Journal of Transport Geography 41 (2014) 97–106

Contents lists available at ScienceDirect

Journal of Transport Geography

journal homepage: www.elsevier.com/locate/jtrangeo

"Nomads at last"? A set of perspectives on how mobile technology may affect travel

Filippo Dal Fiore [a,*], Patricia L. Mokhtarian [b], Ilan Salomon [c], Matan E. Singer [c]

[a] Senseable City Laboratory, Department of Urban Studies and Planning, Massachusetts Institute of Technology, 77 Massachusetts Avenue, Cambridge, MA 02139, USA
[b] School of Civil & Environmental Engineering, Georgia Institute of Technology, 790 Atlantic Drive, Atlanta, GA 30332-0355, USA
[c] Department of Geography and Federmann School of Public Policy and Government, Hebrew University of Jerusalem, Mount Scopus, Jerusalem 91905, Israel

ARTICLE INFO

Keywords:
Information and communication technology (ICT)
Mobile communications
Motivations
Travel behaviour
Mobile technology

ABSTRACT

This paper's goal is to propose a set of perspectives on how mobile phones and computers might affect travel: by tapping into basic needs of travellers; by affecting some preconditions for its spatial configuration; and by altering its costs and benefits. In the age of "digital nomadism," mobile technology is likely to play an important role for the new mobility and work-life arrangements put into practice by a multitude of creative knowledge professionals. What emerges from our multi-perspective exploration is the realisation that mobile technology might offer people numerous new reasons to be mobile: by making them more informed; more capable of using a larger variety of physical spaces and re-negotiating obligations in real-time; and potentially more efficient in the allocation of their travel time and resources. On the other hand, it also appears that mobile technology can impose new burdens on travellers and make travel *less* appealing in some ways. Additional research is called for to improve our understanding of the circumstances under which each of these opposing outcomes occurs. The findings from such research could be used to better calibrate traffic simulation models, as well as to weigh the implications of emerging forms of travel behaviour for the environment.

1. Introduction "nomads at last?"

An April, 2008, report from *The Economist,* titled "Nomads at last," referred to an alleged change in people's lives and mobility styles following the advent of mobile technology: cell phones, laptop computers, tablet PCs, personal digital assistants, and hybrids (The Economist, 2008). While acknowledging the business interests vested in promoting a buzz around the "mobile revolution" (Steinbock, 2005), the evidence is compelling that such technology is, in fact, evolving very fast. Not only are technologies unimagined only a decade ago widely available today, but a broad array of new work-life arrangements are being put into practice.

These transformations are often backed by employers, especially big corporations and global players, who increasingly allow their employees to telecommute, equip them with laptops, tablets, and mobile phones, and introduce ubiquitous Wi-Fi connectivity and hot desking.[1] Ultimately, they understand that, in a knowledge economy, the balance is changing. Fewer workers need to be where work and information are, while more often work and information can be where workers want to be. This makes sense if we consider that the raw materials of knowledge work are digitised rather than tied to physical locations.

Ongoing changes in people's mobility are difficult to track by means of traditional statistics. We are at the initial stages of "measuring the measurable" (Mokhtarian et al., 2005), which calls for much additional research. Consequently, we still don't know how to measure the alleged "nomadism" because of an inherent difficulty in defining and measuring it.[2] Rather, we talk about telecommuting or mobile work. Until recently most scientific research on the implications of technology for travel has focused on home and office computers, and less so on those (mobile) technologies that accompany us in the travel itself.

The very fact of having access to a portable device is likely to have repercussions for the way we move, as have other innovative devices that entered the travel realm in the past, from compasses to bicycles,

* Corresponding author. Tel.: +1 617 3244474; fax: +1 617 2588081.
E-mail addresses: dalfiore@mit.edu (F. Dal Fiore), patmokh@gatech.edu (P.L. Mokhtarian), msilans@mscc.huji.ac.il (I. Salomon), matan.singer@mail.huji.ac.il (M.E. Singer).

[1] Wikipedia defines "hot desking" as an office organisation system that involves multiple workers using a single physical work station or surface during different time periods (Wikipedia, 2014c).

[2] In an article whose neutrality is disputed, Wikipedia defines "digital nomads" as "individuals that leverage digital technologies to perform their work duties, and more generally conduct their lifestyle in a nomadic manner. Such workers typically work remotely—from home, coffee shops and public libraries to collaborate with teams across the globe" (Wikipedia, 2014b).

http://dx.doi.org/10.1016/j.jtrangeo.2014.08.014
0966-6923/

and from umbrellas to automobiles. Their common rationale is enhancing human capability in travel by providing orientation, protecting against the rain, increasing the speed and decreasing the effort of movement, (and now) allowing access to information and communication while on the go (see the concept of human extensibility in, e.g., Janelle, 1973; Janelle and Gillespie, 2004).

The advent of mobile devices stemmed from an economic and societal drive toward higher personal freedom, productivity, and efficiency in a post-industrial globalisation context (Castells et al., 2006). The ability to access communication and information resources "anytime, anywhere" not only is considered a means to liberate the individual from a dependency on specific physical places to carry out the desired activities, but also is viewed as a means to become more efficient in the allocation of scarce resources (i.e. time for work and leisure activities) – e.g., through more information and greater travel coordination – in order to be able to pack in a larger number of activities in the same amount of time (Lenz and Nobis, 2007). Thus, mobile technology offers an enhanced ability for individuals to choose where they want to be – to some extent, freeing themselves from the "yoke" of place-based constraints and the travel required to conform to them. At the same time (even aside from applications specifically designed to enhance *travel*-related information such as GPS, digital maps, and real-time traffic information, among others), mobile technology makes travel a richer experience and an easier one to pursue – but also a heavier burden due to the expectation that the traveller will now remain reachable and productive while away. The latter effect may not only apply to trips that would have occurred anyway, but could also facilitate *new* trips, given that those same expectations are supposed to ameliorate the effects of being physically absent, which may lead, for example, to an employer assigning more travel than the employee or the family desires.

If we are to understand the implications of technology for travel, we must grapple with how people balance these effects, both contradictory and complementary: freedom *from* travel, freedom *to* travel, and the bondage of travel. To do so, in turn, requires us to revisit a fundamental question: "what drives people to travel in the first place?" Only by a more thorough comprehension of those motives can we expect to understand why travel continues to increase (aside from short-term effects due to a global recessionary economy) at the very time it becomes easier than ever to forgo.

In this paper we first answer this question by assembling several different but useful perspectives on it, and then leverage those perspectives to help us better distinguish and comprehend the likely impacts of mobile technology on travel. This paper specifically has the travel of creative knowledge professionals in mind,[3] and some of our discussion pertains most cogently to that group of workers. However, many of the perspectives we present also apply (with varying degrees of strength) to people in other occupations and in realms of life other than work. By focusing on basic assumptions, we construct a number of hypotheses about how mobile technologies might be spatially reconfiguring the "playing field" of human travel. We ground these hypotheses in the preliminary evidence of which we are aware, and use creativity as a further source of informed speculation. Our hope is that this discussion will provide a lens (or set of lenses) through which this subject can profitably be viewed, and might inspire and inform future novel and creative research questions on the treated topics.

The paper is organised as follows: in the next section we review a selected set of conceptual frameworks, developed in the past and related to the primitive drives of travel behaviour. In Section 3 we use those frameworks to build a series of hypotheses and theoretical constructs on how mobile technology might affect travel: the way it addresses some basic human needs; the way it interacts with four distinguished classes of preconditions for travel; the way it impacts the spatial configuration of activities and trips; and the way it affects the costs and benefits of travel. We conclude the paper by recognising the need for empirical evaluation of the many hypotheses presented, in particular to identify which types of people are more receptive to mobile technology-induced behavioural change.

2. Drives and facilitators of travel: some anchors in the literature[4]

By drives of human behaviour, we mean broad and general categories of motivations into which a number of more specific reasons can be grouped. Typologies of such drives appear in a variety of disciplinary contexts, including psychology, sociology, geography, economics, and marketing research, as well as in several interdisciplinary fields. Drives should be distinguished from facilitators of (or constraints on) human behaviour. Drives are the fundamental motivations to act a certain way. According to Mokhtarian and Salomon (1994), the drives can be assumed to be generated largely from lifestyle orientations toward work, family, leisure, and ideology. Facilitators/constraints are factors that serve to make an alternative course of action either easier or more difficult to choose, respectively. The same factor (such as cost) can be either a facilitator or a constraint, depending on whether it is present in a positive (low cost) or negative (high cost) sense. But it differs from a drive in that, no matter how many facilitators are present (or constraints are absent), a behaviour does not occur unless there is a drive to do it.

In the following subsections, we briefly introduce three perspectives on the drives and facilitators of human (travel) behaviour. These perspectives are by no means mutually exclusive. However, they do exemplify alternative disciplinary views of motivations for human behaviour in general, and travel in particular, that we find useful in thinking about the impact of mobile technology on travel. In Section 3, we will argue that mobile technology interacts with the facilitators/constraints of travel (Section 3.1, on "needs of travellers" and Section 3.4 on "costs and benefits"). We also introduce four classes of "preconditions" of travel (involving both facilitators/constraints and drives) that are affected by mobile technology (Section 3.2).

2.1. Travelling to fulfill psychological needs

The discipline of psychology has long studied what prompts people to behave in a particular way. The best-known theory of motivation must be that of Maslow's (1943; 1954) hierarchy of human needs. According to Maslow's theory, human beings act to fulfill unsatisfied needs, which can be organised into a hierarchy or pyramid – in which the most primary level of needs (i.e. physiological needs) sits at the bottom and the most advanced (i.e. self-actualization) sits at the top (Fig. 1).

As shown in Table 1, Maslow's needs can be used to derive some of the most common motivations or drives for travel and mobility; i.e., forms of travel demand. However, as we will see in Section 3.1, those needs may also serve as facilitators to, or constraints on, travel.

The listed motivations that can be derived from Maslow's theory relate to the standard triad of travel purposes (Reichman, 1976):

[3] Florida (2002: 8) says that the Creative Class is a class of workers whose job is to create meaningful new forms, and is composed of scientists and engineers, university professors, poets and architects, and also includes "people in design, education, arts, music and entertainment, whose economic function is to create new ideas, new technology and/or creative content" (Wikipedia, 2014a).

[4] Portions of this section appear in a companion paper (Mokhtarian et al., 2014a). There is essentially no other overlap between the two papers.