Title	Editorial: Learning on the Boundaries - an Invitation to Pool Boundary-crossing Learning Objects
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Citation	CEBE Transactions, 2008, v. 5 n. 1, p. 1-4
Issued Date	2008
URL	http://hdl.handle.net/10722/202347
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Editorial

Learning on the Boundaries – an Invitation to Pool Boundary-crossing Learning Objects

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In two recent editorials in this journal I have developed the themes of knowledge boundaries, professional divisions and interdisciplinarity. Here I want to be more specific with a proposal designed to help stimulate what I shall call 'learning on the boundaries'. It is clear to me that professional and subject boundaries in the built environment are pretty hard to shift. I do not believe that they are immobile, but that they move in their own way and at their own time. Major curricula change can happen when there is major organisational change. But even where departments have come together in new schools of the built environment, or interdisciplinary programmes have been set up, there remain very serious inertias, capacity, capability and human capital problems. In the long term, knowledge boundaries shift with student and employer demand and with paradigm changes. Tinkering at the edges with various management and organisational interventions and innovations may or may not speed up these changes.

It is worth trying an approach that appeals directly to the university teacher locked into his or her particular subject domain. The difficulties of making major shifts in what one teaches in order to accommodate knowledge from another domain are huge. The transaction costs of change generally limit the scope for significant curricula leaps. It is reasonable to suppose, however, that university teachers might be better able to manoeuvre at the edges in the general direction of greater interdisciplinarity. Assume, for example, that the knowledge map of most of us who teach includes an awareness of at least one disciplinary boundary – between our own subject and another that is closely related but over some border or other. Then assume that there is some help on hand to navigate towards that boundary by making small adjustments to what we teach. Let's say that each lecturer slightly changes tack just for one teaching session – an hour's lecture, or a two hour workshop, or a project or an assignment. If everyone does the same, something quite significant might be set in motion.

Consider Figure 1 as an example. This is a model – a very limited and partial model - of the built environment subject area. It abstracts from the knowledge base of various subjects in order to make a connecting theme, in this case, valuation. Valuation has a specific meaning, of course, for our surveyor colleagues – and that is partly why I have selected it for illustration. The surveyor's idea of valuation has parallels in all other built environment

subjects and thinking about those parallels can help guide unilateral movements towards more integrated knowledge.
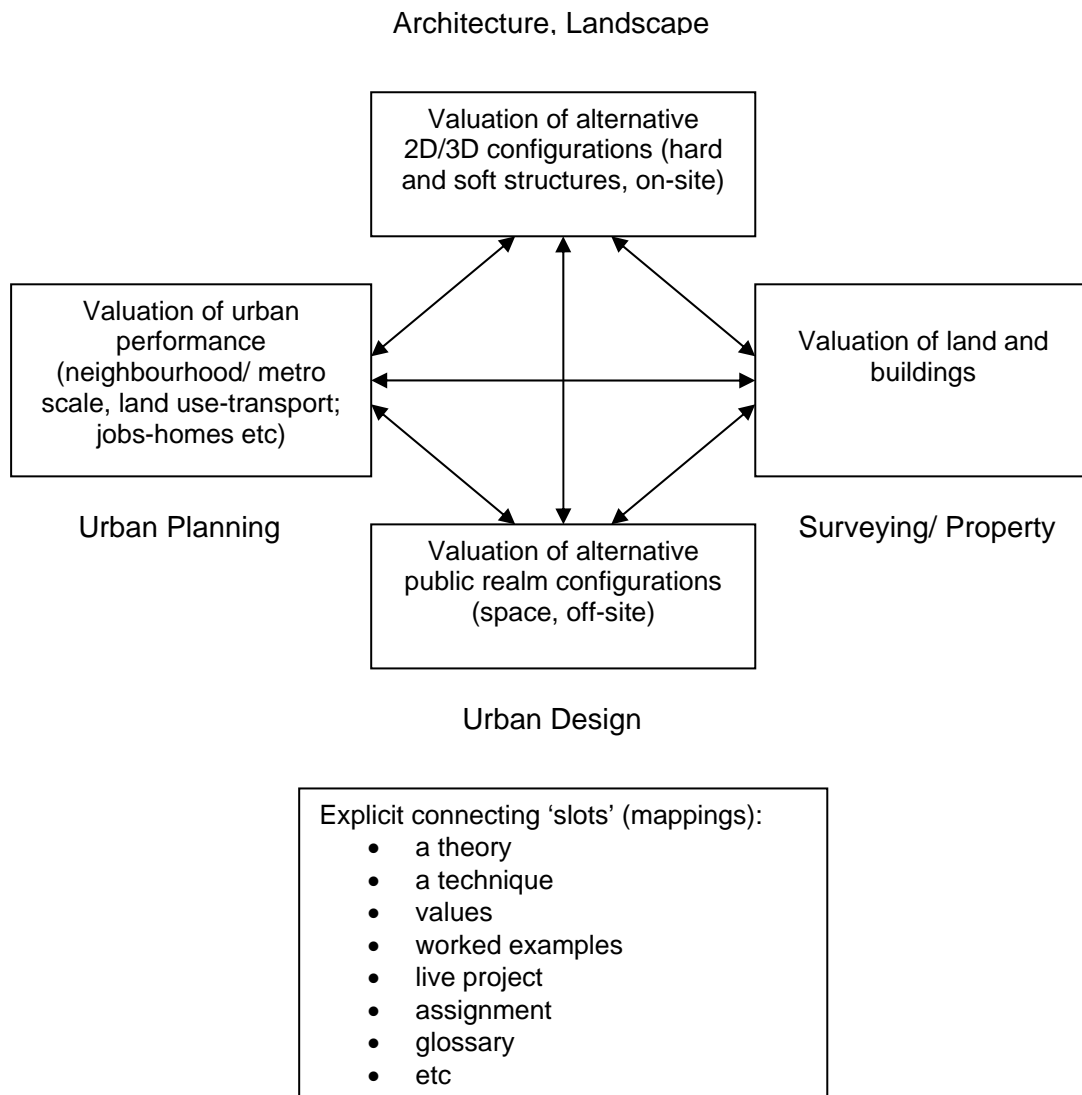
Architecture, Landscape

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                    ┌──────────────────────────┐
                    │ Valuation of alternative │
                    │ 2D/3D configurations (hard│
                    │ and soft structures, on-site)│
                    └──────────────────────────┘

┌──────────────────────────┐                      ┌──────────────────────────┐
│ Valuation of urban       │                      │ Valuation of land and    │
│ performance              │                      │ buildings                │
│ (neighbourhood/ metro    │                      │                          │
│ scale, land use-transport;│                     │                          │
│ jobs-homes etc)          │                      │                          │
└──────────────────────────┘                      └──────────────────────────┘

Urban Planning                                    Surveying/ Property

                    ┌──────────────────────────┐
                    │ Valuation of alternative │
                    │ public realm configurations│
                    │ (space, off-site)        │
                    └──────────────────────────┘
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Urban Design

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┌────────────────────────────────────────┐
│ Explicit connecting 'slots' (mappings): │
│     •   a theory                        │
│     •   a technique                     │
│     •   values                          │
│     •   worked examples                 │
│     •   live project                    │
│     •   assignment                      │
│     •   glossary                        │
│     •   etc                             │
└────────────────────────────────────────┘
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Figure 1: 'Boundary learning' using 'Translational learning objects'

There are four boxes in the model, representing the different kinds of 'valuation' that are bread and butter for four different professions. From one point of view, all built environment subjects are centrally concerned with valuation. Surveyors value sites, land and buildings. They may, for example, give a value to a site based on the residual value of a project, once all construction and net operating costs over the project's life time have been accounted for (and discounted to present value). Architects' designs are intrinsically evaluative. A 2D or 3D design is a solution to a complex cost-benefit puzzle. It resolves a set of benefits and costs to some optimal spatial configuration. The costs and benefits are typically limited to building costs and on-site user benefits. If off-site benefits are in the frame, then the architect is moving into the domain of the urban designer and urban planner. Urban designers, like

landscape architects, might be thought of as optimising the value of specific public realms. They might attempt to deliver maximum benefit at least cost, or best value for fixed budget or maximum impact up to a cost ceiling, or some other formula. Urban planners working at the neighbourhood or metropolitan scale seek to optimise the value of the entire neighbourhood or city. They anticipate trade-offs between alternative land use and transport systems, for example to try and achieve balance between jobs and housing, accessibility and congestion, demand and supply of open space and so on. So we are all optimising in what we do and that means making valuations. Some valuations are more formulaic and objective: others more tacit and subjective; but (e)valuation is at the core of all that we do.

Using this particular abstraction as a unifying framework (many others could be imagined), consider the idea of knowledge boundaries. We may start from the more obvious boundary disputes. Architects and construction managers are jostling for position as team leaders in construction projects. The coordinating power of the architect's drawing is not as strong as it used to be because construction projects are that much more complex. So there is an active fault-line between the architect's and the construction manager's approach to evaluation of a building project. Then ask the question: how could an architecture teacher make some small change in the way she teaches to better accommodate the view of the project manager? Ditto with the project manager teacher. If each changed the content of just one topic, or lecture, or reading assignment in the direction of each other's paradigm, then they will have given something important to their students: at the minimum, guidance in translation; but possibly more than this – a window through which to explore a more synergistic knowledge and skill base. The same may be said of other major fault-lines such as that between property/real estate and urban planning. Most planning schools work from a view that society (cities) needs a degree of centralised planning. Most surveying schools work from the idea that cities take shape as individual sites are developed: top down versus bottom up planning – market order versus planned order. Neither is the whole truth and students need elements of both views and ideas about how they may be resolved. 'Translation' learning objects tacked on to existing modules could empower students to make their own interdisciplinary connections.

Developing this further (into a programme that could be rolled out 'virally' or in some more organised fashion) consider the idea that each box in the Figure is a learning object belonging to a particular subject. There may be more than one instantiation of the object – developed by different individuals. A specific instance of one of these learning objects is developed by Dr. X at university Y and is designed to map specific knowledge from Subject A to knowledge from Subject B. It would probably be developed in discussion with Dr. Z from Subject B. To give structure to this process, each box (learning object) might contain reference to four types of knowledge on both sides of the boundary:

- Techniques
- Theory
- Values
- Readings

The box would thus have explicit links ('slots') which interface with other boxes. The more the collaboration between Drs. X and Z, the more specific could those links be and the greater the chance of either of them independently re-working more of their teaching to reflect interdisciplinary realities.

There is the seed of an idea for a funded project here. Indeed, CEBE is in touch with academics in different subjects and universities interested in exploring this approach. On the other hand, this is also something that could start to happen more spontaneously.

I invite readers to submit 'Boundary learning objects' that can be shared. This might be documentation for a tried and tested module or module part with an explicit subject translation bolt-on. Try and be as specific as possible. A box that interfaces site valuation and urban design might, for example, contain an explicit consideration of an urban design technique for evaluating the quality of the public realm and a site evaluation technique that makes clear the value of off-site attributes. Another example, interfacing urban planning and real estate might, for example, include an exercise that has students running a hedonic house price model, a site evaluation formula and exercise and a planning-brief exercise for the housing market areas being modelled (I once ran a very successful exercise for my second year undergrad urban planning students that did the first two of these).

The idea, then, is to grow knowledge at the boundaries – and over the boundaries. This way is less threatening and much less time consuming and risky than major interdisciplinary teaching ventures. In the end, subject boundaries are necessary, as I have said in other editorials - to save on the costs of searching for knowledge. Ironically, this makes subject boundaries and disciplines all the more important (in the face of knowledge explosion) just at the time when the users of knowledge demand more permeability across boundaries. Do-it-yourself boundary negotiation has a lot to commend it in these circumstances.