

## **Knowing our Places? Contexts and Edges in Integrating Disciplines in Built Environment Education**

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### **Abstract**

The paper examines andragogical challenges for interdisciplinary working in built environment education; the quite different instruments and approaches that are used in planning, design, development and property management; and the diverse interests at work at different spatial and temporal scales. This forms the basis for discussion of the implications and opportunities for interdisciplinary place-based action learning in both initial professional education and lifelong learning. It is concluded that, while there are many inherent challenges because of different disciplinary horizons, more effective processes of areal/contextual appraisal could provide the basis for active interdisciplinary project working and more holistic and integrated learning.

**Keywords:** Interdisciplinary, Integration, Place-based Learning, Boundaries, Professional Skills

## Introduction

Built environment disciplines span a wide diversity of concerns and actions, from the realisation and management of development and places through to spatial planning at great territorial scales. Each is concerned with the development and management of our living environments. Places where, as Cortese (2003, p.16) observes, “Interactions between population, human activities, and the environment...for a secure, just, and environmentally sustainable future are among the most complex and interdependent issues with which society must deal”. Thus the responsibilities resting upon built environment disciplines are great, and the need to secure real synergy and added-value from the combined results of our actions is imperative. But are we up to the challenges? While each of the disciplines involved is inextricably linked, they each work at quite different spatial and temporal scales; use different approaches and instruments for action; and in some ways are guided by quite different values. Are these different disciplinary horizons and goals sufficiently and explicitly appreciated? Do they divide us as much as our institutional, disciplinary and professional structures do? How can education and training programmes be devised that help to bridge the complex borders and divisions that exist, in what should arguably be a more engaging and holistic process? These are some of the questions that have prompted this paper.

There have been various efforts to promote integration between built environment disciplines. Both Latham (1994) and Egan (1998) for example, addressed the opportunities for integrating processes and project teams in the construction industry, which they assumed to include the wider built environment disciplines. Egan’s later work, *Skills for Sustainable Communities* (2004, p.13), moved beyond this narrow assumption and took a wider and welcome perspective, stating:

We firmly believe that attempting to upskill professionals in isolation will not produce the outcomes we are seeking. Instead success will lie in changing the behaviour, attitudes and knowledge of everyone involved, many of whom may not have realised in the past that they had anything to do with each other, or with sustainable communities.

This belief that change is needed in knowledge, attitudes and behaviour is not new. For example Collier *et al.* (1991, pp. 5-7) promoted the idea of “a common language...” and “a common culture for all students...on built environment courses...”. The idea of ‘commonality’ was proposed and a series of ‘common modules’ of study were devised that were to be taken by all built environment students. This is not the place to critically analyse the short lived implementation of the concept in Birmingham, but it is fair to say that the process was fraught with interpersonal and operational difficulties, and the repeated fear that this approach to ‘commonality’ actually resulted in the lowest common denominator. Reflecting upon a similar initiative in Leeds, Wood (1999, p. 373) also found that “...common programmes were actually problematic” and that more needed to be done to define the terminology and differences involved in interdisciplinary and inter-professional studies. Interestingly the findings here did recommend greater emphasis upon interdisciplinary project

working in contrast to the common skills approach that was originally promoted by the Construction Industry Board (1996).

The challenges of developing interdisciplinary skills in the built environment were also explored by Gann and Salter (1999) who took their perspective from the engineering discipline. They noted that the challenges of practice do not present themselves in disciplines and that interdisciplinary skills are critical to problem solving in the conditions presented in the built environment where many variables, together with significant levels of uncertainty and risk are found. While they did not identify specific ways to promote greater interdisciplinarity they did identify two forms of interdisciplinarity worthy of noting. The first was found to be between different domains *within* a discipline, which in their study was within engineering. The second was found between the engineering and built environment disciplines and the social science and humanities. Despite this rather narrow perspective they went on to draw the critical conclusion that "...interdisciplinary thinking requires an appreciation of different methods and approaches to problem definition and solving". An approach that they see as "...encouraging integration of different perspectives into a unified whole" by selecting "...concepts, methods and techniques that transcend rather than reproduce the boundaries set by formal (academic) disciplines" (1999, p. 18).

Conceptualisations of multidisciplinary, interdisciplinary and transdisciplinary relations can be varied. In this paper these terms are generally taken to follow the perspective suggested by Winder (2003) in which, *multidisciplinary* studies are seen as a 'patchwork' led by a well-defined discipline; *interdisciplinary* studies are seen to require intellectual synergies across disciplinary boundaries; and where *transdisciplinarity* is seen to include a wider community of interests beyond the academic and professional.

The problems that arise for disciplines in achieving concerted action in practice and in the wider context of stakeholders' interests have been examined by Mayer *et al.* (2005, p. 403). Drawing upon the examination of the "institutional barriers to sustainable construction" by Van Bueren and Priemus (2002) they explore "the complexity of decision making from a multistakeholder or process viewpoint". Referring to the work of Conte and Monno (2001), they suggest that what "...is needed is a high level of integration of disciplinary insights and stakeholder perspectives, taking into account the various time and space dimensions of an urban development process". Critically they conclude that "experts from various disciplines must be able to communicate and share knowledge effectively" (Mayer *et al.*, 2005, pp. 403-5).

For built environment education to enable students to engage in developing and communicating knowledge between disciplines within the reality of these complexities and uncertainties, multiple variables and perspectives is no easy task, but that is the challenge.

The paper initially considers the built environment professions; the spatial scales and timescales at which they operate and the instruments that they use in terms of policy design and implementation. This establishes a context for discussion of the skills needed; how they may be differentiated and developed and critically the contexts and boundaries within which they may be integrated. The significance of context and enquiry in devising andragogical

approaches to adult and professional learning (Knowles, 1980, 1984), rather than the sometimes more didactic pedagogical approaches that can be found, is also briefly explored. The paper concludes with a reflection upon how the lessons being learned can enable disciplines to come together more effectively in built environment education.

### **The professional context**

Duffy and Hutton (1998) suggested that professions have been concerned with "...boundary maintenance – keeping knowledge in the hands of those who know best..." and that "Innovation is unlikely to be stimulated by such exclusivity" (Duffy and Hutton, 1998, cited by Gann and Salter, 1999, p. 9).

As long ago as 1983 Schön suggested that much professional activity had lost credibility, and that faith in a rational, technocratic approach to problem solving was misplaced. He argued that, although those problems that can be clearly defined were amenable to a technical and rational response, many problematic situations existed which could not be approached in this way, because many "*problems do not present themselves to the practitioner as givens.*" (Schön, 1983, p. 40) (emphasis added). In these cases he suggested that it is necessary to explore values, attitudes, uncertainties, possibilities and "ends". "*When ends are fixed and clear, then the decision to act can present itself as an instrumental problem. But when ends are confused and conflicting, there is as yet no 'problem' to solve*" (Schön, 1983, p. 41) (emphasis added). Schön argued that it is the capacity for 'problem framing', that is central to professional development. This is particularly significant for this enquiry as the role of individual and collective reflection in exploring and identifying strategic 'ends' is a crucial consideration for developing built environment learning activities and curriculum development. In relation to professional education Schön, citing Dewey (1974, p. 151), suggests that students cannot be taught what they need to know, but "*...have to see on (their) own behalf...*" (1987, p.17) (emphasis added).

Today urban design as a discipline has come to claim one of the more holistic perspectives upon the built environment and place making. This is interesting because it might be hoped that insights into interdisciplinary integration and collaboration could be found here. But as Cuthbert (2007, p. 77) argues, urban design has sat rather uneasily in the context of the 'established' built environment disciplines, being "...continuously defined as *other* – half way between...architecture and planning". In the early 20<sup>th</sup> century the scene had been dominated by the architects who claimed to be the leader of the team, and even in the 1950s, 60s and 70s there was a dominance of the architect planner as the leader of the, then, civic design field. The 1980s and 1990s saw considerable diminution of this historic hegemony and other disciplines asserted their place in shaping and managing the urban environment. During this period the number of qualified architect planners dropped dramatically, while the discipline of town planning, as established in UK law, became more concerned with policy rather than design and development orientated. The gap between architecture and planning widened, and this eventually came to be seen as a major interdisciplinary issue and problem as highlighted in *Mind the Gap* by Tibbalds (1988). During the same period the landscape design profession expanded and many practitioners took an

increasing interest in urban as well as landscape space design while the significant role of surveying, engineering and other related professionals, and the impact they have upon the way the built environment is developed and managed seemed to be somewhat under-recognised.

Throughout these debates in the UK the importance of breaking the barriers between professional silos (Latham, 1994; Egan, 2004) was highlighted. In this context the aim of the proposed integration and efficiency was to improve the performance of the Construction Industry, an industry which was defined widely to also include the related professional disciplines including architecture, surveying, engineering and planning. The initially limited focus upon an 'industry' did develop a wider perspective of sustainable development and communities as the ultimate goal, but even so it could be argued that this was still rooted in the technical processes of production rather more than the wider societal processes in play. Cuthbert (2007) explores this lacuna in the international context by examining the field of *urban design*. It is a field for which many conceptualisations and definitions can be found, and Cuthbert reviews these comprehensively in the extended paper cited here. The author's most significant conclusion for the purposes of this paper however, is that in addition to ambiguities within the urban design discipline itself, the discipline has also "failed to engage with any substantial theory in the cognate disciplines of economics, social and political science, psychology, geography, or the humanities" (Cuthbert, 2007, p. 177). While recognising that the idea of urban design as a distinct discipline may be contested, the wider significance is clear. Not only should we consider how our approaches to education and practice are concerned with interdisciplinary relations within the built environment, but we should also consider the transdisciplinary relationships with a wider economic and societal context.

In the UK the foundation of the Urban Design Alliance (UDAL) as a wider interdisciplinary forum for built environment disciplines and the creation of the Academy for Sustainable Communities (now within the UK Homes and Communities Agency) are testimony to the recognition of the interdependencies and potential synergies. But despite all of the efforts disciplinary silos still seem common. Somehow the initiatives to promote interaction and integration have failed to really take hold, and it is not easy to see real interdependence and synergy in the design and delivery of many initial professional education programmes. It is this 'gap' and the educational challenges and opportunities that can be identified to address it that are the focus of the following discussion.

As Duffy and Hutton (1998) have asserted "Professions...should be judged not by how much knowledge they manage to accumulate but by how good they are at developing new knowledge in the context of action...". This "...turns exclusivity on its head: the more professionals share, the more likely they are to learn" (Duffy and Hutton, 1998 cited by Gann and Salter (1999, p. 9). The challenge for education in the built environment is to prepare our students by developing curricula and learning activities that enable them to develop this new knowledge through active learning and shared explorations: between disciplines, and in the context of the wider environmental and socio-economic interests. Before going on to explore how this could be achieved it is important to consider the fundamental relationships in time,

scale and purpose that exist between disciplines in practice, as it is these that set the context for their interactions.

### ***Spatial scale and timeframe***

The significance of scales of interest and actions is an important issue for this enquiry because the disciplinary approaches to scale, and the aims that each discipline pursues at different scales are often subtly different (Moudon, 2002). This is not surprising, for as Lynch (1962, p. 9) noted “site analysis depends upon purpose [and] the same piece of ground will be seen quite differently by a quarryman, a biologist, a fortifications engineer, a farmer and a building contractor...Each view is correct but partial”. It is instructive, therefore, to explore the approaches that are used by each built environment discipline in order to see how they differ, and where they may come together in greater synergy. It is the appreciation of this that may help in the development of more integrative educational programmes and possibly deeper integration in practice. Key aspects of this exploration include the objectives of analysis for different disciplines, the different spatial scales and levels of resolution that may be appropriate, as well as the timescales with which they are concerned.

The issues of spatial scale and resolution of analysis have been examined by Moudon (2002, p. 38) who identified broad ways in which the scale, grain and areal extent from the macro to the micro can be identified, and considered the differences in approach used by disciplines. For example:

- Architects being primarily concerned with the plot, or the site of their commission.
- Urban designers concerned with scales ranging from “groups of plots up to entire cities”.
- Land-use planners concerned with “activity zones ... excluding reference to building types or plot sizes, and regional planners who use a level of resolution *at yet a higher level of abstraction*”.

Moudon (2002, p. 38) also notes that “only architects and urban designers consider elements of urban form” with “all other allied professions replacing these elements by abstract concepts such as density and land-use mix”.

To this nascent typology we can add a number of other disciplines, for example the building surveyor being concerned with strategic life-cycle management and daily maintenance, and the real estate manager being concerned with long term property portfolio management and immediate investment decisions.

### ***Instruments of policy, design and implementation***

In considering opportunities for promoting interdisciplinary integration it is also instructive to consider how disciplines develop, communicate and demonstrate their special expertise and what ‘instruments’ they use to do so. Perhaps integrating our appreciation of these instruments could support integration in the curriculum and by extension approaches and

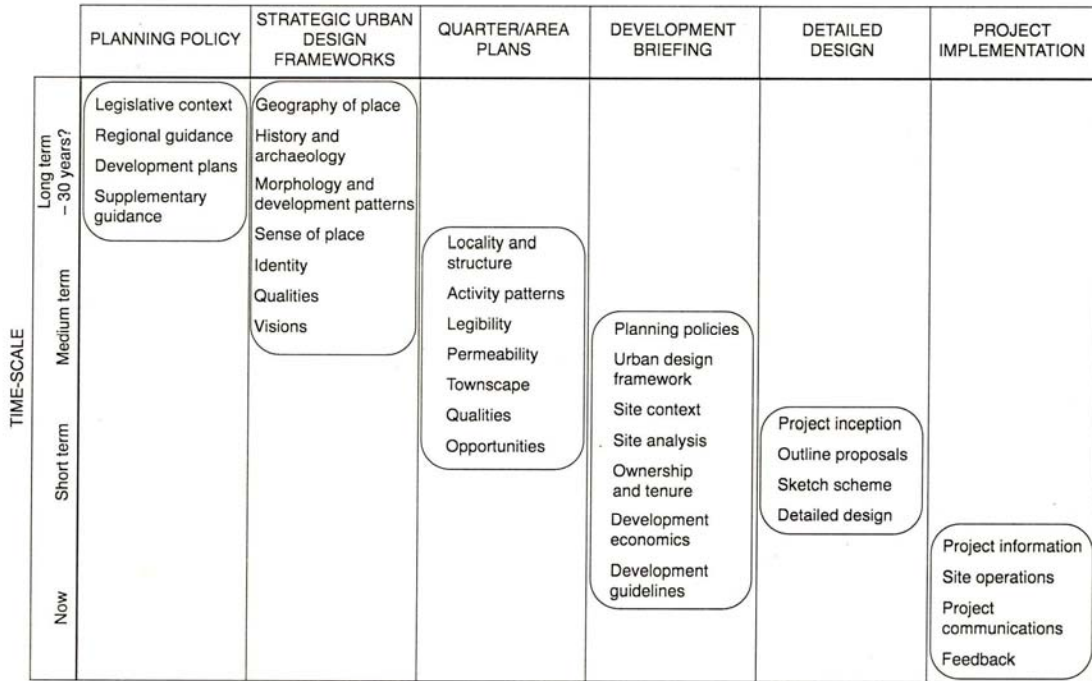
outcomes in practice. A simple example illustrates the sort of opportunities for integration that could exist. This relates to the well known processes of Design Review that are carried out internationally, formally with expert panels or internally by professional officers, in the consideration of applications for development permits. Often there is little or no integration of appraisal between developments in the same area. The potential for integration is considerable but it cannot be achieved at the level of the individual site or development. Action would be required at another scale. Could greater integration of appraisal help to integrate decisions in practice? A local initiative which has been adopted, in slightly different ways in the devolved planning administrations of Britain, is the *Design and Access Statement*. This is a statutory requirement for most significant planning applications under which design teams must prepare and submit a statement setting out the design thinking behind their proposals. The local context, physical organisation, scale and access are key ingredients, but sadly again these statements are generally done independently and site by site by different teams. At the moment there is little or no integration between them and in practice they fall some way short of their potential.

The ways in which ideas and aspirations are translated into strategies, plans and designs vary between, and also within, disciplines. Some display a clear methodology or quantitative discipline, while others can appear to derive from more qualitative or intuitive processes, but the ways in which the resultant intentions, plans or designs are communicated and the instruments used do fall into some broad types. Each disciplinary domain can be seen to have developed its own means of 'expression'. The most clearly defined of these instruments are specifications, design drawings and statutory plans, but a range of less clearly defined instruments is also used. Some have been developed to link strategic policies to developments on the ground, and although they are relatively infrequently and patchily used in practice, their integrating potential is significant. Box 1 outlines some – but not all – of the instruments that can be found internationally in practice.

<p><b>Policy and principles - Issues based</b></p> <ul style="list-style-type: none"> <li>Transnational spatial strategies</li> <li>National spatial strategies</li> <li>Regional spatial strategies</li> <li>Sub regional spatial strategies</li> <li>Local plans and development frameworks</li> <li>Statements of corporate responsibility</li> </ul>	<p><b>Policy and principles - Place based</b></p> <ul style="list-style-type: none"> <li>Countryside characterisation studies</li> <li>Urban characterisation studies</li> <li>Village design statements</li> <li>Area management plans</li> </ul>
<p><b>Implementation - Place based</b></p> <ul style="list-style-type: none"> <li>Area action plans</li> <li>Development briefs</li> <li>Master plans</li> <li>Design and access statements</li> <li>Legal covenants</li> </ul>	<p><b>Implementation - Development based</b></p> <ul style="list-style-type: none"> <li>Detailed development design</li> <li>Development evaluation</li> <li>Inception and feasibility studies</li> <li>Property management plans</li> <li>Specifications of works</li> <li>Development contracts</li> </ul>

**Box 1 An outline typology of Development Planning instruments – strategy, implementation and management**

Chapman and Larkham (1999) illustrated some of the relationships involved between the instruments involved across the ranges of spatial and time scales, as shown in Figure 1, but they concluded that, far from there being the potential hierarchy they illustrated in theory, there are significant gaps in practice.



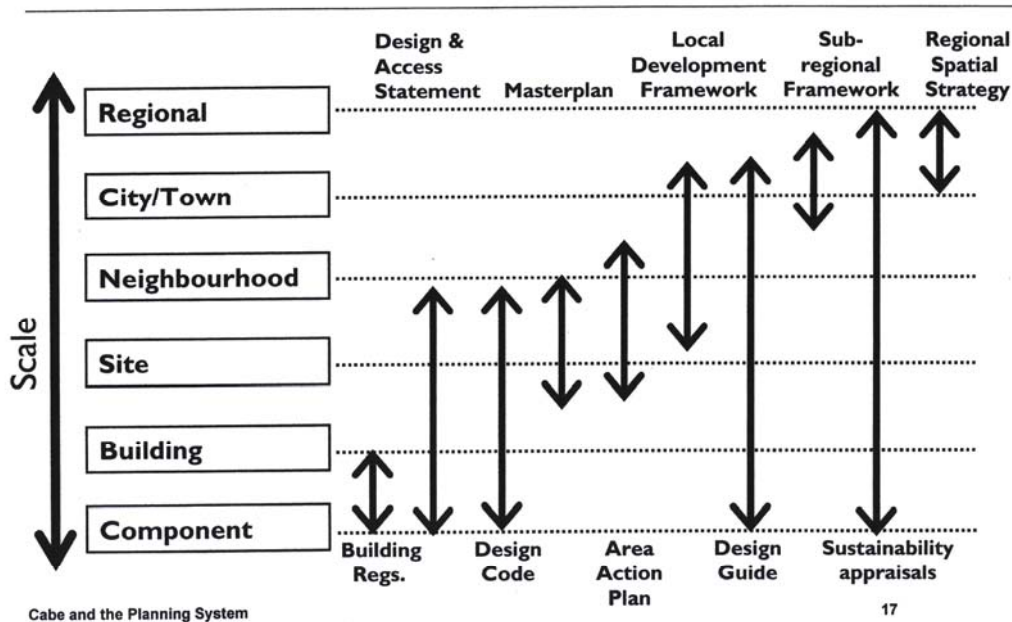
(Source: Chapman and Larkham, 1999, p. 226)

**Figure 1 Timescale, policy and action: linking planning, urban design and architecture**

The UK Commission for Architecture and the Built Environment (CABE) (2003) later sought to explore the integrating potential by relating 'planning design tools' to spatial scale as illustrated in Figure 2. Within this the potential of Area Action Plans as an instrument is significant as they offer a means of leading development and active management in areas of both development and conservation. They are concerned with translating broader spatial policies into more tangible form *on the ground*, and thus they rely upon higher levels of place specific knowledge and situated appraisal. But integration of 'knowledge' and 'appraisal' between initiatives or instruments at different scales is still the exception rather than the norm.



## Planning design tools

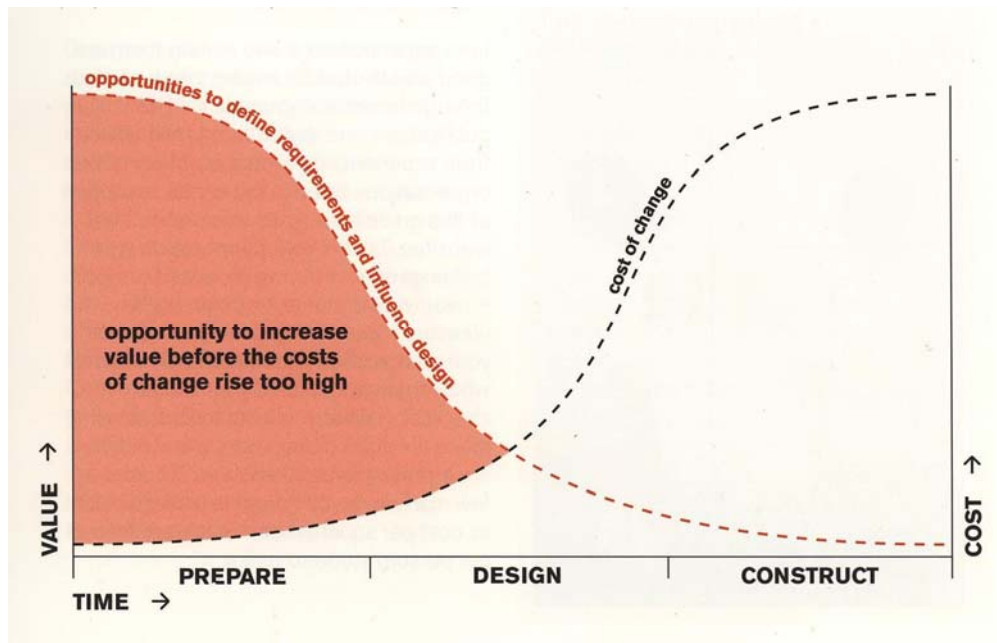


(Source: from an unpublished CABE presentation, reproduced by permission)

**Figure 2 Linking planning tools to design and spatial scale**

## Skills: Differentiation, Development and Integration

Moudon (1992, p. 334) made a critical differentiation between the *knowledge* required in 'understanding' and the *prescriptive skills* involved in 'designing', making a clear distinction between exploring "what was/is", and proposing "what should be". This reveals significant considerations for built environment education and provides a valuable framework for conceptualising issues and approaches for our pedagogy and andragogy. First because it challenges us to explore in depth what understanding our students in each discipline should be enabled to develop in order to underpin their decision-making and prescriptive skills. How often are students' proposals made with inadequate evidence or justification? Second because we also need to appreciate how the understandings and decision-making skills of each of the disciplines interrelate, and crucially how they could develop synergies that add value to one another. In order to take the conceptualisation further it is useful to consider how development, change and protection occur in practice in the built environment. Three stages of development *prepare, design, construct* have been illustrated by CABE (2003) and provides a good starting point (see Figure 3).



(Source: CUBE, 2003 p. 22; reproduced by permission)

**Figure 3 The opportunity to increase value**

The diagram clearly demonstrates the critical place of the preparation stage in increasing value, and thus quality, in the built environment, but it fails to capture the important role that management and stewardship has in practice. To do this it is necessary to develop the stages further, and the following amplification is suggested:

	(Husbandry)	
	(Construction)	
1. Implementation	(Management)	Construction and use
	(Prescription)	(CABE stage 3)
	(Design)	
2. Decision-making	(Policy)	Planning, design and specification
	(Strategy)	(CABE stage 2)
	(Preparation)	
3. Data and analysis	(Understanding)	Preparation and inception
	(Knowledge)	(CABE stage 1)

The reason that these are shown here in what might be considered a *reverse* order is that the most immediate impacts upon the built environment are the physical development and changes taking place *now*. However these obvious physical changes are driven by the evaluation of options and alternative potential actions and resultant decision-making that has

led to them. This decision-making in turn depends upon the quality of understanding of the place and of the base data that is used.

For this enquiry there needs to be a clear and simple focus upon the quality of outcomes of our actions (often the physical *implementation*) but the source of opportunity to achieve this is to be found in exploring the much more complex dynamics between the disconnected actors and decision-making processes that lead to that implementation, and central to this is the nature of the information needed to support decision-making, and particularly how that information is gathered and shared in ways that increase synthesis and which supports integration of decision-making and implementation.

Within individual projects this process can be quite explicit and visible, at least in part; but in the wider development process a multitude of individual and organisational choices, some macro but also a myriad of micro-scale decisions are being made continuously, and in practice quite discontinuously. Approaches to improving interaction and integration in this context are confronted with some very significant challenges, not least the logistical challenges presented by such complex activities at many different scales simultaneously. These multiple disconnected actions each have their own analytical and decision-making frames of reference, and unique aim and purpose. Data and analysis are limited to the action, and it is thus incomplete and inadequate for integration between actions. Except in individual and prestige projects, little integrative preparation is really sought. Devising approaches that enable built environment students to engage with this wider context and to make connections between their own disciplinary interest and others is a key task, and success in this could provide a basis for greater synergy between disciplines in education and in practice. In order to do this a central question is how learning activities can be devised to enable tutors and students to share practical and theoretical perspectives between disciplines in such a way that, as Cooper (1997) suggests, has a focus that enables students to exchange and develop together to achieve outputs undifferentiated by discipline.

### **Built environment contexts in interdisciplinary learning**

In built environment disciplines specialist expertise is developed within the context of a shared interest in the management, development and protection of that built environment. As Webster (2008) has argued, there are also boundary crossing interests that various disciplines share, for example, valuation. However it is clearly the *places* that are the built environment that are of paramount concern for all of the disciplines if they are to achieve added value and integration between them.

Kostoff (1992, p. 8) observes that “Urban form is...the matrix within which we organize daily life [and that] always a city has its own mind: it may refuse to go along with what has been prescribed...”. Clearly any intervention in the built environment is complex, and it is argued therefore that it is only by appreciating the ways in which places develop and the ill-defined rules by which they change that we can have a positive influence upon how they can be developed in the future. This is equally so in historic places, which have often evolved in the most heterogeneous ways; planned settlements, where evolution and change inevitably bring

new pressures and directions; places experiencing economic and physical decline; and in the rapid urbanisation of the developing world.

The suggestion here is that there are practical ways that shared appraisal of places can contribute to integration between built environment disciplines. However to succeed more deliberate and integrated approaches to situated analysis are needed. In essence, what is required is a 'mechanism' that can help to establish a strong knowledge base about the ways our towns and cities are metamorphosing and the qualities they possess today as the basis for exploring shared perspectives. As Punter and Carmona (1997, p. 117) concluded "...design operates as an iterative, cyclical process in which area appraisal and public consultation represent the points of departure for policy development and review".

Significantly this perspective places the processes of appraisal and engagement at the heart of the whole process. Indeed Punter (2007, p. 185) suggests that, while "generic design principles...can provide the basis for...assessment of design quality," it is "context and site analysis [that] are vitally necessary..." before their application.

There is a long history of place-based analysis and appraisal (Lynch, 1960; Cullen, 1961, 1968; Worskett, 1969; Bentley *et al.*, 1985) and the analytical tools have been used as design and development planning tools. However the analytical approaches used in practice are quite individual, with practitioners adopting and developing their own techniques for survey, analysis and decision making. Each approach is adapted and used place-by-place, or project-by-project and there is little integration within or between places or between projects. As Punter and Carmona (1997, p. 123) found "...most appraisal processes have been very partial, both in the geographical sense of tackling only parts of the district or borough, and in the systematic sense of covering only selected aspects of design and environmental quality".

The work of urban morphologists (Conzen, 1960; Kropf, 1993; Whitehand and Morton, 2003, 2004) has influenced some academics and practitioners to explore analytical and appraisal techniques that can capture the qualities and *genius loci* of places as a means of informing and guiding development and change in practice. Kropf (1993, 2001) explored the potential of urban morphology in appreciating built form and guiding design. Hall (1997, 2000) developed the concept of 'design areas' and explored the ways in which morphological analysis can inform the establishment of situated design policies. McGlynn and Samuels (2000) have employed morphological analysis in developing a 'template' of design criteria. Chapman (2006) explored approaches to micro analysis and macro abstraction to distil characteristics of places, spaces and forms that could go beyond utility as a contextual guide for 'harmonious' insertions, but also provide a stimulus for innovative new development. A key feature of this analysis, as Moudon (1992) shows, is that appreciation of 'what is' must be the precursor of prescription. Indeed it can be argued that systematic approaches to appraisal could also provide innovative decision tools that build upon a deeper appreciation of existing built environments, conditions and needs. Such approaches to contextual appraisal have typically been focused upon the physical and qualitative aspects of built environments, such as those developed by Lynch (1960, 1962) and in Cullen's *Townscape* (1961) and *Notation* (1968), but for our purposes the frame of reference must be drawn much

wider to capture the socio-economic context as well as the environmental. The value of boundary crossing learning in this wider context has been recognised by Webster (2008) and it is important to explore the opportunities to develop these further.

### ***Contexts, boundaries and integration***

Having considered some of the disciplinary concerns and approaches found in built environment professions it is also important to reflect upon the pedagogical and andragogical implications. As Knowles (1980, 1984) revealed there are key educational considerations for adult and by extension *'professional'* learning, where the context and enquiry may be more effective than instruction. Where disciplinary and professional knowledge boundaries (Webster, 2008) are central to the learning object it is this andragogical dimension that is critical to the exploration of the complex interprofessional and disciplinary interactions concerned. Here "...we have to learn not only to be fluent across disciplinary boundaries but also across research and teaching boundaries" (Frank, 2005, p. 3). Before going on to consider how these boundaries can be bridged in built environment education it is important to reflect upon the nature of those boundaries.

For example, there are significant boundaries within which each discipline develops its 'special' knowledge and skills sets, and within higher education there are self imposed boundaries in the way that knowledge and skills are valued (Lees, 2007). In universities it is common to find areas of expertise organised into "highly specialized areas of knowledge and traditional disciplines" (Cortese, 2003, p.16) and thus boundaries are not solely disciplinary or knowledge and skills based, they are also institutional and professional. These boundaries between disciplines extend to the value and emphasis placed upon theory and practice; principles and application. The attitudes of academics also impose intellectual borders and institutional structures can also create boundaries between teaching and research (Frank, 2005).

These boundaries have generally been recognised as cleavages between disciplines, however it is suggested that there is another boundary between, and within, disciplines that has gone under-recognised in the discourse to date. This is the boundary between Policy and Prescription; between Strategy and Action. Figure 4 illustrates this relationship, and the critical 'boundary', that exists between the strategic concerns for the longer term and wide scale, and the more immediate concerns of the implementer. Strategy and policy must be concerned with key principles and performance criteria, while implementation and action require precise prescription and specification. But how can the added value of synergy between these borders or edges be achieved?

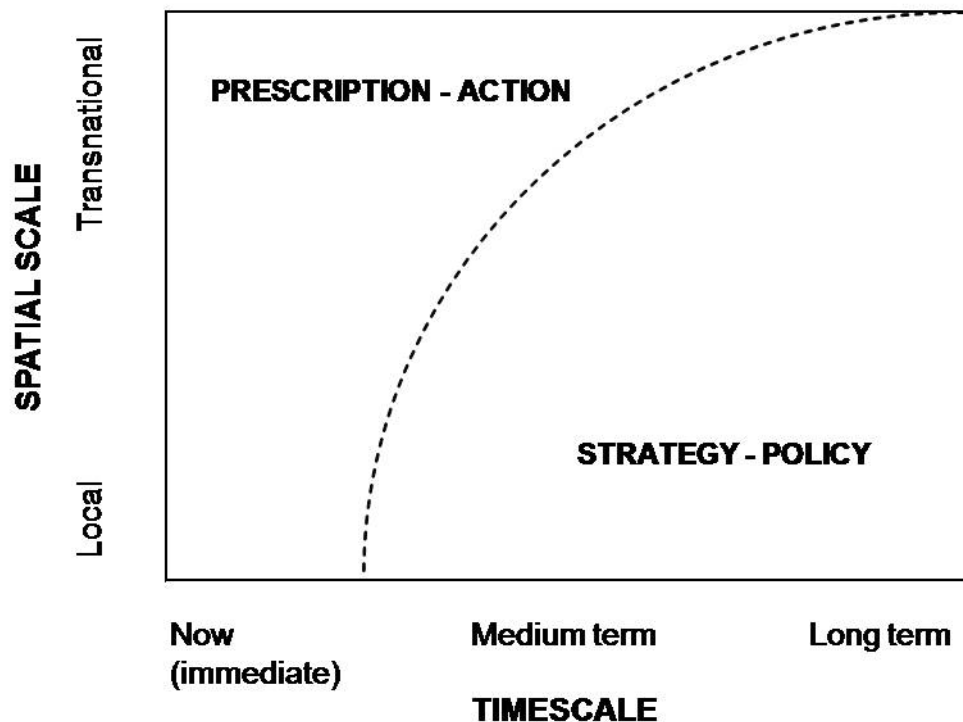


Figure 4 Illustrating the strategy-policy/prescription-action 'boundary'

The wide range of scales at which 'development' in its broadest sense in the built environment can occur, from the simple shelter to the new city, from the new road to the protected environment, are often neatly separated in our disciplinary theories and practices. However if we consider places holistically, this convenient division is counter-productive because in terms of place making the parts are inextricably part of the whole. Different scales, instruments and actions require quite different approaches, ranging from the broad coordinating framework through to precise specification and prescription; from *strategic policy* and *qualitative criteria* to *project prescription* and *specification*. In this situation it is clear that the aims and objectives of urban analysis can vary greatly, as may the levels of generalisation required, and may span the depth of analysis needed to describe and understand how places have developed *ab initio*; the 'abstraction' that may be needed to support policy formulation in planning; and the prescription that is involved in architecture and project management.

It is wrong to draw simple divisions between the approaches of each discipline in this field of study, but it is important to acknowledge that there are differing objectives and values shaping their values, perspectives and practices. For example, different mindsets are needed for the planner when considering policy, strategy and long or unknown timescales, and the architect when charged with detailed design, specification and implementation on an immediate timescale. At the level of policy and direction, it is necessary to maintain some level of 'abstraction' to see the bigger picture, but it is not possible to implement any development abstractly. A clear programme and specifications are then essential. The question is how we can integrate knowledge and action more effectively between these

'levels'? This strategy and action boundary is transdisciplinary. Each discipline is concerned with the challenge to critically analyse the key principles that should underpin their action: the brief before the design, the programme before the contract, and the policies before the programme. Exploring this boundary requires a new perspective.

Webster (2008, p. 1) has argued that the "...transaction costs of change...limit the scope for significant curricular leaps" and that "university teachers might be better able to manoeuvre at the edges in the general direction of greater interdisciplinarity". But will this action at the edges really lead to the transformative action needed? While valuable developments may well result, it is argued that it will not achieve wider interdisciplinary change on its own, and that what is needed is a focus that is simultaneously central to each discipline and on the edge for each discipline. The focus suggested for built environment professions is the context of 'places' as only this offers the opportunity for exchange and translation between disciplines and the basis for coming together with diverse purposes but a unified aim: successful sustainable places. This appraisal of places, in time and space *as they exist*, would provide a focus of study that is simultaneously central to, and at the (leading) edge of, all disciplines and indeed stakeholders. Sharing appreciations of place and context, initially independent of purpose, would in itself be challenging and integrative. When moving on to tackle problem definitions and resolutions it is the context of place that will provide the vital common ground. An action learning process developed on this basis, with students engaged in real places and issues with the intention of integrating interactions and outcomes (McGill and Beaty, 1992) would be the key ingredient of interdisciplinary work within which educators and students "share perspectives...both theoretical and practical" (Cooper, 1997, cited by Gann and Salter, 1999, p. 18). Examples of this sort of exploration are few in practice although Walker (2005, p. 38) has employed 'Land-scape' as a focus for trans-disciplinary learning. While this has been fairly limited in the range of disciplines it has crucially focused upon "...the learning process rather than the production of an object-orientated solution".

It can be argued that there are two major strategies for interdisciplinary learning. One is to focus on commonality at the boundaries of existing professional knowledge bases, while another is to focus on the space and places which represent an important commonality for all built environment professions. Here it is suggested that place based problem and project activities could support both multidisciplinary learning between built environment disciplines, and also transdisciplinary work beyond those disciplines to engage with broader societal processes, as well as developing the conceptual understanding of individuals about the nature of and relationships between professional responsibilities. A central feature of this process would be that, although initially students may be presented with a quite unstructured problem, it would be situated in a very tangible place. In this context students could be supported in the process of problem framing and analysis at various spatial, temporal and sectoral 'scales'. From this they would find points of departure from each other according to the particular aspect of the space/place they are studying. They would develop knowledge that is both specific to the scale that they are particularly working at, as well as knowledge of how this is related to those working at other scales of interest, thus leading to deeper

appreciation of the differences in theories, language and values in play, and of the ways these can be mediated at disciplinary and professional borders.

## Conclusion

The diversity of actors and the multiple activities that occur daily render the achievement of integrated outcomes difficult in practice, even in flagship projects, let alone the immensely dynamic development processes that are a main characteristic of our urban places. A key question is how can greater integration be promoted in these dynamic and discontinuous situations? This is certainly the case in the complex processes that occur in our built environments, more generally, but at least in spatial and development planning there is the advantage of a physical reality; the uniqueness of the place; and some clear questions that can be formulated about the options for its future. It is argued that it is this contextual focus which provides a clear and unifying focus for debate in built environment education and practice.

The choices for the development of our living environments are not simple and they will be contested between diverse interests, beliefs and values. It might be expected that the call for more systematic appraisal of the qualities of places *as they exist* may attract opposition from several directions. First it could be considered to be costly in time, at least initially. Secondly it could be accused of lacking real or immediate purpose. However as Healey (1995, p. 254) has recognised, "...integrating potential..." depends upon the way a plan or programme captures the 'ideas' of the people concerned and its ability to guide multiple subsequent independent actions and decisions, and Cuthbert (2005, p. 226) has argued that "Urban design...existed for millennia as a social practice". Thus what we are engaged with in built environment education and practice requires engagement in a systemic process, rather than simply a series of specialist acts.

Here it is argued that built environment education can be developed as a 'social practice' which captures the 'ideas' of participants collectively in a process founded in appreciation of the built environment as the context of our lives. More effective integration of analytical and appraisal techniques would provide a knowledge base which would explore the uncertainties and risks identified by Gann and Salter (1999) while fostering interdisciplinary working inherently. The development of a strong and shared knowledge base would naturally form a strong platform for debate and a lively heterogeneity of decision-making and actions, reducing inter-professional conflicts, if not eradicating them.

The conclusion of this paper is not that contextual and locational analysis are important to strategic development, implementation and management in the built environment, for this has been well established and accepted in each discipline. The simple conclusion is that integration of analysis and problem-framing between disciplines is an essential precursor to any possible integration of decision-making. It is this that has the most transformative potential in interdisciplinary built environment education. In this the structures of the curriculum and the philosophy of programmes are important, but it is vital that the framing of learning activities enable students to develop deeper appreciation of the interrelationships

between diverse actions in space, time and purpose in the actual places that are our built environment.

A number of obstacles to bringing forward such learning activities have been acknowledged, but the challenge that we should overcome them together is clear. Contributions towards this, and the continued research that is needed to bring these ideas into practice, will assist in securing the long-standing ambition to achieve greater integration between the built environment professions in education and in practice and will be greatly welcomed.

## **Acknowledgements**

The author would like to thank the colleagues who have provided their thoughts upon an earlier working paper; the three anonymous referees whose comments have been greatly helpful and encouraging in developing the paper; and the Commission for Architecture and the Built Environment for kindly allowing illustrations to be reproduced in this paper.

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