Analysing scientific research about transport and climate change mitigation

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CO2 emissions and transport

USA

EU-27

China

India
Objectives

✓ Summary of transport researchers’ engagement with climate change mitigation & energy use

✓ Explanation for identified trajectories

✓ Identification of further pathways to be explored
Brief review (i)

Elements within transport systems

- Transport technologies
- Physical infrastructure & land use configuration
- Price of transport
- Psyche of users (behaviour change)
- Institutions

Methods and methodologies

- Various (quantitative) methods but dominance of:
  - Scenario approaches: probable, possible & desirable futures
  - Infer conclusions about future from empirical data about current behaviours
- Dominance of ‘scientific method’ but emerging trend of participatory methods?
Brief review (ii)

Some key tendencies:
✓ Privileging of technological & infrastructural solutions
✓ Growing and reinvigorated popularity of market-based approaches
✓ Quantitative & positivist research prevails but dominance challenged in the margins
Explanations

Pathways followed cannot be understood without:

- Attention to historical evolution of transport studies as academic discipline – understood through Kuhn/Rouse

- Consideration for more general ways of thinking about and acting towards climate change mitigation – understood through governmentality approach
Approaches

Rouse/Kuhn:
✓ Normal science ≈ equipment-informed ‘going on’, structured by paradigmatic examples

Governmentality:
✓ Analytical perspective on ‘conduct of conduct’
✓ A particular style of government:
  ▪ Green Governmentality (≈ bio-power): top-down managerialist approach to prudent use of natural resources by populations
  ▪ Ecological Modernisation (≈ neo-liberalism):
    • Unity of economy and ecology & recoding of environmental issues in economic terms
    • Decentralised government & active role of responsible citizens
    • Techno-optimism
## Complementarity & reinforcement

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Historical evolution

Rouse/Kuhn approach:

✓ Helps to explain focus on infrastructure, land use, technology (fuel economy/type) and price:
  ▪ Predict-and-provide approach ⇒ privileging of forecasting models ⇒ focus on rather-easy-to-quantify factors
  ▪ Paradigmatic example of random utility theory
  ▪ Forecasting models & utilitarian theories structure researchers’ practical understandings, i.e. their tacit background understandings (Vorhabe), problem definitions (Vorsicht) & range of potential solutions (Vorgriff)
Insights from employing GL lens (i)

✓ Green governmentality as context for:
  - Use of scenario approaches & forecasting models
  - Use of totalising models of individual behaviour, e.g. theory of planned behaviour & behavioural economics

✓ Ecological modernisation as context for:
  - Growing popularity of carbon pricing/budgeting
  - Belief in technological push
  - Focus on psychological processes in users
  - Reflection on institutions in delivering effective mitigation
Insights from employing GL lens (ii)

Academic research as techniques that render invisible:

✓ Technology as Latourian mediator in behaviour (cf. ANT)
✓ The entanglement of technology & behaviour (cf. STS approaches)
✓ Markets as fragile and complicated sociotechnical arrangements (cf. ANT & economic sociology)
✓ The gap between intentions and behaviour & the importance of the pre-cognitive realm (cf. practice theory & theories of affect)
✓ Non-linear temporal consequences of emissions (cf. complexity theory)
Additional pathways

✓ Rapprochement with traditions from sociology, human geography, cultural studies, etc. to:
  ▪ Develop understandings of transport as open, complex and social
  ▪ Develop alternative understandings of travel practices and the factors shaping those practices
  ▪ Expand repertoire of methods and methodologies

✓ Address questions beyond the minimisation of CO$_2$ emissions
Further questions (i)

✓ What is the kind of world ‘we’ want to live in & find desirable? How should mobility be configured in that world?

✓ Why are the responsibilities for decarbonising transport located with individuals, vehicle producers and public authorities and not with those stakeholders promoting economic growth and propagating consumerist lifestyles?

✓ Are neo-liberal ways of governing CO₂ use in transport not exacerbating existing or creating new social inequalities?
Further questions (ii)

☑️ What about agents who are not endowed with the capacities required to instrumentally manage carbon budgets, or cannot exercise the level of choice in shaping travel patterns that neo-liberal logic takes as given?

☑️ Is transport in principle a right and/or capability (cf. Sen/Nussbaum) to which people ought to be entitled?