Homo Viator 2020s: electrified and internet-based personal mobilities

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Abstract Homo Viator [traveling Man] refers in this article to the mobile individuals of the 2020s, gradually exposed to EVs (electric vehicles) and AVs (autonomous vehicles), as electricity-based and Internet-dependent personal road transport, respectively. This article examines the similarities and differences between the electrification and Internetizing of terrestrial personal mobilities and assesses the significance of these two trends for physically moving individuals, mobile society, and mobility-based urban space. EVs are already increasingly adopted, whereas AVs are still mostly being tested. Internet-based communications have already become universally adopted. Electricity and the Internet differ from each other, notably as far as the car industry is concerned, by their roles, modes of production, transmission channels, and storage. For individuals, EVs and AVs differ from each other in several ways: The degree of personal operations and the required accounting and licensing; the ability to move human-made products electronically; ergonomic aspects; travel and communications as an experience; and interactions with fellow individuals. From a societal perspective, the universal use of electricity and the Internet for road transport will require strict security assurance for their production and transmission. In addition, the importance of the relevant communications and electricity professions will grow. On yet another end, the ability to work during car riding may blur the buffer time between work and home. Spatially, EV-based cities will be quieter and cleaner ones, whereas AV-based cities will be characterized by removing traffic lights and road signs, coupled with the availability of more parking spaces.

Keywords Electric vehicles (EVs) · Autonomous vehicles (AVs) · Internet · Personal mobilities · Homo Viator

Introduction

Homo Viator [traveling Man] is a term that was originally suggested by Gabriel Honoré Marcel (1951, originally published in 1944), a French philosopher and Christian existentialist, who argued for humans’ continuous evolutionary existentialist journey. Later, the expression was borrowed for people experiencing exile and displacement (Tucker, 2003) and for various classical human writings (Whitby et al., 1987). Side by side with these rather extended and rather metaphorical uses of Homo Viator, it was for Eyerman and Löfgren (1995) to propose its adoption for both social and spatial mobility, in their arguing for humans as constituting moving entities, moving continuously in both society and space. Later, a similar expression was proposed by Bán (2007: 289) explicitly for
spatial mobility, when he stated that ‘with all of his or her everyday movement, Homo sapiens transformed into Homo mobilis’ [mobile Man].

In this article, we refer to Homo Viator in its literal sense, expressing individuals’ travel within their contemporary travel context, which includes travel in both terrestrial and virtual spaces. In the following sections, we would like to examine two major transitions in terrestrial travel only: its current electrification through electric vehicles (EVs) and its upcoming Internetizing via autonomous vehicles (AVs), seemingly later in this decade. These two trends for terrestrial travel, namely the use of electricity for energy production, and the use of the Internet as the major transmission channel for information for virtual travel, have been there for some time already for virtual mobility. Thus, electricity has been required directly for mobile telephony, through charging batteries, which have been required since the wide adoption of mobile telephony, beginning in the 1990s (electricity has been used modestly and indirectly also in fixed-line telephony). The required use of electricity for mobile telephony was followed by the widening mobile use of the Internet, notably since the 2000s, through the universal adoption of smartphones (Kellerman, 2014).

Hence, the 2020s are, and they will be further marked, by the world of terrestrial transport moving to its being based on electricity and the Internet, similarly to the previously basing of virtual ‘transport’ on electricity and the Internet. Therefore, in this article, we aim to examine the similarities and differences between the electrification and Internetizing of terrestrial and virtual mobilities and assess the significance of these two trends for physically moving individuals, for a mobile society, as well as for mobility-based urban space.

These investigations may turn out to be of some significant value, and from at least two perspectives. First, it seems that electricity and the Internet have not been systematically compared as technologies, and such a comparison is required now, given the joint use of electricity and the Internet in the upcoming AVs. Second, systematic societal assessments of these two technologies from a comparative angle have rarely been pursued, and such societal perspective are required these days with the growing use of these technologies for personal mobilities. We need to assess the joint use of these technologies for individuals, societies and cities for the development of suitable urban planning, coupled with the formulation of proper social and urban policies. As Kassens-Noor et al. (2020) discovered, the academic discussion of AVs has been still mostly directed to engineering issues with over 100,000 articles focusing on AVs in this direction, as compared to less than 200 ones devoted to planning and policy-making issues, and even these latter ones focused mostly on auto rather than mobility issues. This missing discussion is striking given the impression of Kassens-Noor et al. (2020) that AVs may ‘reinforce the status-quo or worse expand the divide of economic, environmental, and social inequalities’ (p. 330).

In the following sections, we will first list and interpret all three current and upcoming electric and Internet-based mobilities: EVs, AVs, and comprehensive mobile communications. Pink et al. (2018) noted that the study of telephony has emerged mainly within cultural studies, anthropology, and communications, whereas the study of automobility has developed mainly within sociology and geography. It seems, however, that geographers have been involved in the study of telecommunications already as of the 1970s (for a review see Kellerman, 1993).

The comparison of the three mobility modes proposed here will attempt to highlight some of their basic features. This will be followed, first, by a comparative examination of the parameters for electrified and Interneted road transport and communications, and then by several discussions highlighting the significance of electric and Interneted mobilities for mobile individuals, for a mobile society, and for the mobility-based city.

Our following discussions will begin with a clear distinction between the three appliances of movable communications devices (mainly smartphones), EVs, and AVs, with two of these devices, namely movable communications, and AVs, being based on both electricity and the Internet. Thus, in later sections of the article, we will examine the differences and relationships among these technologies per se.

**Electric and internet-based mobilities in the 2020s**

Several electric and Internet-based mobilities have emerged already, or will emerge later during the 2020s: EVs, AVs, and Internet-based
communications. All of these three mobility modes are briefly described and interpreted in the following sub-sections.

Electric vehicles (EVs): The early 2020s have presented a widening adoption of EVs (Kellerman, 2022a), though most of the EV car models still carry higher prices than traditional cars (Sovacool et al., 2019). EV sales during the first half of 2021 increased by some 160% globally, as compared to 2020, with electric cars comprising some 26% of car sales worldwide in 2021 (Skidmore, 2021).

The development of EV technologies during the last two decades has had to cope with several challenges: the size and weight of the cars, the power capacity, as well as the long charging duration of car batteries, side by side with the rather high prices for EVs. The growing and widening adoption of EVs reflects solutions for most of these problems, with charging duration on its way to becoming equalized with the duration of gasoline tank filling, via a new charging technology ( Storedot, 2022). Thus, one may expect the full electrification of private road transport sometime between the end of the 2020s and the mid-2030s.

Electric engines avoid the process of independent energy production by every car separately through their internal combustion engines, turning rather to the pre-produced electric energy for car operation through battery charging. In some way, EVs may be viewed as a transitional car mode towards the upcoming introduction of AVs, which will be electric, as well. Thus, the decade of the 2020s will present a full revolution in road transport, including both car power provision and car operations.

A full adoption of EVs will lead to quieter and cleaner cities, given the nature of electric engines. However, higher consumption levels of electric power, brought about by massive car charging, may lead to additional air pollution, to be produced by electric power stations, thus causing a spatial concentration of such pollution.

Autonomous vehicles (AVs): Autonomous vehicles constitute driverless cars, either totally or partially (Kellerman, 2018). AVs in general were declared ‘the next mobile revolution’ (Maurer et al., 2016: v). The AV project constitutes, by definition, a complex project, involving numerous technologies (Mitchell et al., 2010), led by the Internet, in its mode of the Internet of things (IoT), for both car-to-car and car-to-traffic lights and infrastructure communications, and side by side with artificial intelligence (AI), camera technology, radar, and other information technologies (ITs).

AVs are expected to be widely adopted, possibly sometime between the late 2020s and the early 2030s, i.e. about one decade later than the pre-Coronavirus forecasts for such an adoption. The delay in the commercial introduction of AVs relates to the Coronavirus crisis, which has partially paralyzed the car production industry, as well as to the preference given to the development and introduction of EVs, and the need to improve further the functioning of AV technologies (see e.g. Latham & Nattrass, 2019; Nadafianshamabadi et al., 2021). The global shortage of chips is an additional factor in the delay in the production of fully computerized cars.

Once AVs will become widely adopted, it will be for the Internet to dominate both car communications and road traffic, and this may call for possible future coordination between AV operations and the communications services provided for AV individual passengers.

Internet-based communications: The Internet constitutes a comprehensive information and communications medium, facilitating global reach, and providing for communications, as well as for the storage and retrieval of all forms of information, whether textual, audial, graphic, or streaming. The Internet functions through the Web for information services and through communications platforms for interpersonal interactions, carried out by users may be located either in fixed locations or on the move (Kellerman, 2020).

Furthermore, IoT (Internet of Things) permits appliances to act as Internet subscribers, being either remotely operated by humans, or autonomously operated by appliances communicating with each other, which is the case also for AVs. In 2021, over 83% of the world population maintained an active mobile broadband subscription, as compared to merely 11.2% of the world population owning a fixed telephone subscription (ITU, 2022).

The Internet is much older than the currently developed EVs and still developing AVs. However, it was already back in 1900 when cars were divided into electricity, gasoline, and steam-driven ones. Only a decade later it was for gasoline to become the leading energy source for cars. The failure of electricity to remain a leading energy source for vehicles was attributed to
the lack of sufficient electricity infrastructure by then (Taalbi & Nielsen, 2021).

The Internet was originally developed in the US already in 1969, within the project of ARPANET (Advanced Research Projects Agency Network), as an experimental alternative communications system for telephone services, originally developed for a potential replacement of the telephone system in case of nuclear disasters. It was originally experimented with through a network, which connected security headquarters with universities. Four major Internet technologies, including the Internet protocol, the router, the Web, and the browser, jointly led to the establishment of the publicly available and commercial Internet system, in 1995. Following the maturing of the Internet, IoT has been advanced since the late 1990s and early 2000s (Ashton, 2009).

Smartphones have turned the Internet into a fully mobile communications mode. They constitute upgraded mobile phones, facilitating connectivity to the Internet as well as to Global Positioning Systems (GPS). Mobile telephone technology was originally invented back in 1906 in the US by Lee de Forest (Agar, 2003: 167). However, the first limited mobile phone service was introduced in the UK much later, in 1940, followed by even later universal adoption of mobile telephony gradually as of the late 1970s, following the long-awaited release of proper wavelengths, and the emergence of relevant ITs, which brought about the miniaturization of mobile devices, as well as their automated operations.

Two additional features of mobile phones have contributed to their enormous success. The first feature was the invention of the transmission of written texts through SMS (short message service), which was originally introduced in 1993 in Finland, and which became widely adopted in 2000. The second feature of mobile phones, leading to their success, was their turning into smartphones, first in Japan in 1999. Smartphones constitute mobile phones connected to the Internet via cellular connectivity, as well as through Wi-Fi (wide fidelity), side by side with their connection to GPS systems.

### Comparative parameters for electrified and Interneted road transport and communications

In this section, we would like to shed some comparative light on electricity and the Internet, notably from the perspective of the car industry, focusing on their differentiated pace of development, their production system and storage, their production distribution, and finally shedding some light also on the differentiated uses of the Internet.

Viewed from a historical perspective, cars and telephones are of a similar age, in terms of the time of the original invention of both devices, in the last quarter of the nineteenth century. However, it was for telecommunications to become both electronic and Interneted much earlier than cars. This difference may possibly be related to the rather veteran tendency of the high-tech industry to focus on the world of communications, with little attention given to the world of transport until recently.

This has been the case also for the development of energy production for car operations. Thus, cars have been assumed to produce by themselves the energy that is required for their operations, using their internal-combustion engines for this purpose, rather than through an 'importing' of externally, produced electricity (Kellerman, 2022a). Similarly, this has been the case also for car communications and operations, so the Internet was introduced first as a purely informational and communications technology for car drivers and passengers, rather than its later development into an operational and control technology.

The upcoming dependency of road transport on electricity and the Internet is not equal to the dependency of smartphones on electricity, since car batteries may charge phones, but not the other way around. From yet another perspective, once AVs will become widely adopted the transmission of information will not be dependent on road traffic, but road traffic regulation will be dependent on information transmission.

Another difference between the dependencies on electricity and the Internet refers to storage. Electricity can be stored in batteries, thus reducing the immediate and continuous dependence on the electricity system, and providing some power at times of malfunctioning of the electricity production system. Internet connectivity, on the other hand, cannot be ‘stored’ in batteries and the like. However,
the extensive use of routers provides for the flow of Internet transmissions with much flexibility, including under circumstances of full disconnection of some routes, as was the case during the 9/11 disaster in New York.

From yet another comparative perspective concerning energy production, the ‘production’ of Internet connectivity is much more dispersed, as compared to the production of electric power. Thus, side by side with Internet farms, containing large numbers of powerful communications servers, additional servers owned by companies and organizations may too play a role in the global transmissions of information. Electric power, on the other hand, has been traditionally produced in a small number of power plants. Contemporarily, though, the production of electric power has become more dispersed, through solar farms and windmill fields. As far as energy consumption, though the use of electric power through the charging of any single smartphone, computer, or car, might be moderate, the total energy consumption by all vehicles and communications devices might be significant. Internet farms tend to consume a lot of electric power, both for their operation and for air conditioning, given the heat produced by the servers. Thus, colder locations are preferred for server farms.

The Internet, which was originally developed as a communications platform, has turned through IoT technology, into an operating and controlling technology, as well. Thus, smartphone users can contact their home appliances, and they may operate and control them. This will be the case, in much more sophisticated and complex ways, for AVs, as well, presenting an integration of road transport with device communications, called V2X, referring to communications between any vehicle with other ones, as well as with traffic lights and other infrastructures. Still, the Internet is not and will not be the only communications technology for both smartphones and AVs, since both devices are, or will be respectively, equipped with Wi-Fi, GPS, and cellular communications technologies. Within the world of transport, however, the adoption of AVs will bring about unified movement conditions and frameworks, in the sense that the physical movements of individuals, materials, information, and capital will all be dependent on both electricity and the Internet.

### Individuals and the electrification and Interneting of transport and communications

Following our elaborations on EVs, AVs, and the Internet, and the comparison between electricity and the Internet, we will move now to a series of interpretations of the personal, societal, and spatial dimensions of mobilities based on these technologies. Thus, the electrification and Interneting of personal transport and communications will be examined from numerous perspectives of individual users and referring to the following dimensions. First, the operation of mobilities by individuals and the possibly required accounting and licensing for such operations, followed by the ability to move human-made products electronically; ergonomic aspects; travel and communications as an experience; and interactions of individuals with fellow ones.

Currently, electric cars are usually more expensive than gasoline-powered ones. The same may apply to the future early penetration of AVs. However, one may assume that once car manufacturers will cover their development costs, car prices, both EVs and AVs, may decline, as has been the case for earlier technological developments, such as PCs (personal computers).

Individuals operate and manipulate the Internet by themselves, for all their information and communications uses and applications, which are pursued via the Internet. However, the very moving of information from origin to destination is performed automatically. The future AV manipulation and operation activities by individuals will be much more restricted. Passengers will only be able to instruct autonomous cars regarding their desired destinations, while IoT and additional technologies will autonomously perform car ‘driving’. Thus, the upcoming use of AVs for road transport will make individual travel in some way become like individual communications, in that AV and smartphone users will merely determine the destination of the respective transmission or travel, whereas the sending of information, as well as the moving of human bodies, will be performed automatically.

The use of electricity for transport and communications is secondary, in the sense that the electricity system is used for the charging of car and phone batteries, rather than electric power being extended directly from the electricity system for the operation...
of cars and smartphones. Thus, communicating and driving individuals, as well as AVS, in their capacity as driving entities, do not constitute personally identified electricity users who need to own an electricity consumption account as is common for homes, and as common for car charging stations. However, the use of the Internet for both communications and car operations requires individual identities and accounts for human users via the Internet, as well as for autonomous vehicles via IoT. Normally, the Internet identity of individuals implies ownership of a communications account, whereas for car riding via AVs, it seems that no kind of ownership or licensing will be required for individual traveling.

Cars are there for the moving of people and materials, but not for the moving of information, which is transmitted electronically at the speed of light. The opposite case of moving materials through the Internet has already one precedent, namely the movement of money, which has become almost completely electronic, as Thrift (1995: 27) noted: 'nowadays money is essentially information'. One might at least speculate that sometime in the future materials will be recorded electronically by information machines, such as smartphones, and then be transmitted to a destination in which the transmitted signals will be reshaped materially. The use of printers to produce three-dimensional products may be recognized as the first step in this direction.

Both human car driving, and information manipulation involve ergonomic dimensions, but with a significant difference between cars and phones. Car driving requires the use of material entities, such as the wheel, pedals, sticks, and buttons, whereas information manipulation involves the use of ergonomically designed screens, which frequently carry images of material devices, notably buttons. Thus, the latter requires literacy but no operational licensing. Once AVs will be adopted then the interaction of passengers with cars will be equal to their interaction with communication devices, namely using fingers only for screen touching, without any licensing.

Both communicating and traveling may be viewed also as human experiences, beyond their operational context, since both involve intervals. In traveling the interval is the travel time between origin and destination, whereas for communications it is the time passing between information sending and the receipt of the awaited response, notably so during synchronous chatting sessions. When driving, the freedom to use travel time for other activities is restricted to talking with fellow passengers, talking with people located elsewhere over the phone, or to listening to the radio or recorded information (see e.g. Thrift, 2004). However, future AV passengers and current communicating individuals can use the interval time for a wide variety of activities. AV passengers will still be spatially restricted to their vehicles while communicating persons can move freely with their phones carried along with them. This rather spatial difference between travel and communications intervals may keep the two classes of intervals as differing experiences.

Both communications and travel may lead their users to a rather wide variety, and partially similar, spatial classes of destinations, such as stores, governmental agencies, bank branches, etc. Of special importance are the reaching and interactions of individuals with fellow humans, which are of a different nature when pursued face-to-face rather than virtually, with face-to-face interactions still the preferred mode of interaction over virtual ones (see e.g. Kellerman, 2021).

Electricity-based and Internet-dependent mobile society

Following our previous discussion of individuals and their use of EVs and AVs, our elaborations will move now to society at large, focusing on some societal effects of an electricity-based and Internet-dependent mobile society. These elaborations will be followed in the next section by a discussion of some spatial, mostly urban, ramifications of electricity-based and Internet-dependent road transport.

As things look like in the early 2020s, it seems that the need to assure the security of the electricity and Internet systems, which will serve the upcoming road transport systems, will constitute their most important societal dimension. The Internet has become a leading target for personal and organized crime, as well as for attacks by state agencies, carried out by hackers of all kinds. Thus, Internet-dependent road transport may become highly vulnerable, given the risk of road accidents once the Internet connectivity of cars gets damaged. Similarly, the electronic, again mostly Internet
(IoT)-based controls of alternative energy sources, such as solar or wind systems, may too be hurt by hacking. These systems will too require, therefore, strict cyber protection.

A rather wide spatial decentralization of energy production systems, side by side with the establishment of numerous routing channels for Internet signals, is called for under the growing risks of damaging attacks. Future technological developments may possibly permit independent electricity production by cars through solar systems installed on car roofs, along with car connectivity to satellite-driven Internet systems, rather than to terrestrial servers spread locally and regionally, thus being more vulnerable to physical attacks.

The professions dealing with electricity and information systems for electric and autonomous cars will possibly grow tremendously, as compared to their current continuously growing importance. The dependence of car systems on electricity and communications may bring about some drastic changes to the industry of car service and maintenance, and their spatial facilities, the garages. Already now traditional cars are connected to computers in garages to identify and locate their malfunctioning parts. Future cars will require electricity and Internet specialists for their maintenance, with cars having fewer moving parts, and using low quantities of oils or none for their functioning and maintenance. Thus, the education of future garage workers, as well as those of professional drivers, will change, requiring them to develop new skills (Nikitas et al., 2021). On the other hand, however, car electricity and Internet systems may be widely like those of other electricity and Internet (IoT) operated and controlled systems, so there may emerge some wide flexibility of employment for proper workers in these areas. Furthermore, the similarity of operational and control systems between cars and other mechanical systems may permit their standard and large-scale production, thus providing for lower prices for cars.

Daily commuting through car driving, or via public transport riding, permits workers to enjoy a buffer time between work and home (see e.g. Kellerman, 1994). However, once drivers will turn into AV passengers, more time may be devoted to working while riding, so the buffer time between home and work may be mostly eliminated (Kellerman, 2018).

**Spatial and urban effects of mass adoption of EVs and AVs**

We will focus here only briefly on the spatial ramifications of the electrification and Internet basing of road transport since these aspects have been exposed already elsewhere for both EVs (Kellerman, 2022a) and AVs (e.g. Duarte & Ratti, 2018; Kellerman, 2018; Milakis & Müller, 2021).

An upcoming full adoption of EVs may lead to quieter cities. Urban typical noise, as produced by car traffic, has come to constitute a basic feature of modern cities, and this may drastically change under a wide adoption of EVs (see e.g., Augoyard and Torgue, 2005; Pink et al., 2019). Quieter urban roads may change locational preferences for residences, thus possibly yielding new urban land-use mixes.

EV cities may further be cleaner ones, with the quite heavy air pollution created by traditional cars disappearing from city streets (Rafael et al., 2020). Back in 2014, some 20% of the global carbon emissions were attributed to the transport sector (Taalbi & Nielsen, 2021). Side by side with this positive trend, air pollution attributed to electric power stations may grow, given their increased production of electric power for car batteries. Thus, the urban sources of air pollution will become spatially concentrated. From a wider sustainability perspective, there may emerge additional issues when EVs and AVs will become widely adopted, such as growing cloud storage, growing consumption of lithium for batteries, and possibly wider coal-dependent electricity production. The latter issue is, though, less likely to emerge, given the growing solar and other carbon-free electricity production.

In the AV city, the road system may not necessarily be changed, as compared to current road systems, since many, but not all, AVs will have the same physical structure as traditional human-driven cars have. However, if smaller AVs will be preferred by car owners or passengers, then narrower road lanes may emerge. The traditional traffic lights may turn into traffic control sensors, invisible to the innocent eyes of pedestrians and passengers. At least potentially, pedestrians too may not need traffic lights anymore for road crossings since smartphones may possibly inform them when road crossing is safe. The numerous traditional road signs for drivers may disappear as well.
The autonomously mobile city may consist of three layers in which automated mobility modes will operate: underground (for autonomous metros and cables), surface (for AVs and autonomous metros), and aerial (for drones as well as for communications waves including those for the integrated controls of city traffic) (Kellerman, 2018).

The urban spatial changes, which may accompany the wide adoption of AVs, may possibly be like those of the tremendous urban expansion, which accompanied the wide adoption of traditional cars at the time, gradually as of the early twentieth century, and which was termed as ‘the first wave of urban sprawl’ (Gutierrez, 2021). In a possible second wave of urban sprawl, as foreseen in numerous studies for the wide adoption of AVs, people may prefer to use autonomous taxis rather than their own private cars, so that cities may become more expansive (Gutierrez, 2021; Nadafianshadahabadi et al., 2021; Liu et al., 2021; Guan et al., 2021). However, it is still debated whether the number of cars and the number of trips will increase once AVs will become the dominant mode of personal mobility (e.g. Dannemiller et al., 2021), or whether they may remain stable (Acheampong et al., 2021).

Cugurullo et al. (2021) recently speculated that a mixed model of AV use will emerge, consisting of both privately owned cars and shared ones. This may possibly bring about, at least for a transitional period, a separation between AVs and traditional car traffic (Lee et al., 2022). Side by side with the possible reduction in the number of private cars, the problem of parking availability, which typifies city life, may also be resolved. Furthermore, the parking pattern of AVs will permit smaller distances for the separation among parked cars in depots rather than in parking lots.

The freed parking space, coupled with the availability of more efficient AVs, may potentially bring about a re-concentration of office businesses in downtowns. However, the opposite possibility of a rather wider dispersal of employment areas may also become possible, as commuters will not mind traveling longer while working during travel time. Thus, it is difficult, yet, to foresee the possibly new or renewed spatial organization of business in metropolitan areas in the era of full AV adoption (Heinrichs, 2016).

**Conclusion**

Homo Viator [traveling Man] referred in this article to the mobile individuals of the 2020s, becoming gradually exposed to EVs and AVs. We attempted to examine the similarities and differences between the electrification and Internetizing of terrestrial and virtual mobilities and to assess the significance of these two trends for physically moving individuals, for a mobile society, as well as for mobility-based urban space.

EVs have already been increasingly adopted, whereas AVs are still mostly being tested. Internet-based communications have already become universally adopted. Electricity and the Internet differ from each other, notably as far as the car industry is concerned, by their roles, modes of production, transmission channels, and storage. For individuals, EVs and AVs differ from each other in several ways: the degree of personal operations and the required accounting and licensing; the ability to move human-made products electronically; ergonomic aspects; travel and communications as an experience; and interactions with fellow individuals. From a societal perspective, the universal use of electricity and the Internet for road transport will require strict security assurance for their production and transmission. In addition, the importance of the relevant communications and electricity professions will grow. On yet another end, the ability to work during car riding will eliminate the buffer time between work and home. Spatially, EV-based cities will be quieter and cleaner ones, whereas AV-based cities will be characterized by the removal of traffic lights and road signs, coupled with the availability of more parking spaces.

Our interpretations in this article have revolved around contemporary humans, the Homo Viator of the 2020s, the mobility technologies already used by them, and the ones to be used in the upcoming years. We may now conclude by offering some future perspectives on these two foci.

Electric road transport, and even more so the upcoming autonomous one, will offer the Homo Viator of the 2020s a much less stressful, much more efficient, convenient, and less costly, mechanized travel. These physical mobility settings may permit and call for much wider personal physical mobilities. However, on the other hand, virtual mobility has become much more widely used during the Coronavirus crisis, even without the introduction and adoption of any
significant new technological developments. The convenience of online visual meetings, shopping, banking, etc. has become more attractive and more routinely used (Kellerman, 2022b). Thus, one may just look forward to a possible emergence of new and still unknown balances between upgraded personal physical mobilities, on the one hand, and the convenient and widely available virtual ones, on the other.

The similarities in the infrastructures between the world of communications per se, on the one hand, and the future Internet-dependent realm of traffic, on the other, may invite, in the future, some joint technological developments, which cannot yet be foreseen. Electricity as the almost only energy source for human activities does not necessarily call for functional integrations of various electricity-based devices, machines, and activities since electricity merely constitutes an energy source. The role of the Internet is much more complex. The Internet originally emerged as a communication and information system, but it has turned through IoT also into an operational and control system, simultaneously with its continued communications and information abilities. These widely applicable operational and control abilities of the Internet may call for and invite joint technological developments with possible ramifications for future mobilities.

Declarations

Conflict of interest I have no conflict of interest.

Ethical approval This article does not contain any studies with human participants performed by any of the authors.

Human and animal rights This article does not contain any studies with animals performed by any of the authors.

Informed consent Informed consent was obtained from all individual participants included in the study.

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