

Mobility Transitions: Proposed way forward



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Introduction

Sustainability transitions seem to be the dominant theme of our times. There has been growing international consensus since the 1970s for shifting to a sustainable mode of production, distribution, and consumption of resources in all facets of life (WCED 1987). The transport sector, with its contribution of 25% global greenhouse gas (GHG) emissions (IPCC 2007), is not excepted. There have been calls for transitioning to the transport systems which are socially just (Banister, 2008a; Martens, 2017), economically viable (Millsap, 2016) and environmentally sustainable (Davies et al., 2009; Moriarty & Honnery, 2008). Such transitions in transport and sociological studies have been conceptualized as mobility transitions (Sheller, 2018). The current car-dominated mobility regime, (Cosgrove et al. 2009) termed ‘automobility’ by Urry (2004), is prone to inequitable socio-economic and environmental outcomes (Banister 2008; Farmer 2011; IPCC 2007; Sheller 2018). Consequently, there are calls for transitioning away from it, though the destination of such transitions is yet unknown (Sheller, 2018). There are multidisciplinary perspectives on mobility transitions originating from urban planning, sociology, geography, and engineering. Critically reviewing such perspectives is important for advocating a normative vision for future mobilities and wellbeing of socio-environmental systems. This paper aims to do the same.

In doing so, this manuscript critically analyses literature on land-based mobility transitions at the scale of metropolitan region. It does not consider literature on sea and air-based travel media, however. The document is structured as follows. The next section establishes the need for mobility transitions. The subsequent section presents and critiques mobility transitions’ literature originating from the perspectives of urban design (Cervero et al., 2016; Jabareen, 2006), technology (Bouton et al., 2015; Moriarty & Honnery, 2008), and mobility justice (Martens, 2017; Sheller, 2018). Subsequently, a radical approach, “immotility as resilience” is discussed (Ferreira, Bertolini, and Næss 2017, p.1) along with an idea of transit-fusion (Currie, 2018). Before conclusion, the paper highlights the need for exploring social and cultural conditions under which the people will take up sustainable modes of transport and reduce GHG emissions.

Why Transition?

There have been several negative externalities attached with the current regime of automobility. Urry (2004) argues that car, with its wider socio-technical relations with steel, aluminum, and oil industries, is a quintessential product of western capitalism. It thrives on publicly subsidized highways, tollways, and parking spaces at the expense of public transport (Farmer, 2011; Sheller, 2018). Evidence suggests that accessibility to transport systems in such regime is mediated by income levels (Banister, 2018), race (Farmer, 2011), gender and ability (Yon & Nadimpalli, 2017). In addition to equity issues, the automobility severs communities by busy roads (Mitchard et al. 2011;

Rosenbloom 2007), decreases livability (Vuchic 1999), and increases health risks (Davies et al., 2009) by causing pollution related diseases such as asthma. Moreover, car-dominated regime contributes to climate change through production of GHG emissions, has more than doubled to 7.0 Gt eq CO₂ since 1970 (Sheller 2015). IPCC (2007) estimates that, at present rates, the GHG emissions from transportation sector may double by 2050. Besides that, on average, a total of 1.25 million deaths are related to transport globally (Sheller 2015). Lastly, congestion in urban centres has become a major problem of automobility (Daley 2011). In Australia, the cost of congestion is expected to rise to \$20.4 billion by 2020 (Bureau of Transport and Regional Economics 2007). It is in such a backdrop that multidisciplinary perspectives on mobility transitions have been proposed.

How favourable outcomes can be achieved?

The urban design-based perspective proposes reduction in demand for travel through improvement in urban design. Jabareen, (2006) and recently Cervero et al., (2016), argue that trips generated for travelling to work and play can be minimized by reducing urban sprawl, increasing density, and promoting mixed used developments. They contend that the current spatial separation of residential and work locations generates most of the traffic that needs management through placement of live, work and play activities within mixed used developments located at walkable or cyclable distances. Cervero et al. (2016), in addition, contend for improving the amenity of walkable and cyclable realm through placemaking along with discouraging vehicular traffic on the street through speed controls, parking measures and prioritization of pedestrians. Several iterations of these solutions with names such as ‘complete street’, ‘livable city’, ‘transit-oriented development (TOD) (Newman 2009)’ have been proposed but they remain far from complete solutions in themselves. According to Banister, (2008b), such solutions consider travel only as a derived demand and do not consider travel for leisure purposes. Moreover, Sheller (2018) contends that placemaking, and amenity interventions attract affluent residents to such locales and push out the existing poor residents thus gentrifying the neighbourhood in the process. She cites examples from developing and developing countries that such interventions are not inclusive and equitable.

Technological perspectives on mobility transitions have generated a considerable interest recently. Connected, autonomous, shared, electric (CASE), mobilities have been proposed as a panacea for problems of automobility. Ross (2016), Bouton et al., (2015) and Fulton et al. (2017), believe in the technological solutions to the problems of automobility. Technological solutions foresee a future where demand for travel trips is managed by application-based web platforms which connect a fleet of electric driverless cars. Fulton et al. (2017) claim that such a scenario would cut 80% of transport related GHG emissions and reduce 75% car traffic on the roads. Ross (2016) portends an end to public transport in such a scenario. However, Morozov (2014) and

Sheller (2018) dismiss such innovative technological solutionism as ignorant of the underlying power relations that sustain the current regime of automobility. Sheller (2018) also warns that such a regime may replace old fossil fuel-based hegemonies with those of mineral interests that might source lithium batteries for such transition. Currie, (2018), based on the ride-share and car occupancy data of services such as Uber and Lyft, contends that the car occupancy is on the decline worldwide and what is being pitched as a ride-share is actually a car-share scheme. He further claims that autonomous or driverless technology is not a reality yet and, hence, there is a possibility that it fails like other technological dreams such as Sinclair, Hovercraft, and flying car etc. On the other hand, Millsap, (2016) doubts equitable uptake of such mobilities given they precondition ownership of a smartphone which is not possible for everyone. Similarly, Mokhtarian, (2018) based on the travel time typologies of a utopian autonomous vehicles' (AVs) environment, predicts that instead of lowering congestion, AVs can increase congestion by increasing travel trips. Such additional trips may be generated within the travel time saved through efficient trip chaining and smart technology of AVs.

Mobility justice theories advocate for inclusivity and equity in mobility transitions. Such a normative agenda stems from Kaufmann et al.'s (2004) conception of 'mobility as a capital' which can be exchanged with any other type of capital and, therefore, demands distributive fairness. Later iterations of the need for such transition have been Martens', (2017) 'transport justice', Sheller's (2018) 'mobility justice' and Banister's, (2019) 'transport for all' visions. Such mobility transitions critique the unequal accessibility that the current automobility regime provides to low-income classes, racial and gendered minorities, and people with disabilities. Sheller (2018) argues that the current regime caters to the needs of able-bodied white male rush hour commuter. Banister, (2019) notes how poor must spend more time on public transport in early morning commutes when rich cruise past on paid toll-roads in their luxury SUVs. Martens (2017) demands procedural fairness in transport planning by considering severity of transport disadvantage while planning for transport. Wajcman (1991) complains that current regime does not cater to the travel trajectories of females which are different from their male counterparts and at different times of the day. Farmer, (2011) reports how unequal access to transport translated into racial segregation in Chicago USA. Such normative agendas, however, lack practical solutions for remedying the ills of contemporary mobilities. Only Martens (2017) gives a stepwise guide to plan equitable and fair outcomes in transport systems. He too, however, does not specify a mode choice for such transitions. The best remedy with all such theorists is some mode away from the car as enunciated in Dennis and Urry's (2009) landmark book, 'away from car'. Also, it remains unclear how such agenda will materialize under the prevailing hegemony of western capitalism (Gleeson, 2017).

Radical approaches to mobility transition are not uncommon. Moriarty & Honnery, (2008) and Ferreira et al., (2017) argue for strategic reorientation in conceiving mobilities. Moriarty and Honnery (2008) consider that wicked problems of climate change and fast depleting oil reserves cannot be remedied through technological fixes and fuel-efficient vehicles within the limited time available to humanity. They, therefore, argue that future transport planning should consider low mobility scenarios. In the same vein, Ferreira et al., (2017) challenge Kaufmann et al.'s (2004) 'mobility as a capital' thesis and propose 'immotility as resilience' theory. Based on Tainter's (1988) complexity theory, they contend that complexity in human systems has reached such a threshold that further technological interventions may breakdown the entire socio-ecological system. They, therefore, argue for 'localism' against 'globalism' as a favoured course for mobility transitions. In their conceptualization, localism maintains access through proximity-maintained interactions as against the transport-maintained arrangements of globalism. Such a proposition considers once in a lifetime international travel. However, given its utopian nature, Ferreira et al. (2017) advance 'localism without activism' (p.21). They themselves consider the need for travel in disasters, terrorist actions, pandemics etc. but still they consider that such scenarios should be explored. It is, however, unclear that how the contemporary world that thrives on connectivity and mobility can move back in time? The current post-Covid-19 world might afford a good starting point for such discussions.

Transit-fusion is yet another approach to mobility transitions. Currie, (2018) while dismissing the hype around autonomous cars, proposes transport planning that combines good features of better performing modes. He contends that public transport is the future of transport as it provides most features of much hyped CASE (connected, autonomous, shared, electric) mobilities. He reports that the automation of trains is already at an advanced stage while driverless trains are already operating in Vancouver, Barcelona, and London (UITP 2011). Similarly, he claims that car based shared mobility data is a farce as the often-cited ride share data by companies such as Uber and Lyft do not represent ride share between passengers, but it shows the sharing between the cars. He argues that the true shared mobilities are provided by public transport in which trains provide shared mobilities to approximately 2000 people while buses provide shared mobilities to around 50 people. He further advocates for provision of dedicated tracks and priority to buses in urban areas like Bus Rapid Transit (BRT) systems. BRT systems provide dedicated access to buses within fenced tracks which are inaccessible to other transport media. This proposition, however, does not address ways to neutralize the contemporary car culture and the differential power geometries attached with it (Sheller 2018). It also does not address perennial inefficiency in suburban public transit (Mees 2009). Lastly, it does not address issues of equity, inclusivity, and the ways to incorporate severity of transport advantage into transport planning process (Martens, 2017).

Conclusion

Reflections on the mobility transitions literature offer valuable insights. Most of the propositions, except, the technological regime, envision a future away from the automobility. Some conceive such transition at neighbourhood level (Cervero et al., 2016) others at global scale (Bouton et al., 2015), still others at systemic level (Banister, 2019; Sheller, 2018) while some question the philosophical moorings of the current systems (Martens, 2017). However, we cannot separate these mobility transitions from the ideological background of the disciplines from which they emanate (Henderson, 2020). In doing so, it can be argued, that all propositions take a linear view of the progression of time. Disruptions, such as the current pandemic, cannot fit into our modellings for future scenarios. Moreover, planning for future suffers from some degree of optimism bias as Godet, (2002) quips that we tend to overestimate the prospects for growth and underestimate the power of inertia. Thus, the transformative potential of such mobility transition theories rests on several factors not all of whom are absolutely under control of planners, and policy makers.

In conclusion, literature on mobility transitions continues to be expanded and enriched. The urban planners propose to develop compact mixed used developments that would reduce the need for long distance travels. The engineers envision ubiquity of connected, autonomous, shared, and electric vehicles in future that would reduce GHG emissions, minimize congestion and reduce fatalities on roads. Similarly, propositions based on theories of social justice challenge the dynamics of power relations that create and perpetuate uneven access to transport systems based on class, race, and gender. Radical theorists on mobility transitions advocate for strategic reorientation of transport systems and propose low mobility scenarios that. These propositions argue for promotion of proximity-maintained interactions of localism as against transport-maintained interactions of globalism. However, even with such wealth of theories on mobility transitions, one fails to enlist literature that explores socio-cultural conditions that attract and retain people to car based mobilities. Exploration of such socio-cultural conditions might prove helpful in mediating a shift away from car based mobilities and help in reduction of GHG emissions as well.

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