ARE TRANSPORT MODELS
AND REALITY OUT OF SYNC?

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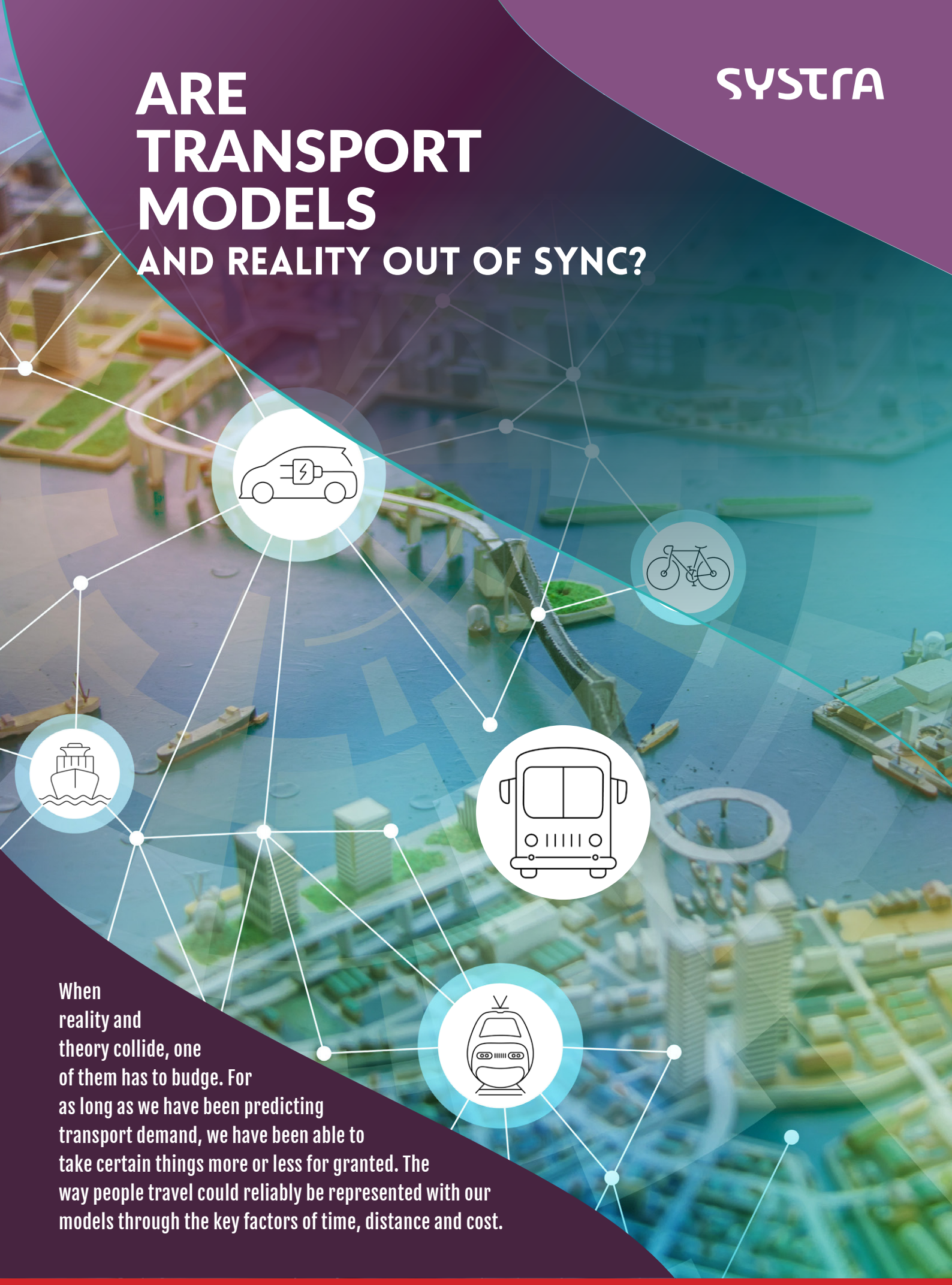

When reality and theory collide, one of them has to budge. For as long as we have been predicting transport demand, we have been able to take certain things more or less for granted. The way people travel could reliably be represented with our models through the key factors of time, distance and cost.

BY DUNCAN IRONS
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ARE TRANSPORT MODELS AND REALITY OUT OF SYNC?

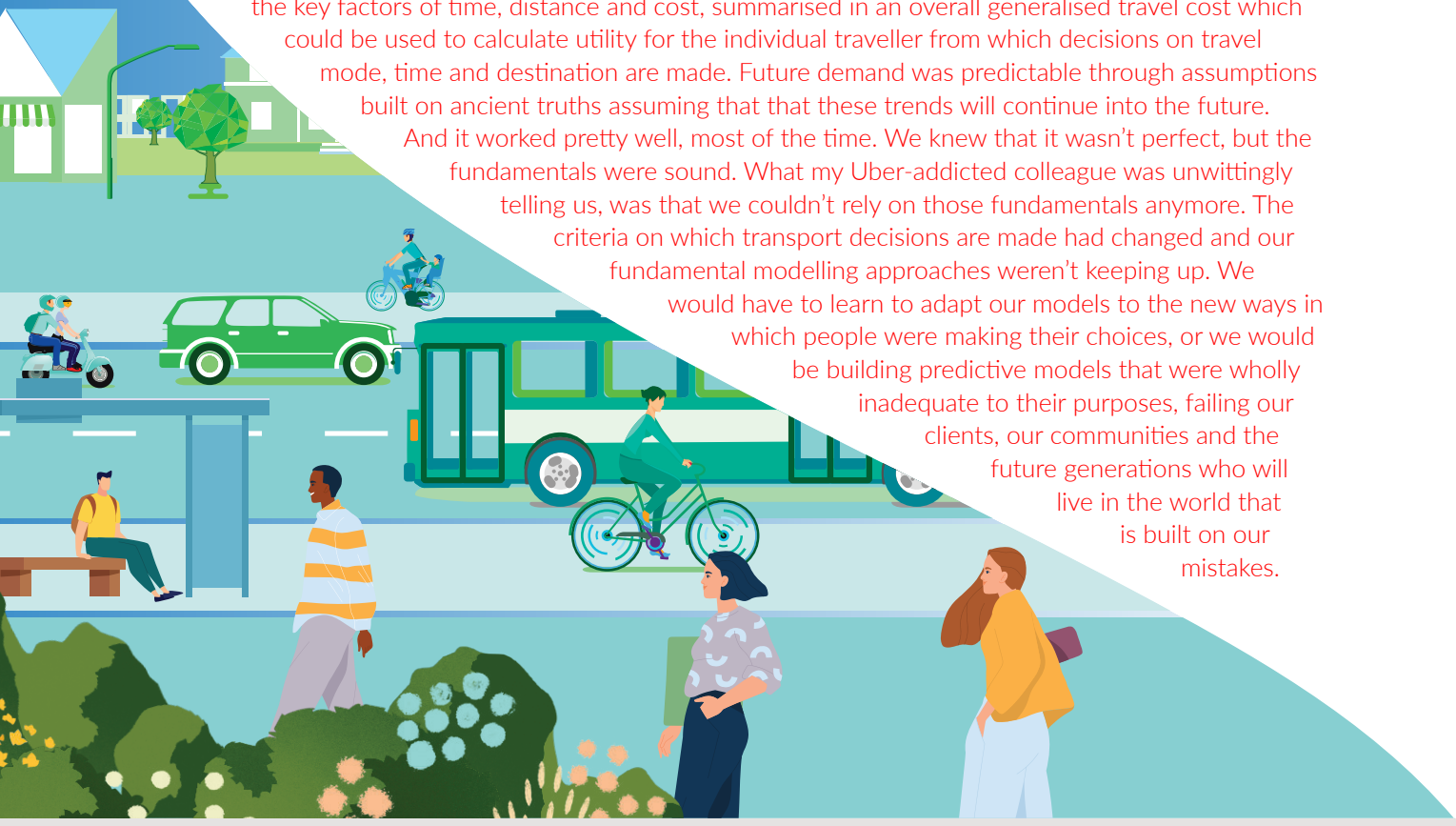
A couple of years ago, while attending a conference about – what else? – transport modelling, I was waiting to meet a colleague who was running a little late. He had come by rail to the nearby station and then taken an Uber to the conference centre. I asked him what the delay was, and he told me he had had to wait 20 minutes for the Uber to arrive. But why wait? I pointed out that he could have taken a taxi from the rank and saved time. Ah well, he said, it was just easier to do it on the app: easy payment, automatic receipt, and anyway, what's a few minutes delay which he could easily fill checking his emails?

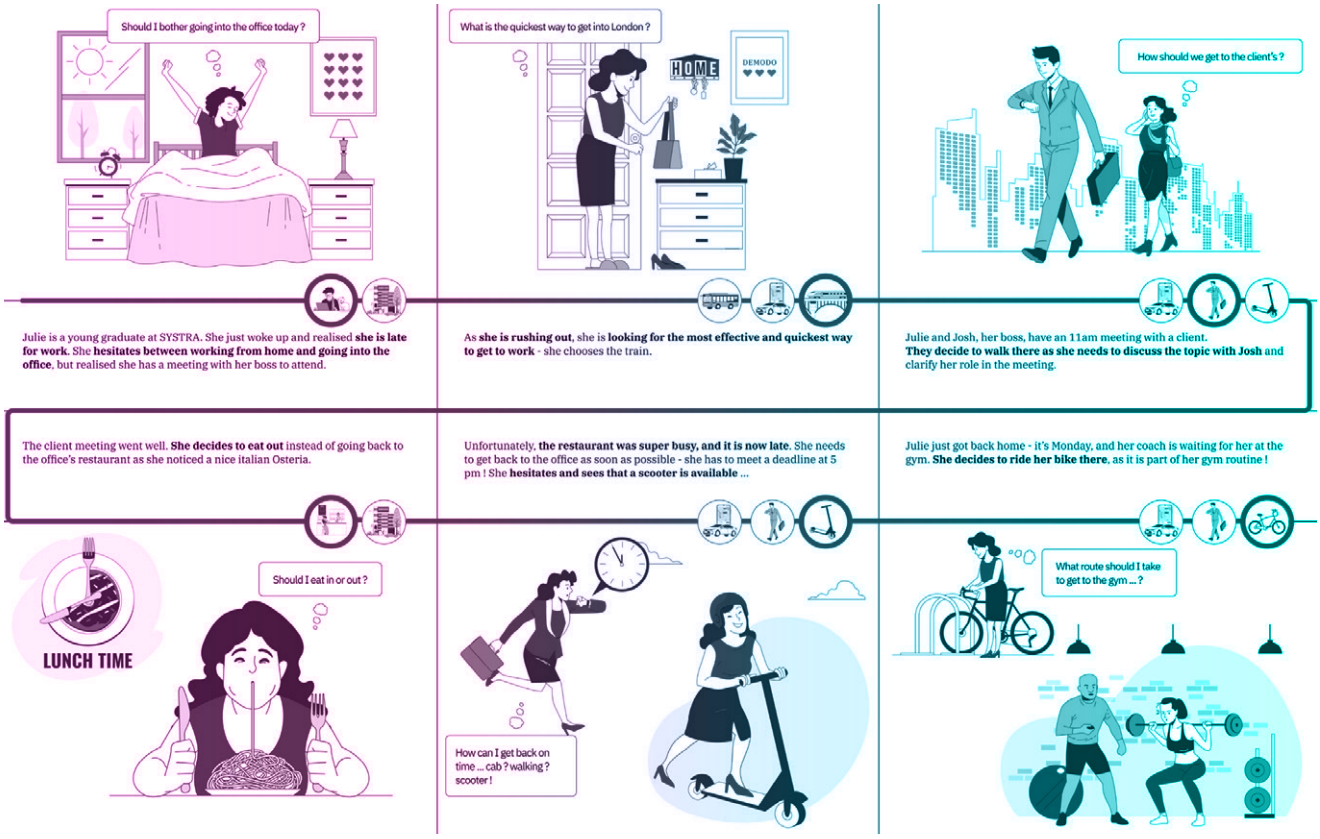
But that is not how it works in transport demand modelling, I wanted to say. You don't make transport decisions like that. It doesn't fit the model! That was the moment when I began to question our current approaches to 'Demand Modelling'.

It got me thinking about other scenarios - people who decide their travel modes using criteria such as environmental impact, personal health, personal safety and the ability to utilise the time for other activities.

When reality and theory collide, one of them has to budge

For as long as we have been predicting transport demand, we have been able to take certain things more or less for granted. The way people travel could reliably be represented with our models through the key factors of time, distance and cost, summarised in an overall generalised travel cost which could be used to calculate utility for the individual traveller from which decisions on travel mode, time and destination are made. Future demand was predictable through assumptions built on ancient truths assuming that that these trends will continue into the future. And it worked pretty well, most of the time. We knew that it wasn't perfect, but the fundamentals were sound. What my Uber-addicted colleague was unwittingly telling us, was that we couldn't rely on those fundamentals anymore. The criteria on which transport decisions are made had changed and our fundamental modelling approaches weren't keeping up. We would have to learn to adapt our models to the new ways in which people were making their choices, or we would be building predictive models that were wholly inadequate to their purposes, failing our clients, our communities and the future generations who will live in the world that is built on our mistakes.





Technological Change

That might seem like a big conclusion to jump to from one person's decision to take an Uber, but it has become impossible to ignore that there really is a huge shift in the way people think about and organise their daily travel plans. Technological change is a major factor, but many other things are contributing. Ideological considerations play a much bigger role in decision making, such as concern about climate change. Personal health and quality of life are powerful motivators in choice of transport mode and organisation of trip chains, and the increased flexibility of post-pandemic working practices permits and encourages a greater degree of dynamism and spontaneity in daily routines. How deep these changes go, we still don't know, but some stable patterns seem to be emerging in the post-covid world. The Tuesday-to-Thursday in office working week for some folk appears to be a permanent fixture, for one thing, and the question for many commuters on any particular day is not just how but whether to travel. Other social changes that are potentially even more disruptive to our modelling assumptions seem to be emerging too. Young people, for example, are native to a world where the idea of ownership in many things has given way to the service supply model: music, movies and even bicycles in a lot of places. These younger consumers find the idea of resource pooling, including in transport, much more natural and comfortable than their parents may have done and are likely to adopt new approaches much more quickly and enthusiastically.

Organising travel

Life events and stages have a greater impact on how we make transport decisions in the new world; people with children are more likely to organise their travel around dropping children to school or nursery on the way to work; busy single people and couples visit the gym on route to work and pick up the groceries on the way back from work to save time for leisure at the weekend; other people are choosing active modes over the car for short urban journeys as it's often more convenient and gives the health conscious a workout; and retired people are planning their journeys to avoid crowds and maximise the enjoyment of the journey as well as the destination; all of which perhaps reflect not just a change in social conditions but a fundamental change in values.

The very meaning of the time-cost of a journey is changing rapidly now that mobile digital connectivity allows us to use that time for our work or leisure activities.

SEGMENTED MODELS

What it all adds up to is a much more complex pattern of motivations and consequently a much more segmented transport sector. We can't lump all these lives together under the traditional set of rubrics. To accurately predict demand, we will need finer grained and more segmented models that reflect this complexity and respond to the dynamics of each traveller's changing priorities and needs during a day and over a lifetime. We must understand and map all the key decision points that trigger a transport choice and encompass the ideological and value considerations that motivate individual choices.

Luckily, we won't have to do it in the dark or to rely on cumbersome user surveys that go out of date almost as fast as the information can be processed. There is already massive, up-to-date and appropriately anonymised data available from reliable commercial sources that can give household socio-economic circumstances in fine detail. Real-time data collected from mobile devices at a huge scale is now properly useable. Taking advantage of those data sources and applying them appropriately will be a challenge, of course and will involve a certain amount of risk. But sometimes more risk means less danger. If we continue on the current path, modelling the future with out-of-date techniques, under the control of the model and current approaches rather than the reality it is designed to predict, we will be building a future world on an illusion.

Lessons from the past

Our children and grandchildren will live in the world that our models help create. Still, today, we can see all around us the mistakes of past generations of planners who committed to models of human behaviour that were over-theorised, detached from the lived experiences and preferences of the people they were designed to serve. Great cities forever scarred by motorways that rudely and destructively carve through city centres. We can do better. Let's not make the same mistakes again.

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Find out how SYSTRA can assist you in Transport Modelling:

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