The Planning and Transport Research Centre (PATREC) at UWA delivers integrated land use and transport planning research to extend the evidence-base in support of the effective planning and management of Western Australia's high and rapid growth future. Read more about PATREC here: [http://www.patrec.uwa.edu.au/](http://www.patrec.uwa.edu.au/)

Australasian Early Career Urban Research Network (AECURN) offers a forum for networking and sharing academic expertise and resources, organising training workshops, seminars, guest lectures, etc., and facilitating cross university collaboration within WA, Australia and internationally. Sign up to the website to receive updates of events, workshops, conferences and publishing opportunities: [www.aecurnonline.com](http://www.aecurnonline.com) or contact mariana.atkins@research.uwa.edu.au or Rebecca.Scherini@curtin.edu.au

This joint PATREC and AECURN seminar highlights the research which was conducted by Yuchao Sun as part of his completed PhD study and the current research of Steve Fargo, a PhD candidate of the Australian Urban Design Research Centre at UWA.

**LOCATION/DATE**
The University of Western Australia, 
Geography & Geology Building: Room 1.31 - Gentilli Lecture Theatre
**Friday 6 March 2015**, 4:30pm - 6:30pm

This is a FREE of charge event, but we appreciate your [RSVP](mailto:patrec-see@uwa.edu.au). Coffee/tea and refreshments will be served after the seminar.

**RSVP**
patrec-see@uwa.edu.au

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**About Yuchao Sun**

Yuchao (Chao) Sun is a research fellow at PATREC (Planning and Transport Research Centre). He has experience in both academia and consulting. His main research interest includes applied Artificial Intelligence, transport and traffic modelling, discrete event simulation.

**Title of Talk: CLOUD: COmputational Urban Layout Design**

Inspired by developmental biology, CLOUD incorporates a number of important biological principles. It commences with an ‘embryo’ (or ‘embryos’) and grows it into a plan rather than trying to begin with complete solutions. Its universal modules play similar roles to biological cells. The model also incorporates principles of Agent-Based Modelling (ABM) and displays the characteristics of an emergent system.

A hypothetical application, maximizing combined everyone-to-everyone connectivity and dwelling density, has evolved interconnected street plans. However, no step is specific to the example; the operators will grow a road and land-use network under various specifications and constraints guided by an objective function. Making the process applicable to an actual
development might require more constraints, operators and certainly an enlarged objective function. Cost and other goals can be included so long as each goal is functionally related in some way to every change in the plan made by the search procedure.

In numerical terms, the computer-generated plans are better than manually constructed grid plans. The analysis of the grid plans also revealed the diminishing returns to street connectivity, which has practical implications in balancing connectivity and the cost of providing it. The plans COULD generated also feature high internal connectivity with low external permeability. The former should promote walking and cycling and enhance the sense of community. It should even out the distribution of internal traffic and therefore increase safety and discourage through traffic.

The mechanisms and theoretical background of the model will be discussed, along with its limitations and possible extensions.

About Steve Fargo

Stephen Fargo AIA is a practicing architect in Perth and a PhD candidate at AUDRC (Australian Urban Design Research Centre). He has worked independently and in association in New York, Singapore, Cambodia as well as some of the principal Australian cities. His thesis, currently titled 'Hyperdensity, Retrosprawl, Remediation', investigates distribution of workplace as a function of macroeconomic development, urban evolution and architectural typology.

Title of Talk: Commuting Volume/Direction, Workplace Distribution, and Activity Centre Planning in Perth Metropolitan SubRegions: A Preliminary Method of Quantitative Analysis

Among urban planning goals of the WAPC document Directions 2031, two stand out as potentially important for the optimization of future growth development in the Perth & Peel Metropolitan Area: Employment Self-containment (ESC) by SubRegion, and Activity Centre Planning. However, a recent quantitative analysis of commuting volume and direction indicates that ESC goals may not be met by current policy.

Actual job shortfalls in PMA SubRegions favour job accretion in the Perth Central SubRegion and perpetuate environmental and infrastructural problems of high volume/long distance journey-to-work commuting patterns associated with already-established and growing residential settlement on the periphery. This presentation outlines a method for locating and quantifying these job shortfalls and speculates on the usefulness of current Activity Centre Planning as a possible means to achieve ESC goals through future workplace distribution across the SubRegions.

Please note that paid parking is available in the car bays behind the Geography & Geology Building (carpark #20, http://www.uwa.edu.au/contact/map?id=2110)