

The Future of Mobility: Items of Interest

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1/4/18

Ref: Geography 2050: The Future of Mobility, American Geographical Society, November 2017

Introduction

This short note is to capture a few of the major points that occur to me after the conclusion of the conference. There is not expectation that all of this, or perhaps any of it, is original. All of these matters may well have been thoroughly resolved and it's simply a matter of educating myself.

The quality of thought and expression that follows varies in terms of its comprehensive nature and critical focus. One has to start somewhere.

The Dynamics of Transition from 0 AEV to 0 IOIEC

Ref: Rethinking Transportation 2020-2030 (Arbib & Seba, 2017).

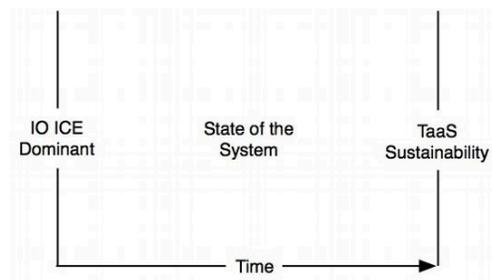
The following was posted to the Disruption, Implications, Choices: RethinkX Discussion Group on LinkedIn on July 31, 2017. No response as of November 25, 2017.

Further to Rethinking Transportation 2020-2030

Of late I've been thinking about the transition from IO ICE to TaaS. How does the state of the system change as the transition is made?

For example, how will the state change based upon IO ICE/A-EV? I was wondering about how I might react if, in an IO ICE, I find myself on an expressway with many A-EV.

Jim



My updated view is that 0 AEV refers to the left edge of the graphic and 0 IOIEC refers to the right edge.

How will this transition be made?

What are the state changes that the system will undergo?

My particular concern is about human behavior. In an e-mail to James Arbib of November 20, 2017 I said, "I'm concerned as to the reaction of human driver, especially those more advanced in age, amid vehicles that do not look like cars, have no drivers, and behave in a synchronous fashion that is in conflict with human experience."

The Impact of Separate Ownership of Fixed and Mobile Assets

Examples abound of this dichotomy throughout the global transportation industry and others (health comes to mind). It seems to me that separate ownership leads to separate incentives that could culminate in a less-than-optimum level of systems performance. Perhaps the most notable consequence of this is the state on transportation infrastructure in the US.

The Interaction of Mobility and Commerce

As mobility has increased there has been a consequent dispersal of commerce across the geography. Off-shore manufacturing represents an extreme example of this. Mobility is marked by increased reach and range leading to increasingly complex transportation systems.

Adrian Gonzalez...ARC Advisory Group, estimated that a typical cross-border shipment involves the accurate completion and filling of 35 documents, interfacing with 25 parties including customs, carriers and freight forwarders, and complying with over 600 laws and 500 trade agreements that are constantly changing (Cottrill, 2003).

Since 2003 the systems have become increasingly more complex. In general, the more complex the systems the less we can know about it and, as a consequence, our ability to manage such systems become increasingly problematical.

The Reinforcing Loop Comprise Mobility and Urbanization

In an e-mail to James Arbib of November 20, 2017 I said, “My hypothesis is that the rise of urbanization is aided by mobility, that rising urbanization can lead to conditions that negatively impact mobility and quality of life, that actions are subsequently taken to relieve the conditions and that these cause a renewed growth in urbanization. This constitutes a reinforcing loop that cannot go on forever.”

I note *Why Don't Cities Grow Without Limit?* (Cowen, 2018) that ties in to this hypothesis.

I've yet to read a detailed discussion of this matter in *Connectography: Mapping the Future of Global Civilization* (Khanna, 2016).

It seems to me that there are limits to growth (shades of the Club of Rome) that need to be considered when it comes to mobility.

Mobility Across the Country Development Cycle



Institutions such as the World Bank and United Nations rank countries in various categories according to their stage of development. The hypothesis here is that the impact of mobility in terms of its potential to positively impact country development and the probability of achieving the impact varies widely.

This poses the question is to the objective of mobility – impact or implementation?

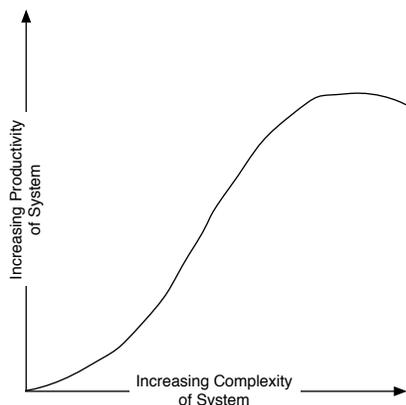
The Interplay Between Mobility and Global Value Chains

“Designed by Apple in California Assembled in China” is an example of global value chains, a phrase that has come into vogue, especially in the development literature, over the last few years. One could, of course, use this notion of distributed value chains across more limited geographical areas (an assembly line is an example of this).

It seems to me that mobility can affect the performance of these value chains. Of interest, then, is the value chain model and accompanying assessment tool that provides a diagnostic for determining potential impact. The

complexity of global value chains (see the Gonzalez comment above) suggest that the starting point for this development of this diagnostic needs to be other than at the global level. Furthermore, it may well be that there are important lessons to be learned from the design, development, implementation, and operation of assembly lines.

Limits Imposed by Complexity and Economic Growth



The hypothesis here is that systems grow in pursuit of increasing productivity, and that productivity reaches a point where the growth rate begins to decline chiefly due to the increased complexity of the system. This increased complexity causes a growth in coordination costs across the system. It is these costs that detract from productivity.

Does future mobility¹ lead to more or less complex systems?

How does one measure productivity? Or the benefits of future mobility? Or the complexity of systems? Is there an upper limit to the benefits of future mobility?

Mobility as Seen Through the Lens of the Social Progress Index and/or Quality of Life Index

Many different affected groups will see the impact of future mobility through many different lenses. Some of these groups will have a power to enable or inhibit progress. It behooves one to understand what some of these lenses might be and the picture that can be seen through them.



The *Social Progress Index* (“2017 Social Progress Index,” 2017) is an example of these lenses.

How will future mobility affect these indices? How is the path forward changed on the basis of understanding this effect?

¹ By this I mean an amalgam of the views expressed at Geography 2050: The Future of Mobility, American Geographical Society, November 2017.

Requirements Imposed on and by the Infrastructure



There is an interesting issue here in that if one adapts the future mobility assets to the existing infrastructure, such as is being done today with self-driving cars, then the effect may be to perpetuate outmoded and ineffectual infrastructure.

The assumption here is that if one could design infrastructure anew one would not design what is currently in place. High-speed rail is an example of a new design of an infrastructure that took place at the same time as the new design of the rolling stock. This was possible in the case of railways because of the separation between the new and old infrastructure.

This separation may not be feasible in the case of future mobility thus compromising that full impact of the new system.

The hypothesis is that this is a significant issue.

Impact of Mobility on Social Structure

Social structure seems to be currently undergoing significant turmoil leading to change. This change is metered by the dominant cultural differences across the world. See *Culture, Leadership, and Organizations: the GLOBE Study of 62 Societies* (House & Global Leadership and Organizational Behavior Effectiveness Research Program, 2004) for additional insight.

Mobility is a significant factor in social structures and it seems as if future mobility will affect and be affected by these structures. These effects need to be considered. For example, how does Transportation as a Service (Arbib & Seba, 2017) and society relate? What actions are suggested for maximizing the positive impact of future mobility on the social structure?

Intellectual Capital Requirements

The successful implementation of future mobility into society is likely to require the development of intellectual capital and capacity across a number of disciplines and social classes if success is to be achieved. What is this need and how can it be provided?

Critical Success Factors

There are factors critical to the success of future mobility, a success that has yet to be defined. That is, what are the bases upon which success will be declared. These are in multiple disciplines, are more or less important as progress is made, and are interrelated. Some will be easy to identify, acquire, and manage. Others less so.

What's important is to identify these as early as possible. ■

References

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For Discussion Only