**3rd Australian Universal Design Conference Transcript**

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So, hello, everyone. It's great to come into the room and feel the vibe. There was interesting and passionate discussion this morning which is great to start the afternoon off.

Just a quick introduction of myself, I am a transport planner by trade. I have been in the industry 16 years. I'm not an accessibility and inclusion specialist, but I am somebody that is really passionate about transport and cities and making our cities accessible to everyone, regardless of ability, age, gender etc.

And over the last couple of years, I have been working within the city space. Particularly in relation to health and well-being. And I have been lucky enough to work on some major projects recently – Perth Stadium, the London Olympics, and doing thought leadership on what the future of transport means for people going forward.

And through this session, the things I want to touch on are I want to do some thinking about the past – what have we learned about some of the transport issues we have today? What is the future? What does this mean for our cities and mobility?

For the past, this is something that really interests me. One of the things I talk about is walkability and walkable settlements. I love this photo from the 14th century showing how cities and towns were built around how people could move, walking, horses and carts.

And it gives me an idea of these are some of the places that people want to live in, some of the most inclusive and accessible environments, due to the fact that they were built around people and how people move.

Then in 1908, we saw Mr Ford and his model T come into play. 15 million units sold in 20 years. It has really changed the way... Our cities started to change, and started to change the way people moved around our cities and the level of accessibility available to them.

Here are some slides. This is from Radburn, it's a bit of transport history. This is one of the garden cities in the US that began to develop and began to see that motor vehicles, people, pedestrians, children and elderly people couldn't interact together because it was dangerous. And then we started to see the separation of use.

We started to see the separation of housing and jobs and amenity, just to accommodate private vehicles.

I love this stat. As someone who is not a transport engineer – and as anyone working in the industry knows, transport engineering can be tricky – but this is from 1947 and these guys really took separation to the max. And we started to see cars dominating cities.

This is a picture from LA. Even some of our Australian cities start to look like this. Then we started to see this. You can tell from my accent, I am from the UK. There are a lot of UK examples. This is what sparked me to do my job, starting to see really terrible infrastructure for people – guard railings, subways, overpasses really putting people and pedestrians not at the heart of our transport systems anymore, and cities really designed around private vehicles.

In my view, these are inequitable solutions to mobility. But the future is coming, we are here. Autonomous vehicles. In my industry, AV means autonomous vehicles. I do use it too much. But this is what I wanted to talk to you about today in terms of future mobility.

Future mobility covers many things. Uber can now be considered future mobility. Anything that uses a smart phone or an app or uses new technology. But it's a really interesting subject area. And we have the opportunity to shape our transport systems going forward.

The reason I'm interested in AVs is I see pictures like this all the time. And I sit in my office. For the last five years we have been talking about creating cities for people and now everyone is excited because autonomous vehicles are coming. But I just think of this film…

(Laughter)

I hope I don't get sued by Disney. There is no credit for this. But I watch that film, WALL-E, and think, is this what we are designing? We need to bring it back to being a bit more realistic.

You will start to see this kind of thing when people talk about autonomous vehicles and the future of transport. It's a beautiful picture which has been done by a well-known urban designer. It shows what I consider Utopia, in a sense.

Yes, you have got Metro, but where are all the people? We know our cities are growing and getting busier. You just walk around any of your cities and towns to know that there are more people around.

I think there are about four cars driving around there, but the reality is, is this really where we are getting to or is this the utopia we are planning for?

The future of cities, will it be for all or just for a few? That's what I wanted to touch on today, not to give you answers around AV or what that means for mobility because I don't think we have the answers, but to really give you some thoughts and considerations around what it can mean for the work you do and the people you design transport solutions for. And to give you some nuggets of information to take to the table to make sure we are talking about accessible design when we talk about future mobility.

To give you a bit of background, when you hear about autonomous vehicles in the media and you read the information around them, autonomous vehicles can mean many things to many people. We talk about them being either evolutionary or revolutionary.

Evolutionary stuff is what is being tested on freeways in Australia at the moment. These are cars you can buy now. They have GPS, auto cruise control, self-parking. Then we talk about the revolutionary autonomous vehicles and these are like the Google cars. I think there was a recent fatal pedestrian accident in Las Vegas. These are the ones that are completely automated, so it is a computer driving you.

A discussion today is about the revolutionary type of autonomous vehicle, which would be stage V automation. A lot of the tech companies are really trying to get to it. That's where they want us to be. So you need to bear that in mind when you talk about autonomous vehicles, but for this conversation, it is around the revolutionary, fully automated car.

One thing we also need to think about is the car ownership model. I will touch on this later. I've got some slides with some graphs – I don't really like using them – but I can take you through them. There are two schools of thought in the way that autonomous vehicles become rolled out into the community. First there is private car ownership, which we see today. Everyone could have their own autonomous vehicle. You could have five, your dog could have one, your kids could have one, you could have one to pick up the shopping in.

Then there is the shared model, which urban planners are talking about the benefits of, where you don't own a car at all. You might subscribe to a car club. You pick up your phone, dial for the car like Uber or a taxi and it arrives.

So this is important, the ownership. This has very much not been defined at the moment. As I will speak about later, depending on what model we go down will really impact the level of accessibility in relation to future transport.

There are lots of opportunities in relation to autonomous vehicles. Today I'll touch on the social side. But there are other discussions going on. Road safety is one thing. Talking about towards zero in terms of accidents on our roads. There are environmental opportunities generally relating to reduced car ownership. Also the economic opportunities.

And as you can see, human error counts for 90% of accidents, so the safety side of things is really key in automation.

But there are also a lot of risks. A lot of these haven't been answered. Again, we'll talk more about the social aspect, but bear in mind autonomous vehicles and changing our roads from driven cars to driverless cars really unlocks so much in terms of what we know about cars today.

So, how do they sit within the legal framework? How ethical are they? Whose life matters? There are articles on this to say if an autonomous vehicle wants to crash, who does it crash into? Does it aim for the elderly person or the child? These are the discussions that we are having around this, which I don't think we would ever have with cars today.

Social implications. Redefining the shape of our cities and mobility for all. There are two sides of things when we look at autonomous vehicles. And once you dive into what autonomous vehicles mean for us, they can unpick so many things.

Before we talk about people, let's talk about cities. There are two schools of thought in terms of autonomous vehicles. Are we going to end up with more suburbanisation, or potentially could we use the opportunities relating to autonomous vehicles to get more densification?

I think suburbanisation is quite easy to understand. At the moment, people need to be able to access transport. But if you have a car and you can just use your phone to call it to take you where you need to get to, then do you need to live within a certain distance of the train station, where you work, or any other amenity? Will we be more dispersed because transport issues are taken off the table?

Particularly now, as the time spent within the autonomous vehicle can now be productive time. We always talk about the time penalty of driving means you are economically inactive. But once you are in a car that drives itself, you can either watch Netflix or do some work or talk to your family.

Densification is an interesting one. The argument behind this is because of autonomous vehicles now they are going to be quieter because they will generally be electric. The transport issue, they can unlock the last-mile issues. So can we have more density because we take away the space needed for private vehicles?

Again, questions that haven't been answered, but we have learned from the past that with vehicle ownership suburbanisation is driven forward because it is the easy way to go. So those are thoughts we can talk about later.

Car parking is one thing we discuss a lot with autonomous vehicles. And what it means for people. At the moment... There is a quote from Donald Shoup, a well-known academic in relation to car parking.

He has found out most private vehicles are parked 90% of the time. Sitting there doing nothing, taking up valuable land, making our cities crappy, not very walkable or accessible.

So if you take that out of the equation, the AV can drive away and do something else or go home and park outside your house, that means we don't need the land for parking. Does that mean now we have more space for people?

Particularly in relation to space, maybe more affordable housing is a benefit of that. You don't need to provide huge basements for parking, which put higher costs on housing. Potentially that comes off the table, so we can provide better housing.

But the pessimist in me thinks there is more space for roads and cars moving on them. And that is my last point in relation to autonomous vehicles – what does it mean for street design? Here are some drawings from NACTO. The one on your right is a street you would see today. A lot of space allocated to private vehicles, vehicles driven by people.

The drawing on the other side shows what it means if vehicles are reduced or if they are all following each other, we can give space to people and have wider footpaths, more accessible and livable streets, which would be a great outcome from autonomous vehicles.

There needs to be a framework in place to make sure that happens and make sure that the freed capacity doesn't get given back to more private vehicles.

More on the social side. What does it mean for people? I love this quote – and it is something I always think about, we are always chatting with millennials about Uber.

Autonomous vehicles do offer some great opportunities for accessible mobility. As we know at the moment, a large proportion of people are unable to drive. But now if they have autonomous vehicles, that takes the 'not being able to drive' issue off the table.

And for those who don't drive, they use public transport. Autonomous vehicles are regularly being talked about in terms of how they can provide access to rail and tram, the last-mile solution, for people who are unable to access train stations.

And here is some great work, this is some work that has come out of Infrastructure Victoria lately. They have produced a number of papers about how Victoria prepares for autonomous vehicles and one of the pieces of work was done with Deloittes, looking at the social and economic impacts.

The graph shows a number of scenarios. The dead-end scenario assumes that in 2046, we will still have private ownership, self-driven cars. Whereas private drives, they tested some scenarios, driverless vehicles in a private ownership model.

And Fleet Street is driverless but shared on demand. This is when you don't own your vehicle. It shows here that the percentage of the population increases dramatically in the driverless car scenario for access to train and tram, which is a great outcome.

The winners are people with lower incomes who rely on public transport, those people who live a significant distance from a train or tram or those who can't walk. And those without driver’s licenses. This paints a rosy picture in terms of what autonomous vehicles can do for access to public transport.

Access to driverless vehicles could increase access to employment and services. In Australia, 50% of people with a disability are unemployed, potentially due to restrictions to access to employment. Again, the work that has been done by Deloittes for Infrastructure Victoria shows that with autonomous vehicles, regardless of if they are shared or privately owned, access to critical infrastructure is improved.

One thing I want to point out here – and I have underlined it – this shows a great picture for autonomous vehicles. It shows that the rollout of autonomous vehicles will potentially improve the access to critical infrastructure. The main reason for that is that at the moment there is poor coverage to critical infrastructure.

We have the issues now and, yes, the autonomous vehicles solve the issue, but are they the answer? Again, this is a future scenario. But the dead end, the green that you see there, is potentially where we could still be in 2046 if we don't solve the technology issues in relation to autonomous vehicles.

And it starts to show, the research shows the impacts of gentrification. Because in higher-income areas, they had access to the infrastructure already. At the moment, they have access. But if you are in more regional areas without access, this shows you are relying on autonomous vehicles to hit the market, and again there is a huge question mark over that.

There is another report in the Infrastructure Victoria suite of documents, and this looks at accessibility to critical infrastructure. The reality of that. The work that was done by Deloittes was a single lens – yes, you have autonomous vehicles, you can access critical infrastructure. But this takes into account traffic congestion and also takes into account that if you live in a regional area or a lower income area, would those autonomous vehicles even bother to come to pick you up? Uber sometimes won't pick you up because it is not worth the money.

The private drive, you can see on the top right hand side, shows that accessibility is improved by 8.2% for people in a privately owned driverless model. But Fleet Street, the other one I showed you, in red, -11%, is the shared ownership model.

At the moment governments are starting to think that the shared ownership model is where we should be going to ensure our streets don't become overly congested, but you can see accessibility actually decreases in that model, and that is due to wait times, are there enough vehicles in the system to pick you up? And also fares, on demand, we get price-surging with Uber, which is something that could be implemented with driverless vehicles.

This means if you live in an area that is inaccessible, people who are going to work may get a vehicle as a priority over yourself. It starts to paint some interesting lenses and we need to bring conversations together. Yes, autonomous vehicles means you can get to the train station, but if there are 150 autonomous vehicles trying to get the station, how do you get there on time?

And I think this comes to my point that public transport is still key within a future transport system. At the moment we talk about vehicles but when we talk about mass transit, I mentioned the words 'mass transit' at an event the other day and people said that I was talking about utopia.

But our populations are growing, so vehicles with one person are not going to do the heavy lifting of our transport systems. Public transport remains key. We need to make sure that we really invest in public transport, but also think about the interface of public transport and private vehicles. So if you are relying on autonomous vehicles, you can get into them.

This is one question I keep asking – how do driverless vehicles interact with people? We talk about that social side, this is on the ground. Particularly if you have a visual or hearing impairment. A lot of us rely on social cues when we are moving through space, that eye-to-eye contact.

I read a great quote from the Commissioner of Built Environment in England, and he was saying, "If someone looks you in the eye, they are less likely to kill you," which I think is true. That is where this issue of shared space comes from.

This is a real picture. Jaguar/Land Rover are leading the way in driverless pod development and they are putting eyes on autonomous vehicles to overcome that issue, which I think is great. I had the great opportunity to go to Perth to see the driverless bus, it did actually look at you. As you got near it you wondered what it would do, as a pedestrian.

If these things stop because they see a pedestrian, our roads will be full of vehicles waiting for pedestrians to cross. But the traffic engineers would stick guard railings everywhere because we need our vehicles to move as quickly as possible. But I like that, it looks cute.

What does it mean for people in our cities, driverless vehicles? I am interested in walking and walkability in the community. If people are now hopping into an autonomous vehicle at the front gate and being dropped off at the shop, assuming they can be dropped off because of the million other AVs, it lacks that human connection with your community – which is so important, particularly with an ageing population, knowing your neighbours – which could be reduced.

Also health and well-being. We know that 8.6 minutes of walking a day can have a massive impact on people's mental health. Able-bodied people are inherently lazy sometimes, we find the easiest way to do something and we know that walking activity is a small part of our transport system. Will autonomous vehicles impact that and what will it mean for our mental health?

I wanted to finish off on some research I've been doing at Arup on autonomous vehicles and walking. It is looking at sentiment analysis – where is the conversation in relation to autonomous vehicles?

We have taken a suite of documents and looked at the discussion, where was it at, and also the visual story. If you go on Google and search ‘autonomous vehicles’, you will see heaps of pictures like this. But where are the people in these photos? Where are the communities? Where is the human interaction that is so important for well-being in the future?

It is very much removed from the conversation, and this is why I'm speaking to you today, I want to ensure we put the human back in the driverless car. It is so important.

And I will leave you with this slide. This is looking at where the conversation is in relation to who is having the conversation and where their sentiment sits. It is great to see media generally being quite balanced, positive and negative. And it is great to see academics and planners and designers having that conversation.

The top end of the graph is interesting. Industry groups are all about the positive. But if you look at government, they are not having a conversation that is balanced at all in relation to autonomous vehicles in relation to people. They are drinking the Kool-Aid, I feel, at the moment. And they are going to the graph that says everyone will have access to train and tram but not looking at the ones that say accessibility could be dramatically reduced.

For me, today is a call to arms to make sure we are bringing this conversation to the table, and that we are thinking more holistically – I hate that word – about discussion in relation to accessibility and transport.

In conclusion, let's make sure we bring the idea of accessibility to the table now. It is not an afterthought, it's not a separate table, not a separate chapter in the reports we read, it is a layout and lens that we need. If we bring that to the discussion, we will have, hopefully, in the future, a transport network that is accessible to everyone.

Thank you, cheers.