Smart Mobility and Sustainable Mobility: Never the twain shall meet?

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Sustainable Mobility

Smart Mobility

Current situation

Relations and connections

The road ahead....Perspectives for research on mobility



Research Perspectives on mobility



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Sustainability



Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

— Gro Harlem Brundtland —

AZQUOTES



Sustainable Development

- Goes back to WCED, Brundtland Report
- 4 main dimensions;
- Safeguarding long term ecological sustainability
- Satisfying basic human needs
- Promoting intragenerational equity
- Promoting intergenerational equity



Sustainability approaches

 Approach 1 ; Big help in reaching environmental objectives ECOLOGICAL AS START

- Created extra energy for the environmentalists... but
- Approach 2 ; Reaction to 1 by the powerful incumbent regimes.....





Sustainability approaches; approach 2

The Three Spheres of Sustainability



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Interaction on approaches

"Your basic standpoint; ENVIRONMENT OR EQUILIBRIUM

- "Government should first and foremost provide for the wishes of the majority of the electorate, even if this leads to not reaching the goals set in the fight against global warming"
- Votes , please



Great Societal Challenges related to mobility, scope for sustainable mobility



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URBAN MOBILITY



URBAN MOBILITY





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URBAN MOBILITY







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GLOBALISATION AND FREIGHT



GLOBALISATION AND FREIGHT





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GLOBAL WARMING AND ENERGY





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ENERGY



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CAR DEPENDENT LIFESTYLES

Mobility, and especially its dominant forms – car driving, flying, dragging goods – is now **completely embedded** in modern western lifestyles.





MAGNITUDE OF CHANGE

- 3 great sustainability problems related to mobility
- Contribution of transport in global warming, 25 %, still growing (as only sector!)
- Getting grips on enormous growth in freight transport, through globalization
- Reaching equilibria between mobility needs and liveability in megacities



MAGNITUDE OF CHANGE

- New designs of city mobilities needed
- Enormous reduction in CO2 needed for passenger mobility
- Enormous reduction in freight transport emissions needed
- Sustainable lifestyles needed
- Reaching sustainability is always about CLEAN, and about CAPACITY (related to livability, congestion, safety)



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• Smart is "in"; stands for clever , fast, practical



- No clear definition
- So student team duid look for the common denominator



MAGNITUDE OF CHANGE

- Example ; how to reach minus 80 % CO2 in 2050 in passenger transport ?
- Growth in freight transport; plus 200-300 % worldwide
- Passenger mobility ; saturation in most OECD countries, huge growth foreseen outside OECD world
- Scenarios with best technologies and energy efficiency nowhere reaching minus 80 %, all stop before or at 50 % (Jeekel, 2013)
- Seems to be a need for less kilometres travelled; Moriarty and Honnery; Low Mobility, 2012 and Becker et.al, Klimaschutz im Verkehr-Paradigmenwechsel, 2009; per person per year; 500-800 km car driving



1. Vehicle Technology ;

 powertrains, electric car technology, fuel technology, automation





- 2. Intelligent Transport Systems, ITS
- Cooperative adaptive cruise control, traffic management, platooning



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• 3. Data

 Travel information, logistics planning, IT- systems matching supply and demand, big data solutions





4. New Mobility Services

• Seat management, drivesharing, ride sharing, connecting transport modes, new biking systems





Core on IT an data





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- Great societal interest
- Even hyping
- More technical than sustainable technology
- Less radical in its approach



FIRST CONFRONTATION

Smart Mobility	Sustainable Mobility
Intermediate objectives, no relation to great challenges	Great Challenges
Technology and IT driven	Societal and equity driven
Enterprise world & commercial consultants	Governments & knowledge institutes
OECD countries	The whole world



CONFRONTATION

- Smart Mobility seems to fit in the theory of Ecological Modernization
- Developed around 2000 as an alternative for Sustainable Development
- Characteristics ;
- In reaching environmental targets, profits can be made; 'sustainability is business"
- Focus on greater efficiencies



CONCLUSION ON SMART MOBILITY

- Smart Mobility really useful for
- Better matching supply and demand
- Optimizing capacities of road and parking space
- Advanced driving assistance
- But ;
- Too much expectations on paradigms shifts
- And problematic because of its role in obscuring hard truths on reaching sustainable mobility



CONCLUSION ON SMART MOBILITY Conflict or Dialogue

- Conflict 1 : reaching smart mobility can be identified as reaching sustainability
- **Conflict 2**: with its focus on car mobility in western worlds smart mobility can result in even less sustainability (cleaner but more volume growth)
- Dialogue 1; smart is at least a contribution towards some sustainability objectives
- **Dialogue 2:** smart mobility is a first step towards reaching sustainability



CONCLUSION ON SMART MOBILITY



WAT SHOULD HAPPEN?

ENORMOUS **REDUCTION OF THE ACTUAL CAR DEPENDENCE** WHICH MEANS GOING THE SOURCES : STRESS AND TIME SCHEDULING, SPREADING OF ACTIVITIES OVER SPACE, CAR FOR ONTOLOGICAL SECURITY



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WAT SHOULD HAPPEN?

BANNING FOSSIL FUEL CARS FROM CITIES



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WAT SSHOULD HAPPEN?

ENORMOUS INCREASE IN OCCUPATION RATES OF CARS AND TRUCKS, NOW 1,38 PERSON IN A CAR FIT FOR 5-7, TRUCKS FOR % EMPTY

UNTIL THIS HAS HAPPENED : CONGESTION CAN NOT BE FRAMED AS A PROBLEM!



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WAT SHOULD HAPPEN?

REAL PRICING OF FLYING AND MARITIME TRANSPORT



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WHAT SHOULD HAPPEN?

ENORMOUS INCREASE IN FUEL EFFICIENCIES AND RETROFITTING WHERE POSSIBLE



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PESSIMISTIC?

- Note that most solutions for reaching sustainable transport are to be found in the political sphere and in the sphere of lifestyles.
- Mobility can no longer be "taken for granted"
- Driving in a fossil car alone should become just as abnormal as smoking in public space.....
- Will take some time, however....



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PESSIMISTIC?

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OPTIMISM, FOR THE NEXT DECADE



OTHER SOCIETAL SECTORS WILL URGE THE TRANSPORT SECTOR TO ACT

CITIES AND THEIR LEADERS

YOUNGER GENERATIONS WHEN NOTHING REALLY WORKS : THE PROF. STERN - APPROACH

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- Thank you for your attention
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