An Evolutionary Approach to Spatial Knowledge
Theoretical Developments

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Abstract
The purpose of this paper is to present Developmental Syntax (DS), its wider theoretical
background and application to the field of spatial knowledge research.

DS is a contribution to the theory of spatial knowledge, produced as part of a recently
completed (1999) PhD thesis and currently at Salford University. DS uses the unit of the
'person in surroundings' as its unit of analysis. This unit is used to conjecture relationships
between the person and surroundings. The resulting model provides one basis for the
study of spatial knowledge, the link between the 'knower' and the 'known'. 'Spatial knowl-
edge' is used as a term to denote the relationship between thought and things contributing
to any understanding of behaviour and behavioural settings at the social, urban and global
scale.

DS links methods used in space syntax to a research field of 'emergence'. The techniques
link large scale mathematical modelling with adaptive learning systems and can be reduced to
three significant categories:

Firstly, mathematical systems and statistical analysis
Second, lawful algorithms linking random members of a social group to place in context,
known as transactional relationships with phenomena such as scripted behaviours and
behavioural settings
Third, the incremental associations, selections and conjectures of adaptive learning mech-
anisms and phenomena brought about by ecological perception, which is the focus of DS.

Space syntax significantly represents a holistic approach linked to lawful social and spatial
functions, listed above as the first and second categories in emergence. The third category
must, in any detailed analysis, be linked to the other two. Individuals acting in their sur-
rroundings have degrees of choice or selection and these influence their physical circumstances
even though those degrees of selection are constrained in various ways.

Ongoing research at the Centre for Virtual Environments at Salford University is using
emergence as a philosophy in Urban Modelling. This philosophy seeks to link large-scale
environmental phenomena and social and spatial knowledge systems to selective individual
choices. Advances in understanding the links between all three categories should prove useful
to urban modelling and the increasing democratisation of the urban realm linking individual
and local group interactions to the wider horizons of urban and global planning.