The Theory of Urban Fabrics: Understanding the Science of Planning Cities

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Introduction

The Theory of Urban Fabrics is based around the Marchetti travel time budget of 1 hour average found in every city and how the speed of various transport options have defined three main city types over history: the walking city, the transit city and the automobile city. These are found roughly within a radius of 5km, 20 km and 50km of the centre-point of the city based on the average speed of walking, transit (trams and trains) and cars. The elements of each fabric that developed can be defined by the density, mix, width of roads and other infrastructure that facilitates each mode. The historical period overlays each fabric but more importantly the fabrics have their own shaping influence on how we live and move, and on how the metabolism of the area works. Thus to truly understand a city and make policy decisions on matters like energy, carbon, transport options, building options and indeed any matter that crosses the desk of a town planner, it is necessary to understand the urban fabric of each part of the city. Most town planning remains stuck in the models developed from the 1933 Functional City era where transport was separated out from land use and each were given separate quantitative models and professions. Town planners were given land use and transport was given to traffic engineers. In reality this led to the automobile city with all its elements dominating town planning schemes and decision-making. The Theory of Urban Fabrics suggests there are three steps that need to be taken if a true science of town planning is to be developed:

1. **Recognise the urban fabrics.** Identify on maps where each fabric extends and where they overlap. Recognise the detail in the elements as part of every town planning scheme.

2. **Respect the urban fabrics** as the basis of any planning exercise. Demonstrate in any discussions and policy development that each fabric has distinct and different qualities that should not be subject to a one-size-fits-all modernist model for buildings, street widths, parking requirements, set-backs, site coverage….

3. **Repair and regenerate the urban fabrics.** Each of the fabrics require different approaches. Walking cities need walkability (eg Jan Gehl’s approach). Transit cities need corridor approaches that respect the differences between trams, buses and trains and how land use links to it (eg Polycentric City based on trains and TODs vs Tram-based linear corridor). Automobile cities which dominate town planning schemes have their role and need to be respected as well as recognizing their limitations.

Mixtures of the three city types are found in every city and challenge every community to find ways to balance the competing fabrics.

Much of the value in a theory is how it can help create a better future: a more sustainable one. The Theory of Urban Fabrics can be applied to many issues facing town planners and politicians today including energy matters that were the initial impetus to the work behind this approach. The challenge of what to do now that peak car use and peak oil are happening remains the biggest question. Some approaches to each fabric of the city and especially how to manage the automobile city fabric in the light of these issues, provides the best way to illustrate the theory in practice.

Science Status

I have helped develop the science of sustainability applied to cities. The Extended Metabolism Model from my book Sustainability and Cities, helps us to understand the resource and waste flows but it does little to explain why one part of a city is inherently more resource consuming than another. The Theory of Urban Fabrics is something that we began to feel our way towards in various publications and projects over the past 35 years. It uses transport priorities as the basis for understanding land use and therefore can explain the fabric in which people live and work, including the resulting metabolism. The recent work with Leo Kossonen has enabled me to understand that my model that I developed was more likely to be a useful and comprehensive
theory for how to do town planning than anything else he had seen. I will report on where we have reached in its development.

Science Challenges and Pathways

The challenge is to fully explain the Theory of Urban Fabrics in a way that leads to clear principles and practices for use by town planners. Now that car use is going down in cities it challenges planners to think about how to make a more regenerative city rather than have all major strategic decisions taken away by traffic engineers accommodating the car.

Selected References

