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Future of Transport





The Global Challenge

We live in a world at the point of significant change: Around half of us recognise that we need to travel less, just at the same time as the other half want to travel more. There is little doubt that, without a major technology shift, those in the developed, world who are used to high levels of personal mobility, cannot all continue to behave in the same way as they have done in the past. While in the fast-growing emerging economies, with burgeoning middle classes, many see the desire for individual car ownership as a credible and realistic aim. We are at a tipping point between the two seemingly opposing drivers of sustainability and aspiration. Our primary challenge is in balancing these two.

Much large scale transport change takes place over 20 years rather than ten so, given these timescales, in the next decade we face three major issues; providing mass mobility to the growing global community in a sustainable manner; changing the behaviour and actions of many in the developed world; and making the right choices to set the scene for a practical a low-carbon, global transport system after 2020.

- There are few who would say that mobility in the likes of India and China should be restricted or who would deny citizens in such countries the same freedom of movement that the US and Europe have enjoyed. However most would agree that the route taken in the 20th century cannot be followed in the 21st. Implementing the policies and making the large scale investments required to provide sustainable transport infrastructures in every country involve both bold decisions and deep pockets, but, without a major shift in the next couple of years, the long term consequences on, for example, carbon emissions will be dire. Major transport solutions need to be green, affordable and desirable.
- In terms of the US and European lifestyles that provide the template for others to follow, we must make visible and significant steps and soon. This is not just about shifting away from the SUV, three car household culture often characterised in the media, but involves significant changes beyond switching to smaller, more fuel efficient vehicles. The developed world, and the US in particular, must embrace public transport options both within and between cities, and

at the same time proactively regulating for behaviour changing policies such as congestion charging, road pricing and speed control. This can be achieved a much through designing transport that people want to be part of as by regulation.

- In terms of future choices for the post 2020 world, we already know the decisions that need to be made: Whether to being electric, hydrogen or bio-fuel powered, personal transport has to switch from fossil fuels and this has to happen sooner rather than later; low CO2 options for aviation and shipping have to be found; and an accelerated rollout of integrated mass transit systems has to occur. But, again, this has to be achieved in a manner that attracts consumers.

Of all nations, the US faces many of the greatest obstacles but it also could open the doors to new solutions. The American transportation system has been under-funded and is difficult and costly to maintain: According to the American Society of Civil Engineers it will cost \$1.6 trillion to repair critical infrastructure, never mind make the investments to accommodate future demands. While this might sound like gloom, it should be noted that California, as America's most influential state, raises its ambitions, so they become the benchmark for the US - and this has traditionally had a catalytic effect on global standards. Over the next decade, proactive local policies from Sacramento may well continue to reach globally. Although other nations are thinking well ahead of the US in transport policy, we should not ignore the significant influence that key Federal and State regulations have around the world.

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Options and Possibilities

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In each area of the transport sector, the choices available to us between now and 2020 vary considerably. Some have little freedom to change and others have the potential for major shifts.

Although the aviation industry attracts lots of attention, the real options for change available in the next decade are relatively limited: Rising demand from both low-cost and premium passengers keen to fly shows little sign of abating, airfreight traffic is forecast to double in the next ten years and both Boeing and Airbus have healthy future order books. Even if reduced travel occurs in European and US markets, given the competition between the three main alliances and the growth in Asian passenger and freight miles, a net global increase by 2020 is highly probable. Moreover, as the average plane is in service for around 30 years, the cycle time to change the fleet means that more fuel efficient planes, such as the Airbus 380 and the Boeing Dreamliner, will take a good while to have significant impact. Other than the possible introduction of bio-fuels into the aviation fuel mix, no major technological change will have impact in the next decade: While governments and media like to talk up the contribution of aviation to global warming, it is only responsible for 2% of carbon emissions and has no credible alternative energy platform available in the medium term. As more people desire to fly, despite the cost, for many in the sector, the next ten years will be more an opportunity for improved efficiency of the overall system while continuing to compete for customers on the experience.

The shipping industry is however a focus for potential change. Not only does it contribute more than 5% of global CO₂ emissions, but inefficiency has been built into the system. Over the next few years we can therefore expect a convergence of existing GPS, loading and navigation technologies to enable more efficient routing and speed of transit of the world's merchant fleet. However, although retrofit technologies such as high tech sails are much hyped, again, given

the time to change the fleet, the likelihood of mass impact in the next decade is limited. Given continuing economic globalisation, demand for more not less shipping between sources of raw materials, production centres and primary markets, will steadily increase.

Urban public transport systems covering bus, rail, tram and taxi are all areas of government and industry focus: For example, the French government has recently announced a €20bn investment in the construction of the world's largest automated rapid transit line circling Paris, scheduled for completion by 2020. Delhi has gained significant praise for switching its taxi fleet to LPG and Dubai is now promoting its newly opened urban transit system. As cities around the world seek to replicate the models of modern mobility efficiency such as the integrated urban transport systems found in Munich and Vienna, we can expect further announcements of similar investments in the cities which can afford it.

Turning to inter-urban transport, there is little doubt that China is the now pacesetter for change. Recognising both the challenge and the benefit in increasing the speed of travel across the country, China is investing over \$1 trillion in expanding its rail network to 120,000km by 2020 - the second largest public works program in history. Like Japan, South Korea, France, Spain and Germany before, China is reshaping its landscape around train services by investing in a mix of both very high speed rail (350kph) and high speed rail (125-150kph) that will be the global benchmark for mass transit systems: Cargo transport and passenger transport is being separated, double track artery lines are being electrified and transport hubs are being built in 196 cities. The decisions have already been made and the ambition will be implemented. However, other



countries, yet to take such bold steps forward, may not be able to deliver material change by 2020.

Given the above, by 2020, I see that further significant change can only really be achieved in the area of

personal mobility. Although ten years is barely two design cycles in the automotive sector, with the right support and leadership, we have the opportunity to change the game in terms of both sustainability and aspiration.

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Proposed Way Forward

Over the next decade, some predict that upwards of an extra 300 million people will gain access to their own cars. By contrast in the whole of the past century Ford only produced 90 million vehicles. Some consumers will seek to make choices based on sustainability issues but most will continue to aspire to have the best products they can. While the two are in no way independent, as more and more manufacturers join the likes of Renault and Toyota in announcing all new electric and hybrid ranges for launch in 2012, we, as individuals, will be attracted to rent, buy or lease the vehicles that not only meet our needs but also say something special: Because it creates the aspiration by which many other areas judge progress, the luxury market in which Jaguar plays a key role will continue to be a primary source of influence on consumer choice across the sector.

I see that luxury market buyers increasingly want 'better not more'. I believe that this trend will increase as people seek to buy items of higher quality, greater intellectual depth and perceived value. We will move away from the "Bling Bling" culture that has been with us for the last eight years. The decline of the SUV market is already heralding a shift in the way car companies as such are positioning themselves to express a more environmentally responsible message over just the car's performance: The new luxury 5 door vehicles are not SUVs but "fast backs" like the BMW 5 Series Gran Turismo, Audi Sportback and Lexus LF-Ch Hybrid concepts which will have as much design influence in the US market as they do in Europe and Japan.

Luxury goods buyers, I believe, will want to have items that are visually more discreet: At the height of the credit crunch, shoppers on New York's 5th Avenue were disguising their designer label purchases in brown bags

- this may not be a short term fad. In other markets, we are leaving the era of buying disposable IKEA-esque goods and seeking items that offer longevity and quality - a future heirloom maybe? This is, in some ways, a return to the values of previous generations.

An example from outside the transport sector that supports this is the Slow Food movement which is now coming of age. Originally established in 1989 as a reaction to the growth of fast food, Slow Food focuses more on enjoyment, quality and the effect upon others - an interesting parallel to the use of transport.

Although for many, perhaps the greatest statement of one's personal freedom and, ultimately, individuality is still the car. For others their buying tastes are changing and the consumers' definition of status and how a car features in their lives is shifting: A recent survey of 18-24 year olds of their top five most valued possessions

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showed cars to be very low or non-existent as a priority for this influential community. Members of this group will one day be influencing how car companies cater for their needs, tastes and aspirations.

I believe, society will react to the presentation of a number of influences in car design - from increased globalisation and greater international collaboration between manufacturers, government policy and climate change regulation through to the shift in the balance of wealth and the cultural influence of growing eastern markets. As globalisation continues, national identity and ultimate individuality will increase as a key factor in design differentiation. Well recognised in such brands as Citroen which bring French values to the fore, may well be joined by new brands reflecting Chinese and Indian values. Indeed, as the balance of wealth changes

between the East and West, we can expect both new global marques to emerge as well as new market niches that encourage more vehicles to be more clearly Asian in values. The traditional cyclical product needs of the US will be increasingly challenged by new luxury car markets: I will be interested to see how the success and wealth growth in such countries as Russia and India will impact the tastes and trends in the west.

While we can clearly see the trajectory of more efficient vehicles, many of which may be smaller than today's, we can also see the role of luxury setting the ambition and attracting consumers across all platforms: Although traditionally associated with large four-door vehicles, it will be interesting to see if any luxury marques will also migrate to smaller platforms.





Impacts and Implications

I see multiple implications going forward. Foremost, driven by the inevitable rise in personal mobility, it is clear that we will see more small cars. These will not only be new, mass access, low-cost vehicles such as Tata's Nano, but could also include some luxury marques: Aston Martin are reported to be currently developing a concept based on the Toyota IQ 'commuter car' named Cygnet. However, with advancing fuel and alternative power technology I am confident that luxury cars will still be able to offer a travel experience to the same standards as currently enjoyed by consumers - except that this will increasingly need to be "guilt free". This is a challenge that car manufacturers must overcome in order to continue to offer true luxury which has always been a measure of spaciousness, refinement and exclusivity. For me, it will be interesting to see if any luxury car companies attempt to apply their brand values to the urban commuter segment and similar historically "no-go" segments. If they do, will they be able to do so successfully with integrity and authenticity?

With an aging population and the affordability of personal transport as certain mega trends, I can see a huge increase in the introduction of new traffic control systems including congestion charging and even a pricing mechanism based upon the size of your vehicle as well as the power of your car. Although the concept of intelligent highways has been much discussed over the years, the reality has taken a long time to become main-stream. With more embedded intelligence such as collision avoidance already available in some high end cars, over the next decade we can see smart mobility coming into place: Through combinations of the GPS and mobile tracking of vehicles that are in some markets today together with the need for wireless traffic management systems in overcrowded mega-cities, smart cars and smart networks will converge to deliver the first global phase of smart mobility. I believe that the consumer's reaction to the effect on their freedom in such a world could prove pivotal to the

development of these systems. After all, the car is possibly the most powerful expression of freedom and for a consumer product it offers the greatest possible level of user interaction whilst delivering great personal convenience and enjoyment. Design trends tend to last between 5 and 10 years; for designers, the ends of these trends cycles provide exciting opportunities for change as much as they provide a challenge for strategists to guide investments to capitalise on the opportunities.

I believe that the next few years will be the time when new products are launched that successfully balances sustainability and aspiration. Whether in small urban commuter vehicles or more efficient larger cars, consumer choice will continue to play a major role: Matching together sustainability and aspiration provides equal opportunity across the whole of the transport system.

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