The SCATTER Project: 
Measuring and Modelling Urban Sprawl in Six European Cities

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Our focus on sprawl— it is largely socio-economic, rather than physical. It is also geared to linking land use to transportation. It seeks to measure sprawl and predict its impacts using landuse-transport models.
Outline of the Talk

- Urban Sprawl: An Age-Old Phenomenon
- The Forces at Work: Concentration, Population Growth and Decentralization
- Types of Sprawl
- The SCATTER Project: Sprawl in Europe: The SELMA Project
- Outline of the Project: Work Packages
- General Conclusions
- Modeling the Impact of Policies in 3 European Cities: Brussels, Helsinki, and Stuttgart
- Policies: Sustainability and Smart Growth
Urban Sprawl and Urban Growth: An Age-Old Phenomenon

• **Sprawl is directly identified with urban growth** - as cities get bigger, they expand around their peripheries

• **But sprawl is more specific, it is defined as** ‘uncoordinated growth’: the expansion of a community without concern for consequences or environmental impact.

• **Sprawl goes back to Roman times, first formally defined as a term in the 1820s in England**
Critics of suburbia date from William Cobbett (1762-1835), author of *Rural Rides*. As early as the 1820s he declared, riding west from London, that “all Middlesex is ugly”, a “sprawl of showy, tea-garden-like houses”.

“Need I speak to you of the wretched suburbs that sprawl all round our fairest and most ancient cities?” William Morris, *Art Under Plutocracy*, date unknown, between 1870 and 1896

William Holly Whyte: 1959: *The Exploding Metropolis*, is an early post-war statement.
The Forces at Work

• Big Cities are still attracting population, mega-cities and capital cities like Brussels, London, …. But population is being added to the edge at lower densities and the dominant transport is the car, for ease of access

• Population and other activity is also decentralising very fast to lower density suburbs

• The costs of growth are hard to assess because this growth is at a very individual level
• In terms of urban growth, these forces divide into those that are centralising and those that are decentralising, sometimes called forces of concentration or deconcentration. This is complex in that there is subtle mixes of these.

• The rise of the industrial city in the 18th & 19th centuries was marked by strong centralisation and concentration as people flocked from the rural hinterland to work in the city.

• For the last 100 years, decentralisation has become more powerful due to the falling transport costs, the switch from public transport to car, and the desire for more space.
In the last 30 years, perhaps less, there has been a drift back to the countryside by city dwellers. This is primarily modern-day sprawl, although it is really based on richer people seeking country-like living.

Sometimes this is called “counter urbanisation”.

Even more recently there is a trend towards moving back into the inner city or central city but all these migration streams are occurring because people have more flexibility and are able to indulge their preferences much more than they were able to in the past.
You can see both these forces at work spatially and historically in the growth of large cities such as Greater London (below)

various types of sprawl are quite clear
Types of Urban Sprawl

- Strip development, corridors of high accessibility along roads
- Scattered development - uncoordinated
- Development that leapfrogs existing barriers

But in contrast

- Compact development
- Polynucleated or polycentric development, is a particularly European phenomena, called conurbations in the UK and megalopolis elsewhere, for example in Western Europe
Urban growth as sprawl has been particularly rapid in the last two centuries and shows no sign of abating as people want more space, lower densities. In fact many cities are declining in population but growing in terms of sprawl.
1940s sprawl: it is an advert from the LA Times in 1948 showing the typical sprawl of the 1930s and 1940s in Southern California.

This is taken from Mike Davies’s book \textit{Ecology of Fear}.

Below is more modern sprawl – larger lots.
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The Impacts of Sprawl

- Majority of work is on the impacts of sprawl and most of it in the USA
- The key issue in our SCATTER project is on the idea that as cities sprawl, policies to try to shift people to more efficient forms of transport, exacerbate the sprawl. They make it more attractive to spread out due to increasing accessibility.

- Four major viewpoints of impacts of sprawl:
  1. Aesthetic: sprawl seen as despoiling the countryside, part of anti–suburban bias
  2. Efficiency: costly for the society as a whole
  3. Equity: sprawl creates a concentration of non-white residents in the inner cities and removes tax funding from the inner cities to the suburbs
  4. Environmental: low density cities use more energy.
The SCATTER Project: Sprawl in Europe

SCATTER: Sprawling Cities And Transport: from Evaluation to Recommendations

STRATEC (BE) co-ordinator
CASA – University College London (UK)
STASA (DE)
Trasporti e Territorio - TRT (IT)
LT Consultants (FIN)
\{Strafica (FIN)
CERTU (FR)
CETE de l’Ouest (FR)\}

Scientific Officer of European Commission - DG Research: Dr. Eric Ponthieu
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Phase 1

Improving the understanding of the mechanisms and effects of urban sprawl

Phase 2

Reviewing policies and assessing their effects

Phase 3

Formulating recommendations
Outline of the Project: Work Packages

Phase 1

WP1
State of the art review (incl. USA)

WP2
Interviews

WP3
Statistical Analysis

Phase 2

WP4
Review of policy measures

WP5
Simulation of policy measures

Phase 3

WP6
Impact assessment

WP7
Recommendations
Monitoring tool
Program of measures

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• A Review of Sprawl world wide
• Interviews with Local Representatives in the Six Cities
• Understanding Sprawl in the Six Cities from spatial trends in demographic and economic data over the last 30 years
• Developing land use/transportation models in three cities – Brussels, Stuttgart and Helsinki picking up on the PROPOLIS project
• Development of Scenarios based on changes to transport and land taxation
• Policies at the Local Level
SCATTER has tested many different transport policies for Helsinki, Brussels and Stuttgart using land use/transport models.

All these results generally reinforce the notion that most improvements to the transport system for public and private modes tend to increase accessibility and this increase sprawl. Shifts from car to train and bus do little to stem sprawl.

Economic policies affecting rents etc on land are probably more effective but also more controversial.
## General Conclusions: The Main Results

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<tr>
<th>State-of-the-art comprehensive report on urban sprawl available on Internet - Maybe for the first time: review of both US and European literature</th>
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<tr>
<td>Statistical analysis with a mix of classical (densities) and more sophisticated indicators: generalised shift-share analysis, H-measure, auto-correlation indicators – The analysis highlighted differences in sprawl experimented in the 6 cities</td>
</tr>
<tr>
<td>Qualitative evaluation of policies: 11 European case studies + 1 US case study (Portland, Oregon) – Review of all possible policies tacking urban sprawl or its negative effects - These case studies feed the policy database of the Internet exploratory tool</td>
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| Institutional issues and inter-institutional cooperation – The analysis highlighted two views: “only strong legitimate metropolitan authority can be effective” versus “also voluntary coordination is needed”, and “less formal organisations are useful”.
| Quantitative evaluation of policies: policy simulation with land-use/transport models – Simulations confirmed that rail investments may generate urban sprawl – They led to select a package of 4 policies (including fiscal measures) as most efficient – SCATTER originality: effectiveness of fiscal measures was tested (versus transport pricing measures)
| A set of clear policy recommendations addressed to local authorities to tackle urban sprawl and its negative effects
| An Interactive tool available on Internet for supporting local authorities in building a strategy
Modeling the Impact of Policies in 3 European Cities: Brussels, Helsinki, and Stuttgart

Brussels: Testing Impact of Extensions and Improvements to the Regional Express Rail Network

The same sorts of tests were developed using the LT model for Helsinki which like the Brussels Model was developed for the PROPOLIS project.
Stuttgart: Extension of the light rail S1 and motorway A81:

111S: without A81 / with S1
112S: with A81 / without S1
113S: with A81 / with S1
114S: with A81 / with S1 / with Park&Ride facilities
6. Policies: Sustainability and Smart Growth

- A brief word by way of conclusion on policies – these range from the notions about piling everything into some sort of compact city to ideas about developing clusters in polycentric fashion to letting cities rip in terms of peripheral growth, regardless.

- Let me finish by illustrating the debate is continuing and there is no clear resolution. The hot topic in the USA is the idea that we cannot stop growth but we can be smart about it.
About Smart Growth

- What Is Smart Growth?
- What Are The Environmental Benefits Of Smart Growth?
- What Is The Federal Role In Smart Growth?
- What Are The Challenges Associated With Current Development Patterns?
- Are Development Patterns Purely A Function Of The Market?
- What Are Some Examples Of Smart Growth Policies?

What Is Smart Growth?

Smart growth is development that serves the economy, the community, and the environment. It changes the terms of the development debate away from the traditional growth/no growth question to “how and where should new development be accommodated.”

Smart Growth answers these questions by simultaneously achieving:

- Healthy communities -- that provide families with a clean environment. Smart growth balances development and environmental protection -- accommodating growth while preserving open space and critical habitat, reusing land, and protecting water supplies and air quality.
- Economic development and jobs -- that create business opportunities and improve local tax base, that provide neighborhood services and amenities, and that create economically competitive.
Conclusions are Questions?

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