Today's travellers have a wealth of information at their disposal to help plan and execute their journeys. The availability of travel information to the public has changed dramatically in recent years with the increasing use of the internet and mobile communications. Millions of portable satellite navigation systems are sold every year in the UK and Europe. The amount of people using web-based journey planners to inform their journeys is increasing. The rapid technological developments in the field of Advanced Traveller Information Services (ATIS) demand a greater understanding of what part this technology is now playing in relation to travel behaviour, and how such systems can be designed to benefit both individuals and transport systems as a whole.

It has been generally argued that when making choices between alternative transport options, travellers behave in a reasonably rational way, and can be approximated to act according to their interests, as long as they are provided with complete and accurate information on each of the alternatives – they try to minimise money and other costs, and maximise their utilities from the journeys they are making. Due to the size and complexity of the transport system, choosing between alternative routes, alternative modes of transport (car, bus, train, cycling, etc.) or the timing of their journeys is not always an easy task for travellers. Providing travellers with reliable and updated information on travel options is therefore acknowledged as having the potential to improve travellers’ choices in ways that are beneficial for individuals and society. Stemming from its 1998 Transport White Paper, the Department for Transport has given, and continues to give, notable attention to traveller information systems as part of its approach to transport policy.

Individual travellers are commonly seen as rational human beings who, through choice making, maximise their utilities. However, insights and (theoretical) understandings from psychology and behavioural economics are now emerging through the literature to paint a more complex picture of decision-making processes. Empirical studies provide much evidence that in real life, the behaviour of travellers is typified by bounded rationality. Travellers’ limited cognitive resources have a strong effect on their use of information. Recent evidence showed that even when provided with explicit information on their travel choices, travellers turn out to interpret and value this information in a way that systematically violates the assumptions of rational behaviour. But it is not just the content of information that influences our choices. Inspired by the work of cognitive psychologists, researchers at UWE Bristol found that travellers are heavily influenced by context, i.e. the manner in which travel information is being presented.

Thaler and Sunstein (from the University of Chicago) argue in favour of the so-called Libertarian Paternalism approach, as a way to help people make the ‘right’ choices without restricting their freedom of choice. In their recent book (‘Nudge: Improving Decisions about Health, Wealth, and Happiness’), they suggest the incorporation of small features in the environment to attract people’s attention and highlight the ‘right’ choices for them and alter their behaviour. The art and science of ‘nudges’ could inspire the further design of ATIS, to help travellers make better choices. The following are a few (out of many) examples that illustrate such nudges.

**Defaults**: a default is the option that individuals receive if they do not explicitly request something different. Defaults have strong influence on behaviour – and they tend to become a habit. Some journey planners provide travel information on more than one mode of transport. In the design of a journey planner, travellers could be provided by default with information about car transport, even if they are planning to use public transport – this default might increase the attractiveness of car transport. On the other hand, setting public transport as the default mode could nudge people to consider this as the first option. No matter how defaults are set, it is important not to restrict the choices available for the traveller – making information on all alternatives available.

**Framing and ‘loss aversion’**: People tend to feel and behave differently when information about their choices is presented (or ‘framed’) as gains or losses. The following illustrates three possible ways of presenting the same information on two commuting choices.

1. **commuting by car:** 25 minutes
   **cycle commuting:** 20 minutes

2. **commuting by car:** 25 minutes
   **cycle commuting:** you will save 5 minutes on your journey

3. **cycle commuting:** 20 minutes
   **commuting by car:** your journey will take you 5 minutes longer
Under the rational choice model, the format of the information should not matter. However, since people are more sensitive to losses, they might find the cycling option specifically attractive in the third alternative. This is a rather simple example of how the designers of travel information systems can help people to make more sustainable travel choices simply by choosing a specific format to present information about time (and other attributes) of the alternative choices.

**Salience:** A specific challenge ATIS designers are faced with is how to provide travellers with information on the environmental costs of their journeys. A growing number of travellers are already aware of, and have concerns about, the greenhouse emissions they generate. When informed about environmental impacts, they might make sustainable choices. However, many of the negative impacts of our travel choices are not salient. For example, it is difficult to the driver to easily imagine the air pollution and climate change caused by carbon emissions. Carbon emissions are invisible to travellers; it is therefore difficult for them to associate their travel behaviour with environmental costs. Without feedback, a behavioural change is less likely. Providing drivers with daily information on their carbon emissions might make them ‘visible’, and could make it easier for them to do the right thing. Recent research reports on the effect of in-vehicle data recorders on drivers’ behaviour; this on-board technology collects and records information on the movement, control and performance of the vehicle. It was found that drivers, through the provision of daily feedback on their performance, tend to improve their safety behaviour. Using the same technology to provide drivers with environmental costs, against some targets or against previous performance, could provide them with a psychological incentive to change their behaviour.

The effectiveness of travel information systems may be enhanced if more consideration and emphasis is given to the design of the information context. The libertarian paternalism approach is not offered as an alternative to other measures to influence travel choices. In some cases, synergy between the pricing and the soft intervention by nudges could be an effective policy. ‘Getting the prices right’ by taxes and subsidies could be the first step of a transport policy; however, the effect of pricing policies on behavioural change is limited – partly because of individuals’ bounded rationality. Travellers do not always associate their behaviour with the relevant costs and this slows down the process of behavioural change. Nudges can help individuals to overcome cognitive biases, highlight the better choices, and increase the size and the speed of behavioural change – without restricting choices or limiting travellers’ freedom of choice.

In liberal democratic regimes, where the public and political acceptability of regulation and enforcement are low, the libertarian paternalism approach, through the nudging of travellers, could be one of the most promising approaches to deal with the need for a radical and urgent behavioural change. The last 10 years have seen a rapid evolution of the field of travel information provision. The technological level of today’s systems, the widespread availability of travel information services, together with the insights from behavioural sciences, makes the incorporation of nudges into travel information systems more easy and cost-effective than ever. This could be the trigger to achieve the behavioural change we urgently need.

Dr Eril Avineri is giving the keynote address at Public Service Events’ ITS 09 conference on 12th March 2009 at London’s Barbican Centre. For more information and to register, go to www.publicserviceevents.co.uk.