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Wanted: A History of Economic Flows

The long-term interaction of economic flows, logistics and institutions

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Let us face it! We are only powerless instruments for the selfish flows: The economic flows of commodities, information, finance and people exploit our societies, our technology, and our economic institutions to thrive, expand, multiply and grow in complexity. Economic flows are like Richard Dawkin's selfish gene, using the human beings, its institutions and technology as means to secure its own proliferation and eternal life.¹ Economic flows have expanded since the rise of the first human societies, slowly in the first ten thousands of years, later at a steadily increasing pace. Today, the commodity flows threaten the flows of nature that uphold it. Worried governments have started to inform themselves more thoroughly of these flows by so called "material flow accounting".² The huge flows of information pollute our minds, and the vastly increased speed, volume and complexity of financial flows make it impossible for any government to regulate properly.

Probably it is not that bad. Firms, entrepreneurs and governments create, facilitate, regulate and sometimes hamper or stop economic flows. But no one controls its overall and long term dynamic. A distributed structure of strong incentives for expansion decides the global and systemic result. There is no theory of a "pareto optimal" result of these decentralized decisions.

In any case, the mere extension, scope and size of material, informational and financial economic flows make economic flows an interesting object of study. A sub-discipline of economic- and business history called "history of economic flows" is wanted. This paper argues for more: By following economic flows, business historians have a method to cope

¹ (Dawkins, 1976).

² See for instance "Materials Count. The Case for Material Flows Analysis", National Research Council of the National Academies, The National Academies Press, Washington, D.C. 2004.

with the challenges global history and globalization; not by neglecting the local or the national, but by relating different localities and regions in a genuinely transterritorial³ approach. As Geoffrey Jones phrase it in “The Oxford Handbook of Business History” (2008): “Globalization is a central issue, and perhaps the central issue, in business history.”⁴

Flows may help business history go global – and stretched in time

The main motivation behind this paper is to explore concepts and perspectives that may help locate Norway and its business history within global history.⁵ A study of economic flows seems as one obvious gateway to realize such an ambition. However, even if Norway will be the main national case and Norwegian timber export the main example of flows, I think the discussions have some general interest. Following economic flows may also be a way to free business history from its myopic character, its habit of not looking more than 150 years back in time. As an alternative of using the birth of the “modern industrial corporation” as a demarcation line for business history, the history of economic flows may lead us back to the birth of business as an activity, a mentality, and a culture.

In the introduction to Oxford Handbook of Business History (2008), Geoffrey Jones and Jonathan Zeitlin confirm that most business historians “still work primarily within their own national frameworks”.⁶ Within the established paradigm there are, however, two ways out of the national confinement. One is the comparative approach. A milestone in this field of research was Alfred D. Chandler’s “Scale and Scope” (1990). Chandler included the business systems of USA, Great Britain and Germany in his study.⁷ His colleague at Harvard Business School, Thomas K. McCraw, stretched the canvas to add Japan in the widely red and taught textbook “Creating Modern Capitalism” (1997) which he edited.⁸ In the introduction to the book “Business History around the World” from 2003, Geoffrey Jones and Franco Amatori concluded: “the significant comparative business history literature remains rather limited”.⁹ However, in the Oxford Handbook Jones and Zeitlin emphasize “the growth of comparative

³ “Transterritorial” is used as an alternative to “transnational”, since “transnational” seems to presuppose the existence of national states. However, the national state is a rather modern phenomenon.

⁴ (Jones, 2008), p. 141.

⁵ As the reader will understand from reading, the paper reflects a novice’s enthusiasm, *preparing* to follow the flows.

⁶ (Jones & Zeitlin, 2008), p. 3.

⁷ (Chandler jr., 1990).

⁸ (McCraw, 1997).

⁹ (Amatori & Jones, 2003), p. 2.

research has been an important driver for changing scholarly agendas”.¹⁰ That growth of institutional and comparative research is promising, but it is not in itself what we think of as global history.

One of the most border-crossing business historians today, Geoffrey Jones, exemplifies the other main route for business history to become more global, which is writing about multinational firms and their transactions. Jones’ works on the evolution of international business and multinationals is extensive.¹¹ In the first chapter of “Multinational and Global Capitalism” from 2005, he writes about the multinational firms: “The central premise of this book is that they should be seen as one of the primary drivers of the flows of investment, trade and knowledge across the borders, which are at the hearth of the globalisation process.”¹² Nevertheless, even if Jones sees economic flows as the hearth of globalization, his focus is on the multinational firm as an institution and an organization, not the global economic flows.

This raises the question on what the core of business history is – and what we want it to be. One of the main influences of Alfred D. Chandler Jr. is the institutional orientation of recent business history, closely connected to his comparative approach. Institutional business history transcended the traditional study of individual firms, and Chandler called himself an institutional historian.¹³ Both the big industrial firm, as the American corporation of the second industrial revolution, and business systems, like the British “Personal Capitalism” or the German “Cooperative Managerial Capitalism” are institutions. They are relatively lasting social norms, or rules of the game, that guide the organizing of firms and ways of doing business.

The institutional turn was important step forward for business history. It opened for generalizations, like Chandler’s claims on the importance of the three-pronged investments or managerial capitalism as the economic superior business system. The generalizations may be wrong, but they stimulate new research and create lively discourses. However, institutional constructs like national business systems, industrial districts, business groups, multinational corporations and even international trade regimes have limited scale and scope. The

¹⁰ (Jones & Zeitlin, 2008), p. 3.

¹¹ The more recent books: (Jones, 1993, 1996, 1998, 2000, 2005a, 2005b).

¹² (Jones, 2005a), p. 3.

¹³ (Chandler, 1984),

institutions and organizations governing and coordinating economic flows have more limited extension than the flows themselves. The economic flows of commodities, information, finance and people indicate the borders, the real extension and scope of the economic system. The distinction between economic systems and business systems is important. Economic flows cross the borders of several national business systems on its way from its origins to its destinations. In this respect, we have had a capitalist “world system” with global economic flows at least from the fifteenth century. The movement from studying individual companies to including systematic research on institutions represented a paradigmatic extension of business history in the late twentieth century. The inclusion of economic flows should be the next step. A history of economic flows will be a part of business history, but also a specialized research field on its own.

The introduction to the “Oxford Handbook of Business History” stresses the strong influence of Chandler on the development of business history, but it also points out how new research transcends some of Chandler’s limitations. This also goes for chronology: “While the hundred years between 1850 and 1950 were central to Chandler’s work, the Handbook essays report extensive research conducted on the business history of the second half of the twentieth century.”¹⁴ However, the authors mention nothing of new work on the period *before* 1850. The main work in business history is more or less contemporary history, at best going back to the start of the industrial revolution. Should it be that way? In his chapter on globalization in the handbook, Geoffrey Jones has some short references to earlier periods, but has no recommendation for business historian to go on with it.

Who will then take care of the history on how business first arose? Three main historical stages before industrialization should be of particular interest for business historians: First, the development of a business orientation within traditional societies; second the evolution of trade and markets; and third, the breakthrough of capitalism. The interaction between flows and institutional change is one important force in the transitions between these stages. Growth, fluctuations and increasing complexities of flows creates both pressure and possibilities for institutional change. Institutional change affects the growth, fluctuations and increasing complexities of flows. Interacting strongly both with institutions and flows, are the material infrastructures for transport and communication, facilitating flows. I will later

¹⁴ (Jones & Zeitlin, 2008), p. 2.

suggest some important dynamics between flows and logistics on the one hand and institutional configurations on the other. However, to argue for a new history of flows, make it urgent to look into some conceptual aspects of the word “flow”.¹⁵

Everything flows

If we look close enough, everything flows, even rocks and mountains. Rheology is the physical science of “deformation and flows of matter”.¹⁶ The science got its name in 1929 at the forming of the Society of Rheology. Greek philosopher Heraclitus’ words “panta rei” or “everything flows” inspired the society’s founding fathers.¹⁷ Rheo is the Greek word for flow. The society chose a time-glass as their logo, with “panta rei” written on it.

One of the pioneers of rheology, Marcus Reiner, has given an account of the original conceptualization of this branch of physics. Reiner saw a problem with Heraclitus’ formulation. It could seem to indicate that the new science was relevant only to what we normally consider as fluids. Rheology, however, should cover all types of matter:

*The way out of this difficulty had been shown by the Prophetess Deborah even before Heraclitus. In her famous song after the victory over the Philistines, she sang, “The mountains flowed before the Lord”. ... But Deborah knew two things. First, that the mountains flow, as everything flows. But, secondly, that they flowed before the Lord, and not before man, for the simple reason that man in his short lifetime cannot see them flowing, while the time of observation of God is infinite.*¹⁸

The “Deborah number”, D , has become a central unit of measurement in rheology: D = time of relaxation/time of observation. The Deborah number characterizes how “fluid” a material is, how easy it flows. We will see the flows of all materials if we just wait long enough.

If everything flows in the physical world, we will not expect the social world to be any different. Concepts like flows and flux are terms of high standing within contemporary social science. The sociologist Rob Shields sees flows as “a new paradigm”.¹⁹ One of the leading

¹⁵ As a newly converted to the field of flows, my enthusiasm will certainly exceed my knowledge about all the good work already done with relevance to the history of economic flows.

¹⁶ Encyclopædia Britannica Online, Academic Edition:
<http://www.search.eb.com/dictionary?va=rheology&query=rheology>. The homepage for Society of Rheology:
<http://www.rheology.org>

¹⁷ Whether it really was Heraclitus who is responsible for the term “panta rei” or Simplicius of Cilicia is discussed among historians of philosophy.

¹⁸ Marcus Reiner, “The Deborah Number”, *Physics Today*, 1964, p. 62.

¹⁹ R. Shields, “Flow as a new paradigm”, *Space and Culture*, 1: 1-4.s

diagnostician on contemporary society, Manuel Castells, writes about the “space of flows” in his book on the Network Society:

*Our societies are constructed around flows: flows of capital, flows of information, flows of technology, flows of organizational interactions, flows of images, sounds and symbols. Flows are not just one element of social organization: they are the expression of the processes dominating our economic, political, and symbolic life.*²⁰

The concept of flow has many brothers and sisters. In looking for a proper concept to catch the core of social reality, the actor-network theorist John Law discusses words as ‘slippery’, ‘indistinct’, ‘complex’, ‘elusive’, ‘diffuse’, and ‘messy’ – and sticks to ‘messy’.²¹ Referring to John Law’s deliberations and inspired by the philosopher and mathematician Alfred North Whitehead, organizational researcher Tor Hernes ends up with the alternative “tangled”.²² A tangled object “may continuously be on the move to becoming something else”.²³ For Whitehead as for Hernes, there are no substances or structures in reality, only processes and events, like Whitehead’s elementary units of the world, the “actual entities”. They grow, mature and perish.²⁴ They flow.

That everything flows should be good news for historians. Historians are a sort of social rheologist. As a profession, historians focus on change, processes, evolution and transformations. We try to order the flows of events as times goes by. On the other hand, if everything flows, what is the meaning of pointing out flows as a separate field of study?

There is a duality in the Deborah number. The relative fluidity of a material is also its relative durability. Stability is just as real as change. Historians’ proper object of study is not change in itself, but the dynamics of stability and change. The physical world has solids and liquids with very different Deborah numbers, but with interesting interactions. Solid material channel liquid material, like pipelines transporting oil or water. In the end, however, also networks of pipelines flows, they have their formation, growth and deformation. There is a parallel in society. Fluid flows of communicational events fill up the social world, as for instance the stream of decisions within companies. More solid social artefacts channel these flows, primarily institutions, like for instance corporate law. However, institutions also flow;

²⁰ (Castells, 2000), p. 412.

²¹ (Law, 2004)

²² (Hernes, 2008), p.

²³ Ibid. p.

²⁴ (Whitehead, 1978) and (Sherburne, 1966).

they have formative periods, path dependent growth, transformations and deformation. The interaction between more solid material and institutional structures on the one hand and the more fluid economic flows is a main topic of this paper. Since we are not God, we will mainly use the concept of flow in a humanly common sense way, as movement of materials, information, energy and so on through space. The more solid structures taking care of such flows are the technologies of logistics, including what we call infrastructures. The scope of logistics as a scientific discipline has evolved from a narrow military use to the much more including “management of the flows of goods, information and other resources, including energy and people, between the point of origin and the point of consumption”.²⁵ An even broader societal logistics should be an integrated part of the history of flows.

Logistics complexes carry flows

As a Norwegian business historian, I have had the pleasure to see close colleagues working with the history of the Norwegian railways and Norwegian roads. Together with other colleagues, I have contributed to the history of the Norwegian postal services, the Norwegian telecommunications and the Norwegian electricity system. To some extent, business- and economic historians working within the field of transportation, communication and energy has a lot to say about flows, even if most of the literature has been more concerned with institutional, organizational, political and technological aspects that facilitates or hamper flows. A history of economic flows must certainly draw on this sort of research, but for our purpose it also has some limitations.²⁶

What this literature mostly misses is how commodity-, information- and energy flows use several infrastructures and logistics facilities to reach its destinations. To use the most important Norwegian export item during the nineteenth century as an example: Some of the timber exported was chopped or sawn in the forests in the northeastern part of southern Norway. Horses transported the timber down to the Laagen River. Log driving was an extensive activity in both Laagen and other rivers and watercourses until the second half of twentieth century. Laagen ends in the northern part of the big Lake Mjøsa at the city of Lillehammer. From Lillehammer, sailing boats, later steamboats, took the timber the 100 km south to the small place Eidsvoll. Until 1854, horses transported some of the timber from

²⁵ <http://en.wikipedia.org/wiki/Logistics>, downloaded 13.08. 2008.

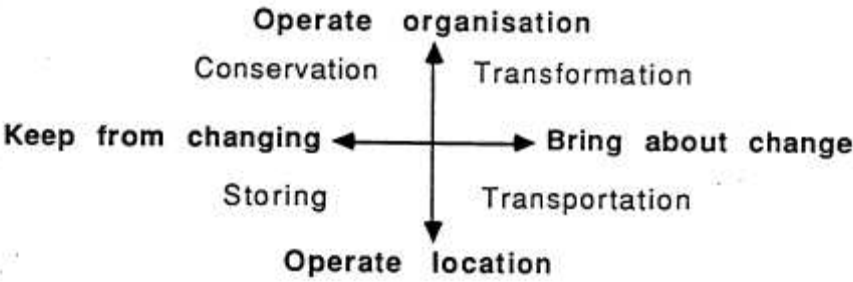
²⁶ (Boge, 2006), (Bergh, 2004), (Knutsen & Boge, 2005), (Thue, 1997), (Skjold & Thue, 2007), (Rinde, 2005), (Espeli, 2005) and (Thue, 2006).

Eidsvoll and close to the 70 kilometres to the capital Oslo (until 1924 called Christiania and Kristiania). On the way, a lot of sawmills made different boards, planks and deals of the timber. From 1854, the railway took over most of the transport between Eidsvoll and Oslo. From Oslo, sailing boats shipped by boats to England, Scotland and other European harbours. From there, canals, horses, ships, and after a while, railways took the timber to its places of destination.

To understand the material and economic foundation for the timber trade, it is necessary to look into the international intermodal logistic complex²⁷ that took care of the flows of timber, from the forest to the foreign construction place that finally used the timber. The logistic complex involves all the necessary means of transportation and the ways of handling their interfaces. The study of such international intermodal complexes will be a natural topic within the history of economic flows.

Logistics is, however, more than material transportation. The Swedish economic historian Svante Beckman has made the diagram in fig. 1 that gives some useful distinctions for research on the logistics and material flows.²⁸ The model is also useful as a reference model for operations used on information.

Fig. 1. Operations in production and logistics



²⁷ “Intermodal” refers to the combination of more than one kind of transportation or communication. The word “complex” is meant to draw the attention to the heterogeneous character of the logistics facilities, or the system of several diverse systems.
²⁸ (Beckman, 1990), p. 18.

The diagram's four columns indicate four basic operations that we can use on the material. Three of these basic operations are associated with logistics. Operations that change the location of the material, transportation, are the most obvious. Storing, however, is also a fundamental part of logistics, being resting places for the flowing materials, such as warehouses or mailboxes. Before the railway was built, wintertime with snow was the best time to transport timber between Eidsvoll and Oslo. The timber then had to be stored at appropriate locations and in appropriate ways during the snow-free parts of the year, waiting for transportation. The history of ports is also a history of storing, and we have to integrate the research on port-history into the broader history of flows and intermodal logistics. As nodes in the logistics networks, ports also function as exchanges (in the same way as telephone exchanges) where the directions of the specific flows of cargo can be directed to new locations and transferred from ships to other ships or other modes of transportation.

The operations called “conservation”, which means keep the organization of the material to change, is exemplified by preservation by canning, freezing, drying, salting and so on. In rheological term, conservation makes the Deborah number bigger by increasing the time of relaxation and deformation. It is anti-flow. Conservation relates closely to logistics for three reasons. First, because transportation takes time, conservation is often necessary to enable commodity flows. Second, it might also be a prerequisite for storing goods. Third, a lot of innovation in logistics and transport concerns the parallel processes of transportation and conservation. Ships, trucks and cars have equipment for freezing, cooling or heating for conserving their cargo. The history of the Norwegian “cold chain”, an infrastructure based on freezing technology for fish from the fishing ground to the home freezer, is under investigation.²⁹ Today, fish caught in Norwegian waters can be shipped to China for processing and transported back again as frozen fillets for consumption in Scandinavia, packed and labeled with Norwegian brands.³⁰

When talking about logistics, we have so far only talked about material flows. In addition, flows of information (including knowledge), financial flows, and flows of people are of critical interest to business. Flows of commodities have parallel flows of information regarding content of the transaction (like negotiating a contract) and means of payment. Other informational and financial flows are also normally involved, for instance regarding assurance

²⁹ (Finstad, 2008)

³⁰ (Rønnings, 2006)

for ships and cargo, for hiring the services of agents to sell the Norwegian timber in England or pledging credit from bankers.

The geographical patterns, or the space, of different kinds of flows might vary, but until the mid nineteenth century and the coming of the telegraph, the same logistic facilities handled all kinds of flows. Information based flows, including means of payment, depends on a material carriers, like paper or metal. This becomes very evident when looking at the history of postal services. The mailbags carry both letters with information and packages of goods and commodities, and the postal authorities used all means of transport to have both letter and packages delivered at the destination. There are different levels of material carriers, or material infrastructures. Some “higher” levels of carriers are special made for information, like letters, newspapers and books. In the electronic and digital era, information flows are still material. Different voltage levels in a computer represent binary digits. Modulated microwaves between cell phones and varying streams of electrons in a telephone cable do the same. However, the most “heavy” of the flows have always been the commodity flows. Several economic-, management- and other social theories have relevance for the study of commodity flows. Of special relevance are some theories that use “chains” as a core concept. Varieties of chain-theories throw light over the relations between the commodity flows on the one hand and power, institutions, organizations forms, politics and firm strategies on the other.

Economic flows integrated in commodity chains

The tradition of the world-system analysis initiated by Immanuel Wallerstein in the 1970s, introduced the concept of “commodity chains”. A report from the Fernand Braudel Center that is headed by Wallerstein, states: “The concept of a commodity chain is central to our understanding of the processes of the capitalist world-economy. It is the commodity chains that in fact integrate the world-system more than anything else.”³¹ Wallerstein and his collaborator Terence K. Hopkins gave this explanation of the word in 1977:

Let us conceive of something we shall call, for want of a better conventional term, ‘commodity chains’. What we mean by such chains is the following: take an ultimate consumable item and trace back the set of inputs that culminated in this item – the prior transformations, the raw materials, the transportations

³¹ “REPORT ON AN INTELLECTUAL PROJECT: THE FERNAND BRAUDEL CENTER, 1976-1991”, <http://fbc.binghamton.edu/fbcintel.htm>, downloaded 24.03. 2008.

*mechanisms, the labour input into each of the material processes, the food inputs into the labour. This linked set of processes we call a commodity chain.*³²

A node is the place commodity chain where the transformations or manufacturing are done, in accordance with Beckman's column of change in material organization in the figure above.

According to Hopkins and Wallerstein, these nodes have four properties: (1) The relations of production within the node, (2) the organization of production, (3) the node's geographical location within the chain, and (4) flows between the node, other nodes of the chain, and with other commodity chains.³³

This commodity chain concept is useful also for our purpose. Economic flows may pass through several nodes of transformations to end up as a commodity chain with many links. In our context, one bias in this approach seems obvious. The institutional ("relations of production") and organizational ("organization of production") focuses are on production, or transformation. However, the institutional relations of logistics and its organization are even more closely connected to the flows. Producers might either directly or indirectly take care of the logistics, like some vertically integrated petroleum companies. But this has far from been the rule in the history of business.

To define the nodes and commodity chains from the perspective of the finished product, as the world systems theorists recommend, leads to challenging research efforts for most modern compound and complex commodities. Another way around is to start with the raw material and natural resources and follow its flows and transformations to the final consumption or deterioration. The first nodes in the economic flow of mid nineteenth timber trade from Norway were the locations where the forest workers saw or chopped off the trees, and where peeling were done. After these first transformative nodes, sawmills transformed the logs further to boards and planks. In the importing countries, primarily Great Britain, France and the Netherlands, the next nodes could be additional sawmills, shipyards or construction sites for house building. The places for the long-term consumption of ships and houses often represented the last nodes in the useful transformation of the timber. Then, the wooden utilities that did not finally become dust, earth or mud at the sea bottom, has ended up as potential pleasure for archaeologists. World systems researchers hoped to identify the commodification processes of capitalism by studying commodity chains. It was also a way of

³² (Hopkins & Wallerstein, 1977), p. 128.

³³ (Hopkins & Wallerstein, 1986), p. 162.

exploring the division of labour and the unequal distribution of rewards between the core and periphery in the world system.

The concept of chains is adopted in several other research traditions. Michael Porter's concept of value chain is probably the most familiar to business historians.³⁴ The ambitions of the world system approach is as macro as it can be. Porter's concept refers to value creation at the micro, or firm level. It observes flows with reference to decision makers' strategic choices. The value chain includes inbound logistics, operations, outbound logistics, marketing, sales, and service. Porter's approach is meant to be useful in analysing all sorts of firms. However, two Norwegian professors of business strategy, Charles B. Stabell and Øystein Fjeldstad, have proposed a more differentiated set of value configurations. To Porter's value chain they add the value shop and the value network.³⁵ The value shop is characterized by intensive problem solving on behalf of the customer, like professional services and consultancy. For our purpose, the value network is of more interest. The model applies to firms that mediate relationships between their customers, like telephone- and transportation companies, among the core actors of logistics systems and complexes.³⁶ In the same way as Porter's value chain can be a reference model when discussing manufacturing firms, the value network is a useful reference model when studying strategies of logistics firms.

Later, sociologist and geographers have taken the concept of commodity chains in new directions. In an overview of some of this research, the sociologist Jennifer Bair points out that the world system analysis has inspired two subsequent approaches, the global commodity chain- (GCC) and the global value chain (GVC) frameworks.³⁷ Where the world systems analysis is "fundamentally interested in how commodity chains structure and reproduce a stratified and hierarchical world system," the two other frameworks are increasingly oriented "towards the meso level of sectoral dynamics and/or the micro level of firm upgrading."³⁸ Some of this research has affinity to Porters concept, discussing how firms in the developing world might be able to improve its position in a value chain relative to the more dominant firms. A related question is how national governments can help firms achieve such improvements. This way of questioning certainly has relevance for business historians trying

³⁴ 1985 Porter "Competitive Advantage: Creating and Sustaining Superior performance. Free Press, New York

³⁵ (Fjeldstad & Stabell, 1998)

³⁶ Stabell and Fjeldstad also classify insurance companies and banks within this model of value creation.

³⁷ (Bair, 2005)

³⁸ Ibid. P. 156.

to see the how firms have shifted its positions within commodity chains, and how governmental policy has influences such shifts.

GVC theorists have focused on the governance structure of different value chains, and they have put forward five classes of global value chain governance: hierarchy, captive, relational, modular, and market.³⁹ The institutional governance structure of chains varies between sectors, but also through time – and opens up an interesting field for historians of flows. How has the institutionalized governance structures of firms, commodity chains, national business systems, and regional- and international regimes developed and interacted over time?

Parallel flows, as of merchandize and microbes

Governance of commodity flows is about institutions, but also about the continuing flows of information. Information about markets and prices is necessary for doing the right investments, and extensive information flows relate to the monitoring and managing of business operations, negotiations and transactions, and marketing. The book “Information Flows. New Approaches to the Historical Study of Business Information” (2007) represents a pioneering work in this respect. The historians and editors Leos Müller and Jari Ojala are responsible for an introduction discussing how business communication has become better, faster, and cheaper over the centuries.⁴⁰ (Better, faster and cheaper are good characteristics on how most infrastructures and logistic complexes facilitate flows.) The book covers information flows back to 1350, and prove how business history may profit by going further back in history than normal. It also indicates that the history of flows will be a productive arena for cooperation between business historians and other economic historians.

Flows of commodities, information, finance and people are certainly core examples of economic flows. However, economic flows most usually converge with other flows. A fascinating narrative of parallel flows is A.J.R. Russell-Wood’s book on the Portuguese Empire 1415-1808, a “World on the Move”.⁴¹ One chapter is dedicated to the “flux and reflux of people”, the next ones to “the ebb and flows of commodities”, the “dissemination of flora and fauna”, “transmission of styles, mores, and ideas”, and “movement in word and image”.

³⁹ (Gereffi, Humphrey, & Sturgeon, 2005).

⁴⁰ (Müller & Ojala, 2007). The notion of “better, faster, and cheaper” is first introduced by John J. McCusker in a interesting preface to the book.

⁴¹ (Russell-Wood, 1992/1998).

Even if Portugal in this period is a most special case, Russell-Wood's methods and approach are useful to locate whatever nation or territory within global history.

More directly related to the history of the Norwegian timber trade is a book on the fight against epidemic diseases in South Norway 1830-1880 by May-Brith Ohman Nielsen.⁴² During the seventeenth, but especially from the beginning of the eighteenth century, the European states took strong measures to prevent the dissemination of the plague. They built quarantine stations at ports and inland routes, and sanitary corridors around cities and along borders. The city of Kristiansand in South Norway was in the early nineteenth century an important port, not least for the timber export. In the 1830s, the cholera epidemic spread through Europe. The microbes were carried from the Indus delta along the caravan routes to the big markets in Niji-Novogrod in the late 1820s. From there it spread further into Russia and Europe. The quarantine station in Kristiansand took care of the first ships with cholera in June 1831. In the second half of June, the station coped with 66 ships. Many ships came to Kristiansand after being denied access to other ports. The brig "Nøisomheden" ("Frugality") with the skipper Dietrich Feischen of Bergen was denied to dock in Bergen, and was sent to the quarantine station in Kristiansand with its rye, hemp, flax, canvas and feather from Riga.⁴³

The nature-based and vertical structure of logistics facilities

The parallel flows of commodities, information and finance have a kind of horizontal character. The logistic facilities carrying them also have a vertical character. One of his chapters is about logistics, or the structures that were carrying the flows, and Russell-Wood has called it "Movers: caravels, carracks, caravans, canoes, and carts". As is obvious from the title, the chapter is much about water transport, about flowing water carrying economic flows. What is special with Russell-Woods account of water-transport is the seriousness with which he deals with both the cultural artefacts, that is the different boats and vessels, and the natural part of the sea based infrastructure. Russell-Woods has maps with ocean currents and global wind and pressure patterns during different part of the year and shows how these natural conditions both could simplify and complicate the Portuguese operations. However, infrastructures of most kind are very much dependent on and marked by its natural foundation, whether roads, railways, electricity grids – or the sea fairways. The multilevel and vertical structure of infrastructures and logistics facilities is especially apparent in water

⁴² (Nielsen, 2008)

⁴³ Ibid. pp. 64-99.

transport. The first level of the infrastructure, or carrier, in shipping is the ocean, the currents, the wind, the natural conditions for ports and so on. The constructed ports, lighthouses, seamarks, the availability of pilots exemplify a second level. The boats are a third level, and the barrels, containers or the mailbags in the hold are the fourth level. A postal historian might even look at the envelope and the paper as separate levels of carriers of the information flows.

Norway has one of the longest coastlines in the world, a coastline that has shortened the distance to the rest of the world. The sea also serves as an internal transport infrastructure, compensating for the troublesome inland communication caused by a mountainous topography intersected with fjords and valleys. To locate Norway in global history it is necessary to understand the sea-based logistics, and historians of flows can take advantage of vast amounts of literature on ships, shipping and shipping companies. It is, however, easy to overlook the contemporary significance of sea-based logistics. About 90 per cent of today's world trade is transported by ships, very much of it in containers. The innovation of the standardized container is possibly as important as the standardized internet protocol.⁴⁴

Anyway, the history of economic flows has to take the social and historical interface with nature and geography seriously. That also very much goes for the interface with nature that emissions from logistic facilities represents, be it coal fired power plants, cars or waste from nuclear power plants. Today, the flows of CO₂ from coal-fired power plants even got an economic value. Energy exchanges sell emission rights for CO₂.

Logistics and the selfish flows

If there is some sense in Bruno Latour's and the actor-network-theorists' concept of material objects taking the role of agency, here we have the paradigmatic case.⁴⁵ Economic flows, inside and between territories, have increased during nearly all kinds of regimes. It is not only a result of capitalist dynamics. Normally, substantial increases in flows require development in logistics facilities. Flows take advantage of all kind of motives to secure the building of ports, ships, roads, trucks, railways, telecom networks. Examples of such motives are profit, power, political support, military advantages, prestige, equality (regional politics), employment (public works during depression) or purely social (a very high percentage of our use of telephones is communications with family and friends). When flows meet bottlenecks

⁴⁴ (Levinson, 2006).

⁴⁵ See for instance (Latour, 1999).

in their expansion, a lot of invention and innovation take place. Only in the field of modern telecommunications: Industry developed suitable cables when the telephone-lines started to mess up the air in the cities. The first manual telephone exchange was invented when the number of telephone users reached a certain level. Several generations of electrotechnical, automatic exchanges later facilitated the increasing flows. Proper radio tubes were developed early both to radiotelegraphy and to long distance telephony in order to extend the reach of flows. The American telecom company AT&T developed the transistor in the early 1950s to improve its operations; only adding more tubes to cope with the increasing flows had become both very expensive and space demanding. In the 1960's and 1970's, problems with congestion in the telephone systems initiated modernization and digitalization in many countries. In Norway, a breakdown in the overloaded telephone system in 1969, gave arguments and justification for a gigantic upgrading in the following decades.⁴⁶ The historian of technology Thomas P. Hughes relates theory invention and innovation to “critical problems” and “reverse salience” in technological systems.⁴⁷ According to Hughes, engineers feel an urge to intervene when one part of a system is “behind” the other. However, a reverse salient only become a critical problem when the flows increases to a level that make the backward components visible as a bottleneck. The expanding flows set the engineers in action. When the creative engineers have opened the way, as invented the optical fibre used in telecommunications, the operator will for some time even have spare capacity to offer. He put the prices on transmission down to stimulate the growth of flows. The flows expand, and suddenly the creative engineers will have to invent new ways of modulation in the optical fibre to satisfy the swelling flows. The flows and the logistics technology interact in a mutually stimulating, spiralling movement.

Prices, volumes and the life behind

There are close affinities between the study of trade and the study of flows. Trade, however, refers only to the transfer of property rights, to buying and selling. When buying and selling go on across national borders, we have export and import. The concept of flow also takes care of physical and broader social properties of commodities, information, finance or people on the move. Economic flows are often, but not always, related to trade. Substantial economic flows take place within corporations, as part of government's and state's taxation or redistributive practices, or by smuggling, looting and mafia methods. However, price series

⁴⁶ (Thue, 2006).

⁴⁷ (Hughes, 1983).

and data on volumes of exported and imported goods between countries are a most important starting point for identifying transterritorial flows. An example of relevance also for our case of Norwegian timber export is the economic historian Camilla Brautaset's doctoral thesis on Norwegian exports 1830-1865.⁴⁸ Brautaset uses several sources to adjust and established statistics on Norwegian export of such important commodities as fish and timber. Work with such data must certainly be a core activity within a research program on a history of flows, and Norwegian economic historians have done a lot of good work on such data during the last decades.⁴⁹

However, the history of flows as conceptualized here should also have an ambition of getting close to the concrete, material, institutional and organizational aspects of the flows. In what locality and because of whose decisions did the flows originate? What route did it take, that is which local communities did the commodities pass by, and with what consequences?⁵⁰ What means of transportation and communication were used, and how were the interfaces between the different infrastructures coped with? What actors and organizations were involved in its production and distribution? Where did the flows end? Who consumed it for what purpose? Moreover, even if trade presuppose parallel flows of commodities, information and means of payment, these flows may operate in different geographical "spaces".⁵¹ Following up on questions like these may uncover real life behind prices and numbers.

A pioneering work on Norwegian flow history is Stein Tveite's book on the Anglo-Norwegian timber trade 1640-1710 published in 1961.⁵² In the first chapter, Tveite presents some interesting distinctions when reflecting on the different sources available for studying the timber trade. It is striking how he stresses the importance of local history. Local history gives a better grasp on the connections between the timber trade and the economic life in general: "The small geographical area gives better opportunity to see how the trade was carried on, what sort of problems the individual merchant had to deal with."⁵³ He then argues

⁴⁸ (Brautaset, 2002).

⁴⁹ In Norway, the main centre for this kind of research has been the Norwegian School of Economics and Business Administration.

⁵⁰ For instance, in (Kiil, 1993) we learn how the transport of fish from different parts of North-Norway to the city of Bergen was taken care of during centuries. Kiil tells the story of local logistics and flows related to a very international trade.

⁵¹ As an example, the complex networks for handling bills of exchange and other means of payment in the Anglo-Norwegian timber trade in the eighteenth century is discussed in (Kent, 1955).

⁵² (Tveite, 1961).

⁵³ (Tveite, 1961), p. 10.

that studies of individual firms or individual merchants would give an even closer and better understanding of the microeconomic aspects of the timber trade. At the time Tveite made his research, he had only one such book to support him, a history of the so-called “Linderud-dynasty”.⁵⁴ Actually, this book, written by Andreas Holmsen, became the first in a series of a five volumes exemplary business history of an enterprise with an exceptional longevity.⁵⁵ The combined use of business history and local history uncover the actual decisions and situational contexts behind prices and export and import volumes.

Tveite points out that local history deals with the “internal aspects” of the business and trade. Local history from the rural areas examine chopping, transport, log driving, sawing, property structures, and business relations between peasants or forest owners and the merchants in the city. They follow the timber to the city. The urban histories look at the cities’ relations to the surrounding countryside and then follow the timber until the customs are paid and the ships have transported the deals, boards and planks out from the harbour. Tveite, however, also took the “external aspects” of the timber trade seriously. He wanted to make a balanced presentation of both sides of the North Sea. To achieve this, Tveite did extensive research in British archives during a stay at London School of Economics in the 1950s. One of his many ambitions was to find out what sort of markets Norwegian timber ended up in, what uses were the most important. Wood for housing was the most important, but Norwegian timber also helped strengthen the British Navy.

A way to secure a balance between internal and external aspects in the study of trade flows is to bring relevant historians from exporting and importing countries together. In 1999, a local history organization in Western Norway published a seminar-report on “Timber and Trade”.⁵⁶ The topic of the seminar had been export of timber from the Ryfylke area in south-western Norway to Scotland and the Netherlands 1500-1700. Historians from the three countries met and presented perspectives on the topic based on sources from their own respective local and national archives. It was possible for the Scottish historian Christopher Smout even to name one of James IV’s warships using Norwegian materials; “the Michael, a monster of perhaps 1,000 tons which is said to have consumed all the oak-woods in Fife ... as well as ‘all the

⁵⁴ (Holmsen, 1946).

⁵⁵ The other volumes are (Holmsen, 1971), (Sejersted & Schou, 1972), (Sejersted, 1979) and (Lange, 1985)

⁵⁶ (Lillehammer, Langhelle, Smout, & Bruijn, 1999)

tymmer that was gottin out of Noraway””.⁵⁷ Among other topics discussed in the papers are the export’s effects on the rural economy, the means of payment and barter, the cultural influences of the repeated encounters between the natives and foreigners. Independent of the scientific results of the report, the motivation behind the seminar, its topics and the way of organizing the meeting among scholars seem exemplary.

Approaches like this can relate to some of the perspectives that Fernand Braudel presented in his three volumes work “Civilization & Capitalism. 15th-18th Century”.⁵⁸ Braudel discusses the transition from loosely connected circuits of market economies to an integrated capitalist world-system. We might be able to identify what Braudel see as three economic layers, or circuits of economic flows. The upper layer of capitalism, in many years identified with a small group of rich merchants in the main European cities. The second layer being the market economy mostly based horizontal relations. The third layer Braudel called the “material life”, a mostly self-sufficient economy.

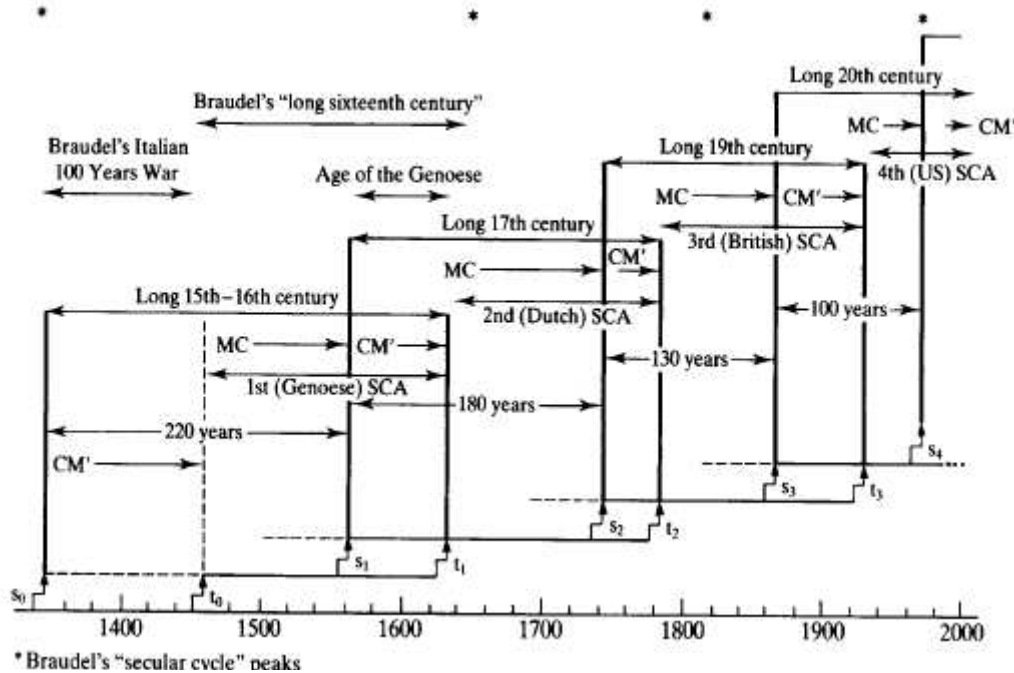
Based on Braudel’s work, figure 2 shows how the world system theorist and sociologist Giovanni Arrighi pictures how the centre of gravity and hegemony of capitalism has moved over a 700 years period.⁵⁹

Fig. 2. Stages in capital accumulation in the world-system

⁵⁷ (Smout, 1999), p. 40.

⁵⁸ Summarized in (Braudel, 1977).

⁵⁹ (Arrighi, 1994/2006) p. 364.



To put the economic flows out of and into Norwegian territory into a context close to this would be proper ambition for a project trying to locate Norway in global history. Then it would be necessary to have some general understanding of the interactions between economic flows, logistics and institutions. One of the motivating starting points for my work on this paper was some reflections on such interactions connected to the building of the first Norwegian railway.

A small case: Transnational flows, local interests and a developmental state

From the late 1840s, the first labour movement in Norway was organized under the leadership of the teacher Marcus Thrane. At its height in the mid 1850s, this thranitter movement had approximately 30,000 members. In the parish of Ullensaker, north-east of Oslo (called Christiania at that time), Thrane had many followers. As in other parts of the country, the members in Ullensaker demanded universal voting, reduced import duties, distribution of arable land on reasonable terms to poor peasants and better schools. However, the main work of the thranitter movement in Ullensaker was to stop the planned railway!⁶⁰ Many of the members had substantial income from plank driving with horses from Eidsvoll, close to 70 kilometres northeast of Oslo, to the capital. After a substantial increase in the Norwegian timber export to Great Britain, France and the Netherlands from the 1830s, the traffic on the distance congested. The flows of timber were hampered – and the local interests groups of

⁶⁰ (Pryser, 1974).

owners of forests, sawmills and commercial ships worked hard to have a railway built between Oslo and Eidsvoll. Transport counted for a very substantial part of the costs connected to the timber trade.⁶¹

In 1854, the first Norwegian railway was transporting timber on their narrow gauge between Eidsvoll and the capital.⁶² The railway removed a bottleneck in the transnational flows of timber from the forests in East-Norway primarily to Great Britain, France and the Netherlands. As a technological system, the railway became part of a larger, intermodal logistics complex, including a system of log floating, horse transport, shipping and storage- and port activities. The Norwegian elements of this logistic complex connected to similar transport- and communication facilities in the importing countries.

The political discussions, the planning, and the final organization and financing of the railways in Norway became a project of national, regional and local significance. The politicians and the public had to deal with questions concerning the influence of foreign capital and competence, the role of the state and its relation to the local communities and private business interests. The sociologist Frank Dobbin has discussed how the existing political culture influenced railway policy in the United States, Britain and France, but also how the actual choices of railway policy influenced later industrial policy in the three countries.⁶³ Also in Norway, the early railway policy partly reproduced, partly created new paths for the development of the business system. Within a new political economic order of classical liberalism, the developmental Norwegian state continued to exert progressive initiatives promoting economic growth, as in the mercantilist era. One important legal innovation was the use of a concession laws stating condition for the establishing of private railways. The use of such concessions laws became important in the telephone business from the 1880s, but of even more important in order to secure national control of the hydropower resources in the early 20th century. As part of the broader logistic complex, the railway served a mediating and catalytic role between the transnational flows on the one hand, and the development of the national business system on the other. The learning- and policy process during the building of railways, roads and canals in the nineteenth century created a structural

⁶¹ (Sejersted, 1979).

⁶² (Bergh, 2004).

⁶³ (Dobbin, 1994).

balance between the state, the municipalities and private interests that contributed to the political culture and thereby future decisions on economic policy.

One other important effect of the new railway was the possibility to economically transport more than the usual amount of timber to Oslo. Smaller dimensions of timber could now profitably be exported, and not least: Other flows of goods, especially agricultural products for the urban market in Oslo, made use of the new infrastructure.⁶⁴ This illustrates a common mechanism in flows enlargement. Increasing flows trigger off innovations and investment in infrastructures and logistic complexes, and the new facilities opens up for a significant further expansion and variety of flows.

What sort of interactions between flows, logistics and institutions can we identify in the longer-term perspective of the history of capitalism?

Logistics revolutions and the relocation of capitalist hegemony

As noted, until the telegraph and railways got momentum from the early and mid nineteenth century, the logistics facilities on land and water were very much the same for all economic flows.⁶⁵ Water transport gave enormous advantages over land travel in terms of economy, safety, and reliability.⁶⁶ With some exceptions the, to study the significant improvements in logistics until the nineteenth century, is very much to look at water based transport. It seems as important relocations of the main centers of capitalism have been closely connected to what we might call logistics revolutions. The Swedish social scientists Åke Andersson and Ulf Strömquist coined and developed the concept of logistics revolutions in the 1980s to describe four big shifts in transport and communication from the 12th century.⁶⁷ More lately, sociologists have used it to describe and analyze the emerging of a retail driven supply chain, with intermodal transportation, containerization and heavy use of information and communications technology as important ingredients.⁶⁸

According to Andersson and Strömquist, very much following Braudel, the first logistics revolution started in the late 12th century. A strong growth in cities and important innovations

⁶⁴ (Bergh, 2004).

⁶⁵ However, the optical transmission of information by smoke, signal-flags and the optical telegraph should not be forgotten.

⁶⁶ (Friedel, 2007).

⁶⁷ (Andersson, 1985), (Andersson & Strömquist, 1988) and (Andersson & Strömquist, 1988).

⁶⁸ (Bonachich & Wilson, 2008).

in shipbuilding characterized this period. Cities have historically been the main centers of trade, markets and capitalism, and the creation of cities represents in itself close to a logistics revolution: “To avoid transportation, some five to ten thousand years ago mankind invented the city”.⁶⁹ The city-states of North-Italy were central in the birth of the capitalist world system. According to the historian of technology Robert Friedel, especially then Venetians were innovative in shipbuilding:

*At the end of the thirteenth century, the Venetians devised a new kind of ship, the great galley, which extended their shipping capabilities. When this ship was combined with new policies that directed almost all shipments to be sent out in protected convoys, the security and power of Venetian commerce exceeded that of any other Mediterranean state. At the same time, the Venetians experimented with modified round ships, based on northern styles that used square sails. The resulting ship, the ‘cog’, gave merchants an effective cargo-carrying vessel that required far less manpower than the galleys. The fleet of Venice were the basis for the greatest commercial power the European world had yet seen.*⁷⁰

The Venetian state took active part in the ship-building through the huge shipyard called the Arsenale, and: “The involvement of the Venetian state in the building not only of naval vessels but also of the city’s merchant fleet was typical of the active role played by the government in commerce and technology.”⁷¹ This involvement was not exceptional in medieval Europe, “governments and rulers everywhere had a hand in fostering trade, promoting manufactures and other sources of wealth, and in regulating work and production”.⁷² The state facilitated increased flows, and these increased flows strengthened the state. The increased trade, or flows, experienced by the Italian city-states led to standardization of business practices. Consequently, “a new form of business organization – the *vera società*, or true company – arose to rival, and sometimes supplant, the *commenda*”.⁷³ The institutionalization of this new organizational form has similarities with the institutionalization of the large hierarchical industrial enterprise. In Chandler’s account, the relation between the new logistics facilities of the industrial revolution, increased flows, and the large-scale industrial enterprise is clear:

It was not until the 1870s, with the completion of the modern transportation and communication networks – the railroad, telegraph, steamship, and cable – and of the organizational and technological innovations essential to operate them as integrated systems, that material could flow into a factory or processing

⁶⁹ (Schaeffer & Sclar, 1980), p. 8.

⁷⁰ (Friedel, 2007), p. 97.

⁷¹ Ibid. 100.

⁷² Ibid. 101.

⁷³ (Cameron & Neal, 2003), p. 66.

*plant and finished goods move out at a rate of speed and volume and with the precise timing required to achieve substantial economies of throughput.*⁷⁴

It seems that the character of flows and its facilitating logistics have been decisive for the emergence of new kinds of “transformational nodes”. For Chandler, “the revolution in transportation and communication created opportunities that led to a revolution in both production and distribution”.⁷⁵

The second logistics revolution started in the sixteenth century. In trying to explain the Portuguese expansion in the sixteenth century, Rondo Cameron put some weight on “good fortune”, however, a “less accidental but nevertheless fortuitous, factor was the accumulated knowledge and experience of the Portuguese in ship design, navigational techniques, and all related arts – a continuing legacy of the work and dedication of Prince Henry”.⁷⁶ Once more, we see the relation between the state on the one hand, and the development of logistics facilities on the other. The later emergence of the Dutch capitalist hegemony relates also strongly to changing logistics. The historian John A. Davis how Dutch merchants were able to outrun their commercial rivals on European markets:

*In the case of the Dutch, this owed much to the technical capacity of the Dutch fluitshipt that carried that carried larger cargoes faster than the ships of any of Holland’s commercial rivals. As a result, navigation was a key factor in the emergence of the Dutch commercial empire, an by the 1670s the Dutch commercial fleet equaled in tonnage the combined merchant fleets of England, Portugal, France, Spain and Germany.*⁷⁷

Pressure from increasing flows also created strong incentives for the Dutch cities to cooperate in order to improve inland transportation. According to Jand de Vries and Ad van der Woude:

*Eventually, the compelling need for better intercity communications led to a breakthrough. Beginning in 1631 the cities began to cooperate with one another to finance the improvement of existing waterways and the construction of new ones.*⁷⁸

The joint stock chartered companies, as Verenigde Oost-Indische Compagnie established in 1602, became a new kind of institutionalized organizational form adapted to the increased scale and scope of flows – also taking care of the logistics.

⁷⁴ (Chandler jr., 1990), p. 26.

⁷⁵ Ibid.

⁷⁶ (Cameron & Neal, 2003), p. 139.

⁷⁷ (Davis, 2006)

⁷⁸ (De Vries & Woude, 1997), p. 34.

The later British superiority on the oceans is well known, as their mercantilism. Interestingly, Norway emerged as one of the world's largest shipping nations during the nineteenth century, closely connected to its extensive export of timber and fish – to Britain, France, Spain, Italy and other parts of Europe. It gave Norway no global hegemony, but provided one of the most important channels of economic growth.

Andersson and Strömquist connect the third logistics revolution with what we usually consider as the first and second industrial revolution. The fourth logistics revolution connects to the just-in-time paradigm and the breakthrough of information society. However, this is not the place for an even more extended discussion of the relations between flows, logistics and institutions. The point has been to propose a research agenda. The neo-schumpeterian theories of people like Carlota Perez and Christopher Freeman will probably be useful when working with contemporary history.⁷⁹ They classify infrastructures and logistic facilities according to changing technological revolutions or paradigms (table 1). If related to the literature on national business systems and varieties of capitalism, we will have an exiting time as business historians.⁸⁰ We will be able to put our small pieces of research into a broader picture of long term, global history.

Table 1. The industries and infrastructures of technological revolutions⁸¹

⁷⁹ Especially (Perez, 2002) and (Freeman & Louçã, 2001)

⁸⁰ (Whitley, 1999) and (Hall & Soskice, 2001).

⁸¹ (Perez, 2002), p. 14.

<i>Technological revolution</i>	<i>New technologies and new or redefined industries</i>	<i>New or redefined infrastructures</i>
FIRST: From 1771 <i>The 'Industrial Revolution'; Britain</i>	Mechanized cotton industry Wrought iron Machinery	Canals and waterways Turnpike roads Water power (highly improved water wheels)
SECOND: From 1829 <i>Age of Steam and Railways</i> In Britain and spreading to Continent and USA	Steam engines and machinery (made in iron; fueled by coal) Iron and coal mining (now playing a central role in growth)* Railway construction Rolling stock production Steam power for many industries (including textiles)	Railways (Use of steam engine) Universal postal service Telegraph (mainly nationally along railway lines) Great ports, great depots and worldwide sailing ships City gas
THIRD: From 1875 <i>Age of Steel, Electricity and Heavy Engineering</i> USA and Germany overtaking Britain	Cheap steel (especially Bessemer) Full development of steam engine for steel ships Heavy chemistry and civil engineering Electrical equipment industry Copper and cables Canned and bottled food Paper and packaging	Worldwide shipping in rapid steel steamships (use of Suez Canal) Worldwide railways (use of cheap steel rails and bolts in standard sizes). Great bridges and tunnels Worldwide Telegraph Telephone (mainly nationally) Electrical networks (for illumination and industrial use)
FOURTH: From 1908 <i>Age of Oil, the Automobile and Mass Production</i> In USA and spreading to Europe	Mass-produced automobiles Cheap oil and oil fuels Petrochemicals (synthetics) Internal combustion engine for automobiles, transport, tractors, airplanes, war tanks and electricity Home electrical appliances Refrigerated and frozen foods	Networks of roads, highways, ports and airports Networks of oil ducts Universal electricity (industry and homes) Worldwide analog telecommunications (telephone, telex and cablegram) wire and wireless
FIFTH: From 1971 <i>Age of Information and Telecommunications</i> In USA, spreading to Europe and Asia	The information revolution: Cheap microelectronics. Computers, software Telecommunications Control instruments Computer-aided biotechnology and new materials	World digital telecommunications (cable, fiber optics, radio and satellite) Internet/ Electronic mail and other e-services Multiple source, flexible use, electricity networks High-speed physical transport links (by land, air and water)

Note: * These traditional industries acquire a new role and a new dynamism when serving as the material and the fuel of the world of railways and machinery.

Conclusion: Just what we are looking for?

In his chapter on globalization in the Oxford handbook, Geoffrey Jones holds that business history of globalization “will require shifts in methodologies and approaches”. He continues: “A global perspective should move beyond such national frameworks to look more closely at the nature of the linkages between geographies, as already seen in the literature on business

diaspora and on communication and transport networks.”⁸² My suggestion is that flows might be just what we are looking for.

⁸² (Jones, 2008), p. 162.

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