Editorial

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I have the great pleasure to introduce our last issue of 2019 that ends the latest decade of publication of *Transport*. This is an opportunity to reflect on the past few years and look to the coming ones – they are perhaps among the most exciting in the history of transportation engineering.

I like to define a mode of transportation as a combination of a need, a technology, a concept of operations and also a specific business model. Trying to find the main markers of the 2010s, it seems obvious to me that they will be first remembered as a time of emergence of ground-breaking modes. For instance, the transportation network companies such as Uber and Lyft started operations nearly 10 years ago. Since then, as controversial as they can be, they have changed on-demand service by increasing the offer and lowering fares. Ride-sharing companies are now ready to take the air.

Urban air mobility is already a reality. For instance, São Paulo, Brazil accommodates over 400 000 helicopter operations per year. That is nearly the number of annual aircraft operations performed at London Heathrow. However, a new generation of greener, safer and quieter air taxis combined with urban air traffic management might make short on-demand flights more acceptable to city residents, and accessible to a larger number of users.

The new decade is opening on a plethora of potential new modes that promise personalised point-to-point mobility, shorter travel time, a higher level of safety and a dramatic reduction of the cost per seat per kilometre. It is too early to predict with certainty if these promises will be realised, but I believe we will start soon to see more research papers on Hyperloop (or vactrain), automated and connected vehicles, operation of unmanned aerial systems beyond visual line of sight, commercial space transportation and other innovative modes in *Transport*.

However, the excitement should not hide the formidable challenges ahead. First and foremost, we shall never forget that safety always comes first – especially in a context where we make our vehicles increasingly automated and connected, and start taking the driver or pilot out of the loop. As engineers,

our mission is to safeguard life, health and property, and to promote the public welfare. *Transport* has regularly published research papers in safety, and our readers might want to review our selection of October 2017 (Newport, 2017).

Another marker of the 2010 decade is the awakening of humankind to the threat of human-induced climate change. As I stated in a previous editorial (Le Bris, 2017), we must become greener if we want to sustain the development of our societies without degrading our well-being, endangering public health and even more, at a horizon that is increasingly visible. *Transport* featured emissions and climate change in April 2017 (Rahman, 2017) and several papers on the matter have since been published in these proceedings.

Other major issues for the near future include sharing and regulating capacity – a scarce resource in urban areas (Ison and Potter, 2010) – accessibility and inclusivity, closing the gap with poorer regions and communities (Jones, 2016), and integration of new information systems (Frost and Cherrett, 2019).

As transportation professionals, we are on the front line to tackle these concerns and still continue to interconnect people, provide access to healthcare, education, work and supply, as well as moving materials and goods. Also, we shall educate the citizens and the decision-makers on the opportunities and risks, and promote a holistic approach to long-term challenges.

This issue of *Transport* features five papers in traffic engineering, roadway safety and pavement engineering.

Everyone has faced the dilemma of finding the most efficient itinerary to visit different locations. This is also known as the travelling salesman problem. Insects living in swarms solved this issue way before we started facing the commotion of urban life. Bee colony optimisation (BCO) is one of these insect-inspired approaches. Wang *et al.* (2019) applied it to light rail systems to facilitate passengers' journey to multiple stops. You can also read a previous research paper by Wang *et al.* (2017) on applications of BCO to light rail transit and mass rapid transit.

Guo *et al.* (2019) defined a new indicator for ranking intersections in order to evaluate their importance for the purpose of efficient and effective management and control of transportation networks under congestion. Their study presents an original index called ‘intersection rank’. Their findings can be used to identify intersections of importance in a network and adjust resources during congestion periods.

Reddy *et al.* (2019) reveal a limit of traffic monitoring using cameras. They explain that these systems rely on a major assumption: drivers abiding by the traffic rules and the roadway markings. It appears that Indian roads have a heterogeneous traffic and poor lane discipline. As an alternative to traditional video monitoring, Reddy *et al.* developed a methodology to estimate levels of traffic congestion on urban roads. To do so, they identified specific patterns utilising surrogates such as area occupancy or average velocity.

Gao *et al.* (2019) studied drivers’ behaviour under low-visibility conditions due to haze. Comparing driving sessions under clear and hazy weather in a high-fidelity simulator, they characterised the reactions to changes in the attitude of a lead vehicle in low visibility. The results provide references for developing microscopic traffic simulations and traffic strategies under haze. Interestingly, Zolali and Mirbaha (2018) analysed the effect of foggy weather on drivers’ speed choice in two-lane highways.

Ameri *et al.* (2019) studied the substitution of steel slag and limestone virgin aggregates for recycled asphalt pavement in cold in-place recycling asphalt mixes. They found out that the presence of modifier aggregates leads to an increase of the optimum binder content under the Marshall method, and a decrease in permanent deformation and moisture susceptibility. According to the authors, limestone-modified mixes are more resistant to moisture damage; even so, steel slag-modified mixes showed better performance against rutting distress.

Transport and its authors are eager to receive the valuable comments of their readers. You can provide discussion on the papers or send comments to journals@ice.org.uk. Authors are also welcome to submit papers online for consideration; full details can be found at www.icevirtuallibrary.com/page/authors.

On behalf of the Institution of Civil Engineers and the editorial panel of *Transport*, I would like to thank the authors for

sharing their findings with the transportation community, and our reviewers for contributing to ensure the quality and integrity of this peer-reviewed publication.

I wish you a happy new year and a wonderful winter.

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