

Keynote Speakers

The COSIT'09 keynote speakers are:

- James Pustejovsky, Professor of Computer Science, Brandeis University, USA.

"Interpretations of Space through Language"

- Neil Burgess, Deputy Director, Institute of Cognitive Neuroscience, University College London, UK.

"Neural mechanisms of spatial cognition"

- Bill Hillier, Director of the Space Syntax Laboratory in University College London.

"The city as a socio-technical system: a spatial reformulation"

Abstracts

Bill Hillier, Director of the Space Syntax Laboratory in University College London.

"The city as a socio-technical system: a spatial reformulation"

On the face of it, cities as complex systems are made of (at least) two sub-systems: a physical sub-system, made up of buildings linked by streets, roads and infrastructure; and a human sub-system made up of movement, interaction and activity. As such, cities can be thought of as socio-technical systems. Any reasonable theory of urban complexity would need to link the social and technical sub-systems to each other. Historically, most urban models have sought to make the link through the concept of distance in the physical system as a cost in the social system, defining the physical sub-system as a set of discrete zones. Such models have proved practical tools, but over the years have contributed relatively little to the development of a more general theory of the city. Here we propose a more complex and, we believe, true-to-life model based on the definition of the physical sub-system of the city as a network of spaces – streets and roads - linking buildings, rather than as a system of discrete zones. This allows us to approach urban complexity in a new way.

Two key issues – theoretically perhaps the two key issues - in the study of complexity in general are the levels problem: how organised complexity at one level becomes elementary the next level up; and the parallel problem: how systems with different internal dynamics interact with each other. In (Cohen & Stewart 1993) a general framework for conceptualising these two problems is outlined: complex phenomena at one level commonly produce lawful (though rarely mathematically describable) emergent simplicities one level up which then have their own emergent dynamic, independent of the complex processes that created them. They call such emergent simplicities, in which ‘chaos collapses’, ‘simplexities’. Simplexities of different kinds then interact and modify each other to create ‘complicities’, or complexes of simplexities, to construct the complexity of the real world. Here it is argued that this formulation captures the problem of complexity in cities as socio-technical systems, and that we need vertical theories to capture the relations across levels, and lateral theories to capture the relations of parallel systems. We outline a vertical and a lateral theory to account for generic aspects of the emergent complexity of cities.

However, both theories require an account of the linking mechanism, and here we show that since all actions that create cities are taken by human agents, the vertical and lateral linking mechanisms necessarily involve human minds, not in the sense of real historic individuals, but in the sense of a generalised individual acting according to spatial laws which are both objective and intuitively known, in the same sense that an individual who throws a ball of paper so that its parabola leads it to land in a waste paper basket intuitively ‘knows’ the law of physics. We call this generalised human subject the ‘objective subject’ of the city, and show that by virtue of being everywhere in space and time in the formation and working of the city, it everywhere imposes its point of view on it, so that cities are cognitive formations in an even more fundamental sense than they are socio-economic formations. The cognitive sets the envelope of possibility within which socio-economic processes create the city.