Human-centered design for future mobility

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Dr Jo Kuys says the design of many cities prioritises cars over people and there is a strong need for human-centred design focused on how transportation plays a role within modern cities. Credit: Swinburne University of Technology

Evolution of the way we move rapidly increased during the industrial revolution when the automobile replaced horse-drawn carriages. In the early 1900s, linear production lines—largely attributed to the Ford Motor Company—made personal transportation more affordable. With

this came many challenges, some of which are still being resolved today, such as safety, speed, efficiency and power.

The emergence of personal transportation reshaped our cities. Our roads were designed around the automobile rather than horses. With this came an imbalance between the human and its interaction with a city and a machine (the car) and its interaction with a city. Today we see cities mainly prioritize cars over people.

The evolution of transportation

This provides a strong platform to address human needs through research in human-centered design focused purely on how transportation plays a role within modern cities. It also addresses future transportation and the next evolution of personal transportation. Electric vehicles are starting to dominate the future landscape which brings issues around a lack of noise and the impact that may have on pedestrians.

The next evolution to this is autonomous vehicles and the role they will play in reshaping our urban vernacular. Will a city's urban sprawl expand if people didn't have to worry about physically driving to work? Could the interior of an autonomous vehicle be designed around user needs such as a 'traveling office' or a 'traveling relaxation pod'? With this will come issues around motion sickness and ownership. Will there be a modal shift for private car ownership to a system that is shared?

As a transportation researcher with a Ph.D. in transit-oriented design, I focus on future possibilities and how design is used to better inform these scenarios. We have witnessed this with mobile telecommunication but have not seen significant research done in future transportation and how that continues to evolve past the combustion engine.

Human-centered design in public transport

Human (user) and behavioral factors are critical to achieving the successful implementation of sustainable public transport systems (Shiftan, Kaplan and Hakkert, 2003). A human-centered design approach is critical to understanding all levels of transport design, from the setting of transport policy, to its implementation, through to infrastructure, vehicle and interface design (Woodcock, 2012).

To improve urban transport, there should be an emphasis on the end-to-end journey experience on public transport from the moment commuters step out of their homes to the moment they arrive at their destination (Stradling et al., 2007). When considering end-to-end journey experience, human-centered design must be integrated at the very beginning to generate viable outcomes for the public. By doing this, an innovative outcome can be achieved if done correctly, while acknowledging all factors that need to be understood along the journey, says Woodcock. It's not just about the physical manifestation of a particular outcome, as the surrounding context and human behaviors need to be considered throughout the entire design process.

It is important as a future transportation researcher to create possible future scenarios in response to projecting ideal mobility solutions. Creating future scenarios helps to identify missing key elements within the projected future to accommodate user needs that may be overlooked. We can develop a new aspect of future mobility through identifying these missing elements to help direct mobility that can promote a healthier lifestyle, as well as help create usable urban structure. This is not a technology push development; it is a human-centered design driven development. Technology needs to be developed to satisfy the users' needs not the other way around.

Projecting appropriate future mobility solutions will require a deeper

understanding of what makes an ideal compromise between humans and machines. No matter what the social status of a particular individual is, everyone should have access to an efficient mode of transport that does not discriminate. A connected city is the underlying core of the urban vernacular keeping economic growth strong and continually improving the lives of people who live there.

Provided by Swinburne University of Technology