

**SUBJECT: Bridging the Public- Private divide create great cities**

**SPEAKER: Gabe Klein**

**MODERATOR: Dr Chua Yang Liang**

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**Note:**

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Emcee 00:02	<p>Distinguished guests and fellow colleagues, welcome to today's CLC Lecture Series. My name is Jing Yi, and I'm from the Centre for Liveable Cities. The Centre was jointly established by the Ministry of National Development and the Ministry of Environment and Water Resources in 2008 to distil, create and share knowledge on liveable and sustainable cities. The CLC Lecture Series is one of the platforms through which urban thought leaders share best practices and exchange ideas and experiences. For today's session, we're honoured to have with us, Mr Gabe Klein, former Commissioner of the Chicago Department of Transportation. Mr Klein will describe how it is possible to overcome the challenges of entrenched bureaucracy and deliver changes to city life. And to do so quickly if the right mentality was adopted. The presentation will be followed by a moderated panel discussion and a Q&amp;A session with the audience, which will be moderated by Dr Chua Yang Liang who is Head of Research, Southeast Asia Jones Lang Lasalle Singapore. Let us now begin the lecture by inviting Mr Gabe Klein on stage. Mr Klein, please.</p>
GK 01:51	<p>Thank you. Thank you for the introduction. It was nice that it was much shorter than usual. You get tired of sitting through these long introductions where people go through your entire career and bore the audience. But I will say that the picture you saw up there of the bike share - that was actually Washington DC. I spent most of my career in the private sector in start-ups then went to work in Washington DC as Director of the Department of Transportation which in some ways has some parallels to Singapore on a much smaller scale obviously. But I've been learning more about your government. I've been here this is my fifth day because I really want to immerse myself in what was going on and experience Singapore. In Washington DC we have a vertically integrated government which allows us to get a lot of things done quickly. So when the Mayor lost the election and I left Washington DC government. I was going to go back to the private sector and I got asked by Rahm Emanuel who was the Chief of Staff to the President, when he took over Chicago to come run the Chicago Department</p>

	<p>of Transportation. I'd only been to Chicago once for a day and so I didn't know much about it. It is a much bigger city but I was intrigued and I took it as a personal challenge to see if what I was able to do in Washington in a vertically integrated government could work in Chicago in a completely different type of government with 50 alderman and so on and so forth. And when I was done and I realised that you could get as much done in both environments using the same formula. That's when I wrote this book "Start-Up City" because I got asked via the urban land institute. I was a Fellow there. I get asked to speak in a lot of places about whether there was a way to do this in every city and I think there is. And Singapore is very unique. It's a wonderful place. I've had a lot of fun the last 5 days and I've taken some pictures which I'll share with you. You guys have a lot of advantages. There's a lot you can get done. And you can do it a lot faster than a lot of other city-states or states or countries.</p>
03:34	<p>With that I will dive in. I got way too many slides coz I got too excited about talking to you after spending 5 days here. I put too many things into my presentation. So I apologise in advance. But I want to talk a little bit about what motivates me. I want to talk about history and talk about how we got where we are. Talk about what we are currently seeing in cities around the world in terms of rapid urbanisation and so on. And some of the new technologies is coming to the fore and how that shapes the way we think about our cities. And maybe what we could do to shape a more utopian future in cities versus a more dystopic future and both are very real possibilities.</p> <p>So let's dive in. I think fundamentally what motivates many of us is that we love our cities. We love where we live and we want them to be the best quality places they can and the most sustainable, economically, sort of forward thinking, supporting economic growth and safe. And these are three important factors in what defines a great city. I was intrigued when I listened to David Christian. He's an environmental scientist from Britain talk about the Goldilocks conditions that allow humans to be on the planet. Goldilocks</p>

	<p>Conditions being his term. And he talks about how we have been on the planet for 200,000 years. But it's really over the last 100 years since the industrial revolution, the third wave of the industrial revolution really took hold that we are starting to undo the Goldilocks Conditions that allow us to actually live on the planet. You don't need to be a rocket scientist or environmental scientist to figure out that things are changing on the earth. And fundamentally, we are facing some really devastating effects of our population. Who knows how many people we had in the world in 1900? Anybody? 2 billion? In 1900. I see all these people googling. We now have 7 billion. So that's like a quintupling of the population in a hundred years. We've been on the earth for 100,000 and we are going towards 9 billion plus by 2050. There are all types of effects of climate change. We take water for instance for granted particularly many of us who live on the water. Like I did in Chicago. I come from the United States where people either accept climate change as very real and very scary, or they think that it is something made up by politicians. We're really a tale of two countries. But we are learning that the predictions by the scientists have actually been very conservative. And NOAA in the US, the National Oceanography blah blah blah, is saying that we are looking at 5 and a half feet of sea level rise by 2100. So that's a lot. That means that places like Miami will, South Miami will no longer exist. By 2100. It's built on limestone. This is really interesting. This is Beijing. In 2013 is the really nasty looking photo. And then in 2008 a week before the Olympics when they ban cars. So you can see a significant difference based on the choice that we make. And so we are finally having to face the facts that our population, the industrial revolution and the way we choose to live our lives everyday are having significant effects on our ability to actually live our lives on the planet.</p>
06:53	<p>Now the good news is, at least in the US where we have people who deny climate change, they are starting to admit that the economic impact and we, we as either government officials or business leaders, have a responsibility to be honest with people about the cost-benefit of our choices, particularly</p>

	<p>driving around automobiles. Now the other thing that really motivates me, and I was really excited to talk about today, was the safety of our cities. And the fact that we lose more people to traffic fatalities worldwide than any disease. It's the number one killer of young people worldwide. And that's the number that we lose every year. That's the leading killer of people 10 to 19 and 15 to 29. Now here in Singapore, like many places, you've seen a drop, a precipitous drop, in the number of accidents and deaths. But it's still too many. And when you look at who's dying in the accidents, it's the most vulnerable users of the street. It's the cyclists. It's children. It's the elderly. And you see this over and over everywhere in the world. So while the numbers have actually fallen, they're up for 2015 because of lower gas prices, more than half the people who are losing their lives are the vulnerable citizens. So in Chicago, we had the first vision zero in the United States, calling for zero fatalities in 10 years. But I knew that without a cultural shift towards active transportation, getting people out of their cars into shared use mobility transit and without technology, we would not be able to get there. I'm going to talk about some of that today.</p>
08:26	<p>Let's talk about history. We tend to think about cities as relatively modern. But cities have been around for well over 5000 years. And we basically organised ourselves the same way for a very very long time, often near water, often with some sort of barrier or moat between the city and the surroundings. And what we've learnt now, and I think Singapore is probably the best example in the world actually, is that density always increases productivity. And we know that modern times because of places like Singapore. Like New York City. But what we didn't know until now was that historically it was the same case. And they built cities and then they in-filled an added density and they became much more productive as people as a result. So let's talk about what the streets looked like before the automobile became the primary mode of transportation in many places. Now I understand here in Singapore two-thirds of people take transit every day. That's a wonderful thing. And I know that you've set goals to make it even</p>

	<p>higher. We can get there. You know we talk about congestion at least in many places. I don't know about here. Most places in the world we talk about congestion as being a bad thing. And in the old days congestion was a really good thing because you knew, like H. Hershberg and Company over there, you knew that they were going to be busy. Not sure if this works. This is a clothing store. Again, you don't need to be super-educated to understand that business is doing well. We shared public spaces in the past because we lived in very tight quarters like many Singaporeans, which we've gotten away from in the United States. We took trolleys to work. Trams. Here in Singapore, we used not rickshaws, these are called trishaws I think, once you have the bike in front. That may have been a rickshaw. Then we had trolley buses then the automobiles were introduced. But this is a very multi-modal society. People walked, biked and took transit. And bikes were actually a very prevalent form of transportation as I've learnt. And how many people got around in olden times if you will. Then we decided that we were going to take public space and use it for parking. So it's been fascinating for me to learn where parking came from. Parking actually came from the United States, from Washington DC in the 1880s. And what parking was for, was for creating park space in grand boulevards. And over time as people got different types of vehicles, they started sticking their different vehicles between the trees. And that's how parking came to be. But it's not necessarily a given that we should be leaving our cars as a storage in the public right of way.</p>
<p>11:06</p>	<p>But it just happened naturally as we had more and more vehicles sitting idle waiting for passengers. I also, I love this picture. I can't pronounce this. Bugis Street? Thank you. So there were many other uses for streets and this, in this case the street was used every night for all types of fun activities, drinking and eating and shows and so on and so forth. So it shouldn't be a given that cars are to be the dominant force in the streets. In the United States, when we got rid of our street cars, we got rid of our transit options, you can literally track it to the month we did that. People fled the city. People</p>

	<p>left. So when we drove highways through the cities, after we connected our cities and states, and then we said, hey if it works so well to connect our cities, let's drive the highways right through the cities. We sent a very clear message to people that this was not a place to live. This was a place to work. This was a place to cut through, not a place to live. And we stimulated our economy by building tract housing out in the suburbs. We sold people this American dream. I actually worked with Bill Ford to fund [indistinct] but he will tell you that the single occupancy vehicle is not the future for travel now. But we really sold people this idyllic image of what suburban life would be and as many of you know, cars do not appreciate and homes typically do. And we burdened people with car ownership more so than home ownership. And of course there is a direct correlation to adding cars to the system and adding fatalities to the system, a direct correlation. And there are still prices to be paid all over the world. Now it's interesting if you look at what happened in Europe. They woke up a bit and said, wait a second is this really what we want? And you know they made a lot of the same mistakes that we did in the United States. But they started to remedy it but we did not. We went all in on the automobile in the US and we built an entire quality of life, if you will, around it. And there's been other costs. This is how kids got to school – biking and walking. And there's been a complete swap for the automobile and we shouldn't be surprised when a 50 pound kid is now a 75 pound kid because they are sedentary and we feed them Macdonald's. No offence to any Macdonald's shareholders that are in the room.</p>
<p>13:32</p>	<p>Ok, enough with the down stuff, depressing stuff. Let's talk about what's happening now. We are re-urbanising at a rapid rate but what's fascinating coming from the US is that we are levelling off in the United States because we have not made the investments in high quality transit and transportation. And we have not embraced density. I love this image from Shanghai because in the 26 years that we would have spent planning something, they've built an entirely new city and I think a lot of it has</p>



happened here as well where you have incredibly rich an robust transit system. I was learning over lunch from some of your leaders that during peak now you have trains coming every 100 seconds. That's admirable. In DC where I'm from, they come every 6 minutes probably at peak. What we are still learning in the US and I think you have learnt more than we have is that you can only fit so many people in automobiles. Basically it's a challenge in volumetrics. You have so much capacity for vehicles. This is supposed to be a GIF and it's supposed to show you people standing in the streets. But you know what we are going to skip it coz we have loads of other stuff to talk about.

So looking at these historical slides, the reason I go into it is because I think it's really important to recognise that we have gone from this era of hyper consumption, post-world war 2. We were really sold this idea of moving to the burbs so we can own two cars and a white picket fence and two televisions and all that to people really being more concerned about a higher quality of life and being able to walk, bike, take transit within 5, 10, 15 minutes of everything that they want and without feeling the need to own everything. Some things but not everything. So in transportation we are really moving from the We economy, or the Me economy excuse me, to the We economy. And I think what people are fundamentally asking themselves is ok, back in the day my family may have owned a cow so we could have milk. Now it's modern times, I just buy milk. Do I need to own a car to have transportation? Do I need to make that capital investment? And cars sit 95% of the time in most of the free world. So these new business models which are springing up whether it's with Zip Car which I had the opportunity to help build in the early 2000s. What was very important to us was that the public-private partnership with cities where we put them on the streets or Lyft and Uber and Grab Taxi, services like that now are giving people the insurance policy to have a car available to them without owning them. And governments are embracing connecting the modes where they can be public or private, with one payment system,

	<p>with one app. And you're seeing this in Montreal, Helsinki. So really you have the government functioning more as an air traffic controller than as a day to day operator or travel agent if you will.</p>
16:27	<p>Now we tend to think that a lot of the innovation's happening just in the private sector but I got to launch Capital Bikeshare in DC, Divvy in Chicago, two of the largest systems in the United States. And I can tell you that without government leading, without government making the capital investment in the system, it wouldn't have happened. And we would not have big bike share systems in the United States. And we do have the private sector running them but government plays a very important role, sometimes in decision making, with public input or actually making the capital investment that the private sector would not take the risk for. And if the public-private partnership is done properly and embraced by both sides, and this is a lot of what I talk about in the book, shared incentives, shared rewards, it's amazing how well these can work. But when you get into a contractual war over who's going to win, who's going to lose, the citizenry typically loses. So you know bike sharing is everywhere. And soon I think coming to Singapore. I think it's going to change the way people move between neighbourhoods, particularly if you can install air-conditioning on the bikes. The other thing that's happened in a lot of places, people here, how many of you go to the gym? Raise your hand. Only people in the front and those 2 ladies. Ok. You guys are in very good shape. People are realising maybe I don't need to go to the gym. Maybe I could just ride my bike or walk to work. We were talking at lunch today about one gentlemen who rides 16 kilometres every day. But it's the same time to take transit. And so that's pretty amazing. And if government can look at what space was originally used for transit, and in the book, I talk about the Pennsylvania bike lanes and how we repurposed this space that used to be for people, became space for really nobody, for cars to park actually. And we made it into bike facilities. And now it's full every morning and every night. Full of people riding their bikes, just reallocating that space. And this is I think</p>

	<p>important for Singapore. There's a misconception in a lot of places where you don't have let's say bike lanes, and you think if I take that lane away from cars, then it's going to make the cars travel slower. Right? That seems like it makes sense. Well, what I learnt that time in Chicago is that it's actually not true. And if you use sensors to sense when cars are at red signals. If you add turn lanes because our road ways are typically not optimised very well. They're better in Singapore than a lot of places by the way. Then you can actually take a lane away and give it to bikes and you can actually increase the throughput of cars by optimizing that corridor. This is Market Street in San Francisco which is a six-lane road way. And I was looking out the window of Ed Raskin's office. He's the director of the San Francisco MTA. And I said this is rush hour? He said yea. He said everybody's in the trains or on the buses or on their bikes. No one drives. He said why would they? There's only two lanes with the 10 miles per hour speed limit. So the lesson is if you build it they will come. And there's so many cities in the US that you have to add one more lane at the cost, Tampa for instance, of \$9.3 billion. And all they will do is fill that lane with congestion within two months. Actually it will be worse than it was before.</p>
<p>19:37</p>	<p>We are learning that complete streets are very important. So if you're going to put in a bus lane, if you're going to put in a bike lane, see what you can do for all modes. See what you can do to keep the pedestrians safer, see how you can make transit work better, see how you can slow cars down to the speed limit. So how do we get what most of us in this room, probably think we need to go? For one thing, if you're running the transportation agency or the associated agencies, our goals used to be much more simple. They were admirable but they were simple. Safety and throughput. And now, they're really about quality of life. And if you look at press conferences that Rahm Emanuel and I had and Adrian Fenty, we really did not talk about transportation almost at all. Because when you poll people during election cycle, transportation ranks between 7<sup>th</sup> and 23<sup>rd</sup> typically in importance. These things matter to people. And these are actually the things we effect in</p>

people's lives. Together they relate to people in the things they care about. The other thing we did was we set very aggressive two year action agendas. We didn't call them plans because they weren't plans. We committed to getting 120 to 150 things done in a very short time frame. Two years. And then we would report on what we did and what we didn't do. What we failed at and what we succeeded at. What we exceeded. Again, we built around these principles. Things that matter to people and what I realised, having been in private sector, then government then going through this process, is that it's really all about change management, about how you bring all your stakeholders along with you and facilitate this change. So whether it was a giant new \$100 million train station or the Chicago river walk which we'll talk more about, or simple changes to make our streets safer with paint and some signalling changes like this [indistinct] or the new BRT system or even the activation of an alley. It's really about change management and fundamentally changing our approach to redesigning around people and safe streets for everybody. And so when we did this, we said ok we're going to publicly come out and be honest with people about our priorities. And I thought we'd get a backlash. We put out this modal hierarchy and our focus is pedestrian first, transit second, cycles third and auto last. We got no push back. And I realise it's hard to argue with prioritising people in our society. But it's funny. When you go out in the streets within Singapore, it doesn't feel like people are always prioritised and there's simple things you can do. Like creating mid-block cross walks, painting cross walks, putting up signs to alert people that they actually have to stop. something I've experienced quite a few times here where they don't. this is actually a picture the other night in Little India where we had our daughter in a stroller and there was no sidewalk, no way to get across the street. When the Uber pulled up we were worried that the Uber was going to pull up and actually hit the stroller. So accessibility for young, for old and for disabled people which in this case, if you're in a wheelchair, incredibly challenged, it's really important. And I realise this is supposed to be getting people off the sidewalk to a bus or taxi, but you see a lot of this in Singapore where there's actually no way to get

	<p>across the street. In fact coming from lunch over here, with some of the leaders of the agencies, we had to break the law and sort of jump over the median to get here because you have this natural want and need to cross the street to get into the building but there's no way to actually do it. So we need to look at these things. We need to look at some areas, like I was down in Arab Street some of these areas which are really robust and vibrant where the stores face the street and they just feel like they're designed well. Maybe because they were designed, 100 years ago.</p>
23:23	<p>We need to ask ourselves, why are we having accidents with heavy vehicles? Should we have trucks in the downtown or city limits during business hours? Or like DC, or in New York, experimenting with getting rid of trucks during the day or in Deventer in the Netherlands where I visited, where they close the downtown, not only to cars, trucks but to bikes even. They only allow people on bikes outside the downtown and if you want to deliver to the downtown, you got to do it between midnight and 7am. That makes it safer. We have to look at why we allow people to speed when we know there's a 40 miles per hour, 80% of people are going to die if they get hit by a car. And at 20 miles per hour, 95% will live. That's why we have speed limits. One of the things we have struggled with in the United States is actually having design standards that make sense. We try to build everything to a suburban design standards and now we have urban guidelines and actually and soon and this is from NACTO in the US, soon we will have global design guidelines coming out. There's a new resource out as of last week, from people for Bikes, about how to quick build your streets. So it's great to want to build wonderful complete streets. You take 10 years to get there but what can you do in 2 weeks, what can you do in 2 months to make the streets safer for people, to iterate a pilot in a controlled way. How do you do what we do in Chicago where with no money, build 50 miles of protected and buffered bike lanes by incorporating them into our resurfacing? It can all be done. And we have to do it because when we know that we have to create safe places people want to be, that's what happens. Fatalities go</p>

	<p>down, injuries go down, business goes up. And we have the data now to approve it. And there's an effect on land values also. We also know this in the United States. That we keep getting these predictions or increased need for lanes for driving. And they've been wrong for 15 years. So I would ask you, when you look to build a new road or highway, is it a stimulus project or is it a needed project? Is there a cost benefit to putting that into your rail system? Now I've met with some of your government officials and I have to say, their plans for the future are really bold and robust. For instance, building a lot of, if you need new highways, underground, is pretty bold. But it's smart. So I think they're doing a lot of the right things but people should always be asking, what is the return on investment. What is the cost benefit? And what is the opportunity cost to this project versus another? Particularly when young people coming up have very little interest in driving. And when we know from prior experience that induced demand is a real thing. When you build capacity, again within 2 months, you typically fill up capacity and you have more congestion than you did 2 months before. So you're wasting money typically building capacity. And then of course, you have situations like we did in San Francisco, where the central artery came down. It actually fell down. And guess what nothing happened. They were amazed. Traffic didn't change. People find a different way to travel. So we need carrots and sticks. We got to build more MRT, more LRT, build bike facilities, build sidewalks, and then continue the taxation on automobiles, maybe even raise it. But we need to look at are we spending or are we investing in our future? I think you guys are doing a lot more of the right things here than I see in many US cities. In the US by the way, we spend 2 to 3 % of GDP on infrastructure. You guys spend 8 to 9 % in Asia. So again, kudos.</p>
26:51	<p>And you're getting the pay off from it because that type re-urbanization like in Shanghai and Singapore, you get a bigger return on investment. You don't have to build water pipes a hundred miles into the suburbs. You have to maintain and replace. So there's a formula that I would argue has worked</p>

for thousands of years, even when transit meant horses our own feet. But it continues to work now and I think some of the bold projects that you guys are building, including the whole new area, Jurong, that I went and toured today, was amazing and you have some unique opportunities to get some things right that are going to be hard to retrofit in other parts of the city. When we think about transit, we often think too much about moving people. We don't think about the fact that it organizes our entire way of life. To where the doctor's office goes, and the schools and the grocery stores and so it's about the social structure that we create more than moving people. And we realise this in Chicago and we built many new CTA stations. We built stations. This is a new one we built in the west loop. It had been torn down in 1987. We put it back. Within 2 weeks of putting it back, Google announced, they were taking 300,000 square feet two blocks north, a new hotel was also announced one block north, and so we have to remember that when we put these systems in place, and we take lanes of traffic and we put them back into use for other things, it's also about the place that we create and the return on investment that we get because people want to be there. So it's about creating great places and I know, like in Singapore, you have some incredible malls and they really are amazing. But I would ask if you also want to have more outward facing activation on the street? I think it's something to think about particularly in these new neighbourhoods that you'll be creating and a new CBD from scratch. And we have mid-sized transit oriented development like BRT, MRT is probably large and then you have, I would argue, bike share which is coming. It's going to be amazing here. It's [indistinct]. People organise themselves in close proximity to bike share stations. And then you have what I call mega [indistinct], something I think Asians understand intuitively and in the US it's been incredible frustrating and hard to get people to understand, yes we can afford high speed rail because the returns are so high. To the point now where private investors mostly in real estate are funding high speed rail in the US instead of the government because the returns are there. And they're going to make their money on the real estate. So again, keep doing what you're doing.

	<p>Same thing with the MTR system in Hong Kong, and your system here. Your system actually wither breaks even or makes money, one of the few in the world, maybe one of two or three.</p> <p>Where I do think there is some room for improvement though, is again in public space innovation. There's some great opportunities to take some parking spaces, alley spaces and in a very cheap way, to re-invent them. You can create more safety, you can couple it with art and beautification, and really give people amazing spaces for almost no money. These can be small budget projects that would add a lot of value. This is Haji Street. I think this is intuitively designed as a great public space, probably what, 100 years ago? So again, there are great examples in the past. We don't have to look necessarily all over the world or to the future. You have some great successes. And these re-inventions of public spaces have great returns. Big returns again, in safety, also in business, for retail businesses and in land value.</p>
30:23	<p>In Chicago we formalised this called "Activate". We've taken 56 unused plazas around the city and gradually re-inventing them in partnership with the private sector together with a non-profit. And we think of technology platforms, we are thinking of space as a platform for innovation and entrepreneurship. So you can have wifi, you can have the state of the union or state of the city playing on the TV screen. You can have local e-shop operating and it becomes a safer place too. When it's activated for people. I keep mispronouncing this... yes. This is a great example of something I've read, think you guys had right in the 1960s. this was the place to be back then. Wild music, people laughing and playing and eating and drinking. So the streets even here were not always only for cars.</p> <p>Now let's talk about big public space projects. Something you guys have done I think extremely well. We've done projects in Chicago like the Bloomingdale trail. We took old space that were used for rail, and we converted it to space for people. And we did it in record time for the US. In</p>



	<p>28 months we went to construction, raised 91 million dollars between the private and public sectors, did 500 land [indistinct] with land owners and now it's [indistinct] tax revenues. And it's being used by 5 neighbourhoods. It's the longest elevator trail in the world. Or the Chicago River Walk, which we used federal money then we coaxed the private sector basically to paying to [indistinct] by enhancing the public space that they used which was formerly very low used. People didn't even know the river walk existed. It wasn't contiguous and there were [indistinct] down there, to going to construction in 30 months and building a beautiful river walk where the businesses, some of them are between 3 to 400% of plan, whether they be retail boating projects, architecture tourism and so on and so forth. And again they are throwing off tax revenues for the cities. The faster we could do these projects the faster they could benefit people. For us, it was really key to get the private sectors input before we undertook the project. What would make it work for them before we did the big RFP? And when we did that, guess what? We aligned our incentives, we had a [indistinct] partnership and they were willing to pay three to four hundred percent more than they were before because it benefited them.</p>
32:53	<p>Ok, this is our last section. Let's talk about what's coming and when it's coming. This is my attempt at a joke. This is supposed to be like an elevated hyper loop. Some of you might have heard of the hyper loop. Two companies in the US are competing to have the first test track done. But look, 50% of the population live in cities now and by 2050, it's going to be 70%. A lot of new technology's coming. And I can tell you that a lot of people either don't think it's real, or they don't think it's coming very soon. And in the US it's been really great for the federal government to be bold and to have a public-private partnership around smart cities. And to award one city 50 million dollars which they are going to do in the next couple months – 8 finalists. Because they realise that we already have autonomous cars on the road. It's very real. And the auto companies are approaching it one way. They're basically tying together all the autonomous features that</p>

they already have, that they're developing and that they will eventually have level 3 or 4 autonomous vehicles probably by 2018, 2020, in that time range. Then you have Silicon Valley in the US as well as some companies, one of them based locally that my firm invested in, that are looking to get rid of the human altogether. So instead of gradually moving towards autonomous vehicles, starting by removing the problem which is us, we are fallible, we make mistakes, we dump coffee in our laps, we have two martinis when we leave work, and then we have an accident. By the way, it's not an accident, it's a crash. So I'll put this slide up. The guy was in Oklahoma last week and we're like no, that's never going to happen. That's crazy. How many of you think it's crazy? Put up your hand. Nobody? Right, one person. There's got to be at least one person. The total cost of a fatal crash is 99 billion dollars in the US. \$500 for every licensed driver. So it's inevitable that we will remove the human from the equation. When we do, the system is going to be a lot more efficient because you have two different technologies that are interacting. You got the autonomous vehicles and you got vehicle to vehicle communication. You put those two together then you layer on transportation service, nobody needs to own a car anymore. You see that bus in front? Second to the front? That bus is driving all the cars behind it. And if a deer jumps out in front of that car, the car 100 cars back knows instantly at the same time. So it becomes transit basically. Different forms of transit. And Singapore once again, along with New York, this company Nutonomy, I just went on the road in an autonomous car yesterday. And it works. And it was fascinating and fun. And a funny little anecdote, we were out there and one other investor was here from the US from Boston and we're driving around and a boar runs out in front of the car and it recognised that there was something there. I think it threw it for a loop because it had never seen a boar before, but these things learn. It's machine learning and now it knows what a boar is. So you can not worry about a boar getting in front of your autonomous vehicle and crashing it. The important thing to note here is that the innovation is happening at private sector speed. Meaning, profits are driving it, and if you take that and compare it with the exponential rate that

	<p>we are seeing in technology, as well as the ability to remove 45% of the cost of operating say, a taxi, you get rid of the driver, you can see this is happening very very fast. Very fast. Like before the end of this decade. And one of the reasons that government will be a partner in this, and not fight it. Even if they stand to lose parking revenues, other revenues, is that you can't argue with getting rid of fatalities. That number I showed you earlier, 1.24 million, can cut that by a million. And if we can get 50% plus of cars out of our city. By the way, if you look at these numbers, this is 50% period. In cities, where vehicles are likely to be shared because the business model is so strong, and I think the government intervention will also be strong, you're talking about up to 90% of cars gone within 10 to 15 years.</p>
36:55	<p>So think of the opportunity. Now I know a lot of people into active transportation, like myself. I'm into walking, biking, autonomous cars is just another car. I understand that but we have to embrace this change because you're talking about a way to get rid of parking on the street. We are talking about taking streets right here that have more space for parking than for cars driving and for people and being to actually create that bike lane that you've wanted. Or expanding that 3 foot sidewalk in some places. And so we look at some of the issues that we face today, and you realise that we can really transform our streets with minimal argument because we are going to be able to get rid of all that parking. We use up to 40% of our cities for parking, often in the down towns. So we have affordable housing crises, we have active transportation crises, we have wide thoroughfare. This is Perkins and Will. This is their idea of how to re-invent 40<sup>th</sup> Street in San Francisco. 1 parking space. A lot more green space. A lot more active transportation space. I think this is a huge opportunity that we can't ignore. This article's actually written in a fearful way. Will self-driving cars lead to grade separated cities? With people up in the air, on the ground,. I actually would look at it a different way. And say could we put the cars underground? I think Singapore certainly could. There are other places where it would be tough. But Chicago was originally designed for the cars to be underground</p>

	<p>in the CBD and somehow they ended up underground and above ground. But this is actually a huge opportunity if we needed 90% fewer cars in cities. So one of the reasons I went through all this history and talked about humans being on the planet for 200,000 years, because our frame of reference is 40 years, 55 years, 65 years, so, I wasn't looking at you sir, so our frame of reference is how long we have been on this earth. But we got to realise this is like brief moment in time. And so I think we will look back and say can you believe 20<sup>th</sup> century people used to drive cars everywhere and kill each other and park cars everywhere and we'll laugh at it. And this change is going to happen just as fast as we got rid of the horse. The horse was a primary mode of transportation and within 5 years, 10 years, it was relegated to the stable. And you'll be able to drive a car out in the country on a track but you won't in a city. And I worry that cities and governments and large corporations are not really ready. I was at the National League of Cities speaking and amazed that in their survey, granted their survey was probably a few months old, but 6% of the cities in the US were thinking of the effects of driverless technology even though the cars were already on the road. Level 2, 3 cars. And only 2%, 3 3% were taken into consideration TNCs, Uber, Lyft, Grab Taxi, when they're already operating in their city. So that shows the government is not necessarily on the ball in those cases. So there's a real need, I talk about this in the book, for citizens to expect more from corporations and government. And for governments to focus more on return on investment which again Singapore is very good at, and the private sector to be more focused on a triple bottom line approach to business where they were actually working towards doing good things and making money.</p>
40:02	<p>Government agencies, which again I'm very impressed here with the amount of cross-pollination of ideas, coordination and partnership, but often in cities you find that they operate in silos and they're not working towards the same goals. And we also have to understand that there are companies out there with great solutions. For governments, this happens to be urban engines where we tend to think about building hard infrastructure. There's</p>

also the soft side. Can we literally pay people to make better choices or charge them less to wait 15 minutes to jump on the MRT. Can behavioural economics play a role in easing the need to build new infrastructure? I think it can. So it's going to be very interesting to watch some of this play out. But fundamentally at the end of the day, coming back to the change management conversation, we have to understand that we have to accept the death of some things before we can get excited about the rebirth of things. And that is the quintessential Kubler-Ross change management model. And it's not just the public sector that's going to have to accept change. Entire industries are going to go away, including auto insurance. Including the way some of us are used to living, buying and selling large homes. I have a 3,000 square foot house. New business models. This is [indistinct] and Austin or [indistinct] where they will build you one modular home and then they will drive it across the country and park it in any city that you want. Here people are used to living in a few hundred square feet but for Americans this is a big change. Future compatibility in design, whether it's, if you're building a parking garage and in the US we are starting to do this, design the on ramps and off ramps. You could cut them off, run the A track, run the electrics so it can be converted to an office building in 10 years when we don't need parking anymore. Zonings are going to have to become more flexible so that we can repurpose spaces in single family homes that used to be for vehicle. There are lots of other technologies. I'm going to go fast now coz I don't want to bump into our time for Q and A. But other technologies like 3D printing are going to change the way we move goods and services. There are lots of ...ok, who has a smart phone, raise your hand. Everybody. There's got to be one person that doesn't. But it takes 20 tonnes of raw materials to create an iPhone. 20 tonnes. We weren't even recycling iPhones till about 4, 5 years ago. So in the future, you may walk into a FedEx, you may give them your old phone, they may print you a new phone. When I went to the CES show this year in Vegas, the big thing was 3D printing of glass. Within 2 months, people were talking about 3D printing of titanium. And now you can 3D print steel. So you can see a time very soon when

	<p>that's all going to change. And even retail's going to change. New Balance is 3D printing shoes. So once they have your measurements, you can just turn in your old shoes and get new ones anytime you want. This will affect how retail works, how our public spaces are used, how our private malls are used. They may become manufacturing facilities, for goods on the spot. I was just talking about 3D printing of vehicles. This car took 44 hours to print a month ago. Due to a new increase in technology, they can print it now. Because of the [indistinct] in the printer, 22 hours. And they think they can get it down to 8. So you walk into the showroom, pick out what you want, go home, come back the next morning and pick up your car. You can see how things are going to change. Production of food is moving into cities instead of out at farms. Better than organic. And big money now is flowing into these companies like Aeroponics in Newark. And the biggest shift will be, and most experts agree on this, the coming era of free energy within 25 years. Because we have been propping up oil companies for so long, we are finally going to stop doing it because people like Elon Musk are showing that these business models work. At least until everything is free.</p>
43:41	<p>And virtual reality and artificial intelligence have changed the way people come to meetings. Anthony Robbins. Who knows Tony Robbins, you know, self-help guy. Ok. So he now can beam in to places like Sydney Australia from his office in California and he's on stage just like I am. And he's giving a talk but he never has to travel 30 hours to get to Sydney so you can start to see how the travel industry is going to change. And you may be able to go shopping in Singapore without leaving your couch in Washington DC. So jumping ahead a little bit, the way we work is going to change, I was very happy meeting with your planners this morning. They're aware of this. Most places they aren't even thinking about this. They're thinking about this and they understand that people may work a lot less in the future in places like Singapore Who knows what the number one job for men is in the United States? Plumber? Close. Driver. Driver. Plumber's also a big one. So there's</p>

	<p>about 15 million driving jobs in the US. Those are all going to go away. This Mackenzie, an economist's study is fascinating because they study the future of work. And there are 2 things that stuck out to me. That basically our focus on stem, maybe not so good. Maybe it's creativity that is going to matter in the long run. A lot of the stem jobs will be automated, including computer programming. End of the next decade and a half, digital technology will dissolve the concept of work as we know it. The choice of words is important. Not change the nature of work, but literally dissolve how we work. Or if we work.</p>
45:02	<p>So, I will challenge you to think about, if you are going to be in your home, you're going to be in your neighbourhood 90% of the time, instead of 40% of the time, where do you want to live? Do you want to live in the left or on the right? I think it's pretty obvious. And so the places, like Singapore, and what you do with Singapore, these are the places that people will want to live. They went through the affluent and auto-dependent, they became transit-oriented, then they got rid of the cars, affluent, compact, TDM-focused, and young people, they want everything within 5 to 10 minutes of [indistinct]. By the way, empty nesters want the same thing. So old people and young people, when you poll them, they want the same thing. So with all this new technologies, easy to get focused on like autonomous cars, artificial intelligence and virtual reality and some of you are saying wait a minute I thought you said those are all good things. Well, yes, but we don't want to organise ourselves around all of these things. We want to use those as tools to get to the place that we want. But fundamentally, I think people will probably lead simpler lives in the future. Probably spend more time in their neighbourhoods. And I will tell you, ownership is pretty much dead in cities. Homes, appreciate, there's value there. Ownership of other things, not so much. And in the US, even home ownership for young people is really going down. So the autonomous vehicles in a lot of these technologies is just a means to an end. What we don't want to do, is to redesign our cities around the autonomous car, like we did in the 1950s with the combustion</p>

	<p>engine power car. We want to create wonderful spaces. We want to give people information so they know how to get around which is another thing I'm very impressed with here. We have to admit this isn't working and we can't build our way out of this problem. And when we think of things like autonomous cars, look what's happening in Europe? They're closing their city centres to automobiles, period. By 2019 in Oslo, 6 other cities within the next few years and the EU's committed to close all their down towns to cars by 2050. Norway, I told somebody 5 billion earlier, it's 1 billion dollars that they've committed to bicycle super highways. And you look at what they spent. By the way I learnt what Singapore spends 2500 dollars per person on health care. We spend 8700 in the US, with our car-oriented, processed food oriented system. So if you truly want to save money, you invest in the right things. You build the things that you want people to use and to do. And the suburbs that are successful, like Arlington outside DC, will become cities, will become cities connected to downtown Singapore by high speed rail. But I do think and look, I know that in some cases here it gets really hot, and you want to have the elevated walkway or the walkway underground. I'm not saying you shouldn't. but I think it would be a shame if we relegated the streets to autonomous cars And continue to relegate people to the background. And I think there's a huge opportunity to try and activate the space. You can still have the tunnel, and the bridge that's air conditioned but there's opportunity to make the streets more people oriented.</p>
47:59	<p>I'm not keeping up with that. This is an example of taking what we have today and really building a system, a sustainable society. And what it might look like. In the book, I talked about an autonomous, shared connected multi-modal future. How all these technologies can come together and be utilised to create the future that we want. Because we don't really have a choice. We are in a do or die situation right now. And we gotta make the change at least for the good of our children if not for ourselves. And by choosing policies and technologies that do prioritise happiness, and the US</p>



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	<p>is somewhere down there, like 18<sup>th</sup>, I think government can do a better job here and again we got to be honest with people. In the US, people think driving is free. It's not. It's the most heavily subsidised form of transportation. And we look at the health offsets of walking and biking. That infrastructure is eventually free. And transit is low cost. We got to be honest with people there. The private sector got to do their part in embracing this change. We got to let our government officials pilot things, try things. Let them experiment, let them make mistakes. It's very important. That's how we have most of the technology we have, including the iPhone and if we do that I think we can have truly great cities and a great Singapore. Thank you.</p>
<p>Emcee 49:29</p>	<p>Thank you Mr Klein. Ladies and Gentlemen, today we are going to try out a simple tool called Slido for our Q and A. this is to better address your questions and concerns. Please follow the instructions on screen and enter the event code in the website given. I would now like to invite Dr Chua to join Mr Klein on stage for the moderated discussion and Q and A. I will now hand the time over to Dr Chua.</p>
<p>CYL 50:23</p>	<p>I feel so excited after listening to you. All the grand plans about city planning. I'm sure all the audience here are equally excited. As the emcee mentioned, we are trying out a new system here. So what you have seen on the slides back here are some of the questions the audience has raised. But before we go into that perhaps share a little bit with us, Gabe, in terms of your thoughts. Understand you started off as a food truck, running a food truck then you went into city gov..you did your own car share system, bike share system before going into a few government agencies. So you have seen the market both from a private to a public perspective. Share with us a little bit your experience. Seems like a bottom up approach. How was it like?</p>
<p>GK</p>	<p>Si I grew up in retail; as a kid. My dad had, my dad did a lot of things. He was a civil rights activist. He was in a number of businesses. In fact he went to Japan in the mid-1950s and learnt about pressure sensitive tapes, like black electrical tape. We tend to think about technology as being all this.</p>

	<p>But back then, technology was about pressure sensitive tapes. So my dad became a businessman at a very young age, importing tapes from Japan into the United States then getting big contracts. The reason I mentioned that was that I grew up in a very entrepreneurial household and growing up in retail from the age of 5 till 25, really taught me the importance of customer service and listening to the customer and it also instilled in me this need for instant gratification. When I sell somebody a bike, they would ride out happy, like so happy. You'd see them buzz off on their bike and just be thrilled. So the reason I say that is that I get passion from seeing people happy, transportation and entrepreneurship. And in all the things I did, whether it was zip car or on the fly, the organic food truck, or working in telecom, which I actually didn't find interesting, I really think it was important to have passion. And I think that was what the government people saw in me and wanted me to bring to government.</p>
<p>CYL 53:27</p>	<p>Just another note before I plunge into two questions. In your book, you talk about public-private partnership and having been on both sides, you've been to the public sector, you've been to the private sector, now a lot of criticism has been raised about PPP and one of them is the fallacy that the private sector can manage risks better. And the other criticism is that in private sector the cost of capital is much higher than in public sector. So in your experience so far, in all the work you have done, how do you mitigate that and how do you promote PPP, especially the emerging markets here, in Singapore and elsewhere in Asia.</p>
<p>GK 54:13</p>	<p>So I have a much broader view of what a public-private partnership is. I fundamentally think it's about a relationship and then you figure out contractually how much risk you want to maintain on the public side and how much you want to transfer to the private side. But our bike share systems were public-private partnerships, even though we capitalised them. And I think when we get into trouble sometimes is wanting to offload our assets to the private sector. Let them own the public asset, like Chicago did with the parking meters before I got there by the way. They basically sold</p>

	<p>them to Morgan Stanley for 1.2 billion dollars, for 75 years and then Morgan Stanley made all the money back in 6 years and had control of the asset for the next 69 years so we couldn't do anything interesting with our public space unless we really put our thinking cap on. And I think people look at that, some of the toll road deals that have been done and they say uh, that's not good. But public-private partnership means a lot of different things. And when it's done properly, I think it's not just about risks. It's about expertise. Like for instance, I'm not sure who runs your rail system but there are companies like Serco, there are companies like Keolis, Transdev, so some of them operate systems on every continent. So you get the benefit of experience that we in DC at Metro, where we operate our own system, do not have. And so we continue to make a lot of mistakes but if Serco runs it, who runs a lot of the rail in London, they run Dubai, they run systems all over the world, I don't think we would experience some of those problems. And so what is government fundamentally good at? What are they not good at? And I think, I'm more interested in government playing air traffic controller and a travel agent, figuring out how to integrate the mesh of all the different modes, transportation for instance, and not in negotiating all the contracts and operating the system day to day. I think actually you lose some of the checks and balances.</p>
<p>CYL 56:53</p>	<p>On that note, let's have a look at some of the questions raised. I'll just go with the top of the list. We try to encourage more public transit, the rise of shared economy has extend made public private transport more affordable. What are your thoughts? Sounds like a conundrum here.</p>
<p>GK</p>	<p>That's great. I'm very interested in the death of fashion. We can come back to that one. I might have missed the first part of that conversation. I try to be fashionable. I think there is a fear. Like when Uber and Lyft first came out, there was a fear that, in the US, that they were taking transit trips. Now look at the data, what we are realising, when you have a robust rail system, like when you have Bart in San Francisco, Metro in DC, it's actually providing feeder trips. Same thing with bike share. People were concerned that bike</p>

	<p>share was taking transit trips and what we're finding, what we intuitively thought the data bears out, which is that bike share like in Washington, was removing trips that were at capacity. Like [indistinct] capacity like on the red line in DC. It's removing trips which we need and it's adding trips in the suburbs once we put stations out there. Now what these shared use programmes are doing is providing really good customer service because they're competing out there for customers. And I think they are causing some of the transit agencies to up their game. They are also now integrating some of these modes into their transit apps. And I talked a little bit about the ability in Montreal, Helsinki, to look at integrating payment. That's going to be very big in the future. Again, for the government to be more the travel agent, sort of picking winners and losers and I think if they do that well, they will be the backbone of the system and a lot of these providers will provide a lot of this first and last mile connectivity. But the problem is you have these agencies try to keep their fiefdoms. And some of their fiefdoms aren't working. Like the suburban bus service. Let it go. Let it go and provide a better quality private service maybe subsidise the private sector at one-tenth the cost to provide those trips and that's something that they're starting to look at.</p>
<p>CYL 01:00:00</p>	<p>Let's see. I think I'll excuse you from that question about fashion.</p>
<p>GK</p>	<p>What was the original fashion question? Oh. Should Singapore regulate clothing to encourage walking and biking? Actually, this has occurred to me. I know that most people wear slacks and a white shirt, or a shirt, I shouldn't say white shirt. I actually think that will be great. First of all showers in every building will be great. And I think the government is thinking of mandating that for future projects. But also, yea maybe people should be allowed to wear shorts. Maybe there should be deodorant spraying machines in every office. But what's more important to us? Having clean air to breathe and being in physically good shape? Or not smelling like sweat? Now, when you go to the Netherlands, people ride their bikes, it's</p>

	not 100 degrees but people ride their bikes everyday sometimes 20, 30 minutes and they don't shower in many cases. They just tolerate a bit of sweat. Maybe we need to do that too.
CYK	What about the next question here. What are your thoughts about the proposed plan in Singapore to open footpaths to bicycles and other mobility devices?
GK 01:01:31	Well, I've mixed feelings on this. I think if you're going to expand the footpaths, I'm not really sure what the definition of a footpath is, if it's a sidewalk, like I've seen some plans where adjacent to the sidewalk, they are adding a footpath. But I have to be honest with you guys. You have a lot of capacity. You have tremendous, 4, 5, 6 lane one way streets in some places. Just take the land away. It's not that big a deal. And I think the public has to let the government try it. You don't scare them into submission because you're going to freak out and tell the government that oh my god, they're taking a lane away and look there's nobody in the bike lane in the first few months because people don't know what to do with it. That's going to happen. Let me ask you this question. When you have to close a lane for construction of a building, do people freak out? No. this happens all the time. I was in Nashville, there are lanes that have been closed for 2 years because they price it so cheap for construction, the construction companies take the lanes forever. It's cheaper to store their equipment in the public traffic lane than on a private site, which we are working on fixing. So it's really about communication, about people understanding what's going on, expectations, setting expectations. I think a pilot where you take a lane away on a major thoroughfare for a year, see how it works, then allow people to wear tank tops to work. No, but seriously, you can fill those lanes with bikes. Perhaps, just ahead of launching bike share. Might be a good time to experiment with taking some lanes away. Once you do 1 or 2 like we did in Chicago, 100 will come very quickly, coz you'll see that nothing happens.

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CYL 01:03:47	One of the arguments if often about heat. The weather makes it impossible to ride here they argue, unless you have an air-conditioned bike, perhaps.
GK	Well, I was on a plane during April Fool's I guess. I missed the google self-driving bike video which is brilliant. Yea, you need air-conditioned bikes. Or just air condition the outdoors. No but one thing that people learn when they get on a bike in warm weather is it cools you down because you're moving. Walking you sweat a lot more than biking typically. This is a pretty flat place. I think if you loosen the dress codes a little bit, add showers in new buildings and yea, it's getting people on the bike the first time. Like you'll realise very quickly that you can get on the bike faster, you can get to work faster on the bike in most cases than on transit or driving a car. And you stay cool most of the way because it's flat. And once you do it once or twice, you're like oh.
CYL	It's a mind set change right?
GK	Yea. Same thing in the United States.
CYL	At this point, perhaps we open it up to the floor. Are there any questions from the audience besides this platform that we have here? If you like to pick up the mike, any questions anyone? Feel free to just raise your hands if you have any questions. If not, I will just go back to the screen and continue.
GK	This seems to be working pretty well because people don't have to get up and embarrassed and raise their hand. Just put it up here.
CYL 01:05:43	So the next question – you were a transport commissioner...
GK	Right great advocate of public spaces [indistinct]. So it's sort of like hip hop. Who likes hip hop here? So there's the golden age of American hip hop right, I would say it was like, some people say it's the early 90s. Some people say 85, 95. There was this magical time where there were mayors bringing in some interesting people. Now I's actually happening in a lot of

	<p>places. So it's not a bad thing. But when Jeanette came in and I was in DC, and we had the new Secretary of Transportation at the federal level under LaHood, I talk about in the book how while I was interviewing for the job and not taking it very seriously, Obama won the Presidency. And I was like wait a minute this is an amazing opportunity to make a change, and you had mayors and you have a lot of mayors now who are more immediately responsible to their constituents than any other politician in the American system. And so, breaking with the status quo, the federal level or the state level, look this is what the people want, they may not fund it, we are going to fund it ourselves, companies are demanding we have bike facilities, safe streets, the families moving in don't want cars running the streets anymore and they want great public spaces that are activated. So it's basically, honestly guys, it's giving people what they've been asking for, for a long time. Just having the courage to actually do it. There's always shrill minorities. It could be oil companies. It can be people that just don't get it. It can be certain business interests but like the bulk of people want the stuff. A lot of times they don't know they want it because they haven't seen it. I talk about that in the book too and that's why the pilots are so important. Once you show people what you can do, with paint, planters, whatever, and they see how different the streets are, then they want it.</p>
CYL	Then it's actually start small, try it out then roll it out to the rest of the city ...
GK	<p>Well, yea but you try it small a little bit then you can do projects like the River Walk, or Bloomingdale trail, very quickly, or 100 miles of bike facility because people would want it. And if you have new politician that's in office, whatever level is important, that's the time to really go gang busters. Typically. At least in the US, might be a little different here. People here are, maybe I'm wrong, seem more open to the government leading and trying things. But maybe I'm wrong about that. So feel free to laugh at me. There's a question right here.</p>
Question	[indistinct]

<p>GK 01:09:49</p>	<p>That's an excellent question. For those of you who couldn't hear, the question is why don't we basically put in tele work centres all over? An I think what I learnt today and what we are going to be talking about tomorrow in a session with government leaders is that this new development to the west is actually a new CBD. That's not exactly what you're talking about. In the DC area we are starting to see that. Tele work centres are starting to go up in the federal government, up in like Fairfax County. And that's why I want to talk about the future of work. People are going to be moving around a lot less in the future and that's going to be a good thing. That's one of the things I used to tell leaders in American cities – stop building highways. Stop building capacity. If you're going to build anything, build rail. Or build bus facilities. But if you don't have the highway, build rail. Take the existing space you have and re-allocate it and absolutely you like we don't have transportation problems. We have land use problems and so if you are moving thousands of people every morning into the CBD, yea, maybe you need another CBD as you're building, maybe you need tele work centres because these days, like I have 7 jobs, and all I need is an internet connection. I work from the aeroplane all the time. That's changing for a lot of people.</p>
<p>CYL 01:11:39</p>	<p>In a way you touch on that which is the concept of work has changed. It's no longer about work pace but it's the concept of work anywhere, work in the café, in the airplane, at home. The whole of concept of zoning has to change in some ways.</p>
<p>GK</p>	<p>Well, look at people's resumes now as compared to 10 years ago. I remember I was concerned about should I like have a 6 months gap in employment, people are going to think what was this guy doing? He only spent like 2 or 3 years at a job. Now the resumes aren't even really that important. Like you look at somebody's resume on Linked In they like have 5 jobs concurrently. One thing they've been doing for 10 years, 3 things they've been doing for 5 years. The nature of work has already changed. Like jobs. I know a lot of people in the US do not technically have a job</p>



	anymore. Just think, 50 years ago you went to work for Toyota you did that for 40 years and you retired. For most people that doesn't exist anymore.
CYL	Back then when you go to work, it's a place with a phone. And a desk. That's not the case anymore.
GK	Exactly. No. it's really about what you have up here and what you can offer people. But the things that, and this is sort of bad and good, the things that people used to do with their hands, including things like typing into keyboards and programming things, a lot of that is going to go away.
CYL	Which brings to a point then is our planning system, concept of zoning, blueprint zoning, blueprint plan, is that antiquated is that something that need to be refreshed?
GK	Yea, well I'm not an expert in zoning but I have a better understanding that I did 10 years ago. I think that, yea we have nimbyism too. The thing is like in Washington where I live, once somebody's been there for 5 years, they think they've been there for 100 years, they don't want anything to change. They don't want anybody to add a storey under their home. Yea so it's tough. That's the part of the change management that's very very tough. The same people want affordable housing. Well look guys if you don't allow density, coz you don't want more people in your neighbourhood, then you're not going to have affordable housing, you're not going to have the store in the corner that you want because not enough business to support it. So I think it's incumbent upon us to educate people also, on the trade-offs. Yes you can have more people in your community – something Asians intuitively don't mind I think, which is really great. The suburban land use patterns in the US have made people think that the dream is still to have as few people on your street as possible. We're getting away from it but it's slow. So zoning overlays or something that you see. In certain districts, the thing I'm most excited about it autonomous cars, upzoning people, creating affordable housing, more density and getting rid of parking. And incentivizing developers to build affordable housing by transferring the

	value from what they would have to build in parking. That's a really huge opportunity because we don't have the robust public housing system that you have.
CYL 01:15:30	Here's an exciting question. It's refreshing to hear from a former director of transport, we should reduce our reliance on cars. Mind sets and culture take time to change. How can we speed it up?
GK	Well, I mean sessions like these are great. You know, I think educating people are important. There are options and choices. You have a bold government. You have smart people. You have a fair amount of resource and capital. I'm very hopeful after spending 5 days here that you're going to see some positive changes. You've done the heavy lifting, like building the MRT and actually getting that done. I know you're still building it. That's the tough stuff. Re-allocating space in the streets, it seems tough because you got to overcome people's objections but it's actually relatively easy. And so creating pedestrian-safe, inviting spaces, adding the bike facilities, it's a lot of the soft stuff. I mean some of it is still hard infrastructure but it's relatively easy in comparison to the stuff you've already done and you got to do it because there will come a point where people will want to live in a place where you can cross the street. So we talked today about lowering streets. You know take a 5-lane arterial, you have the resource, drop it down and look at the ROI on the land which you are going to make accessible to development or make it park space in some cases and the land around the park space will shoot through the roof in terms of value. Now then you have to deal with the affordable housing but then you guys have dealt with it a lot better than most places.
CYL 01:17:40	So there you go, government officials in the room. You are? Question for you sir?
Question	I'm sure you're aware that cars in Singapore are the world's most expensive cars. Do the policies, once the person has spent a good chunk of money to get a car, they want to use it as much as possible and even more. They use

	<p>it where it doesn't make sense because I must use my car, I spent all this money. So how do you see that we can change that?</p>
GK	<p>It's a big problem in the US and we don't have the \$40,000 to \$60,000 tax. I think one of the issues you have is that the cars become a bit of a status symbol here like it is in the United States. If you are willing to spend the \$40 to \$60 grand. We were at a restaurant today and I was amazed to see sharks fin soup on the menu. So I asked the waiter, is that sharks fin soup where they cut the whole fin off and the whole shark is sort of goes to waste? Anyway the waitress didn't appreciate my line of questioning. But the other people at the table said yea but notice we all ordered the vegetable soup. So I'll have the vegetable soup. So when I started in DC as the transportation commissioner, and I started riding my bike everywhere, people thought I was loopy. You know, nobody did that. Like the mayor's in the black car. I had a driver. I had an SUV I could just...Now you go to a meeting and you're a director, you're carrying your bike helmet and it's looked up to. And if you drove there, you sort of don't tell anybody that you drove there. That's over a 7 year period so the culture can shift quickly, whether it's people thinking shark fins soup is not cool or riding your bike is cool. But somebody has got to make the first bold move, to actually put in the facilities, put in the bike share, government's going to have to lead on that, hopefully some of you will support it, and the business folks will support it and you or I and the developers coz they will understand the increase of the...it's a pro-business thing, also pro-health. And then you'll have...Beyonce rides her bike in New York. Who knows who Beyonce is? I assume most of you.. Serena Williams rides her bike. The Mayor of Chicago rides his bike. So you got to lead by example. The great thing about bike share by the way, is the people who wouldn't have though to ride a bike before start to see people like them. Obese people see other obese people riding a bike. Older people, elderly people see other elderly people riding a bike. People of colour see other people of colour riding a bike. So it becomes</p>

	<p>very important in terms of trying it. And feeling like maybe this is for me. And that's really what we're up against.</p>
CYL	<p>You need a societal change in habits. It's not related to the question up there. What if the car is a status symbol? So you do need society to change.</p>
GK	<p>So we have to accept that we can all drive our cars everywhere all the time. But like I was showing, there was some personal responsibility then for the outcome. Let me tell you something. I drive because there are some cases where we don't have a good transit system. Or it's pouring rain or whatever the issue is right? But it should be the exception not the rule and if you can use cars that share mobility, a car can be more efficient than a bus if all 4 seats are full. So it's not that the car is bad. It's the way we use it for everything all the time once we make the investment in it, that is bad.</p>
Question 01:22:20	<p>I want to share an anecdote to address your question. So I was in Hong Kong couple weeks ago and I had to get to somewhere at 5am, so I called an Uber and someone showed up in a brand new, I checked the price, \$200,000 Tesla to pick me up for my Uber drive at 5am. I said to myself why did the Uber driver afford a Tesla. Then it occurred to me that the guy who owned the Tesla probably did not know that the driver was picking me up at 5am. And so it occurred to me that people create their own solutions. If you have an expensive car and you want to offset some of that investment cost, do a deal with the driver. Let him drive it around with an Uber and contribute to the shared economy.</p>
GK	<p>Well, this is happening. There are services like Turo, and Get Around in the United States where people do buy a car and they put it into a fleet. Fiat did a deal with Get Around so you buy a Fiat with Get Around and they guarantee that you make money on it. But basically it will be used by other people most of the time. So this fractional ownership model for vehicles is one way. Peer to peer car sharing is another way where people still buy cars or people just don't buy cars anymore. So these models are going to play out. But the exciting thing is business models are focused on efficiency</p>

	<p>because that's how they make their money. And car ownership is one of the least efficient, biggest wastes of money that we all have. So if they can figure out a better model that's also better for the planet, this is what entrepreneurship should be all about, by all means. And they can involve cars but 90% fewer I hope.</p>
CYL	<p>We have 2 more minutes but we have a lot of questions here but perhaps one last question from the floor, if not, I will look back at the screen. So feel free if you want to raise your hands. This question here, who shares the cost of road tax if roads are shared by different modes of transport – cars, bikes, people?</p>
GK 01:24:51	<p>Well, what do you want people to do? That's why I put the fully loaded societal cost. You want people to bike and walk right? So are we going to tax people the shoes because we are using the sidewalk? No. I think you want to not subsidise but charge for the behaviour that you don't want. Cigarettes, cars, congestion tax. I'm just going to keep going because we're almost out of time. [indistinct] other than air conditioning can we...oops. Oh can we have more shaded biking paths, more trees and sheltered bike ways? Absolutely and we talked about that today. Shade is the big one. We were at the shopping mall and I might be inaccurate in this but Jurong, air is moved around the shopping mall to sort of function like air conditioning but there's not as much air conditioning because it's opened to the elements. And so I think there might be an interesting combination of shade trees, electric bicycles or electric bike share which is awesome, and some sort of technology to move the air that might, it could be as simple as fans that are powered by solar, which I've seen. Or it could be something more complex. I think you can make it pretty darn pleasant. And with an electric bike, to be honest, it's a lot like those electric scooters you got, it's just faster. More stable.</p> <p>Autonomous buses? Absolutely. The original autonomous vehicle, shared use autonomous vehicle was the airplane. It's been autonomous for 30 years,</p>

	getting more so, it's been shared use. People don't generally buy airplanes. We already have autonomous trains. The new system in Dubai is autonomous. Buses will be next.
CYL 01:27:05	How do you balance public sector social and community benefits with private sector ROIs? At times these 2 elements do not align.
GK	So I don't want to just plug my book but you really should read the book because it does, basically this is what the book is about. It's about how you align the incentives. And it's very doable. But we give like \$18 billion a year in tax breaks to companies like Exxon Mobil so what the hell do you expect? That's a really stupid way to get people off of oil.
CYL	Maybe one last question maybe not from there but as a takeaway for the audience here, in your book too, you talk about some of the regulatories and government principles and guidelines are the key in re-shaping urban design, urban concepts and trend movements so what would be your advice to the audience in the room here, what are the key things as government officials that should look at in order to effect the change you are talking about, that you propose in your book. Using more public transport, allowing more autonomous vehicles, what kind of changes should they embrace?
GK	At least in the United States, there's so much propaganda. We think that if we stop drilling for oil, we're going to hurt our economy. Bikes are for either rich white people or poor Latin people. Which is it? There are so many lies and propaganda and so you have to be honest and I find that if you follow the money, you can get there. And for instance, if you build a bike lane in the United States, it has 64 times the return on investment that a car lane does. So I'm really a business person and a capitalist, maybe a socially oriented capitalist. Not a planner or an engineer and I tend to look at where are the real returns? And you got to look at the whole thing, you got to look at people's health. You got to look at the environment because we are going to spend trillions of dollars trying to clean up the mess that we've created with fossil fuels if we live through it. So don't listen to propaganda, follow

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	the money and look at the long term economic decisions that we make and I think it's going to be pretty easy.
CYL	Thank you. On that note, please join me in thanking Mr Gabe Klein. Thank you.
	[Recording ends at 01:31:43]