Telecommunication and Travel: The Case for Complementarity

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Introduction

The potential of telecommunications to substitute for travel has long been appreciated. Indeed, such potential has often been not just a later realization but an integral impetus behind the development of the technology. Early communication devices such as jungle tom-tom drums, trumpet alarms, smoke signals and flashing lanterns were surely conceived precisely to replace the need for a physical messenger. The same cannot necessarily be said of the more recent (1876) invention of the telephone. Alexander Graham Bell’s own initial vision of its uses seemed to be more along the lines of broadcast radio than personal communication, while the President of Western Union dismissed it as an “electrical toy”, and the Chief Engineer of the British Post Office in 1879 sniffed that the “superabundance of messengers, errand boys, and things of that kind” in Great Britain obviated the need for the telephone there (Dilts 1941). However, it did not take long for speculation to begin about the potential of the new technology to eliminate travel. Albertson (1980) refers to a letter to the editor of the Times published May 10, 1879 suggesting that the telephone could provide relief from travel for harried businessmen. The utopian science fiction of H. G. Wells (1899) and E. M. Forster (1909) portrays society taking part in teleconferencing on a large scale, in lieu of physical travel.

That was the speculation; what is the reality? Contributing to a retrospective on the 100-year anniversary of
the invention of the telephone, Pierce (1977) anticipates some of the arguments raised in this paper:

We have seen that telephony has grown steadily since its inception. What has this done to other modes of communication? Is telephony replacing travel? No. Very roughly, in recent years the number of telephone calls and the number of air miles flown have increased at about the same rate, and the number of car miles traveled has increased about half as fast. Undoubtedly, a telephone call sometimes substitutes for a trip, but more and faster communication tends to engender widespread associations and activities that result in trips.

In the additional quarter-century since the telephone’s centennial, new communication technologies and services have been introduced and adopted at an ever accelerating pace: facsimile machines, teleconferencing, electronic mail and the Internet, and mobile telephony, to name just a few major ones. With the increasing power, realism, flexibility, user-friendliness and ubiquity of these devices and services, together with their decreasing cost, one might expect that their collective ability to replace travel should by now be considerable, and that measurable decreases in travel should have resulted.

Instead, we still see nothing of the sort. Aggregate measures of travel demand continue to demonstrate basically increasing trends worldwide (Giuliano and Small 1995; Salomon, Bovy and Orfeuil 1993; Schafer and Victor 2000). In the United States, the repeated cross-sectional Nationwide Personal Transportation Survey is perhaps the best source of data on local passenger travel. Changes in data-collection methodology make comparisons across all years problematic, but just comparing the two most recent data sets alone shows an 11 percent increase in per capita person-miles traveled between 1990 and 1995 (Hu and Young 1999; calculated on the basis of Table 1) – a period of considerable development and adoption of new communication technologies.

The purpose of this paper is to explore the reasons behind this observation. In the sections to follow, I respectively advance conceptual, theoretical and empirical arguments in support of the claim that the net impact of telecommunications on travel will be to increase it rather than reduce it. Most of these arguments have ap-