

Technologies, social practices and travel – where are we heading?

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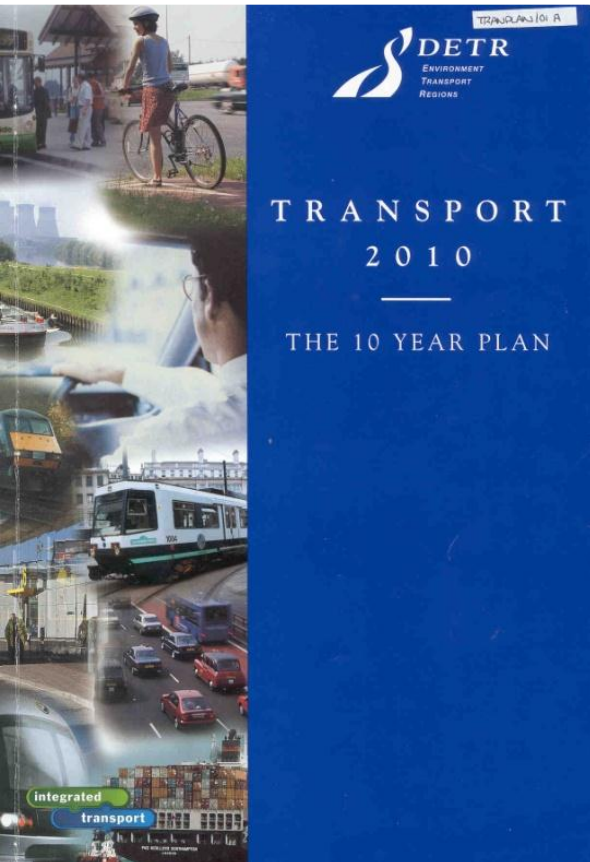
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Overview

- Where have we been?
Reflections on the past decade
- What do we mean by 'technologies'?
- Relationships between technologies and travel
- Where are we heading?

Remember then...?



“social and technological changes will also alter patterns of behaviour in **unforeseen** ways”

“the likely effects of increasing Internet use on transport and work patterns are still **uncertain**, but potentially profound, and will need to be monitored closely”

http://en.wikipedia.org/wiki/John_Prescott



That was **nine** secretaries of state ago

The March of the Information Age

1997 – *Google.com* registered as domain name

1999 – *eBay* launched in UK

2000 – Dot Com bubble bursts

2001 – Wikipedia launched

2002 – Napster declared bankrupt

2003 – Skype founded; National rail enquiries website launched

2004 – Official launch of Transport Direct

2005 – Creation of YouTube

2006 – Facebook open to everyone aged 13 and over

2007 – first iPhone launched in the UK

2008 – iPhone App Store launched

2009 – Amazon Kindle launched in the UK

2010 – iPad launched in the UK; data.gov.uk unveiled

2011 – *Launch of the Raspberry Pi*

2012 – 4G pending











Upward trends

	2000	2010	% change
Adults (15+) who personally use a mobile phone (%) ¹	62	91	+47%
Households with only mobile phone (%) ¹	5	15	+300%
Households with PC/Laptop (%) ¹	46	78	+70%
Households with internet access (%) ¹	30	76	+253%
Households with digital TV (%) ¹	20	93	+465%
Proportion of workers 16+ who are homeworkers (%) ²	9.7	11.2	+15%
Proportion of workers 16+ who are ICT homeworkers (%) ²	3.9	6.0	+54%
UK online grocery sales estimates (£M) ^{3,4}	530	4800	+906%
Adults (16+) who are obese (%) ⁵	21.2	26.1	+23%

IGD estimates 2011 online share of grocery sales in UK to be 3.8%⁶

Downward trends

	2000	2010	% change
Trips per person per year ⁷	1071	960	-10%
Distance travelled per person per year (miles) ⁷	7164	6726	-6%
Travel time per person per year (hours) ⁷	376	367	-2%
Full car licence holders aged 17-20 (%) ⁷	41	35	-15%
Full car licence holders aged 21-29 (%) ⁷	75	63	-16%
Households with only fixed phone line (%) ¹	28	6	-79%

From 2000/02 to 2010, trips/person/year⁷:

Car/van driver – down 6%

Car/van passenger – down 11%

Walking – down 17%

Bus (London) – up 53%

Bus (elsewhere) – down 4%

Surface rail – up 31%

“peak car”?

“Most of the decline in overall **trips rates** between 1995/97 and 2010 can be accounted for by a fall in **shopping** and **visiting friends.**”

National Travel Survey 2010

Reflections

- The “vehicles and the infrastructure” of the information age are maturing rapidly
- The hold of the motor age may be weakening
- Neither car use or internet use are necessarily conducive to promoting public health
- We are in an increasingly ‘mobile’ world
- The ways (or at least means by which) we *participate* in society are changing
- Web 2.0 is facilitating if not fostering collaboration, co-operation and sharing
- The accumulation of change is quite considerable – technology hype can and does deliver, if rather slower than the evangelists might claim

What do we mean by 'technologies'?

- **Transport technologies** – directly associated with transport systems' operation and use

Sat-navs now retailing for less than £50

- **Substitution technologies** – technologies or technology-based practices that replace the need for the individual to travel



- **Non-transport technologies** – technologies outside of transport which indirectly exert influence through effects on social practice



<http://www.telegraph.co.uk/technology/9228588/Make-your-own-the-3D-printing-revolution.html>

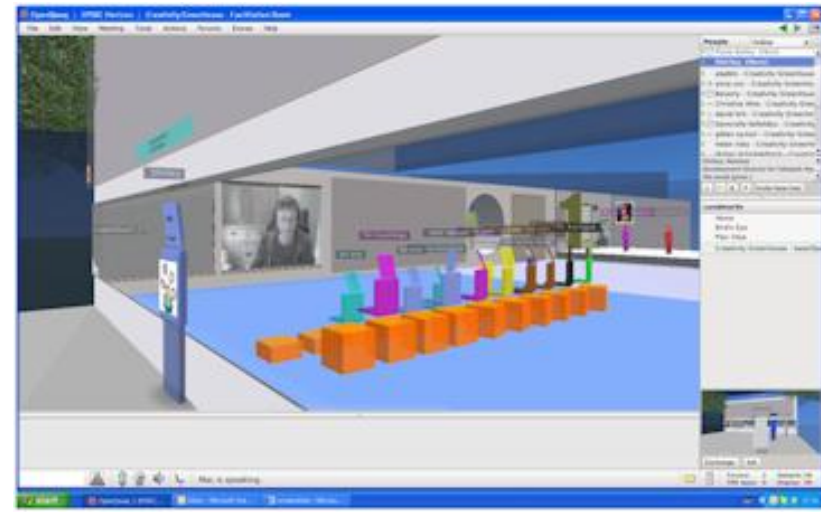
Relationships between technologies and travel

- ***substitution*** of technology use for travel (decrease in travel);
- ***stimulation*** of more travel because of technology use;
- technology use ***supplements*** travel (increasing access and participation thus substituting for an increase in travel);
- technology use ***redistributes*** travel (even if total amount of travel is unaltered);
- technology use ***enriches*** travel;
- ***operational efficiency*** improvements in transport system use through advances in and use of technology; and
- ***indirect longer-term impacts*** upon travel encouraged by use of technology.

Rising prospects for substitution

- Most of our daily lives are concerned with information management, exchange and interpretation
- First-hand experience: RCUK's first full-scale 4-day "Creativity Greenhouse" virtual workshop
- Skype: over 500 million registered users worldwide
- "In the five-year period since 2003, the total number of once-a-month telecommuters in the United States has risen by 43 percent"⁸
- But...substitution today could be the **stimulation** of more travel tomorrow –
pools of social practice change

"The future is already here – it's just not evenly distributed"
– William Gibson, fiction writer



Helping suppress traffic growth?

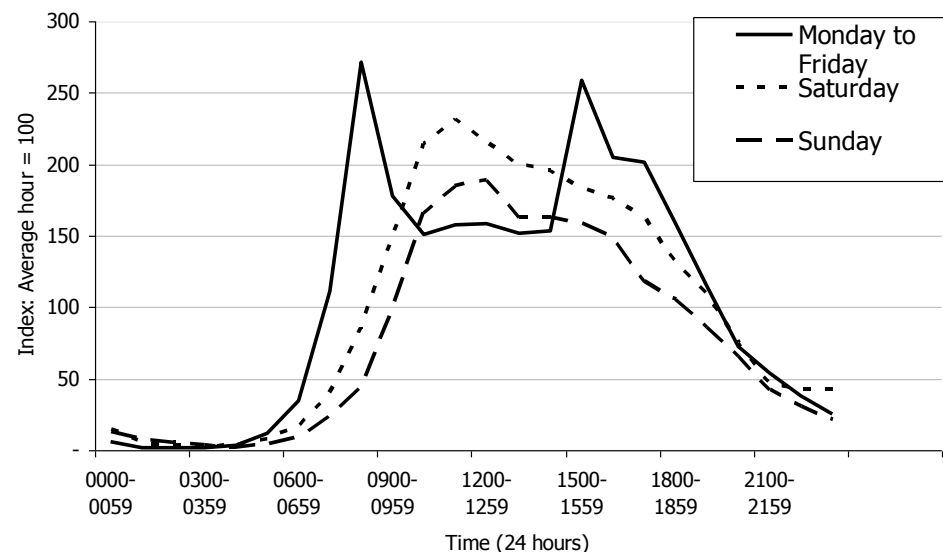
- People are gaining enhanced **access** to people, goods, services and opportunities through technologies without needing to travel more

Table 9 *‘Would you say that your use of the Internet for each of the following has meant that you spend more, less or about the same amount of time travelling? (N.B. If you don’t do activity online please click NA)’*
(per cent of respondents, who did not answer ‘don’t know’ or ‘not applicable’)

Online activity	Sub-sample size	A lot less travel	A little less travel	About the same amount of travel	A little more travel	A lot more travel
for work	514	5	11	81	2	1
for grocery shopping	543	6	18	73	3	1
for other shopping	758	13	30	50	5	2
for communicating with family and/or friends	911	5	19	63	9	3

Renegotiating time and space

- Technologies appear to be making our choreography of what we do, when we do it and where we do it more fluid and flexible (or more frustrating)
- **Spatio-temporal flexibility** could redistribute where and when we travel
- The granularity of flexibility may be getting finer:
 - e.g. it has been found that part-day occasional homeworking is twice as common as full-day occasional homeworking amongst paid employees¹⁰



Multitasking – activity participation while travelling

- Travel has an importance beyond getting somewhere – it provides ‘transition time’ and ‘me time’
- Evidence from surveys of national rail passengers in 2004 and 2010¹¹ reveals growth in availability and use of mobile technologies
 - The proportion of people making very worthwhile use of their time has gone up by a quarter
- Technologies may also be ‘infecting’ travel time but travel time use may come to reduce pressures on other time, e.g.:
 - Doing the grocery shopping while on the train home to ‘liberate’ the evening for relaxation
 - Doing part of one’s two hours of daily ‘TV watching’ on the train home to make time for going to the supermarket



Intelligent Transport Systems

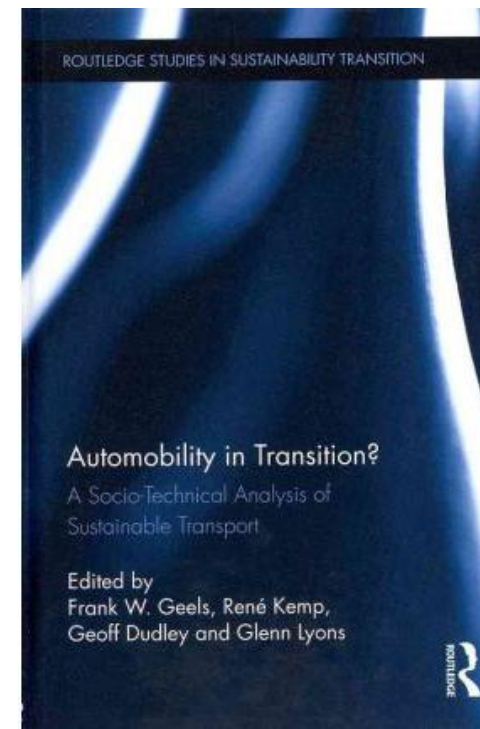
- Opportunity for the traveller to be informed is greater than ever
- As more and more travellers acquire the technological capability to be **human probes**, network monitoring opportunities increase
- **User innovation** and **user-generated data** are phenomena that could be transformative in providing services to support travellers (and operators)
- **Co-operative behaviour** such as liftsharing is more readily facilitated through technology (though greater uptake will be reliant on other factors)

The headache of indirect impacts

- We hunger for tangible cause and effect but...
- Non-transport technologies may be at work 'behind the scenes' with unintended consequences for transport
- Three examples:
 - **Refrigeration** – transformed food storage for retailer and consumer; redefined grocery shopping; land-use and car-dependence empowered as co-conspirators
 - **Assistive technologies** – supporting living in later life in the face of pressure on the welfare system; potentially significant consequences for where and how older people will live with knock on effects for travel patterns
 - **3-D printing** – if this moves from niche to mainstream then it could redefine 'local production and consumption' and significantly affect supply chains and global freight and logistics

Where are we heading? (1 of 2)

- What would be the **counterfactual world** in which the motor age had not (yet) been accompanied by the information age?
- Technologies are 'oiling the wheels' of society's continued dependence on motorised mobility and **accommodation of congestion**
- We are currently experiencing the co-existence of the motor and information ages – but what of **regime change**?
 - Is the information age a collection of niche, incidental developments as far as transport is concerned or a driver for major change?
- **Choice** has been king in a profligate society; **restraint** has been politically uncomfortable, but...



Where are we heading? (2 of 2)

- We now live in a **resource-constrained world**
- We may sustain a semblance of automobility through new innovations in energy production and storage
- Whether by choice or necessity one can contemplate a scenario in which **motorised mobility is a rationed resource**
- Human ingenuity and adaptability would then see technologies used to accommodate this rationing in relation to the fulfilment of social and economic goals
- “How will technologies affect transport and travel?” is a wicked problem – for which straightforward solutions will not be forthcoming
- Much more needs to be done to explore potential future pathways and **to understand the extent to which all quarters of society could adapt through technology use to a post-automobility world**

Thank you

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Sources

1. Ofcom (2010). The Consumer Experience.
2. ONS (2012). Homeworkers and Teleworkers datasheet – 1997-2012, Office for National Statistics.
3. Lyons, G. (2002). INTERNET – Investigating New Technology’s Evolving Role, Nature and Effects for Transport. *Transport Policy*, 9, 335-346.
4. IGD (2011). Online Grocery Retailing: Building Capability for a Digital Future, Institute of Grocery Distribution.
5. HSE (2010). Adult Trends Table, Health Survey for England.
6. IGD (2012). UK Grocery Retailing. Factsheet, Institute of Grocery Distribution.
7. DfT (2010). National Travel Survey 2010.
8. WorldatWork (2009). Telework Trendlines 2009.
9. Lyons, G. and Kenyon, S. (2003). Social participation, personal travel and Internet use. Proc. 10th International Conference on Travel Behaviour Research, 10-15 August, Lucerne, Switzerland.
10. Lyons, G. and Haddad, H. (2008). Commute displacement or commute replacement: the rise of part-day homeworking. *Transportation Research Record: Journal of the Transportation Research Board*, 2082, Transportation Research Board of the National Academies, Washington, D.C., 1-7.
11. Lyons, G., Jain, J., Susilo, Y. and Atkins, S. (n.d.). Comparing rail passengers' travel time use in Great Britain between 2004 and 2010. Forthcoming in *Mobilities*.
12. Geels, F., Kemp, R., Dudley, G. And Lyons, G. (Eds) (2012). *Automobility in Transition? A Socio-Technical Analysis of Sustainable Transport*. New York: Routledge.