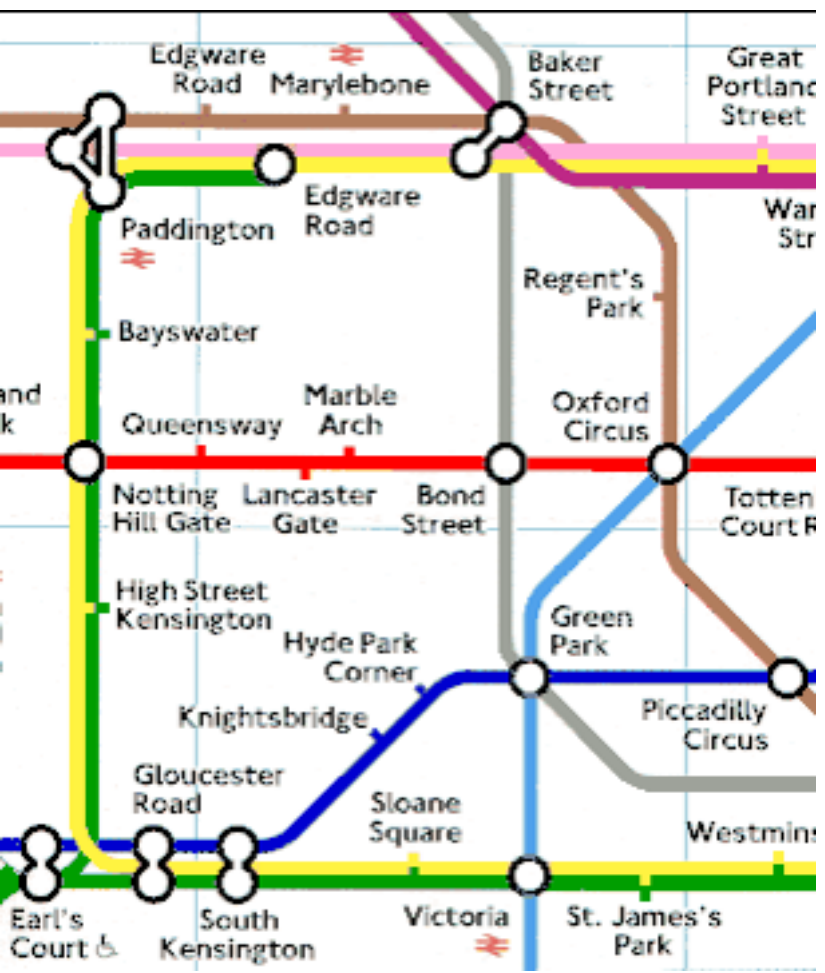




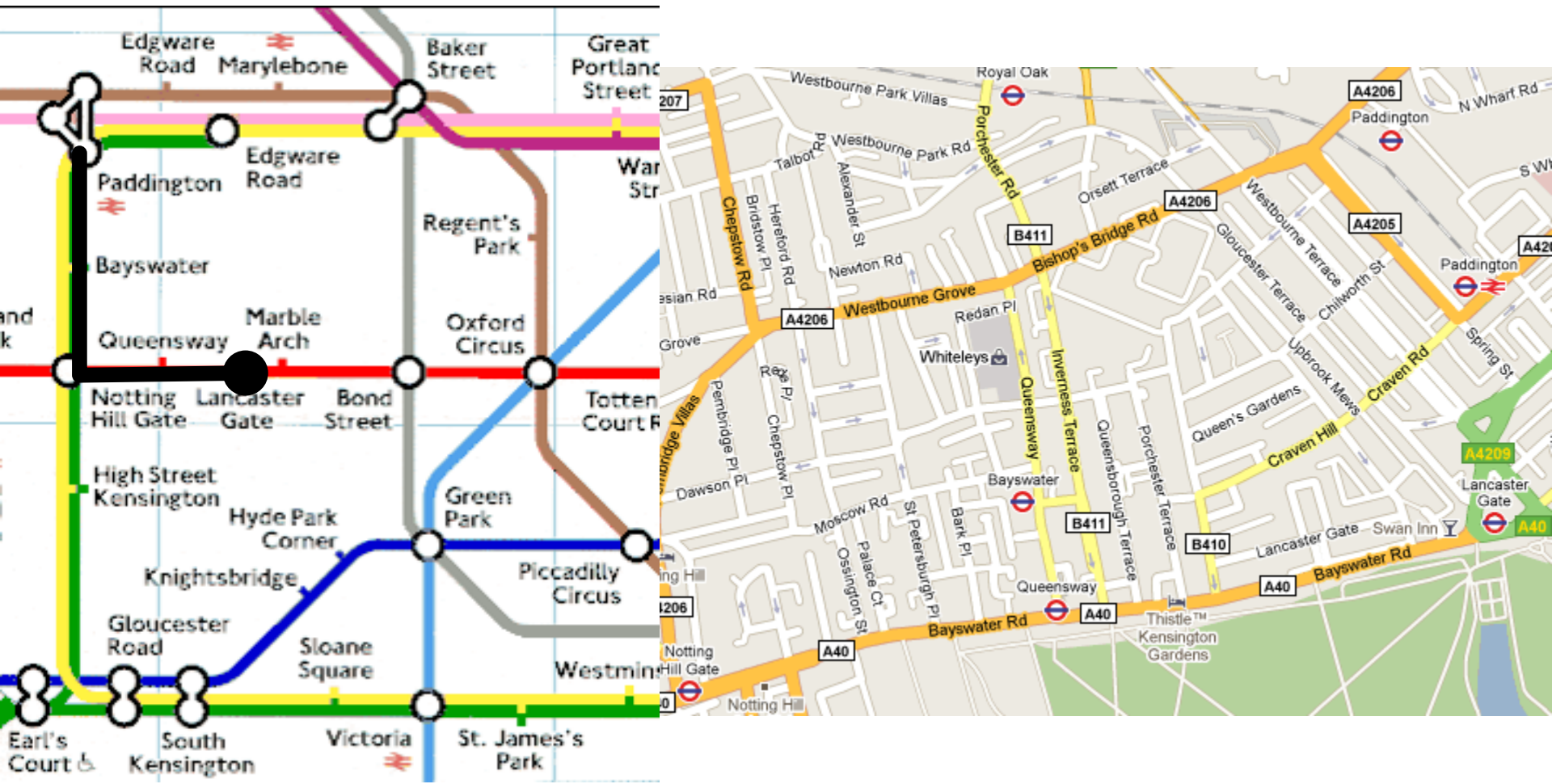
# Knowing what we don't know

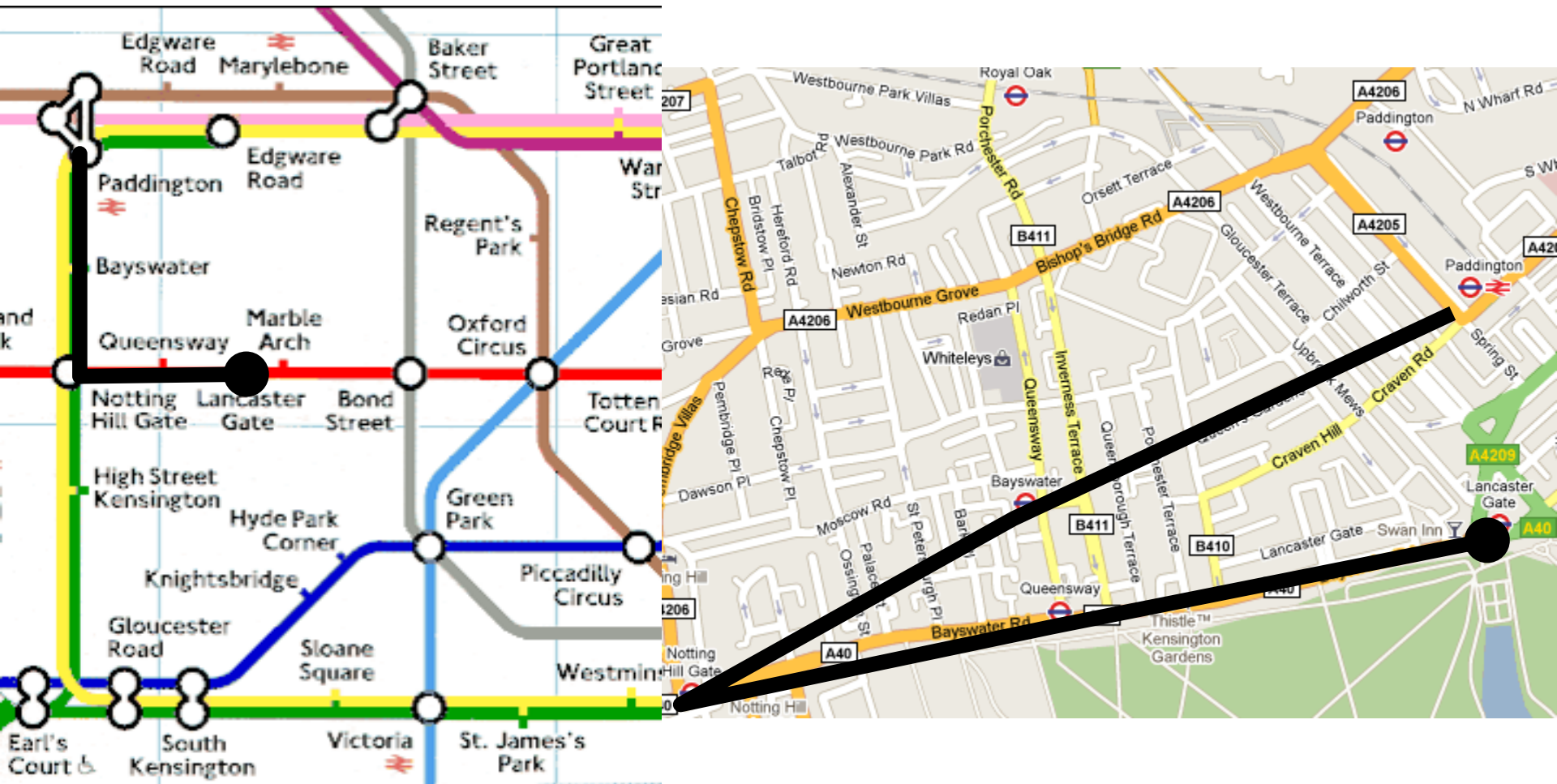
John Kay

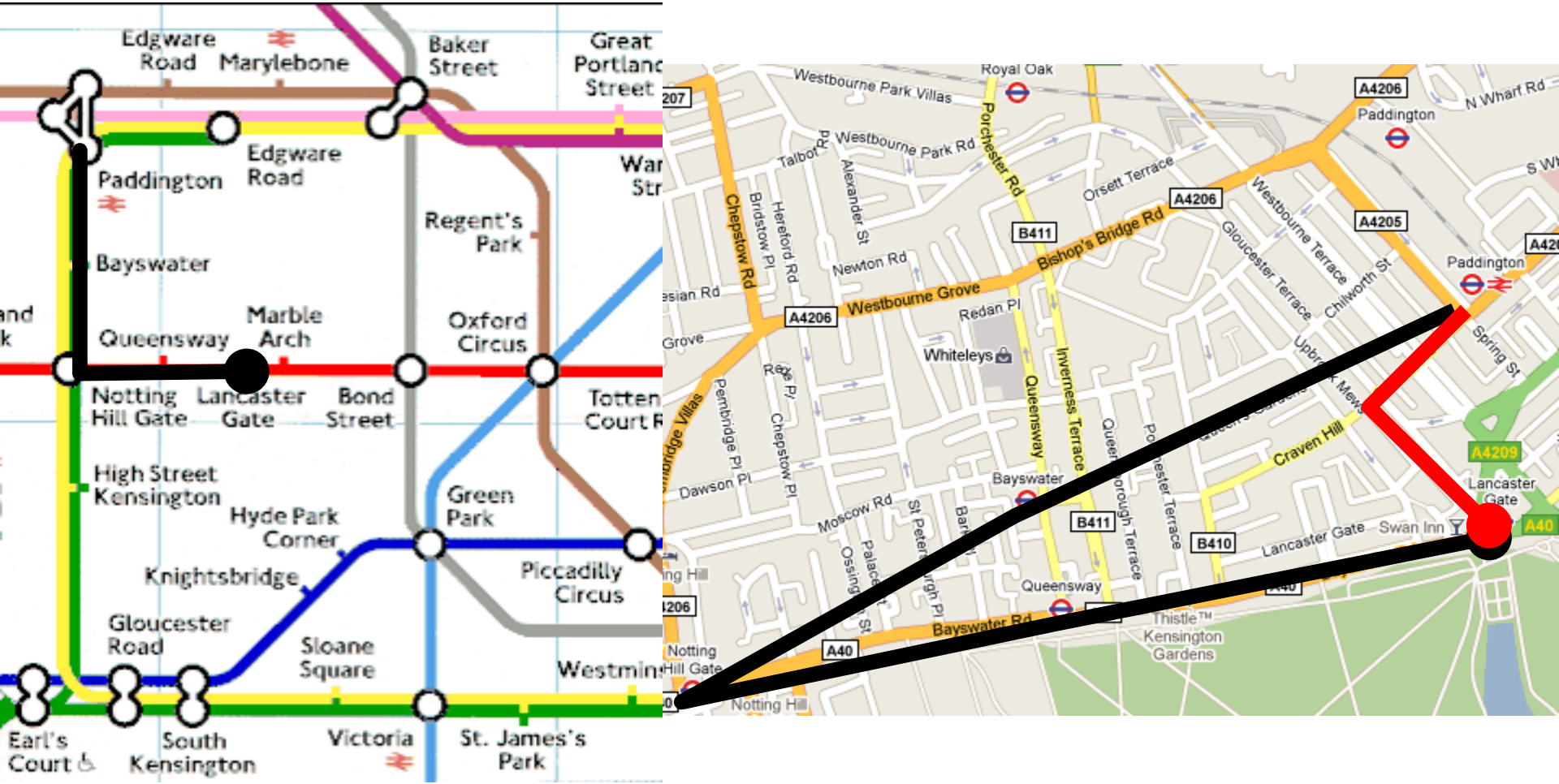
Significant Digits, Brussels, June 2015

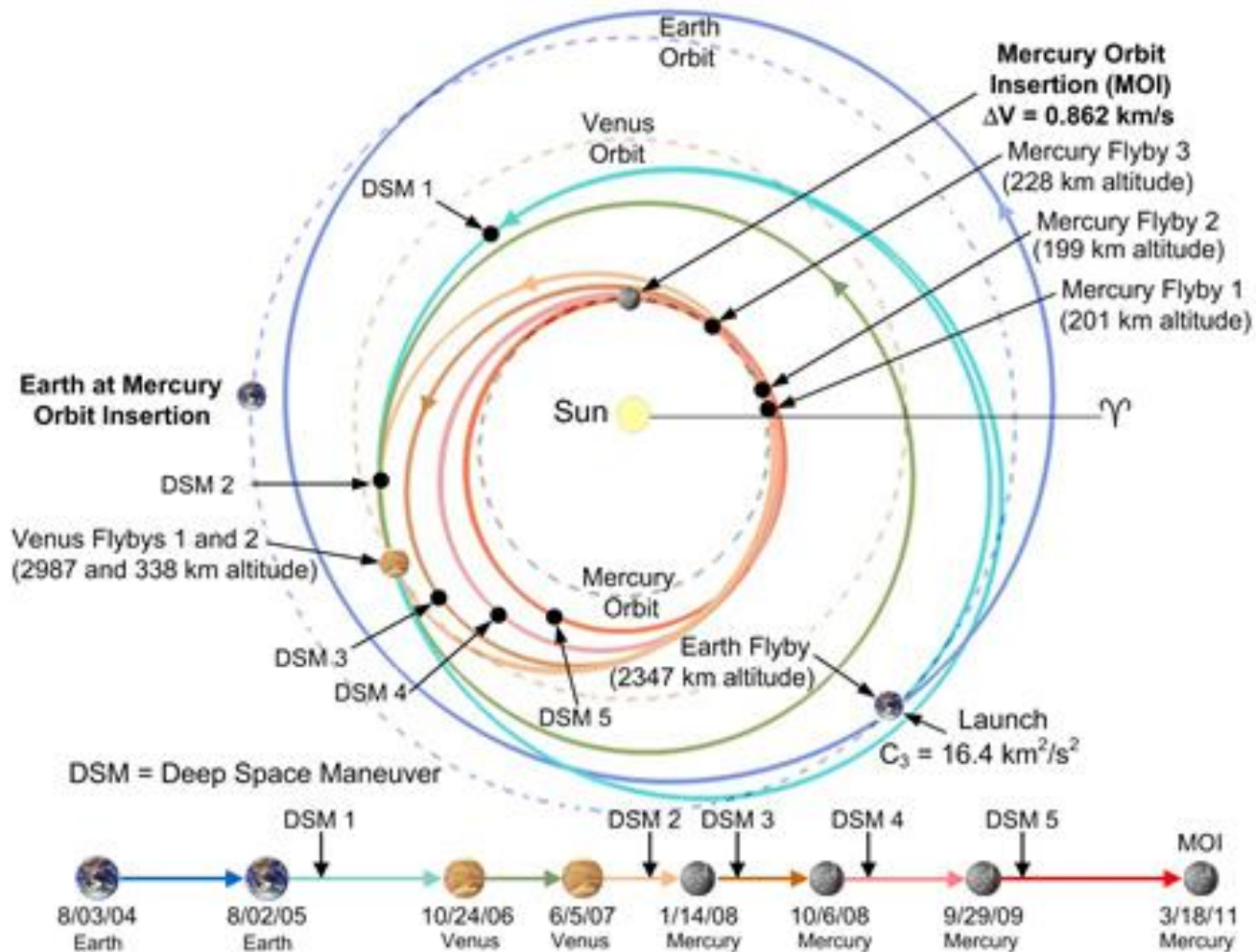












## Bogus Models

WebTAG (or STAG, the Scottish equivalent), used for the appraisal of transport projects in the UK

VAR (value at risk)  
modelling for risk  
management in banks



"I HAD MY ACCOUNTING DEPARTMENT RUN A COST-BENEFIT ANALYSIS ON YOU AND I HAVE SOME BAD NEWS."



**WebTAG : Values of Working Time per person (£ per hour, 2010 prices and values)**

<b>Vehicle Occupant</b>	<b>Resource Cost</b>	<b>Perceived Cost</b>	<b>Market Price</b>
Car driver	22.74	22.74	27.06
Car passenger	17.25	17.25	20.52
LGV (driver or passenger)	10.24	10.24	12.18
OGV (driver or passenger)	12.06	12.06	14.35
PSV driver	12.32	12.32	14.66
PSV passenger	13.97	13.97	16.63
Taxi driver	10.89	10.89	12.96
Taxi/Minicab passenger	21.96	21.96	26.13
Rail passenger	26.86	26.86	31.96
Underground passenger	22.08	22.08	26.28
Walker	17.54	17.54	20.88
Cyclist	17.47	17.47	20.78
Motorcyclist	19.42	19.42	23.11
<b>Average of all working persons</b>	22.75	22.75	27.07

*Source:  
Department of  
Transport*

**WebTAG: Forecast Growth in the Working and Non-Working Values of Time**

<b>Year</b>	<b>Work and Non-Work VOT Growth (% pa)</b>	<b>Year (cont'd)</b>	<b>Work and Non-Work VOT Growth (% pa)</b>
<b>2010</b>	1.10	<b>2028</b>	1.97
<b>2011</b>	0.80	<b>2029</b>	1.99
<b>2012</b>	0.00	<b>2030</b>	2.01
<b>2013</b>	1.09	<b>2031</b>	2.02
<b>2014</b>	2.05	<b>2032</b>	2.04
<b>2015</b>	1.67	<b>2033</b>	2.05
<b>2016</b>	1.95	<b>2034</b>	2.06
<b>2017</b>	1.99	<b>2035</b>	2.07
<b>2018</b>	1.90	<b>2036</b>	2.08
<b>2019</b>	1.91	<b>2037</b>	2.09
<b>2020</b>	1.90	<b>2038-41</b>	2.10
<b>2021</b>	1.88	<b>2042-46</b>	2.12
<b>2022</b>	1.87	<b>2047-51</b>	2.15
<b>2023</b>	1.89	<b>2052-56</b>	2.19
<b>2024</b>	1.90	<b>2057-66</b>	2.21
<b>2025</b>	1.92	<b>2067-71</b>	2.20
<b>2026</b>	1.94	<b>2072-87</b>	2.17
<b>2027</b>	1.95	<b>2088-92</b>	2.18

*Source:  
Department of  
Transport*

## What is wrong with these approaches?

All the problems arise (obviously) from our inability to have, or obtain, the knowledge these models assume

- since most numbers are invented, they can usually be selected to deliver the desired result
- **the future is assumed to be essentially similar to the present, except for mechanical projects of demand/incomes etc.**
- the critical question of the terminal value of the project is largely ignored, and an arbitrary cut off selected
- **uncertainties within the model are either ignored or dealt with in an unsatisfactory way.**
- because certainty is implied, little or no value is attached to flexibility or embedded options
- **the prescription of a universal template blocks the route to the proper exercise of judgment and experience**
- the costs of these exercises make serious public debate impossible, and aggravates a bias to mega projects

Conceptual advances in pricing options and other computer financial products have significantly lowered the costs of, and expanded the opportunities for, hedging risks that were not deflected in earlier decades..... After the busting of the stock market bubble in 2000, unlike previous periods following large financial shocks, no major financial institutions defaulted, and the economy held up far better than many had anticipated.

Alan Greenspan

Changes now under way are most dramatic in the rapid growth of instruments for risk transfer and risk management, the increased role played by diverse financial institutions in capital markets around the world, and the much greater integration of national financial systems.

These developments provide substantial benefits to the financial system. Financial institutions are able to measure and manage risk much more effectively. Risks are spread more widely, across a more diverse group of financial interactions, within and across countries.

Timothy Geithner, 2006

## Analogue economies (Lucas)

The objective is 'the construction of a mechanical artificial world populated by interacting robots that economics typically studies'

An economic theory is 'something that can be put on a computer and run'.

The goal is the capacity for 'sharp prediction'.

## Core issues in modelling

'Grand narratives' versus 'little stories' (Lyotard)

'Deductive versus inductive reasoning' (Popper)

It is perhaps natural to think there is a unique way of describing things which gets at their essential nature, ‘an interpretation of the world which gets it right’, and, a description of “Reality As It Is In Itself”. Of course there is no such unique “interpretation” or description, not even in the one or more languages each of us commands, not in any possible language. Or perhaps we should just say this is an idea of which no-one has made good sense.’

Davidson, D., 2000, ‘Truth Rehabilitated’, in R.B. Brandon (ed.), *Rorty and his critics*, Blackwell, Oxford, Chapter 3, p.66.

## What should we do instead?

- deploy much simpler models to identify key factors influencing assessment
- **these may require further detailed research, political judgment, or experience of similar projects**
- on many issues, quantification will serve as a reality check, but more precise quantification is spurious
- **use the greater flexibility this confers to make much more piecemeal assessment of individual components of large projects, rather than black box analysis**
- give much more attention to the valuation of flexibility, embedded options, and terminal values
- **abandon completely the search for standard templates and universal models the belief that this is possible is a fundamental methodological misconception.**



## A final word

This is not an argument against quantification, modelling or evidence based policy, but against bogus modelling that discredits all these things.

Quantification, models, and the piecemeal accumulation of evidence are essential to good policy making.

**But the map is not the territory.**

