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Communications, Transport, and Territory

Introduction

An old dictionary I have at home defines communications as “an act of imparting (esp. news); information given; intercourse; common door or passage or road or rail or telegraph between places.” This older definition encompasses not only the symbolic realm – which is what we nowadays tend to think of first when the question of communication arises – but also the field of transport studies. It was in this spirit that Marx and Engels defined communication broadly enough to include the movement of commodities, people, information, and capital – including within their remit not only the instruments for transmitting information but also the material transportation infrastructures of their day. As Marx argued, the “creation of the physical conditions of exchange,” and in particular, of the railways, was a necessity for the development of nineteenth century capital, insofar as it allowed products to be converted into “uprooted” commodities as they were transported beyond their region of production into more distant areas. To that extent “the railroad was to travel as industry was to manufacture.” In the Grundrisse, Marx argues that it is precisely transportation between geographical points which turns objects into commodities, arguing that “this locational movement – the bringing of the product to the market, which is the necessary precondition of its circulation … could more precisely be regarded as the transformation of the product into a commodity.”

Marx and Engels’ concern was with the connections between the technologies for transmitting messages and transporting commodities and people, all of which was seen as part of a broader, geopolitical “science of territory” – a set of concerns which are readily re-codable into contemporary debates about de-territorialization and reterritorialization. Evidently, nowadays, the territories and technologies concerned are virtual as much as material, but I shall argue that, far from living in a supposedly “post-geographical” age, geographies, of one sort or the other, continue to matter, if now in different ways. In this context,
I will argue that what is needed is a re-excavation of the tradition of work that continues Marx and Engels’ concerns with the constitutive powers of systems of communications and transport.\(^3\)

**The Power of Metaphor**

In 1933 the art historian Rolf Arnheim proposed that the new invention of television was best understood metaphorically, in relation to questions of physical transport – as a “means of distribution” – but of images and sounds rather than of objects or persons. To this extent, he argued, television is fundamentally related to modes of transport such as the motor car and the airplane – but in this case, as a “means of transport for the mind.”\(^4\) Evidently, Arnheim’s argument works at the level of metaphor by transposing the function of physical modes of transport to the virtual sphere, where the entities being transported – images and ideas – are themselves immaterial. If we trace the etymology of the word “metaphor,” we find that its original Greek meaning is precisely to “transport” or “carry across” – in this case, to transfer significance, by using a figure of speech in which a name or descriptive term is transposed from one realm of meaning to another. As Jonathan Sterne observes, some of our central terms for discussing these matters already invoke the concept of “communication as a subspecies of movement.” Thus, Bruno Latour notes that “the word *metaphoros* is written on all [furniture-DM] moving vans in Greece” for the simple reason that the English term “metaphor” derives from the Greek words for “to transfer or carry.”\(^5\) To take another example, if many cab drivers in the metropolitan cities of the West are immigrants who have come from elsewhere and then take a job moving the city’s residents around, then these “metaphorical” processes are doubly condensed in the figure of the immigrant taxi driver.\(^6\) Arnheim’s proposition is further extended by Ben Bachmair, who is concerned with the particular relationship between motor car and the television as “mobile” media – which have, in combination, transformed the pace, pattern, and scale of social life in the twentieth century.\(^7\) He argues that television fitted snugly into – and extended – the mobile lifestyles encouraged by the motorcar. Furthermore, he insists that the symbiotic relationship between the television and the motorcar should be seen as parallel to that between the telegraph and the railway system in the earlier era.\(^8\)

**Passengers, Readers, Drivers, and Spectators**

In English, the word “transport” can refer either to this material form of motion, in which a person or thing is moved from A to B, or to the immaterial process in which, for instance, the reader of a novel is mentally “transported” to another
(in this case, fictional) realm. These two different dimensions were notably brought together at the moment in the nineteenth century when the coming of the railways in Britain, and thus the particular mode of “passive/comfortable” travel they allowed, created a market for train reading – and thus for the emergence of platform-based newsagents in railway stations. Henceforth, the railway traveller/reader could be simultaneously “transported” in both these dimensions. In his work on the coming of the railway in the earlier period, Wolfgang Schivelbusch shows how the new experience of moving through the landscape at high speed created a different form of “proto-cinematic” vision for the seated passenger, who is personally immobile and yet transported elsewhere. To this extent, the train (and later the car), as well as the various screens of the media, can be seen to have contributed to the development of a specifically modern subjectivity of accelerated visual stimulation.

Within the field of media and cinema studies, some authors, such as Margaret Morse and Anne Friedberg, have, in recent years, begun to address the relationship between the visual experience of physical mobility, when landscapes are viewed through the window of a car, ship, train, or plane and forms of media spectatorship of moving images. Thus Morse considers the analogous nature of the experiences of vision through the car windscreen on a motorway, through the display windows in a shopping mall and that provided by the television screen. Friedberg is similarly concerned with the parallels between the visual experiences of the car driver and the cinema/television spectators. As she notes, drawing on the work of both Baudrillard and Virilio, if the “cinema provides a virtual mobility for its spectators, producing the illusion of transport to other times and places,” the driver is themselves physically immobile, cocooned in the comfort of the “audiovisual vehicle” in which they traverse material space, while “the surrounding landscape [unfolds] like a televised screen.” Thus she explores what she calls the “framed visuality” of the car windscreen, cinema, television, and computer screens as modes of spectatorship all shaped by their relation to the architectural form of the screen/window.

To this extent, I would argue that the exploration of these metaphors, linking previously ignored dimensions of the relationships between communications and transport, can potentially be very productive. However, if, as George Lakoff argued many years ago, metaphors are what we “live by” insofar as they structure our thought at a very fundamental level, we do always need to be careful in their deployment as they sometimes hide as much as they reveal. We should be very careful, as I will argue later following Sara Ahmed, to avoid the dangers of reducing the material processes of migrancy to a superficially convenient metaphor for “mobility” in the abstract, as if it were the “essence” of the contemporary world. We are not all mobile in the same way, and my ambition here is to spell out the significant differences between our various engagements in the different forms of virtual and actual mobility and stasis.
In relation to questions of material and metaphorical distance, our concerns must be, as Birgitta Frello argues, with the specifically social dimensions according to which mobility is given meaning — which always occur within specific relations of power. The question is not simply that of empirically “mapping” material issues such as distance, speed, and means of transport. It is also a matter of the socially constructed discourses through which places — and the differences and distances between them — are defined as “here” or “there.” The question then is “where or what ... or how far away is there.” The further questions concern how geographical proximity or distance is articulated with concepts of belonging and familiarity, or with alterity and strangeness. The key issue, for Frello, is that certain forms of activity involve engaging with difference — and it is this, she argues, rather than the mere transcendence of physical distance, which makes them qualify as “mobility.” Thus, she gives the example of a television documentary in which the geographical distance between the current place of residence of a Danish citizen of African descent and the place where her African ancestors lived is treated as a distance of no consequence, insofar as it is presented as a journey “home” in search of her roots. Conversely, a district of Copenhagen inhabited mainly by black immigrants is presented as an unfamiliar enclave of civilizational alterity for most Danes, despite its spatial proximity. Thus in the first case, physical distance is translated into metaphorical proximity whereas, in the second, physical proximity is articulated as metaphorical distance.16

Communications and Geography – European and North American Traditions

The great geographer of Europe itself, Fernand Braudel, remarked on “the prime importance of communication” noting that “no civilisation can survive without mobility” and, indeed that civilization itself is in large part “a matter or roads, ports and quays.” There is, furthermore, a history of communications in the European Marxist tradition which recognizes that, in the transition from the local economies of feudalism to the wider spaces of the capitalist world market, communications came to play a central and constitutive role whereby “information [was] to capital as lubricant is to the machine.” This tradition has been best developed in recent years by Armand Mattelart. He starts from the premise that contemporary media theory is bedeviled by having lost its historical roots in a tradition that originally included within its remit issues such as the cultural, economic, and political role of shipping, canals, road systems, and railways. My argument is that a new version of such a perspective has much to offer to an analysis of today’s (material and virtual) communications and transport networks, and
their role in the geopolitical dynamics of the contemporary world, in relation to the constitution of both online and off-line territories.20

If Marx and Engels, de la Haye and Mattelart constitute the European lineage of one approach to a materialist theory of communications, there is also a North American version of this tradition, with a rather different theoretical basis, which has its roots in the work of scholars such as Harold Innis, and James Carey – a tradition now reinvigorated, in the wake of Carey’s death, by a new generation of scholars.21 Carey’s remarkable essay on the historical significance of the invention of the telegraph as the moment in which symbolic communications were for the first time separated from the limitations of physical transport has, in recent years, come to be seen as something of a potential “keystone” for a whole new thread of historically inflected, materialist work in communications studies.22 Recently, the work of Lisa Parks and Nicole Starosielski referred to in the Introduction, has emphasized the importance of studying the material infrastructures on which the distribution of all forms of communication signals depend – the “resources, technologies, labour... that are required to shape... and sustain the distribution of audiovisual signal traffic on global, national and local scales,” paying attention to these infrastructures’ “entanglements with environmental and geopolitical conditions” and their tendency to be “concentrated in particular locations and spread across vast distances.”23

However, as long ago as 1937, Grover Whalen, the head of the New York World’s Fair planning committee, offered a celebratory vision of how radio, movies, automobiles, and airplanes were already stitching together a newly democratic national culture in the United States, characterized by connectivity and an expanding sense of mobility, in what came to be characterized as an “age of super-contact.”24 The early twentieth century had, he said, “witnessed a dramatic acceleration in network-building, that occurred as highways and broadcast signals criss crossed the nation, linking homes and everyday routines into sprawling communicative circuits.” In this process, people were understood as being not only “wired into a national community, but paved into one as well” along a complementary network of roads and broadcast signals, insofar as the overall communications infrastructure provided by broadcast networks, radio manufacturers, carmakers, and airlines was composed of asphalt and steel, as well as signals on the electromagnetic spectrum. Within this perspective “technologies from the automobile to broadcasting, railroads and newspapers were commonly contextualised in terms of one another” as complementary modes of connectivity, enabling, extending, and managing the new flows of information, people and goods.25 This approach is founded on a capacious definition of communications as involving all “channels of movement by which an entity, whether a verbal utterance or a box car loaded with freight, could be relayed from one point to another.” The great advantage is
that this enables us to comprehend the dynamics of a broad range of technolo-
gies that all display the capacity to “combine and integrate” across a variety of
communication and transport platforms in a “converging web of communica-
tions media,” threading ethereal, mediated contact together with physical
forms of extended mobility.26

However, in recent years, the discipline of communication studies has, in fact,
come to focus exclusively on the mediated forms of the symbolic, institutional,
and technological dimensions of the transmission of information. This approach,
which simply equates communications with its symbolic or rhetorical dimen-
sion, is based on the ontological assumption that communications is principally
an immaterial process involving intangible phenomena. To that extent, today’s
restricted definition of communications simply follows Diderot’s initiating equa-
tion of the science of communicating with “rhetoric” at the level of discourse.27

Nowadays, the analysis of the movement of people and commodities has
largely been relegated to the discipline of transport studies and remains
neglected by communications scholars. By contrast, my own view28 is that it is
impossible to understand the full significance of communications technologies
if we take a media-centric approach rather than situating them in their broader
social and economic, political and cultural contexts, and in particular, in rela-
tion to questions of transport.29 A similar perspective has also recently been
advocated by Jonathan Sterne, who argues for a definition of the field of com-
munication studies as involving a variety of material and immaterial forms of
“organised movement and action.” To view matters thus is also to support Colin
Divall and George Revill’s argument in favor of seeing “transport itself [as] an
order-building intermediary … an organiser, regulator and generator of things,
places, flows and people.”30

Transport cannot be reduced to a set of narrowly functional economic calcu-
lations, and transport policies have many noneconomic determinations. If we
now return to Whalen’s perspective on communications infrastructures, it is
clear that the construction of the North American highway system, following
the Federal Highways Act of 1956, was heavily influenced by President
Eisenhower’s postwar experience of the German autobahn system and can only
be fully understood in this context. Reversing the terms of Al Gore’s famous
“information superhighways” metaphor, Rupert Cornwell has argued that “like
an early concrete-and-tarmac version of the internet, these new-fangled super-
highways linked [the] continent [and] helped generate the single national mar-
ket that unleashed the post-war US economy.”31 Just as the interstate highway
system in the United States, and later, the basic infrastructure of the Internet,
were initially planned by reference to issues of national security, so air trans-
portation was, in many countries, developed in the first place as a way of
achieving political goals concerning the integration of national or imperial ter-
ritories – thus during the postcolonial period, many of the newly independent
nations, in turn, made it a priority to create their own airlines.32
The conventional perspectives on infrastructure starts from the premise that it constitutes the (usually invisible) substratum on which the mechanisms of everyday life depend – the pipes and sewers that enable the functioning of a domestic water supply system or the cables on which your computer or television ultimately depends. However, Brian Larkin has recently offered an analysis which supplements this by recognizing that invisibility is only one aspect of infrastructure – and there are other moments in which what he calls the “poetic” function of infrastructure come to the fore. This, he argues, is the case insofar as infrastructures often come to symbolize – and constitute a visible display of – desired attributes such as progress or modernity. To this extent, he argues, we should also be aware of the many varieties of infrastructural fetishism displayed in many parts of the world in the policies of states concerned to produce among their populations the political effect of a sense of awe and fascination – by means of what Larkin calls “imaginative investments” in highly visible technologies. There are many examples – the miles of empty road built by the Albanian government when there were very few cars to drive on them; the national versions of satellite technology worked on by Indonesian and Lebanese rocket scientists of an earlier era, which were pursued principally for symbolic advantage in the age of the “Space Race”; and so on. To this extent, Larkin claims, besides their functional effects, infrastructures should also be understood as “meta-pragmatic objects, signs of themselves deployed in particular circulatory regimes to establish sets of effects” – principally, of making the citizens feel pride in their nation’s modernity. Indeed, he describes British policies in respect of building an infrastructure of railways, telephones satellite towers, and electricity-generating dams in Nigeria as being a way of “producing a particular sort of modern colonial subject … Technologically adept, forward thinking, mutable, this subject was formed by the criss-crossing of new communications networks. Railways, roads, and radio broadcasts were... to bring into being a technologically mediated subject ... open to the education, knowledge and ideas travelling along this new architecture of communication.”

Communications, Transport, and Mobilities: Intersections

In arguing for a return to the more capacious understanding of communication, as opposed to its contemporary reduction to the processes of signification, representation, and meaning, I follow Mattelart’s argument in favor of rethinking communication as a material element in the production of places and territories and the facilitation of the smooth circulation of people, goods, and culture. This perspective sees communication as a process of orchestration and assemblage of symbolic and material technologies in the production
of social space, constructing (and inhibiting) different patterns of discourse, and modalities of interaction and mobility. Here, transport networks and services must be understood as “sculpt[ing] landscapes of differential accessibility and …value” by making particular places more or less accessible.

I will return to these issues in more detail in Chapter 2 in my discussion of the role of transport and communications networks in the construction of political communities in Europe.

Within this broader framework, we can then attend not only to the visible flows of bodies, objects, and signs, but also to the way in which the relevant institutional and infrastructural frameworks, while less immediately visible, exert their influence in enabling, channeling, and regulating these movements. To take an example from the study of “mobile” technologies, Katherine Hayles argues that the key issue is the interrelationship of mobile technologies and located infrastructures. As Hayles notes, rather than focusing simply on how we use the GPS/mobile devices at our disposal, we must recognize that their functioning (in terms of capacity, quality of reception, and dependability) is entirely dependent on physically located infrastructures. The crucial questions then are, “where that infrastructure is located, within what territorial boundaries, who owns it and who operates it.” Thus, alongside the study of mobile phone users, we also need a geography of the infrastructure that both enables and shapes these mobile interactions.

Material and Virtual Networks

Although he puts the point in overly deterministic terms, Lefebvre is in many senses right when he argues that “paths are more important than the traffic they bear, because they are what endure.” The routes constituted by both geographical and media landscapes structure our actions in the world, if in different ways – the first by means of guiding the physical expenditures of effort and resources that are required to overcome the “friction” of both material and social distance; the second by constructing a semiotic web of representations that constitute the taken for granted pathways that guide our everyday lives, focusing on and privileging our recognition of certain kinds of possibilities and conversely, limiting or obscuring our recognition of others.

Rather than focusing simply on the symbolic dimensions of communications, while relegating transportation to the status of the merely functional, we must recognize, with Sterne, that “there are instrumental and constitutive dimensions to [both] communications and transportation.” In relation to the constitutive role of communications, the “annihilation” of time and space has variously been attributed, at different stages, to communications technologies such as the telegraph, the telephone, the satellite, and the Internet and to transportation technologies such as the train, the road network, ocean-going liners,
and air transport. Our object of study must thus be defined so as to incorporate both these dimensions. Thus Raymond Williams’ crucial concept of “mobile privatisation” refers not only to technologies of symbolic communications but also, as Sterne observes to “cars, cameras, appliances, wires, airwaves, buildings, messages, movements, images, ideas and sounds … as a whole social complex of practices.”

If we take the case of the railway, its invention cannot be understood simply as that of a technical device. Rather, what Christian Wolmar describes as the crucial innovation – the “placing of a steam engine on custom built tracks” has to be understood in the broader context of the social and financial changes (such as the new availability of capital for investment in scientific inventions) that constituted the Industrial Revolution. From this perspective, the railway is best understood as a “machine ensemble” constituted not only by the material vehicles, their forms of power, and the rails on which they run but also by a system of discursive practices such as timetabling, ticketing, signaling, and communication. In the end, all forms of communications must be understood as involving hybrid “assemblages” of communications technologies and transport systems, such as “trains and telegraph lines, radio and phone lines … a confluence of coaxial cables for increased telephone traffic and network television, combined with … highways and later, satellites … along with plans for internet infrastructures to make use of abandoned railroad rights-of-way.”

Neither physical transport nor communications media are simply machines. Nor is technology outside of social processes. It does not consist simply of things positioned in space but is a “spatial practice temporarily and provisionally stabilised through social institutions and meanings.” Thus, printing, like any other technology, is “not simply … technique … but a set of activities fostering the enrolment of various kinds of actants into heterogeneous networks.” Similarly, “a telephone is not just a device, but a means of folding together the far and the near, the alien and the familiar” and its “invention” also involved the development of a variety of social relations embedded in “patents, laboratories, telephone directories, and accountancy systems.” From this perspective, the Internet is best seen as “a heterogeneous assemblage of codes, user-controlled hardware, shared infrastructure, protocols, files, codes, skills, task-oriented knowledge, ‘netiquette’, venture capital, corporate investment, consumer expenditure and diverse other components.” By the same token, the functioning of any given technological device will vary according to cultural context, because a medium is not simply defined by its technical capacities but by “the complex heterogeneous network of relations between people, technologies, money, ideas and elements of place.”

However, if it is important to situate communication and cultural processes within a material and corporeal landscape, we should nonetheless avoid what John Durham Peters has called the “rhetorical blackmail” involved in the kind of “more materialist than thou” bullying with which fundamentalist Marxists
have often berated those whom they dismiss as “idealists” for failing to grasp the supposed realpolitik of communication. Rather than rejecting questions of textuality and meaning in favor of the “real world” of politics, economics, and technology, our task is to grasp both the materiality of symbolic discourses and the symbolic dimension of material objects and structures. Moreover, we must note that beneath the so-called bottom line of economic processes there lies a cultural framework of trust without which they cannot function.

In summary, my principal concern is to try to indicate, if only schematically, what kind of analytical benefits might accrue from the restoration of the broken linkage between the analysis of symbolic and physical modes of communication. However, in arguing for the better integration of the analysis of symbolic communications and material forms of transport, I am not arguing for their reduction to some uniform set of analytical laws.

The Multidimensionality/Simultaneity of Complex Networks

From the perspective I am proposing, our object of analysis should be the multiple presence of various communications patterns/networks in different dimensions of the same space. Only thus can we effectively construct a multidimensional model of communications and mobility at (literally) different levels and in all its different forms, below, on, and above ground. An excellent model for this type of approach was provided by Richard Wentworth’s exhibition exploring the simultaneous existence of overlaying pathways of communications and transport networks, with origins in different historical epochs, still in existence in the Kings Cross area of London: sewers, passages, tunnels, underground rivers, canals, roads, railways, bus and taxi routes, railways, public footpaths – and above them, the air corridors in the sky. However, even this exemplary model still only addresses transport links in their physical dimension and should, ideally, be complemented by a survey of all the forms of “symbolic communications” in play in the area as well, thus adding in all the electric cables, phone lines, telegraph wires, and now Wi-Fi networks, which also crisscross a given space. As the NL Design Collective argue, “Where once we bought, or claimed rights, in extra-territorial waters, with radio telephony, air travel and television an immense trade in ‘air’ has arisen. Wave frequencies, air routes and the space above buildings are [now] the goods of speculative trade – the... ‘front lines’ in [an] air war.”

Clearly, it would be quite impractical to attempt to do this kind of analysis exhaustively, in each situation to be studied as it would replicate all the difficulties implicit in any utopian vision of a “holistic” mode of study of all dimensions of communication in everyday life. However, while choices of what to focus on in any particular situation must always be made, we must recognize
the complexity of the setting from which we are abstracting some particular dimension of communication – only thus can we achieve a self-reflexive awareness of the limits of our analyses. One good parallel with Wentworth’s ambitious model of simultaneity of the various dimensions of mobility/flow is provided by the work of the Swiss video artist Ursula Biemann. Her work is concerned with the intersections of data flows, flows of commodities, technologies, natural resources, and people, and her ambition is to show how the dynamics of local microgeographies of everyday mobility are intermeshed with global and transnational systems.

Speaking of the way in which borders offer a compressed form for studying the dynamics of these various flows, she takes as one example the Straits of Gibraltar, as a veritable “bottleneck” of such flows. As she notes, the area is traversed by container ships en route from West Africa to the Mediterranean, by boats transporting migrants on their perilous nocturnal journeys, by helicopter patrols keeping watch, by radio waves and radar lines, by itinerant plantation workers who pick vegetables for the EU market, by commuting housemaids going to work for the senoras of Andalusia, by border guard controls on the mountain passes, by buses transporting Moroccan women to Tangier where they peel Dutch shrimps to be shipped back to Holland … by pirates who procure goods from China and by women smugglers who hide these goods under their skirts and carry them into the Medina.51

For her, as for Wentworth, what is needed is a multiperspectival approach that is capable of seeing how these different dimensions of mobility are articulated (or indeed, in conflict) with each other, at both micro and macro levels.

Notes


Evidently the key difference is that both the car and the television (and the living room in which it is customarily consumed) involve modes of private/individualized consumption, whereas the railway and the cinema are fundamentally public modes of communication. B. Bachmair (1991) From the Motor Car to Television, Media Culture and Society 13, 522, 525.

See T. Davies (1984) Transports of Pleasure, in T. Bennett (ed.), Formations of Pleasure, Routledge. I am indebted to Bill Schwarz for this example. These issues are also explored in the work of the conceptual artist Katie Paterson who provides an interesting meditation on the nature of metaphorical conversions. Her work transforms cosmic events, such as the circulation of heavenly bodies (the movement of the moon and the stars or of lightning) into the mundane everyday logistics of transport (Fedex® parcels, mobile phone messages, street illumination). As Brian Dillon notes in his commentary on her work, these metaphors “like curiosity, wonder or the adventure of discovery, take us out of ourselves, and deposit us at some distant remove (or) make distant things seem close and immediate” (B. Dillon (2013) Signs and Wonders: On Katie Paterson’s “In Another Time,” Mead Gallery, Warwick University, unpagedinated).

Cf. Paul Theroux’s discussion of the experience of train travel as one in which the train window “frames” the passing landscape as if it were a composed view “holding the scene for moment, makes it a picture” (P. Theroux (1975) The Great Railway Bazaar, Hamish Hamilton, p. 28). In describing the experience of travel on paddle steamers on the Mississippi River in the nineteenth century, passengers reported a similar sense of viewing “passing scenes” – as if it were the landscape, rather than them, which was in motion. See also G. Votalato (2007) Transport Design, Reaktion Books, p. 106.


See my discussion later in this chapter of Rupert Cornwell’s analogy between the role of the “highway” in its material form and that of the information “superhighways” in the constitution of nation and community.


R. Cornwell (2006) The US Salutes the Super-Highway, Independent on Sunday (July 2), p. 40. Evidently, the same mode of analysis could be applied to the later construction of the British motorway system, from the 1960s onwards, even if such spectacular results cannot be claimed for it.


Cf. G. Brolin (2006) Electronic Geographies, in J. Falkheimer and A. Jansson (eds.), Geographies of Communication, Nordicom, pp. 75–76. Of course, to return to the protocols identified in my introduction, following de Certeau as I do, this is not to presume the inevitable success of these preestablished pathways in entirely limiting the “journeys” that their intended users actually undertake.

Sterne, Transportation and Communication, p. 124.


Sterne, Transportation and Communication, pp. 129, 121.

45 Adams, *Geographies of Media*, pp. 212, 31, 39, 57; cf. the way in which the distinctive development of the mobile phone in Africa has been influenced by the context of there being no effective landline technology in much of the continent.

46 Cf. the virtual dimensions of physical structures; and the rhetorical dimensions of architecture in directing the movements of a building’s inhabitants.


48 M. Serres and B. Latour (1995) *Conversations on Science, Culture and Time*, University of Michigan Press, p. 91 ff. In this connection, we should note Michel Serres’ reminder that “the best synthesis takes place on a field of maximal differences” and his corresponding warning against the dangers of “lazy” forms of what he calls “pass-key” analysis, whereby ready-made interpretations, at a high level of abstraction, are paraded as the solution to all problems. Rather, as he observes, if “a single key won’t open all locks” and “the best solutions are local, singular, specific” then “each time you try to open a different lock, you have to forge a specific key.”


