Editorial

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Examination of the public transport literature shows increasing emphasis on integration and cooperation in reaction to increased pressures from the external environment, especially sustainability. Although focus on public transport problems exists in many fields, more emphasis by public authorities on environmental challenges has created a need for public transport management to emerge as a professional field. A profession of a 'public transport manager' would deal with closer integration of design, planning, and management of the public transport infrastructure.

The public generally supports the increased emphasis on issues related to the environment (APTA, 2004) and largely agrees with added measures, but how to act in harmony with individual needs, political processes and stakeholder expectations poses problems. This is not to say that there have not been success stories, but rather that the spreading of good practices world-wide is difficult due to fragmentation and a lack of a dedicated interdisciplinary field.[1]

Decisions made today for transport infrastructure and technology can have impact for decades and restrict ability to meet changed societal needs in the future. Increased user tension results from discomfort associated with transport (noise, emissions and congestion) and calamity events (terrorism, accidents). Therefore, we observe that decision-making in transport involves increased perceived risk for the policy maker as exemplified in the 'precautionary principle' advocated by the European Commission (EC, 2000). The precautionary principle holds that if a policy and consequent action in the absence of a scientific consensus could cause irreversible harm to society, the burden of proof that harm would not ensue falls on those who would advocate taking action. The precautionary principle has been applied in economics to analyse rational decision-making and the interaction of irreversibility and uncertainty (Epstein, 1980; Arrow and Fischer, 1974; Gollier et al., 2000). The principle is likely to play great role in transport decisions, in other words, we can no longer assume that the present system will continue to grow as usual?

Taking the argument further, Beck (1992) and Giddens (1999) talk about an emerging risk society[2] where we are organised to respond to risk, "[it] is a society increasingly preoccupied with the future (and also with safety), which generates the notion of risk" [Giddens, (1999), p.3]. They argue that there are two types of risk one related to natural causes and one mitigated by the very society we have created. Transport is at the heart of this manufactured risk, a large pollutant, uppermost in our minds when it comes to safety and the key target of violent attacks. Transport is thus important in how modernisation has developed and the current transition towards reflexive modernisation characterised by sustainability and preventive measures to reduce risk. This very societal change in conjunction with fast growth is forcing us to question the setup of the transport system itself, with the pressure on automobiles and air transport as the fastest growing modes.

Transport is communication, meaning that public transport management should deal with transport reduction and replacement with alternatives such as communication technologies, or 'virtual mobility' as it was termed by Crowley (1998). However, transport reduction is not only about communication technologies but also involves decentralisation of workplaces, schools and shopping areas, to move more of these into the communities closer to our homes. By changing work arrangements through remote offices in local work centres, telework and flexwork, we reduce the need to go to central workplaces and schools, but we need to retain the social importance of human interaction. Thus, the success of traffic reduction depends on local initiatives and intervention. Telecommunications have a potential in replacing transportation, however, the human factors underlying the needs and wants for travel must be addressed not suppressed. Individual mobility is crucial and any lack thereof can impact employment, health, family ties, psychological well being and overall quality of life.

Transport infrastructure improvements focused on speed (the value of time), whether road infrastructure or mass transport, tends not to be used by the public to save time, but facilitates urban sprawl (Kenworthy and Laube, 2002). We often talk about constant travel time per day, around one hour (Zahavi and Talvitie, 1980), hence, the question is about how we use the hour, rather than attempting to reduce daily travel. Notwithstanding, new criteria are needed in the planning of transport infrastructure that complements or replaces 'the value of time'. We might forward 'quality of time' in the sense that conducting a car is lost time[3] because one can't do much else, whilst using mass transport one could work, read or surf the internet. Do public transport service providers gather adequately to this unique selling point of their service? Here service providers need to 'frame' the use of mass transport in the context of 'better use of time' and make adequate provisions in vehicles for 'using time effectively' (electricity plugs, internet access, space, tables, 'privacy', etc.).

Health aspects of public transport is a factor that can be seen in the context of the detrimental aspects of pollution, but also in terms of health benefits of physical movement associated with non-motorised transport. There are two aspects, namely:

1   the creation of a recreational infrastructure such as bike routes and walk-paths

2   the creation of mobility infrastructure connecting residential areas with work-places and shopping areas.

In the latter case there is an option to replace motorised transport with physical movement over short distances, which has health benefits associated and consequently public appeal. Thus, an important aspect that should be incorporated into public transport

management is the distinction between *healthy public policy* and *public health policy* (Davies, 1997). In the former case we go beyond the healthcare system and incorporate innovative policies and incentives to create a healthier society recognising factors such as the role of non-motorised transport and walking for public well-being. The integration of such intersectoral cooperation (WHO, 1986) into public transport management is not only viable but can create extra incentive for the general public to consider using walking and cycling to work, shopping and for other travel needs that are usually the domain of motorised-transport. Here public authorities need to 'frame' the use of mass and non-motorised transport in the context of health benefits to the individual and make the necessary infrastructure provisions.

Supply-management of private transport needs to be discussed in the context of sustainable development. Sustainable development has been defined in the Brundtland report of the WCED (1987) as the "…*development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*" This definition suggests that resource use should be incorporated: investment, technological development and institutions as a process of harmonious and balanced change to meet human needs and aspirations. To facilitate the planning of sustainable transport systems mobility should be viewed as a supply variable opposed to a demand variable. Thus, mobility becomes the capacity to travel in an area using various modes, whilst accessibility becomes a measure of the ability to travel from one point to another. In this context, Kenworthy and Laube (2002) point out that reducing or ceasing to add road supply and better management of existing supply does not appear to increase congestion but rather contracts traffic in the same way it increases when supply is added. They point out that the engineering profession is trained to think of traffic flows like liquid, i.e., retaining volume, opposed to gas that changes volume according to the size of its container. This brings us to the conclusion that sustainable transport development can only be met by incorporating a strategic perspective, inherently long-term, crossing policy sectors and service providers, and inter-disciplinary by nature.

Many systems are effective when created then being made more and more efficient with time. However, individual and societal needs and wants change often in direct relation to growing usage until at one stage the once effective system, although many fold more efficient than when introduced, doesn't serve its purpose anymore. This is happening in transport to a degree, namely a shift from constant feeding of growth with road infrastructure to transport supply and demand management. Thus, we have an understanding that systems can be improved but will eventually require rethinking and replacement. This is what we can call a tipping point for transport, i.e., its importance has risen, but in a far more complex manner requiring sophisticated integration and cooperation mechanisms between different stakeholders. The solution is not to scale-back, to restrain people, but to find new solutions that meet sustainability and quality of life expectations more effectively by shifting transport to sustainable forms through system changes.

The roots of progression from the agrarian to the industrial society and the industrial to the post-modern society is how we replace technologies and systems in a revolutionary rather than gradual way: horse to steam, steam to petrol engine, ships to aircraft, slide-rule to computer, computer to networks, etc. Something Fuller (1938) termed ephemeralisation, a principle that refers to the tendency of technology to be replaced by much smaller, lighter, and more efficient technology, which effectively means doing more with less. Fuller wanted humanity to take an ample view of the limited world we

habit and the endless potential for increased living standards within it. According to this the objective of public transport management should be to reduce tangible resource use (energy, land) proportionally faster than demand growth until a negative relationship is achieved.

In the design of transport systems we need to apply systems thinking (see Forrester, 1961) in conjunction with well understood scenarios (see Banister, 2000). Systems' thinking focuses on the whole by understanding interactions and connections between elements that comprise a whole. It considers all human activity systems as open systems affected by the environment in which they exist, and that events are separated by distance and time. Therefore, small catalytic events can cause large changes in the system. Systems' thinking, therefore, promotes organisational communication at all levels breaking silo effects. Proponents of various transport system sub-components are prone to *silo effects,* the opposite of system's thinking. Policies that are 'a cause' of problems may be seen as problem solving and consequently emphasised more and more as problems deepen. However, it is apparent that some of the characteristics of systems thinking are being adopted, for example by breaking the assumption that supply should feed demand automatically in road infrastructure planning (Kenworthy and Laube, 2002).

Public transport management should strive to meet environmental targets, support environmentally friendly solutions, and manage transport reduction programs. To accomplish this there has to be a reasonably coherent vision, common understanding and unified strategic intent. To this effect public transport management, as a field, could be the anchor in forging and maintaining dialog and cooperation among the many stakeholders. University degree programs focusing on public transport management are generally lacking. Yet it is apparent that most disciplines covering public transport, to a lesser or greater extend, have broadened up especially on the research front. Although each discipline will and should remain focused on its specific line of inquiry, a supra field has to emerge that builds on previous work but addresses the specific management and strategy aspects of integrated public transport systems: through dedicated public transport managers, education programs, and interdisciplinary research.

Having argued that public faith in modernisation is declining, political emphasis will move towards sustainability and preventive measures creating demand for solutions that shift transport systems from evolutionary efficiency improvements to complete rethinking. Due to long planning cycles, decisions made today for transport infrastructure and technology can have impact decades into the future and consequently restrict ability to meet future societal needs and wants. Political decision-making in transport involves increased perceived risk. Therefore, interdisciplinary research is needed to prepare planned long run changes that meet societies' future needs. Governmental and industry bodies set targets that call for much greater integration of various service providers requiring trained people in public transport management.

Approaching the 'risk society' is to do more with less, to find better solutions with a long-term perspective. To take risks in testing out innovative ideas, to search for new standards that facilitate system changes. Haul people, more comfortably, at less cost, with less energy, less emissions, less congestion and less use of land and resources at the same time that we decouple emissions and economic growth. It can be done but requires fundamental rethinking on how we live and work, and how we design and manage our transport systems.

The goal of this special issue is to address public transport management initiatives focused on integration and cooperation with special concern for sustainability. At this age

of rapid growth in human mobility, the special issue will contribute to the debate on how to induce the switch from the private car to more environmentally friendly transport through better modal interfaces, as well as policy and management approaches. We present seven papers, all of which have gone through a double-blind peer review process. The first two papers cover integration and governance of public transport. The next three papers cover adoption issues in public transport use. While the last two papers give the reader insight into actual case studies of implementation and evaluation of public transport infrastructure projects.

In the first paper presented, Claus Hedegaard Sørensen and Henrik Gudmundsson point out that sustainable transport is now in the forefront of transport planning and policy around the world. They argue that success in addressing these new challenges will depend on organisation and governance of the sector. The authors focus on bus transport in Greater Manchester as a case of an attempt to facilitate modal shift from cars to public transport. In the research they apply theoretical notions of 'governance modes', to examine whether the strengths and failures of 'market', 'hierarchy' and 'network' governance help to explain actual use and conditions that attract travellers to public transport.

Prabhat Shrivastava and Margaret O'Mahony reveal how different public transport systems have developed independently. They discuss how high growth in car ownership has made integrating of existing public transport networks an alternative to mass development of new transport systems. The authors point out that an integrated approach must involve all the diverse stakeholders based on the coordination of urban policies with journey policies and modal integration between transport networks. According to their arguments the real challenge for transport planners is the integration of non-motorised and flexible transport. In the paper the authors lead the readers through various challenges and problems facing integrated urban mass transportation system planning towards sustainable development.

Sandrine A. Thérèse, Laurie Buys, Lorraine Bell and Evonne Miller spotlight how sustainability of cities depends on increasing urban residential density leading to greater reliance on sustainable transport, yet, high residential density in isolation, may not necessarily forge sustainable transport outcomes. They cite findings from surveys among inner-urban residents showing that cars account for the largest share of work journeys. The authors discuss research implications for transport policy and management and how to encourage sustainable intermodal transport for journeys to work.

Katrin Dziekan and Matthijs Dicke-Ogenia assess negative attitudes towards public transport in the context of feelings of uncertainty experienced by travellers. They argue that information should focus on the cognitive map of the traveller, by building on the existing cognitive map, but provide extra information about the transport system and the area in which it is used. The authors discuss the needs and wishes of travellers concerning travel information and the ergonomic principles involved in the design process of travel information.

Werner Gronau focuses on a conceptual framework for mobility management measures in the context of recreational facilities. He asserts that quite often demand is simply assumed, instead of its potential being evaluated adequately before investment decisions. For recreational sites a high quality public transport has to be offered both in frequency and type. Gronau emphasises the need good communication to the market about the public transport infrastructure and the importance of restricting facilities for private transportation modes.

Milan Zlatkovic, Aleksander Stevanovic, Fabian Cevallos, and Hal Ryan Johnson point out that bus rapid transit (BRT) has enjoyed popularity in the USA. They cover in their article the first BRT deployment in West Valley City, Salt Lake County, Utah, launched in mid-2008. The authors use feedback surveys from users showing significant improvements in transit operations and high degree of acceptance among the system users. The authors, in this article, give the reader an excellent insight into a successful BRT system bringing significant improvements to users.

Jouko Karttunen, Olli-Pekka Hilmola and Juha Saranen discuss how EU transport policy shift long-distance road journeys and short-distance air journeys onto railways. They evaluate light rail as a local passenger traffic solution based on an investment appraisal methodology and a discrete event simulation. Their results show that infrastructure investment plays a pivotal role in determining the profitability of a light rail public transport system and most importantly that environmental issues alone can not justify light rail investments.

The message of the articles is clear: for successful shift to mass transport and non-motorised transport, we need organisation and governance, stakeholder coordination, and to rely on more than policy actions in isolation. Information dissemination must be built on individual cognitive maps and infrastructure investment must be based on concrete business models rather than good intentions.

Acknowledgements

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Notes

1   Public transport (also public transportation, public transit or mass transit) is often defined as all transport in which human beings do not travel in their own vehicles, i.e., being passengers. The American Heritage Dictionary defines 'public' as: "Of, concerning, or affecting the community or the people: the public good." Whereas, a 'passenger' is: "[a] person riding in, but not driving, a vehicle or conveyance." Transport (or transportation) is defined as: "[t]o carry from one place to another." US English does make a distinction between 'transport' on one hand and 'transportation' on the other. The latter term implies the: "…act of or process of transporting." We will in this editorial use the word transport covering both definitions as in UK English. Hence, we consider 'public transport' inclusive of all transport and travel modes, with a focus on the 'transport system' for human beings opposed to only 'passenger transport'. This brings us to the title of this editorial, 'Public transport management', which can be seen as the strategic management of supply and demand of transport for a sustainable future as well as the management of stakeholder cooperation and travel infrastructure integration.

2   Risk can be defined in the risk society as a systematic way of dealing with hazards and insecurities induced and introduced by modernisation itself [Beck, (1992), p.21].

3   Trends in annual hours of delay per traveller have increased on average from 16 hours in 1982 to 47 hours in 2003 in the 85 largest US cities (TTI, 2004).