Peripheral Flows

Peripheral Flows:

A Historical Perspective on Mobilities between Cores and Fringes

Edited by

Simone Fari and Massimo Moraglio

Cambridge
Scholars
Publishing

Peripheral Flows:
A Historical Perspective on Mobilities between Cores and Fringes

Edited by Simone Fari and Massimo Moraglio

This book first published 2016

Cambridge Scholars Publishing

Lady Stephenson Library, Newcastle upon Tyne, NE6 2PA, UK

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

ISBN (10): 1-4438-9048-0
ISBN (13): 978-1-4438-9048-9

CONTENTS

ACKNOWLEDGEMENTS

This book is a collection of essays, which are the result of two years of shared network activities among scholars from thirteen different countries and also from different disciplines (including the history of technology, economic and business history, cultural studies, media studies and transport history). A first, fruitful meeting took the form of a workshop on *Peripheral Mobilities* held on 13 November 2013 at the University of Granada, Economic History Department, with Simone Fari, Gijs Mom and Gregorio Nuñez as conveners. The aim was to contribute to the current debate with in mind the core/periphery dichotomy for defining a new mobility paradigm based on flows. The network is actively engaged in preparing panels and papers for international conferences, like ICOHTEC, T2M and SHOT, the Science and Technology and the European Periphery Meeting.

We would like to thank the Department of Economics of the University of Granada for financing the copy editing and proof reading of this volume and our gratitude goes to Patricia Kennan for her patient work in revising and editing the language.

INTRODUCTION

THE FUNCTION OF FLOWS BETWEEN CORES AND PERIPHERIES

SIMONE FARI
UNIVERSIDAD DE GRANADA, SPAIN
MASSIMO MORAGLIO
TECHNISCHE UNIVERSITÄT BERLIN, GERMANY

Over the last few decades the centre/periphery paradigm understood as a category in historical analysis has tended to drop out of use. It has followed the destiny of concepts like civilisation, imperialism and development, which for a long time occupied an important position in the historical debate before being replaced by others which seemed more interesting, like globalisation, global history and transnational history.

Originally, it was the important role of the Industrial Revolution which gave prime place to "centrality" in the methodological approach of economic-historical analysis. Given that Great Britain had come first in the race to industrialisation, all other countries were studied as late-comers, and therefore any possible institutional, ethical or geo-morphological differences were underscored (Rostow 1960; Gerschenkron 1962). In the same way, firstly Imperialism, followed by the victory over Nazism, consecrated the idea of a superior democratic civilisation to be exported all over the world (Bowden 2009). The conviction that the West is economically, technologically and politically superior has induced many scholars to think of innovations as something to be transferred from the centre to the peripheries (Ferguson 2011). However, some Marxist scholars started back in the 1970s to highlight the difficulties inherent in such a model, and underscored the need to investigate the particular features of the many, varied peripheries (Wallerstein 1974; Amin 2007). Nevertheless, while trying to enhance the dynamics and typical structures of peripheries or semi-peripheries, this reaction did nothing but stress the centre-periphery model. In fact, the need to observe the real conditions of

the peripheries pre-supposes the existence of a centre to distance from and contrast with.

The idea of centre-periphery finds its roots in a historical analysis based on nation-states and the international systems derived from it. Consequently, a strong contribution to overcoming the centre-periphery paradigm comes from those studies which invoke a wider historical and geographical reach and have rediscovered the importance of geo-morphological elements (Jones 1981). In other words, over time the natural boundaries of a territory are held to determine homogeneous economic, political and social conditions which tend to dismiss a nation-state analysis and call for the generation of a wider and more homogeneous category (the Mediterranean, the European continent, Eurasia, the Atlantic, the Baltic and so on). The progressive rediscovery of natural and geographical features has focused interest on environmental history, which considers the environment and ecology not so much as objects of study but as categories of analysis, or a methodology to apply in research on economic, social and political matters (Burke-Pomeranz 2009).

Another contribution to overcoming nation-state approaches is to be found in a renewed interest in history over very long periods. Numerous studies have felt the need to widen their historical analysis from a traditional temporal horizon limited to the last two or three centuries, to a more extensive panorama covering the last five hundred, thousand or ten thousand years from the Neolithic Period onwards, or even the whole history of humanity from its origins (Pomeranz 2001; Cavalli-Sforza 2000; Snooks 1996). Opening up the period of history in this way means having to abandon the benchmark of the nation-state as a category first emerging at the end of the modern age, and at the same time using with greater moderation the centre-periphery paradigm, if for no other reason than the multiplication of centres and peripheries over time.

The increasing scepticism about short-term periodisation and the traditional geography of nation-states has been furthered by the progressive improvement of the means of transport and communication from the nineteenth century up to the present. Today's changed perception of the world and its different regions has multiplied the number of studies on globalisation in the social and human sciences. Three principal groupings have been consolidated in the field of historical studies: 1) transnational history; 2) the history of globalisation; 3) global history. Though making full reference to the nation-state, transnational history avoids adopting it as a category of analysis and therefore goes to consider the relations and dynamics that are installed above national levels (Saunier 2013). Though offering numerous interpretations and definitions, the

history of globalisation studies the evolution of the tendency of peoples to draw closer economically, politically and socially (Chase-Dunn 2006). Global history, instead, proposes changing the perspective for studying historical events and processes, and sees all historical facts under analysis as having to be collocated in the correct context, with due consideration given to causes and consequences on a global level, even in cases of apparently local events (Bayly 2004).

The process of geographical and temporal destructuration probably reached its peak with the definition of two new concepts emerging with globalisation - global moments and global movements. The former reject the historian's classic periodisation and hold that all scholars must be capable of identifying the historical moments in which contemporaries themselves came to perceive they were global. In this way, the history of globalisation, and in last analysis, that of humanity, is characterised by moments of collective global awareness, which stand apart from any attempts at posthumous periodisation (Streeter-Weaver-Coleman 2009). The second concept, which is closer to the position of this volume, expresses a desire to perceive the history of globalisation as the result of a series of movements or international flows of people, things and information (Conrad-Sachsenmaier 2007). These flows, the software, not the transport conveying them, are held to trace out in a dynamic way an intricate network of relations that override any logic of centre and periphery (Magee-Thompson 2010).

In the definition of the subject matter and contents of this volume, contributors have therefore benefited from this new season of studies, which radically changes the traditional centre-periphery paradigm, by now going well out of favour. Nevertheless, interest in the contraposition is still alive, and has not really been diminished in this new theoretical and historiographical panorama. In particular, while the literature has destructured the paradigm, the historical sources available to scholars are full of it - politicians, managers, consumers and users acted and reacted over the course of preceding centuries in the conviction that one or more centres existed to follow and imitate economically, politically and socially. They felt the force of a cultural, military or political attraction which functioned as a model, both to adhere to uncritically in its actions and for defining alternative models, which could be anti-colonial, nationalist or internationalist. In other words, today's scholars must adopt available critical methods to reveal and understand how far the assimilation of the concept has influenced social actors. It is therefore on the perception of the

social actors and their actions that historians must continue with their surveys, thanks to the instruments now at hand.

The main task of the eleven contributions to this volume is to re-consider and re-assess the role of core and periphery in shaping modern socio-technical systems. From this perspective, they explore a terrain formed of highly complex systems, mainly operating on a so-called Western model. Railways, telegraphs, motor vehicles and airports were in fact all born in core areas and then spread out into the peripheries. The approach in itself is not new, but our volume has still managed to bring out some interestingly innovative elements and viewpoints.

Semi-peripheries and flows are the two empirical focal points of this group of essays, and collectively the contributors follow the classical approach and label as semi-peripheral both Southern Europe and South America. However, they go beyond this classification, and also focus on the peripheries of the cores, like rural US, (defined rural by the Americans themselves in the 1940s), doing this in the full awareness that a "single country may contain both centres and peripheries, thereby making purely national distinctions of dubious use" (Gavroglu et al. 2008: 155).

Some of the contributors find that the theme of flows stimulates new approaches (Mom 2011). The concepts of flows is ambiguous, encompassing both transport and communications and, in a broader and often neglected view, also other forms of fluxes, from more conventional technological circulation to mostly overlooked operations like those of sewage pipelines. As Gabriele Balbi and Massimo Moraglio state in their essay, broadening the range of what we define as flows is not just a theoretical move, but can open up new investigative paths and different understandings of our societies.

In a broader perspective, the tensions between cores and peripheries are the outcomes of flows and counter-flows deflecting among those poles, flows being made possible by large systems. We can count a vast literature on this field, which these exchanges have been traditionally termed one-way transfers, functioning from the core to the periphery, with the European/ North-Atlantic area as the core, and the periphery a not-better-defined rest of the world. Here we stress how flows are more than neutral channels, but are themselves part of the equation. And in this equation, armed vessels, submarine telegraphic cables, high-performance planes are not just instruments of exchange and transfer; they are in themselves forms of legitimation and power. The 'uncomplicated' organisation of flow systems embeds political values, which represent forms of dominance, control and imbalance. The most mundane element, like a railway track

gauge, appears to be a highly decisive and politically sensitive element of the struggle between core and periphery (Puffert 2009).

However, our volume is not satisfied with a definition of dominance shaped by flows, which addresses the roles of power and agencies but does not question the axiomatic concept of imbalance, in which cores are perceived as superior to peripheries. Another issue is that flows are depicted one-way only, taking from cores to the peripheries, which means legitimating once more the traditional approach, and therefore confirming the classic diffusionist model (Raina 1999).

It follows that our contributors are not content with the classic definitions of semi-peripheries and flows, and tend to test and revise them, and eventually offer critiques. What has come out is a tempering of the monolithic and traditional concept of a one-way transfer, that of adaptation, e.g. a change in meaning, use and perception more than a simple and linear act of adoption. From the contributions to this volume we can proceed with the analysis, and come to claim we have arrived at sort of perennial re-invention of socio-technical flow systems according to local, regional or national needs. The notions of power and agency are still important, but should be handled with care. As recalled by Gavroglu et al. (2008:155), a national "division remains useful and suggestive".

To give a simple but cogent example, telegraph practices in 19th century Great Britain were different from those in Italy in the same period, as Simone Fari shows us in this volume. The construction of an apparently similar technical system in different contexts unleashed in each country very different social uses, displaying the different expectations and actions of the dominant classes, experts and, naturally, users. The endless debate on the Greek railway system, as narrated by Irene Anastasiadou, illustrates another way of reformulating in local terms the universal grammar of the train. We know indeed how artefacts are entangled with politics (Winner 1980) and how politics are entangled with artefacts (Joerges 1999), and the Greek case shows us how the national debate used the usual ingredients, but in a unique and inimitable homespun brew. In addition, in discussing the role of national cases, Ana Paula Silva describes how the concept of centrality can also be a matter of viewpoint in her study of the Portuguese ranking in telegraph and telecommunication global networks, holding that Portuguese hubs have an imperative need to ensure a proper global coverage of the systems. We then come to find a novel and still controversial way of defining centrality. Was it based in London, at the core of the "Empire", or in the town of Carcavelos, the Portuguese technical hub interconnecting Europe, the Americas and the rest of the globe?

What emerges as the second *fil rouge* in this volume is the focus on semi-peripheries (as Greece, Italy and Portugal can be easily defined). Though our volume wanted to move on from this categorisation, the three countries in question still display inner tensions in emerging as complex socio-technical systems, and their ambiguity can be fruitful in offering novel research paths and theoretical approaches. If, for reasons of prestige, the ruling classes aimed at duplicating the acclaimed model of the West, the results were not always what was expected. Forms of hybridisation, changes and deformation, misunderstandings, new assets and brand-new ways of using the imported technologies are indeed common in the semi-peripheral regions, as the articles discussing them show.

Dhan Zunino Singh´s essay describes not only the influence of western-based models, namely Paris and London, cores *par excellence*, in building Buenos Aires´s underground, but also the tensions emerging in the adapting/re-shaping process once the socio-technical system had been transported into South America. Exactly because they were labelled semi-peripheries, the elites of those areas were fascinated by the European model, which made them prone to adopting the core model, while at the same time desiring to forge an original outcome. Luisa Sousa´s contribution also moves in this direction, showing how innovative road construction models created in the colonies by Portuguese engineers returned to Europe. Here, we have an intricate overlapping of periphery and core, which could almost convince us to abandon them as categories. Victor Marquez´s essay, however, suggests innovative ways of reframing the concept of core. His analysis of rural US and the 1940s shows us how the American countryside was viewed as a periphery, ready to be conquered by a network of airports.

The issue of semi-peripheries is explicitly addressed in Alexia-Sofia Papazafeiropoulou´s essay, offering a panorama of the debate around the concept and focusing on the case-study of Greece. José Barros Rodrigues and Maria Paula Diogo carry out a theoretical excursus and a case-study on the early automotive industry in Portugal, once more describing a pattern which does not follow the expected route. Other contributions in this book are focused on the dilemmas of modernisation as presented - sub specie flows - by those semi-peripheral actors, also those who were trapped between different, fiercely alternative cores. Here the use of plurals is indeed necessary, as in the case of Sławomir Łotysz´s paper, which illustrates how the Polish railway gauge became a battlefield for Russian/Soviet and German/Nazi dominance. The time-frame becomes fundamental for Leonardo Caruana de las Cagigas, who presents the late implementation of Spanish motor-vehicle insurance as strongly linked to

the classic narrative of the diffusionist model, although also showing an unexpected twist, which forces us to reconsider the whole concept of linear diffusion.

So in presenting this volume, we hope that it will contribute to the current debate on history. We also hope it will provide a starting point for future explorations on the subject of Science and Technology Studies and take part in a wider discussion of globalisation, global and transnational history.

References

Amin, Samir. 2007. *Global history: A View from the South*. Fahamu/Cape Town/Dakar/Nairobi/Oxford: Pambazuka Press.

Bayly, Cristopher A. 2004. *The Birth of the Modern World, 1780-1914.* Malden-Oxford-Carlton: Blackwell Publishing Ltd.

Bowden, Brett. 2009. *Empire of Civilisation: The Evolution of an Imperial Idea*. Chicago: Chicago University Press.

Burke, Edmund and Kenneth Pomeranz (eds.). 2009. *The Environment and World History. California World History Library, Volume 9.* Berkeley/Los Angeles/London: California University Press.

Cavalli-Sforza, Luigi Luca. 2000. *Genes, Peoples and Languages*. New York: Farrar: Straus & Giroux.

Chase-Dunn, Christopher K. and Salvatore Babones. 2006. *Global Social Change: Historical and Comparative Perspectives*. Baltimore: The Johns Hopkins University Press.

Conrad, Sebastian and Dominic Sachsenmaier. 2007. *Competing Visions of World Order: Global Moments and Movements, 1880s-1930s*. New York: Palgrave Mac Millan.

Ferguson, Niall. 2011. *Civilisation: the West and the Rest*. London: Penguin Books.

Gavroglu, Kostas, et al. 2008. "Science and Technology in the European Periphery: Some Historiographical Reflections." *History of Science* 46 (6): 153-175.

Gerschenkron, Alexander. 1962. *Economic backwardness in historical perspective, a book of essays*. Santa Monica: Rand Corporation.

Joerges, Bernward 1999. "Do Politics have Artefacts?" *Social studies of Science,* 29 (3): 411-431.

Jones, Eric. 1981. *The European Miracle: Environments, Economies and Geopolitics in the History of Europe and Asia*. Cambridge: Cambridge University Press.

Magee, Gary B. and Andrew Thompson. 2010. *Empire and Globalisation. Networks of People, Goods and capital in the British World, c. 1850-1914*. Cambridge: Cambridge University Press.

Mom, Gijs, Georgine Clarsen, Nanny Kim, Cotten Seiler, Kurt Möser, Dorit Müller, Charissa N. Terranova and Rudi Volti. 2011. "Hop on the bus, Gus." *Transfers* 1 (1): 1-13.

Pomeranz, Kenneth. 2001. *The Great Divergence: China, Europe, and the Making of the Modern World Economy*. Princeton: Princeton University Press.

Puffert, Douglas J. 2009. *Tracks across continents, paths through history: the economic dynamics of standardization in railway gauge*. Chicago: University of Chicago Press.

Raina, Dhruv, 1999. "From West to Non-West? Basalla´s Three-stage Model Revisited." *Science as culture* 8 (4): 497-516.

Rostow, Walt Withman. 1960. *The Stages of Economic Growth: A non Communist Manifesto.* Cambridge: Cambridge University Press.

Saunier, Pierre-Yves. 2013. *Transnational History*. New York: Palgrave-Macmillan.

Snooks, Graeme. 1996. *The Dynamic Society: the Sources of Global Change*. New York: Routledge.

Streeter, Stephen, John Weaver and William Coleman. 2009. *Empires and autonomy: moments in the history of globalization*. Toronto: UBC Press.

Wallerstein, Immanuel. 1974. *The Modern World System, vol. I: Capitalist Agriculture and the Origins of the European World –Economy in the Sixteenth Century*. New York/London: Academic Press.

Winner, Longdon. 1980. "Do Artifacts have Politics?" *Dedalus* 109 (1): 121-136.

PART I

MAPPING THE FIELD

CHAPTER ONE

A PROPOSAL TO HYBRIDISE COMMUNICATION AND MOBILITY RESEARCH AGENDAS

GABRIELE BALBI
USI-UNIVERSITÀ DELLA SVIZZERA ITALIANA, LUGANO, SWITZERLAND
MASSIMO MORAGLIO
TECHNISCHE UNIVERSITÄT BERLIN, GERMANY

This paper aims to revisit the state of the art of communication and transport studies in order to gain a better understanding of their relations. To do so, we will challenge certain self-evident facts regarding transport and communication, analysing the existing affirmations which are never, or very seldom, openly assessed or debated. In sum, we stress how in accordance with their historical precedents, communication and transport are enmeshed to the point in which it is difficult to differentiate between the two. In our eyes, any enquiry requires a different theoretical approach to the investigation of flows, one which encompasses communication and transport together as part of a largely overlapping socio-technical mixture. In doing so, our objective is to contribute to decentralising the research agendas and praxes of these two fields, which for a long time have been excessively focused on their cores, with minimal attention given to their fringes and overlaps.

Keywords: ICT, transport, hybridisation, catalysing effect, de-centralised, fringes

1.1 Introduction

This paper aims to revisit certain elements of state-of-the-art communication studies and transport research in order to acquire a better understanding of their relations. To do so, we will challenge certain self-evident facts regarding transport and communication, in a sort of investigation into a hidden structure often made of passing references which are never, or very seldom, openly assessed or debated. We know

that transport and communications have been alternative research fields for a long time. Such a representation assumes implicitly, and occasionally explicitly, that we have two parallel worlds with minimal or no overlap, at least from the invention of telegraphy onwards (Packer 2006). In addition, such an assumption encourages us to believe that transport and communication have mainly substitution effects, i.e. that more input in one of the two fields means less in the other (Cairncross 1997). The aim of this essay is to offer evidence of the degree of substitution, integration and reciprocal catalysing effects. Communications do not replace transport, or vice versa, though they do set each other in motion.

It is often taken for granted that communication is immaterial, so that transport is depicted as a material "thing" (Leonardi 2010; Schabacher 2013). We claim that both transport and communication rely heavily on physical structures and tangible networks and both have very volatile and weightless components. Additionally, the two realms have often been viewed as space- and time-annihilators, meaning that communication and transport appear to be able to reduce space and contract time. Here we want to show that, on one hand the compression of space and time is a mythological narrative that has accompanied the entire history of communications and transport (Morozov 2010; Mosco 2004); and that, on the other hand, these two dimensions have been compressed by a mixture of communication and transport networks, to the point that it is very difficult to extricate the former from the latter (Warf 2008). Such compression does not actually reduce the relevance of time or space, but on the contrary, makes them more relevant in our lives. That is, time and space matter more now than in the past (Wenzlhuemer 2013).

Splitting the research into those two fields can have academic and practical functions, although their hybridisation definitely requires a different theoretical approach, one which should address the investigation of flows and at the same time encompass communication and transport together as part of an overlapping socio-technical mixture. It is already possible to detect traces of converging paths, in which transport studies are acquiring communication concepts and vice versa. We will combine the study of the two, recalling the backgrounds of transport history and media studies without forgetting the rich debate on mobility studies that began in the late 1990s (Urry 1999).

In sum, our objective is to contribute to the decentralised research agendas and praxes of these two fields (Mom et al. 2011), which for a long time have been focused excessively on the core of communication and transport, with extremely minimal focus on their fringes and overlaps. In other words, we claim that media studies should examine non-media

elements to better analyse their objects of study and that transport appears to be the most appropriate place to do so. Similarly, transport and mobility studies should go beyond trains/cars/aeroplanes, and examine communication for a better understanding of its core of studies. The present paper wants to contribute to the central theme of this volume, not through geographies or spatial arguments, but on a different and more speculative level, by claiming that media and transport studies should examine their peripheries in order to understand their cores or, better, to decentralise the two bodies of literature.

1.2 Two different literatures

Media and communication studies have been scrutinised mainly by the social sciences and humanities. Initially, the role of media and their relevance in fields such as political sciences (understanding how to impact voters) and psychology (for the history of media effects see McQuail 1984) were scrutinised. The long-term effects of these studies have been very relevant. It could be stated, indeed, that the entire history of communication studies in the 20th century can be re-read as studies on what the media do to people and, less frequently, vice versa. Secondly, semiotically and linguistically the most relevant aspect in the media are media texts and so it could be said that, contrary to Marshall McLuhan's famous edict that the message is the medium, media scholars should therefore study films, radio/TV programmes and websites in order to understand cinema, broadcasting and the Internet. Thirdly, media and communication literature has focused mainly on journalistic practices, and for a long time communication has meant in part studying newsrooms and journalist interaction. Fourthly, British cultural studies have promoted the analysis of media audiences, their ability to decode mass-media messages (Hall 1973) and, in general, their active role in counteracting a passive couch-potato image. Fifthly, particularly in the digital era, a crucial, much taken-for-granted idea is the role of media in creating an alternative reality - lighter, different and occasionally more powerful than "real" reality (for a critical assessment, Magaudda 2011). This statement means that media are often viewed as powerful in creating alternative worlds, constructing alternative narratives, providing unusual practices and virtual worlds for audiences to live in. The virtualisation of worlds has apparently increased with digitisation, though it is embedded in the idea of a post-industrial society. It is not by chance that Daniel Bell (1973) identified the key dimension of the dematerialisation of this new type of society in computers and communication networks.

Indeed, the concept of a post-industrial society has established new paradigms, which also offer novel approaches for revising historical research and the current social agenda. It is no coincidence that in recent decades, we have witnessed a new approach towards mobility and flows which has impacted on our perception of transport and mobility. Sheller and Urry (2006:207) noted that until the 2000s, "social science […] largely ignored or trivialized the importance of the systematic movements of people for work and family life, leisure and pleasure, politics and protest. The new paradigm challenges the ways in which much social science research has been 'a-mobile'". Transport was indeed largely subject to research based on a hard technology approach and its outcomes, in which history was likewise material for a business and econometric approach, emphasising technological achievements usually linked to the development of a large network of modern tracks, roads and other infrastructural systems. In brief, both mobility and transport studies assumed a sessile population, with immobile life-long travel habits of moving from A to B, in which transport and communication systems were recognised as couriers of freedom, prosperity and progress (Misa and Schot 2005). This progressive tale was both technological and political, embedding the train, motor vehicles and planes as messengers of development, openly or implicitly moving from cores (GB, Europe, the US) to the periphery (Mom 2014; Raina 1999).

On a different level and despite emerging new research, we are still taken up by the material and immaterial. Communication has been conceptualised as light or immaterial, which is against the evidence of the difficult and huge physical systems allowing those information flows (for a critical assessment see Schabacher 2013). Conversely, transport studies have been largely, if not obsessively, defined as material, physical and heavy, despite the huge symbolic and often immaterial features of travelling.

There is a specific moment in history when this occurred. James Carey (1989), a communication scholar, claimed that the arrival of the electric telegraph in the first half of the 19th century delinked communication from transport, given that in the century as a whole the train was rooted in its slowness, while messages were free to run at the speed of light. From that point in time, communications was able to avoid physical transporters and be independent of them. In doing so, speed was used as a key factor to distinguish communication from transport, thus losing the complex, intertwined relation existing between the two worlds.

This brings us to state that media scholars need to consider that transport and mobility studies can no longer be separated from communication and media studies.

1.3 Two converging literatures

The immateriality of communication was a result of the core concepts of 19th century culture, which defined speed, (which, it should not be forgotten, encompasses both space and time), as the central asset of progress and development, lionising communication for its velocity, equal to that of light in the case of the telegraph. Conversely, transport was the slow but material means of disseminating the ideas of progress and prosperity. In the times of empires, both representations had a core and peripheries, the latter usually identified as the colonies (Ray 2013; Pirie 2009; Winseck and Pike 2007).

In this regard, history and more generally, any long-term perspective, may indeed help. Media and communication studies are on one hand acquiring certain keywords, ideas and approaches previously reserved for transport. In the first place, communication is increasingly more interested in the technological and physical dimensions of the media: different scholars show the materiality of digital technologies and their role in shaping media usage (Hu 2015; Park and Starosielski 2015). This approach has been partially influenced by the long roots of the Canadian School (Harold Innis, Marshall McLuhan and Joshua Meyrowitz in genealogical order), but mainly by the recent convergence between media and science and technology studies (Boczkowski and Lievrouw 2007). Now, after years of scarce influence, the media are a privileged subject of science and technology studies, and have provided a series of useful theoretical backgrounds. In the second place, the network dimension of the media, previously recognised for its neglected forms of communication such as telecommunications (telegraphs and telephones), is currently at the centre of attention, due to the influence of the Spanish sociologist Manuel Castells (1996) and his idea of a network society. Furthermore, the word network appears to be currently a keyword in media studies, as well as infrastructure (Peters 2015).

Regarding mobility and transport studies:

> the current critique of the 'static' social sciences also departs from works concentrating on post-national de-territorialisation processes and the end of states as containers for societies. Moreover, theories of a 'liquid modernity' (Bauman, 2000) usefully redirect research away from the static structures of the modern world (Sheller and Urry 2006:210).

In addition, history has matured new approaches, summarised in what is called the "cultural turn" (Divall and Revill 2005), as well as in a prodigious development of associations and new journals (Mom 2003).

Therefore, whereas communication studies had assumed a materiality, transport and mobility studies had moved towards immateriality. Actually, these concepts appear to be useful in the definition of experiences (both in communication and transport). It therefore appears both difficult and perhaps even pointless to try to separate materiality from immateriality, given that the former is defined by the latter and vice versa.

However, we further extend the ideas of material and immaterial. We want to question the ability of separated fields, like communication and mobility/transport studies today, to scrutinise the complex world of communication and transports once they represent an indistinct flow taking in both messages and movements. Communication and transport need to be seen as part of the same game of fluxes, as certain scholars have noted (Sterne 2006). In doing so, we will show how this interrelation is fundamental in defining a socio-technical assembly of flows.

1.4 Not alternative realms, but two tangled networks

From the nineteenth century, one of the main features of communication and especially telecommunication tools was the fact that they did not allow for communication while moving. Telegraphy and telephony permitted an instantaneous exchange of messages due to the use of electricity only between two stationary subjects. It was Guglielmo Marconi's wireless telegraph that for the first time allowed means of transport (like ships) to communicate in movement. With a large technical-systems approach, we also must remember that the means of transport have always required the presence of telecommunication infrastructures (info-structures); among the various examples, consider the importance of telegraphy for railways and more recently of radar for airplane networks (Beniger 1986; Gras 1997).

With wireless telegraphs, the relation between media and the means of transport became increasingly close and symbiotic. From the 1960s onwards, the most interesting examples are the transistor radio, CB (citizen band radio), and, naturally, mobile telephony and wireless internet access. With the portable radio, people could be entertained for the very first time while on the move, and car radios are probably the closest communion between means of communication and transport. They were targeted at a specific category of users (car and truck drivers) and at least originally were designed to be useful working tools. However, they were re-used in an unexpected manner, and represented and in certain cases continue to represent the terminals of a virtual community of people in movement on motorway networks. Finally, the mobile phone, particularly

from the mid-1990s, has been one of the greatest success stories in the history of the media, and is quite normally used on means of transport to plan journeys, remain in touch with social networks, and while away the time spent waiting for public transport (Katz and Aakhus 2002).

It is indeed clear that travelling requests more ICT not solely as a technological need for transport systems and networks, which can function only if assisted by a massive use of telecommunications. With the exception of walking and biking, any other means of transport requires ICT and without such support comes to a stop. Aviation is the most evident example, though motor vehicles also need it and any lack can have harmful consequences. However, such a learning effect is not limited only to operating transport systems but also involves freight and passengers. Container-tracking is a splendid example of how to achieve traceability and thus more control and efficiency (Maersk 2011). Transport requires more telecommunication in its smaller component (e.g. a single container) and not simply as networks (e.g. vessels or freight trains).

Travellers also require telecommunications. At times travelling can replace communication (I go; therefore, I will converse personally once there. Thus, I retain other communication flows). However, the act of travelling *per se* also requests telecommunication, in organising (booking on-line), in accessing the network (on-line tickets and boarding cards on the smart phone), in travelling (sending e-mails, or phoning during the journey), and once at the destination (filling in the geographical gap with one's own network). The idea that communication requires transport is very new, and past scholars and the general public considered the dependency reversed (Packer 2006). Nevertheless, can we state that communications require transport? We may consider ICT *per se* an act of transmitting messages, unnecessary because such an action can be addressed without support from transport. Nevertheless, once we enlarge the horizon and consider communication as a complex socio-technical system needing implementation and management (including renewal and repairs), then indeed ICT is also in need of transport.

From a user´s perspective, we have anecdotal evidence of increased ICT use once a higher degree of mobility is inserted in the equation and vice versa. As Mokhtarian (2007:45) noted, relying on de Sola Pool (1977), "the first words Alexander Graham Bell spoke over the telephone were 'Mr. Watson, come here; I want you', generating a trip for his assistant (in this case, only down the hallway)."

In addition, as business historians know full well, making a distinction between transport and communication in any business transaction would appear strange (Beniger 1986). From that perspective, both communication

and transport instruments are simply combined to achieve a desired target, namely, make possible the flow of information and objects. Can this explain why business historians working on media studies also are successful in transport research, as the paths of Catherine Bertho-Lavenir, Andrea Giuntini, Daniel R. Headrick, Robert Millward and many others demonstrate?

We have here evidence of a strong reciprocal influence and need of one other. Communication has been developed as a means to optimise the efficiency, as the case of telegraphs for railway openly shows. Messages were and remain tools in directing and re-routing flows. At the same time, journeys increase the quantity of motion or motionless communication flow exchanges. In other words, the combination of the two has become so complex that today they are indistinguishable. It cannot be claimed that transport is feeding communication or communication is feeding transport. We should develop other tools of analysis, which start from this assumption.

1.5 On catalysing effects: communication and transport do not replace each other

The relation between ICT and travel is in no way a zero-sum game, i.e. ICT and physical travel are by no means alternative kingdoms (Mokhtarian 2007). Media history has often shown how new media do not replace or kill off old ones. They often remediate (Bolter and Grusin 1999), copy and generally integrate them, so creating new media eco-systems (Balbi 2015). This paper postulates that not only do communication media not replace others and that means of transport do not replace others, but also that extensive communication does not simply replace transport.

First, as stated above, according to James Carey (1989), before the invention and use of the electric telegraph, these two realms were not separated simply because people and messages travelled at the same speed. With electricity (or the earlier optical telegraph, according to other authors, see Balbi and John 2015), messages could travel independently from humans, coaches, horses or trains; therefore, these two realms began to be perceived separately. This was a long process, if we consider that many Post and Telegraphs ministries in the late nineteenth century continued to regulate transport or, again, if we consider the strict synergetic link between communications and transport that is still relevant.

A second observation: over the past two centuries, both ICTs and transport have become increasingly more available to the masses. Nobis and Lenz (2009:93) remark how the:

> parallel increase of both travel and telecommunication could be registered for many countries of the industrialized world and that the scientific discussion regarding the interaction between telecommunication and travel is far from asserting an 'automatism' between them.

They also notice that "most analyses have tended to presume that the direction of influence is above all from telecommunication to travel thus neglecting or at least underestimating the likely impact of travel on telecommunications." If there is wide agreement over assessing that "the use of and experience with ICT contributes to more fragmented work patterns", it can also "be noted, however, that the causality of this effect is unclear. It is likely that those whose work organisation allows for fragmentation of the work activity will have used ICTs more to effectuate working from home and other places" (Alexander et al. 2010:62). This statement confirms the nature of communication and travel as a complex mish-mash of both elements.

Third observation: indications currently support the notion that remoteness both replaces and catalyses mobility. Low-cost airline companies would not exist without an internet-based selling system, and part of their success is due to their convenient, immediate booking processes which can boost travel consumption. Anecdotal evidence from social network users shows how the increase in virtual contacts also increases real mobility, due to the desire of the parties to meet up. In addition, business partners can contact one another via ICTs, though a journey to their workplaces and a physical meeting deepens the contact and offers further valuable considerations. For a catalysing effect, we can state that a change of work or pleasure location is now available via telecommunications at affordable prices, making higher mobility and hyper-mobility previously unenvisioned options. In this way, the volume of location changes is increased. New societal and professional pressures and infrastructural networks unleash potential mobility, which was previously unavailable or unobtainable because of time and money constraints. Marketing departments know this very well, as a 1990s *Best Buy* advertisement shows. A woman is purchasing a camera and is doubtful of the consequences: "HEY, if I took pictures of the baby and e-mailed them to the in-laws, maybe they would not visit us as often. WAIT, what if that just made them want to visit more?"

Another, very symbiotic tool of this dual process (replacing and

catalysing) is the mobile phone. Scientific research does not agree on its effects and, as noted in the case of the fixed line (De Sola Pool 1977), there are opposite tensions between the mobile serving as a facilitator of sociality and as a kind of replacement for physical meetings (Green and Haddon 2009: 11-13). "Opposite tensions" between communications and transport also mean that current research has identified contrasting consequences that telecoms have on transports.

Two examples should provide interesting insights.

First example: broadcasting. On one hand, radio and television have stimulated both "despatialized simultaneity" (dispersed people could experience the same events at the same time simply by remaining at home and tuning in on their devices, Thompson 1995) and "mobile privatization" (the possibility to travel to new places seen on the TV, again without leaving home, Williams 1974). On the other hand, radio and TV have favoured making contacts and knowing "the stranger" and the "unknown", stimulating mass travel and new forms of the sense of place (Meyrowitz 1985). It is not by chance that statistical data show how in recent decades, the per capita distance travelled each day has increased in nearly all the countries in the world despite, or as an effect of, the extensive use of remote connections (Eurostat 2012).

Second example: a similar situation occurs in an interesting story of an unexpected use of the cell phone in Africa, which has changed the continent in terms of the possibility to access communications and has also introduced new habits. One of the most interesting is the M-PESA or using the cell phone as an electronic wallet to transfer money through the SMS from one phone to another. This usage is crucial on a continent where, particularly in the rural areas, very few cash machines are available. And so the money flows from men (their phones) working in the city (the centres) to women living in the countryside (peripheries). This gender issue has another, unexpected effect on mobility. Women worry that their men may not come back to the villages with the cash simply because they can easily transfer it, and therefore could well prefer to stay in town with a "city wife". (Agar 2013).

1.6 Time and space annihilation and their increasing relevance

With formidable arguments and a vast array of evidence, social sciences have claimed that in recent decades there has been a shift from a fixed and lasting form of social fabric to "liquid life", in which mobility, both geographical and social, has emerged as a key factor (Baumann 2000;

Kaufmann 2002). The constellation of factors has generally been described as globalisation, in which political shifts, societal changes and new technologies have pushed for a radical new framework.

The role of ICT has been particularly relevant here; communication flows have been assessed as revolutionary factors, allowing people to be always on the move (Makimoto and Manners 1997) or use more extremely ICT to simply annihilate space (Cairncross 1997). Scientific literature has emphasised that since the French Revolution (also a revolution in time and space), telecommunications devices, like the optical telegraph, electric telegraph and telephone, have always been viewed as tools for reducing distances, fighting against loneliness and connecting cities far apart (Flichy 1991). This concept is deeply embedded in contemporary culture, and has been applied to the Internet, as the books of Vincent Mosco (2004) and Evgeny Morozov (2011: Chapter 10) show.

However, such a process is complex, and it is made less linear once we introduce the correlated concept of activity fragmentation, as Couclelis (2000) suggested. Specifically:

> It is a common belief that the advancement of modern information and communication technologies (ICTs), such as broadband and mobile internet connections, phones, and laptops, has brought changes in the way business is conducted and work is done. […] A potential effect of ICTs is that they alleviate the traditional space-time constraints of paid work activities and increase the range of locations and times available for conducting these activities […]. This relaxation of spatial and temporal constraints allows for the decomposition of work into multiple segments of subtasks that can be performed at different times and/or locations. Such separation of activities into discrete pieces is commonly termed the fragmentation of activity (Alexander et al. 2010:55).

However, such a relaxation of time and space is mainly the effect of the disintegration of activities on geographical and time scales. Thus, we can speak of a mixture of breaking and recomposing space and time (Warf 2008), in which both transport and communication do not annihilate time and/or space; instead, they instigate an acceleration to the point where those elements are made crucial for the social fabric. Recently, when speaking of British telegraphs, Ronald Wenzlhümer (2013:99) suggested that "Time has not been annihilated by the new communication technologies. Quite the contrary, it has become more important." To use 19th century Great Britain as a case:

> regarding the alleged annihilation of time by the telegraph, it was demonstrated that the acceleration of information transmission facilitated

exactly the opposite development, which could culminate in a quasi-essential of time" (Wenzlhümer 2013:254).

In other words, summarising these elements, we indeed have a deformation of space and time as consequences of modernity, and this is the impact of a mixture of communication and transport regimes. It is exactly the intertwined features of communication and transport facilities overlapping in every performance by which we can trace how time and space indeed remain relevant. They are indeed relevant because if we have centripetal forces that attempt to concentrate human activities geographically, we also have a spatially-defined centrifugal fragmentation of venues in which to perform human activities.

1.7 Conclusion

This paper assumes that communications and transport are very closely interconnected, to the point that scholars should consider them a common field of investigation. Although initially the distinction between the two realms appears to be self-evident, a deeper analysis shows an intertwined connection. The hidden but popular idea of communication as immaterial and transport as material should be re-considered, leaving room for a different approach in which the two concepts are mutually and equally relevant, since material and immaterial actually evaporate into a more holistic concept in which they interact. This can also be said about communication and transport, which, potentially and with a certain risk, can be gathered under the notion of flow. To provide an example, an e-mail is an e-mail, and a train trip is a train trip, well-defined and contained in their infrastructural systems, with each of them representing a whole. Nevertheless, often (or always?) communication and transport are linked in the series of actions, strategies and regimes, which are strongly related and split solely for analytical reasons. It could be easily said: I am on this train because of an e-mail. If we approach the issue under this visual, the idea of a catalysing effect assumes its whole value, precisely because it links elements that are inherently connected. This mutually integrated and hybridised meta-system of communication and transport is clearly portrayed by historical evidence and by the latest development of ICT and transport systems. The new combination of high accessibility to communication and transport should be investigated as a combined socio-technical system of ICT and transport.

Such an investigation path, which combines transport and communication on its horizon, can offer a better scrutiny of flows that emphasises the

existence of an entangled regime of transport and communication, both essential for the whole mechanism. This view can also open novel research paths, in which the concept of materiality and immateriality can be stressed and further developed to the advantage of alternative analytic tools. Furthermore, enlarging the focus will let us understand the communicating and travelling activities behind their implementation, but in a broad view encompassing a more comprehensive and entangled history.

In doing so, our objective is to contribute to the decentralised research agendas and praxes of these two fields, which, for a long time have been excessively focused on the cores of communication and transport and largely ignoring their fringes and overlaps. Histories of trains and telegraphs, ships and wirelesses, planes and radar, subways and mobile phones and so on must be narrated together. To gain a better understanding of the core of media studies (the media) and the core of transport studies (vectors), we need to examine peripheries and non-core matters. Examining communication to understand transport and vice versa are the first steps, and perhaps in the future decentralisation could be more radical. Furthermore, this view is not something revolutionary, though it requires a return to the future. The current growth of network and wireless communication and the virtualisation of transport offers us the right moment in which to merge the two fields. People travel to meet after having intensified their virtual connections; they communicate while travelling, and communication through media is currently the most important task while in motion. Are we witnessing the birth of a new discipline? Trans-communication is open to new research.

References

Agar, Jon. 2013. *Constant touch: a global history of the mobile phone*. London: Icon.

Bayarma, Alexander, Dick Ettema and Martin Dijst. 2010. "Fragmentation of work activity as a multi-dimensional construct and its association with ICT, employment and sociodemographic characteristics." *Journal of Transport Geography* 18 (1): 55–64.

Balbi, Gabriele. 2015. "Old and New Media. Theorizing Their Relationships in Media Historiography." In *Theorien des Medienwandels*, edited by Susanne Kinnebrock, Christian Schwarzenegger and Thomas Birkner, 231-249, Köln: Halem.

Balbi, Gabriele and Richard R. John. 2015. "Point-to-Point: Telecommunications Networks from the Optical Telegraph to the