

# One Man's View – Can the Future Be Predicted on the Basis of the Past?

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# Topics

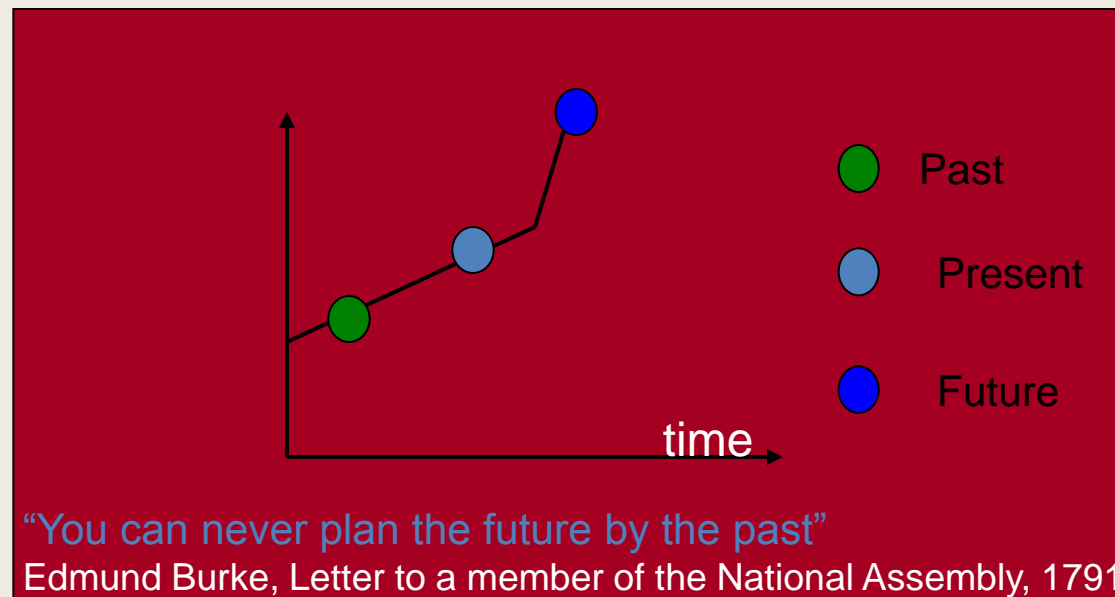
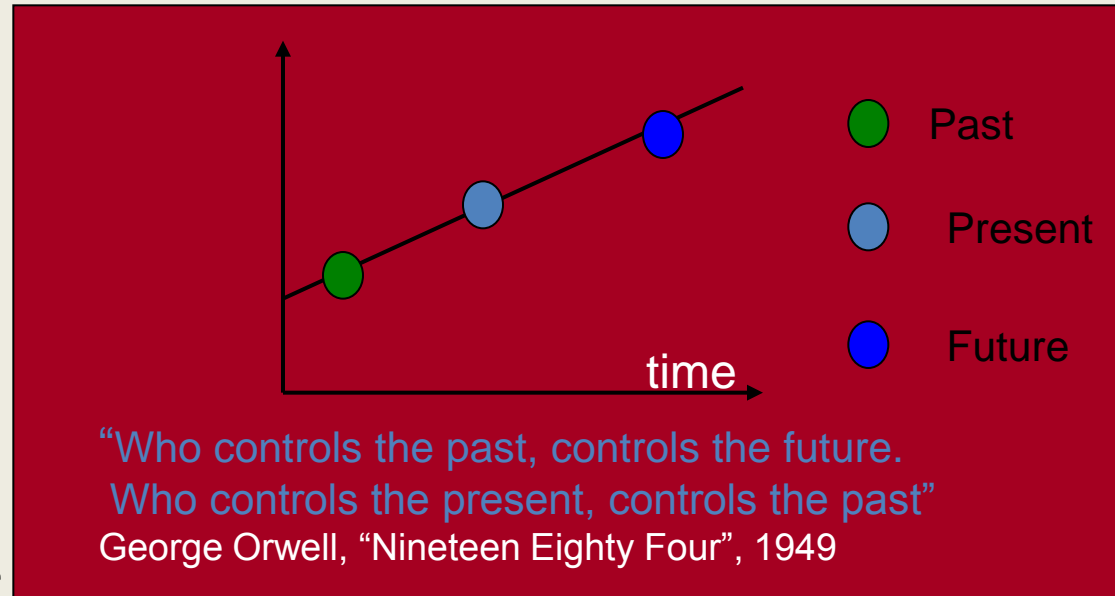
- Introduction
- Predicting the future by looking back at the past
- Potential changes in transportation demand
- Potential changes in transportation supply
- An ITS vision for the future
- Summary of potential consequences
- Summary

# Introduction

- Using the past as the basis for future forecasts is tricky
- Disruptive and non-linear effects can distort the future
- There are some wonderful prior examples of gross errors in predicting the future

# Predicting the Future by Looking Back at the Past

- Can future trends be identified from the study and analysis of past events?
- Accounting for quantum leaps, disruptive technologies and paradigm shifts
  - the Automobile
  - Radio
  - TV
  - the Internet
- The past is the best data we have to go by
- We must be aware of the possibility of gross prediction error, especially as we go further out into the future



# Some Examples of Prior Gross Errors in Predicting the Future

“Dumb predictions”



# Television

- *“While theoretically and technically television may be feasible, commercially and financially I consider it an impossibility, a development of which we need waste little time dreaming*

Lee DeForest

“Father of the Radio”, 1926



# Rail Travel

- *“What can be more palpably absurd than the prospect held out of locomotives traveling twice as fast as stagecoaches?”*

The Quarterly Review, 1825



# The Automobile

- *“The ordinary ‘horseless carriage’ is at present a luxury for the wealthy; and although its price will probably fall in the future, it will never, of course, come into as common use as the bicycle.”*

The Literary Digest, 1889



# Aviation

- *“The energy necessary to propel the ship would be many times greater than that required to drive a train of cars at the same speed; hence as a means of rapid transit, aerial navigation could not begin to compete with the railroad”*

Popular Science Magazine, 1897

# Potential Changes

“possibly, maybe!”



# Potential Changes in

## Transportation Demand

- Adopting new urban forms
- Making use of communications as an alternative to physical travel
- Consequential changes as a result of changes in the economy or lifestyles

# Potential Changes in Transportation Supply

- Automated highway systems
- Mass customization of information provision
- Institutional/organizational change – Relationship of public and private
- Integrated multi-modal regional transportation management
- Replacement of conventional travel by other approaches
  - Telecommuting
  - Very short term auto “borrowing” - use payments

# An ITS Vision

“will it really be this way?”  
sharper in the short term  
fuzzier in the long term



# Intelligent Transportation Systems Vision

- Sharon, the Commuter
- Dan, the Ambulance Driver
- Jim, the Bus Driver
- Ben, the Business Traveler
- Matt, the Commercial Vehicle Operator
- Tim, the Traffic Engineer
- Dale, the Policeman
- Tom, the Taxi Driver
- Bruce and Sheila, the Tourists



# Ben, the Business Traveler

- Smart card for access control and payment
- Travel decision support utilizing alternatives analysis
- Travel time reliability benchmarking and indexing
- Cash less payment for transportation and other services
- Effective travel support for neophytes
- Inter-regional information exchange



# Bruce and Sheila the Tourists

- Integrated multi-delivery channel, multi-modal information
- Complete service coverage from origin to destination
- Extensive pre-trip services
- Extensive local services
- Combined travel, financial and other information services
- Seamless across public and private sectors
- Subscription services integrated with free public services



# Enablers

- Realization of the future vision will need an infostructure, consistent to the extent necessary over large geo areas
  - Data sensors
  - Telecommunication network
  - Advanced data storage
  - Information processing
  - Information delivery channels
  - Sophisticated transportation management



# Long Term Vision

- 2001 - 2015 Intelligent Transportation Systems
- 2015 - 2030 Transportation/communications blend
- 2030 - 2040 New urban forms, new ways of life



# Automated Highway Systems

- Driverless, alternative fuel
  - Cars, park themselves, rental car pick up and drop off by trip
  - Trucks, Road trains, Urban delivery schedules
  - Transit vehicles, Mass Customization, on time individual transit
- The primacy of customer needs and expectations rules
- Multi-modal travel services tailored to the needs of the individual
  - Supported by static and mobile high speed internet access
  - Transit/taxi blends
  - Shared use of vehicles with guaranteed availability
- Electronic payment systems that bridge application and enterprise boundaries

# ORANGES Lessons

- Business model may flip-flop
  - First public, then private
- Ability to decouple the payment device from the vehicle is important
- Not important to have a single payment vehicle, but a single interface
- Very important to have a single customer approach and coherent services

# Institutional/organizational change

- Convergence of public and private sectors
- Organizations are subservient to the transportation agenda, not dominating the agenda
- Focus on the individual, the customer

# Integrated Multi-modal Regional Transportation Management

- New urban forms or cities designed to and responding to the support of multi-modal transportation
- Making best use of information and communication technologies to manage transportation
- Managing transportation as a system
  - Sufficient bandwidth to eliminate it as a consideration
  - Possibility for each user to have own dedicated virtual circuit
  - Fiber technology currently supports 2000 wavelengths on a single fiber
  - This equates to 1,728,000 separately addressable circuits in a 684 strand cable
- Telecommuting

# Summary of Potential Consequences

- New organizational forms
- Intensified application of information and communication technologies to support mass customization
- Increased flexibility in service offerings
- Dramatically improved collaboration across public agency boundaries
- Very strong interaction with the private sector
- Managing the provision of transportation and information services as a single coherent process

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- Potential changes in transportation supply
- An ITS vision
- Potential consequences

