Communications Revolutions: A Historiographical Concept

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It might be supposed that the origins of the concept of the Communications Revolution are to be found somewhere in the work of Marshall McLuhan (1911–1980) or his followers,[1] but—predictably enough, perhaps—no theoretical statements are forthcoming from that quarter.[2] To locate the origins of the concept, we need to do some detective work. The coiner of the term 'the Gutenberg Galaxy' described his own work as a footnote to the work of his Toronto colleague, the economic historian Harold Adam Innis (1894–1952).[3] Before turning to his examination of the relations between political structure and communication in ancient high cultures, Innis had been interested in the significance of spatial movement, with particular reference to Canada. As his biographer shows, he had devoted a decade apiece to studying Canadian railways, the Canadian fur trade and Canadian cod fishing. Innis himself gives no indication how he arrived at his more abstract ideas concerning the connection between 'empire' and 'communications', though it is possible that the unglamorous explanation was that as a Canadian nationalist he did not approve of the United States' position of hegemony and was reluctant to acknowledge that key sources of his ideas came from that country.[4]

A schematic formulation of the concept of the Communications Revolution had been published in 1932 by Robert G. Albion (1896–1984).[5] Innis knew of Albion as the author of a study of the connection between sea power and the timber trade.[6] Albion developed this idea further, presenting more systematic

[1] Gilbert Seldes, 'Communications Revolution', in Edmund Carpenter and Marshall McLuhan (eds), *Explorations in Communication: An Anthology* (Boston, 1960), pp. 196–99.

[2] Herbert Marshall McLuhan, *The Gutenberg Galaxy: The Making of Typographic Man* (Toronto, 1962); Herbert Marshall McLuhan, *Understanding Media: The Extensions of Man* (New York, 1964).

[3] Harold Adam Innis, *Empire and Communications* (Toronto, 1950); revised by Mary Q. Innis, with a foreword by Marshall McLuhan (Toronto, 1972); Harold Adam Innis, *The Bias of Communication* (Toronto, 1951); reprinted with introduction by Marshall McLuhan (Toronto, 1964); for the term 'footnote', see Foreword, p. ix.

[4] Donald Creighton, *Harold Adam Innis: Portrait of a Scholar* (Toronto, 1957), pp. 78f. and 96f.

[5] Robert G. Albion, 'The Communication Revolution', in *American Historical Review*, 37 (1932), pp. 718–20.

[6] Robert G. Albion, *Forests and Sea Power: The Timber Problem of the Royal Navy, 1652–1862* (Cambridge, 1926); Harold A. Innis, 'Transportation in the Canadian Economy', in Mary Q. Innis (ed.), *Harold A. Innis*: *Essays in Canadian Economic History* (Toronto, 1956), pp. 220–33, esp. p. 222.

arguments, in a lecture given at the New York Engineers Club in 1933, in which he described the Communications Revolution as a form of permanent revolution that had originated in America in the 1760s.[7] Albion, in fact was merely following through the logic of his own assumption that the founding and rise of the United States were based on the growth of its communications infrastructure. Richard R. John has shown how easy it is to find examples from the nineteenth century of the belief that the revolutionizing of society was set in motion by new communications media. John endorses Albion's periodization, though he, too, is concerned mainly with American history.[8]

In these approaches the significance of the concept of the Communications Revolution for history in general remains an open question. The purpose of what follows is fivefold. First, to seek to explore the potential of the concept of the Communications Revolution as formulated by Albion and John. Second, to apply the notion to European history, where similar processes took place much earlier. Third, in so doing, to suggest that these fundamental changes in the sphere of the media should all be viewed together and subsumed under the general category of the Communications Revolution. Fourth, on the basis of this prototypical development in Europe, to propose a new chronology, setting the more belated process of modernization in America in an appropriate global context. Finally, to discuss the macro-historical question whether the Communications Revolution was as significant as other fundamental upheavals that have occurred in the past, such as the Scientific Revolution and the Industrial Revolution—in other words, whether the Communications Revolution described here was of world-historical significance[9] and whether it was, like the other revolutions, unique in its own way.[10]

I: The Concept of the Communications Revolution

Robert G. Albion developed his notion of the Communications Revolution via an analogy with the notion, by then well established, of the Industrial Revolution. This latter notion provided a single label for a universal process of fundamental historical change which would otherwise have had to be described and explained in ponderous detail. Albion argued that 'the concept

[7] Robert G. Albion, 'The Communication Revolution, 1760–1933', in *Newcomen Society Transactions*, vol. 14 (1933), pp. 13–25.

[8] Richard R. John, 'American Historians and the Concept of the Communications Revolution', in Lisa Bud-Frierman (ed.), *Information Acumen: The Understanding and Use of Knowledge in Modern Business* (London and New York, 1994), pp. 98–110.

[9] Alfred Rupert Hall, *The Scientific Revolution 1500–1800: The Formation of the Modern Scientific Attitude* (London, 1954); Thomas S. Kuhn, *The Structure of Scientific Revolutions* (Chicago, 1962; 2nd expanded edn., Chicago, 1970).

[10] Alfred Rupert Hall, 'On the Historical Singularity of the Scientific Revolution in the Seventeenth Century', in John H. Elliott and Hans G. Königsberger (eds), *The Diversity of History: Essays in Honour of Herbert Butterfield* (London, 1970), pp. 199–222.

of the Industrial Revolution would be clearer if it were restricted to industry proper, with its factories, mines, and foundries, its labor problem, and its influence on the rise of the bourgeoisie and proletariat with the political and social consequences'.[11] Even though the building of canals and roads, and the invention of the steam ship and the railway train, had made a crucial contribution to the Industrial Revolution, it was desirable, he believed, to separate the radical changes in the field of communications from the Industrial Revolution in the narrower sense. The 'communication revolution' was

> a distinct development with its own separate phenomena and consequences … The story of the canal, turnpike, steamboat, railroad, telegraph, submarine cable, telephone, automobile, wireless telegraph, airplane, and radio is quite distinct from the record of factories and foundries. The change in communications has knit the world closer together. It has widened the horizons of every community, partly through the rapid dissemination of news and partly through the breaking down of provincialism with new facilities for travel. It has been of vital importance in opening up the wilderness and in linking together the far flung possessions of the world empires. It has made possible far greater centralization in commerce and in government and it has also had important consequences in the art of warfare. These manifold results were not primarily industrial, to say the least.[12]

In unpretentious terms Albion was raising a host of questions. Although he was thinking primarily about the United States, his ideas were couched in such general terms that he was, in effect, proposing their application to other countries and periods of history. In particular, his reference to 'world empires' (in the plural) implied that these ideas were relevant to large empires of all kinds. It was this implication that Innis later took to heart in his own studies of the great empires of antiquity; certainly Innis's earlier studies of the Canadian timber trade had given no hint of such theoretical flights.[13] Sociological theorists, too, were inspired by systematizing approaches of this sort, as can be seen from publications by the American sociologist Karl W. Deutsch, who assigned a key role to the 'nerves of government' in influencing the forms of exercise of authority.[14] And the media determinism with which McLuhan has been charged is already latent in Albion's work.

For Albion, the Communications Revolution was particularly important because the introduction of the postal system and the building of roads in America predated the Industrial Revolution and both of these developments were decisive factors in the growth of close ties among the colonies. The establishment of newspapers—such as that of Benjamin Franklin (1706–1790), who was also the Postmaster-General of Pennsylvania—was likewise part of

[11] Albion, 'The Communication Revolution', p. 718.
[12] *Ibid.*, p. 718f.
[13] M. Innis, *Harold A. Innis: Essays in Canadian Economic History*; H. Innis, *Empire and Communications*.
[14] Karl W. Deutsch, review of Harold Innis, *Empire and Communications* and *The Bias of Communication*, *Journal of Economics and Political Science*, 17 (1952), pp. 388–90; Deutsch, *The Nerves of Government: Models of Political Communication and Control* (New York, 1963).

the process of opinion-forming that eventually led to the emergence of the idea of the nation, the Declaration of Independence and the United States' struggle for sovereignty. In Britain the Industrial Revolution and the Communications Revolution seemed to be part and parcel of a single process. 'In American history, however, the "Communication Revolution" was a thing apart for it had performed wonders while our industries were still legitimate "infants".'[15]

The reason why Albion placed the beginning of the Communications Revolution at around 1760 was his conviction that 'it marked a decisive turning point in the *speed* with which information, people and goods moved through the economy'.[16] In the preceding millennium and a half, he claimed, there had been virtually no significant changes in this respect. In Britain and America from about 1760 onwards, however, almost every year brought innovations that increased the pace of spatial movement, with the completion of the Bridgewater Canal in 1761 and the start of scientifically based road-building in 1803 under the British engineer Thomas Telford (1757–1834) being early high points. Significantly, Albion was just as interested in the transport of news as he was in that of people and goods. On his simple schema the key later inventions included those of the steam ship, invented by Robert Fulton (1765–1815) in 1807; the first locomotive with passenger train, by George Stephenson (1781–1848) in 1825; electric telegraphy, by Samuel Morse (1791–1872) in 1844; the trans-Atlantic cable, in 1866; the telephone, by Alexander Graham Bell (1847–1922) in 1876; the first electric train, by Siemens and Halske in Berlin in 1879; the first automobile, by Gottfried Daimler (1843–1900) in 1887; the first wireless transmission of Morse signals across the Atlantic, by Guglielmo Marconi (1874–1937) in 1901; the first motorized flight, by the Wright brothers in 1903; and the first radio broadcast, in 1915.[17]

Passing over all the publications that subsequently made more or less unreflective use of the term 'communication revolution' (or, from the mid-1970s, 'Communications Revolution'), we can turn to the work of Richard John, who in 1994 was the first to subject the concept to a fundamental reappraisal. Accepting that there was widespread agreement that the development of the United States had been revolutionary in character, John asked the question 'as to precisely which sequence of events it [the concept of the Communications Revolution] is meant to explain or even … when it [the revolution itself] began'.[18] John separated Albion's criteria into innovations which were based on technological discoveries or the development of new energy sources (such as the steam ship, the railway or the submarine cable) and those which generated higher speeds by dint of improvements to the infrastructure (such as increased

15 Albion, 'The Communication Revolution', p. 719.
16 John, 'American Historians', p. 99.
17 Albion, 'The Communication Revolution', p. 15f.
18 John, 'American Historians', pp. 98–110.

division of labour or road building); within the latter category he made a further distinction between the transportation of goods and people and the transmission of news. Whereas many historians have traditionally concentrated on the technological innovations,[19] John—unlike Albion—concluded that it was the introduction of the postal system that brought about an increase in speed and produced a cascade of consequences. As later with rail and air transport, the system of post coaches already served to convey news, people and goods; the crucial factor that differentiated it from other contemporary forms of transport, such as canals and coastal shipping, was speed.

John supported his case with citations from contemporary authors: for example, the American moral philosopher Francis Lieber (1798–1872), who in 1832 described the postal system as 'one of the most effective instruments of civilization' and its establishment as equal in significance to Johannes Gutenberg's invention of the printing press;[20] and the travel writer Francis Grund (1804–1863), who maintained that the postal system and the printing press had 'revolutionized' the world.[21] Lieber and Grund were writing before the invention of the electric telegraph by Samuel Morse, which some authors have seen as the event that sparked contemporary awareness of communications technology as an 'agent of change'.[22] For John, the real agent of change was the introduction of a reliable and user-friendly 'communications infrastructure'. The sociologist Daniel Bell, who introduced this term, defines it as 'a complex configuration of interrelated components that follows its own logic and that facilitates the processing of information'.[23] John invoked the notion to contend that the Communications Revolution was 'less a product of changes occurring elsewhere in the economy than an autonomous agent of change'.[24] Disappointingly, however, he confined himself, like Albion, to American history and, indeed, concluded that the take-off did not happen until the 1790s, when the newly constituted American government under the first President, George Washington, initiated the systematic opening-up of the United States' geographical space by establishing a national communications infrastructure. We should certainly acknowledge Washington's efforts to reform the postal system, which culminated in the Post Office Act of 1792, but they can hardly serve as the basis for a world-wide history of communications.[25]

[19] Dolores Greenberg, 'Energy, Power, and Perceptions of Social Change in the Early Nineteenth Century', *American Historical Review*, 95 (1990), pp. 693–714.

[20] Francis Lieber, 'Posts', in *Encyclopedia Americana*, vol. 10 (1832), pp. 289–98, esp. p. 289.

[21] Francis J. Grund, *The Americans in their Moral, Social, and Political Relations* (Boston, 1837), pp. 120 and 389.

[22] Daniel J. Czitrom, *Media and the American Mind: From Morse to McLuhan* (Chapel Hill, 1982).

[23] Daniel Bell, 'The Social Framework of the Information Society', in Michael L. Dertouzos and Joel Moses (eds), *The Computer Age: A Twenty-Year View* (Cambridge, Mass., 1979), pp. 163–211.

[24] John, 'American Historians', p. 105.

[25] See Richard R. John, *Spreading the News: The American Postal System from Franklin to Morse* (Cambridge, Mass., 1975).

II: Speed and the Creation of Infrastructure in Europe

Members of the audience at his lecture at the New York Engineers Club were the first to sound a note of unease at the way Albion had over-indulged his local patriotism (which was later to find expression in a study of the growth of New York Harbour).[26] In the ensuing discussion, in addition to questions over points of detail, it was pointed out that the Chinese empire had had a developed system of communications that had forged links with Europe via the Islamic world, and that the Emperor of the Aztecs had had a sophisticated system of couriers that had kept him informed about the movements of his Spanish adversaries. Moreover, Professor J.K. Finch noted that although it was important to acknowledge the importance of the construction of the Bridgewater Canal, historians should not ignore the fact that canal building had begun in France over a hundred years earlier, with the construction of the Canal du Midi between 1666 and 1681, and indeed that the canal link between the Seine and the Loire had been opened in 1642. Similarly, the French Corps de Ponts et Chaussées had led the way in road building in Europe, long before the British had given any thought to the creation of a road system.[27] These various comments touch on the question which this article proposes to pursue further here: namely, whether the concept of the Communications Revolution should not be regarded as universal.

If we apply the crucial defining criteria of the concept—namely, infrastructure creation and speed—to European history, then we discover completely different sequences of development and a different periodization. In Europe the great structural transformations that led to the emergence of modern society occurred much earlier than in America. This is true of the beginning of the Industrial Revolution, and certainly of the Scientific Revolution; and it is also true of the Communications Revolution. Systematic attempts to achieve greater speeds go back to the period that is usually regarded as the beginning of the modern era, namely the same notable decades that saw the invention by Johannes Gutenberg of the technique of printing with movable type and the discovery of central perspective in painting. We shall return to the connection between speed and letterpress printing shortly, but the link between relays of mounted couriers and pictorial perspective is clear: both innovations took place in Renaissance Italy and served to measure and structure space in a more rational way. It is not known exactly when postal relays

[26] Robert G. Albion, *The Rise of New York Port, 1815–1860* (New York, 1939); see also Robert G. Albion and Walter Phelps Hall, *A History of England and the British Empire* (2nd edn., Boston, 1946); Robert G. Albion, *Sea Lanes in Wartime: The American Experience, 1775–1942* (London, 1943); Robert G. Albion, *New England and the Sea* (Middletown, Conn., 1972); Robert G. Albion, *Naval and Maritime History: An Annotated Bibliography* (4th rev. edn., Newton Abbott, 1973); Robert G. Albion, *Makers of Naval Policy, 1798–1847* (Annapolis, 1980).

[27] Albion, 'The Communication Revolution', p. 24f.

were introduced, but several indicators point to the beginning of the rule in the duchy of Milan of Giangaleazzo Visconti (1351–1402; ruled 1378/85–1402), who personified the modern prince as described by Machiavelli in his famous work. It is in Milan that the earliest 'time sheets' in European history have been found—typical kinds of docket enabling communications facilities to be monitored for efficiency on a stage-by-stage basis via the recording of exact timings. These earliest postal couriers were expected not only to be physically competent but also to be able to write and to operate with an abstract concept of time using a mechanical clock. Every courier was required to record the receipt of letters and transported goods at the postal station by signing his name and noting the time of day.

Systems of mounted couriers were expensive and did not immediately become a permanent facility. It is not until the rule of Filippo Maria Visconti (1392–1447; ruled 1412–1447) that evidence for their use begins to multiply. In terms of organization, the pattern that was established in the Duchy of Milan was then extended by northern Italian postmasters to the whole of Europe in the course of the sixteenth century. The very earliest dockets bore a characteristic admonition that the greatest possible speed was required, the so-called '*Cito* mark'—a mark, incidentally, that survived right through until the dawn of the railway age. Indeed, the phrase *con la celerità de la stapheta*—'as fast as a team of mounted couriers'—was a way of denoting the fastest possible form of conveyance. We can infer, then, that there was an altered perception of speed in this period, with the space-to-time ratio of a mounted courier serving as a standard unit of measure.[28] The conveyance mark *Portentur die noctuque non celeriter, sed fulminantissime per cavallarum postarum sub pena mille furcarum* combined references to several essential features of the later postal system: the use of horses instead of runners; the provision of fixed relay stations where horses, and presumably also riders, could be changed; the uninterrupted transportation of news during both day and night (*die noctuque*); the emphasis on speed by means of the *Cito* mark, here upgraded into *non celeriter, sed fulminantissime*; and the characteristic threat of the gallows (*furca*) in the event of delay. The gallows were represented on the dockets either by a pictorial image or in words, in this instance again in heightened fashion (*sub pena mille furcarum*).[29]

[28] Fritz Ohmann, *Die Anfänge des Postwesens und die Taxis* (Leipzig, 1909), pp. 56–63.

[29] This conveyance mark dates from 1425: see Aloys Schulte, 'Zur Entstehung des deutschen Postwesens', in supplement to the *Allgemeine Zeitung* (1900), no. 85, pp. 1–5. The *Cito* mark was standard throughout Europe until the eighteenth century. Only in Britain was it translated into the vernacular, as *Haste haste haste post haste*: see Philip Beale, *A History of the Post in England from the Romans to the Stuarts*, London, 1998, pp. 142ff. (with illustrations from 1598 and 1605). It is clear from the fact that this mark retains the gallows that a borrowing from the continent was involved. See also J. Crofts, *Packhorse, Waggon and Post: Land Carriage and Communications under the Tudors and Stuarts* (London and Toronto, 1967), p. 133.

One of Albion's basic errors was his belief that the decades between the decline of antiquity and the American Revolution saw no essential changes in communications. In reality, the demise of the Roman *cursus publicus* created a caesura. However, memories of it were not lost. Renaissance jurists practising the widely adopted Roman law knew the appropriate passages of the *Codex Justinianus*,[30] as did graduates of the law faculties of Italian universities. Scholars were familiar with Herodotus's account of the ancient Persian system of couriers, Suetonius's story of the Emperor Augustus's introduction of the *cursus publicus* and the descriptions of its functioning given by Pliny and Livy. Giangaleazzo Visconti, in particular, was a dedicated reader of the classical texts.[31] Nevertheless, the Renaissance was not simply a revival of antiquity: it saw the emergence of something quite new. The jurist Jacopo Menocchio (1532–1607), in his commentary on Imperial law, emphasized that the modern postal system differed in name from that of antiquity because, by contrast with the latter, it was available at a set price '*pro communi hominum et reipublicae utilitate*' and was not dependent on Imperial permission. Quite correctly, in fact, he singled out the public character of the postal system as the crucial factor that distinguished it from the communications system of the ancient world.[32] This points us to Albion's second basic mistake, which Innis and McLuhan also made. The basis for the Communications Revolution was not, as Albion maintained, communications technology on its own, but the position of the technology within society. Unlike the communications facilities of antiquity—and of Asia, the Arab world and the pre-Columbian Americas—which remained the preserve solely of the ruling dynasties and their officials, the modern means of communication of Europe were accessible to the public. As a result, rather than leading to new forms of tyranny, they became a crucial 'agent of change'.[33] To quote Bell: 'Control over communications services is a source of power. Access to communication is a condition of freedom.'[34]

General access to the most advanced communications infrastructure was the factor that distinguished European culture from all other civilizations. How and where had this decisive step been taken? For an answer we must look to the institution that extended the Italian courier relay system to central

[30] *Codex Justinianus* (534; XII, 50, 1–21), ed. by Gottfried Härtel and Frank-Michael Kaufmann (Leipzig, 1991; based on Paul Krüger, ed., *Codex Justinianus*, vol. 2: *Corpus Juris Civilis*, Berlin, 1900), pp. 271–73.

[31] Dorothy Muir, *A History of Milan under the Visconti* (London, 1924), p. 90. The same was true of Filippo Maria Visconti: see Muir, *A History of Milan*, pp. 133–72. See also Erik J. Holmberg, *Zur Geschichte des cursus publicus* (Uppsala, 1933), pp. 37f. and 54ff.

[32] Jacobus Menochius, *De arbitrariis iudicum quaestionibus et causis libri duo* (Venice, 1569), p. 253f. (*casus* ccxxix).

[33] Wolfgang Behringer, *Im Zeichen des Merkur: Reichspost und Kommunikationsrevolution in der Frühen Neuzeit* (Veröffentlichungen dess Max-Planck-Instituts für Geschichte, 189, Göttingen, 2003), pp. 17, 22, 42 and 65–98.

[34] Bell, 'The Social Framework', p. 176.

Europe: the Imperial post. As early as the reign of King (later Emperor) Friedrich (Frederick) III (1415–1493, reigned 1440/52–1493), the postal system was introduced north of the Alps by Frederick's son Maximilian (1459–1519, elected King of the Romans 1486, reigned as Emperor Maximilian I 1493–1519). Maximilian, as inheritor of the *Grafschaft* of Tyrol and the husband of Maria of Burgundy (1457–1482), wished to create links between his geographically disparate lands. In 1490, accordingly, he summoned Italian communications specialists to Innsbruck: members of the de Tassis family who had previously been responsible for organizing the courier system for Venice and the Papacy. The only problem was that permanent courier lines were extremely expensive to operate. Huge, powerful empires like those of ancient Rome, Persia, China or the Aztecs could maintain them, but no ruler of a small-scale European state was in a position to do so. The postmasters and couriers, however, were not subjects who could be compelled to obey orders: they worked for cash. If cash was not forthcoming, they withdrew their services. In 1501, and then again in 1505, the brilliant communications entrepreneur Franz von Taxis (1459–1517) negotiated a contract with Maximilian's son Philip I of Burgundy (1478–1506, reigned 1492–1506), the ruler of the Netherlands and later inheritor of the Spanish throne, guaranteeing permanent daily payments by the Burgundiay Treasury in Lille. In 1516 this contract was renewed and extended by Philip's son and successor, Charles I of Spain, the later Emperor Charles V (1500–1558, reigned 1519–1556). These contracts, defining the rights and responsibilities of the postmasters, laid down the basic terminological framework of the modern European postal system.[35]

The structure of the Imperial postal system can be explained by means of an example. Jacob Fugger the Rich, whose financial resources had been critical to the outcome of the Imperial election of 1519, had agents across the continent who kept him better informed about new developments than all his competitors. But, for all that he was the richest man in Europe, how did he succeed in financing a system of news that surpassed those of some of the wealthiest princes? The answer is simple: Jacob Fugger was one of the first private users of the Habsburg mounted courier relays, which soon spread from Austria, Germany and the Netherlands to Bohemia, Hungary, Italy and Spain. The Italian entrepreneurs, whom King Maximilian I had sent to Brussels, had come up with a brilliant solution to the financing problem. In an early act of privatization, they themselves took over the management of the system, replacing the princely court officials. They opened the channels of communication to general use and transferred the financial risk to innkeepers as franchisees. A segmentary service was transformed into a public one, open

[35] The key reference work is Martin Dallmeier, *Quellen zur Geschichte des europäischen Postwesens 1501–1806*, 3 vols. (Kallmünz, 1977/1987: Part I, *Quellen—Literatur—Einleitung*, Kallmünz, 1977; Part II, *Urkunden—Regesten*, Kallmünz, 1977; Part III, *Register*, Kallmünz, 1987).

to all customers upon payment of a fee. One result was the fixing of communications routes and the establishment of permanent 'offices': this was the origin of 'post offices'. The reason why all the Fuggers' news came from a particular set of places had nothing to do with the Fuggers' system of mercantile agencies. The letter-drawers in the *Trachtenbuch* of the chief accountant Matthäus Schwarz, which depicts him with his master in the Fuggers' head office, reflect the structure of this first public communications system: they bear the names of the major post offices.[36] And if we analyse the places from which the news reports in the Fugger Newsletters emanated—papers which, between 1564 and 1605, contained news from around the world, from Persia to Peru—we find the same place-names, with the reports always dated to the same days of the week.[37]

The Imperial post (*kaiserliche Post*), from which the *Reichspost* was later to evolve, was the first public communications system in Europe. In contrast with the late medieval messenger systems, and even with the 'post' in France and Britain—which remained a 'segmentary' service in both countries throughout the sixteenth century, available only to a limited number of social groups—Charles V's Imperial post, run by the Taxis company across the whole continent, could be used by everyone in exchange for a simple charge (*porto*). It was 'universal' in terms both of its customers and of the goods that could be despatched by its means. Letters, news (*avisi*), packages (*pacchetti*), money, jewellery, samples of textiles and spices, and other small items could be conveyed rapidly and safely between Antwerp and Naples, Prague and Madrid. Those in charge of this communications universe were Italians, and the language of the post—like the word '*posta*' itself—was Italian. The system was based on an organizational invention, not a technological one: the division of labour on an extensive scale.[38] Under pre-industrial conditions, the only way in which speed could be optimized was if space was portioned out and stations established where horses and riders could be changed. These stations were the 'posts' (*positae stationes*) that lent the system its name. Speed, the prime objective of communication, was a measurable variable.

[36] Wolfgang Behringer, 'Fugger and Taxis. Der Anteil Augsburger Kaufleute an der Entstehung des europäischen Kommunikationssystems', in Johannes Burkhardt (ed.), *Augsburger Handelshäuser im Wandel des historischen Urteils* (Berlin, 1996), pp. 241–48; Matthäus Schwarz, 'Das Trachtenbuch des Matthäus Schwarz', in August Fink (ed.), *Die Schwarzschen Trachtenbücher* (Berlin, 1963), pp. 97–176.

[37] Victor von Klarwill (ed.), *Fugger-Zeitungen: Ungedruckte Briefe an das Haus Fugger aus den Jahren 1568–1605* (Vienna, 1923; trans. by Pauline De Chary as *The Fugger Newsletters: Being a selection of unpublished letters from the Correspondents of the house of Fugger during the years 1568–1605*, London, 1924); Klarwill (ed.), *The Fugger Newsletters, second series: Being a further selection from the Fugger papers specially referring to Queen Elizabeth and matters relating to England during the years 1568–1605*, transl. by L.S.R. Byrne, London, 1926); Behringer, *Im Zeichen des Merkur*, pp. 325–30.

[38] See Émile Durkheim, *The Division of Labour in Society* (first publ. 1893, transl. 1933, repr. Glencoe, Ill., 1964).

The postal contract agreed in 1505 between Francesco de Tassis,[39] the Habsburgs' chief entrepreneur, and Philip of Burgundy, the King of Spain, was the first one to specify minimal speeds, thereby establishing norms for the space-time relationship: letters between Brussels and Innsbruck were required to take no more than five days to deliver (a speed sadly not always achieved today).[40] The data required for measuring speed were recorded, and the mounted couriers were reminded of the purpose of their mission by the *Cito* mark on their dockets, its importance further underlined by the gallows symbol.[41] The dockets made it possible to check whether the agreed delivery times were being adhered to. Calculations were not rigidly based on the physical formula $v = s/t$, and yet by the eighteenth century forms were being used to compare target and actual times on all postal routes on a station-by-station basis, with delays indicated under a special heading. Time had become a precious commodity, not to be squandered. Speed was paramount not only for merchants but also for government diplomats (as the Milanese postal administrator Codogno emphasized),[42] scientists and indeed letter-writing lovers.

Measurable progress in the communications system began to occur in about 1500. This is amply proven by all the statistics: the numbers of postal stations, post offices, postal routes, horses (and, later, coaches) per post house; the numbers of officials per post office; the frequency of postal couriers and mail coaches, and their speeds; the numbers and print runs of newspapers, postal route maps and postal schedules; the number of bilateral contracts with governments; the number of kilometres of newly-built and paved roads; and the levels of receipts and rents, which were meticulously recorded in an age of mounting budgetary sophistication. Indeed, an astonishing fact can be noted. Unlike other historico-statistical variables, the number of postal stations shows a unidirectional linear increase from a level of zero in around 1500 right through to the advent of the railway age. Using examples provided by historical geographers, we can date the growth of postal routes very precisely, charting the areas that were opened up and tracing the tangible results. By and large, then, expansion of the postal network was not all that different from the later development of the rail and air-traffic networks, in the sense that it proceeded on a

[39] Francesco de Tassis changed his name in Germany to Franz and in France to Francis or Francisque. Taxis and Tassis is the same family: they were called Taxis in Germany, Austria and Bohemia, and Tassis in Italy and France—this was confusing for their contemporaries also.

[40] Fürstliches Zentralarchiv Thurn und Taxis, Regensburg [FZATTR], Posturkunden no. 1; regest in Dallmeier (1977), vol. II, p. 3f.

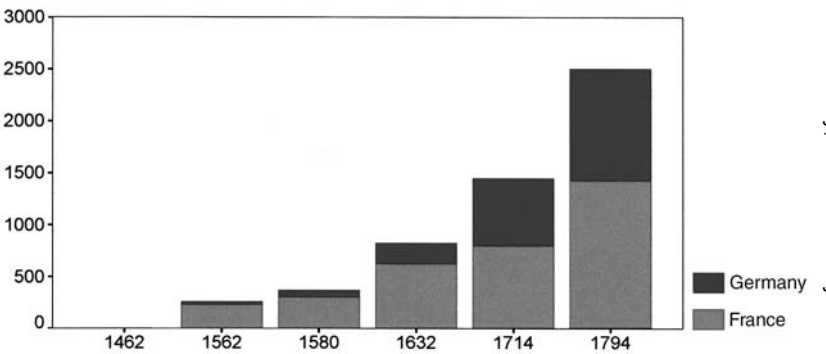
[41] Oswald Redlich, 'Vier Post-Stundenpässe aus den Jahren 1496–1500', in *Mitteilungen des Instituts für Österreichische Geschichtsforschung* [*MIÖG*], 12 (1891), pp. 494–504; see also Aloys Schulte, 'Zu dem Stundenpaß von 1500', in *MIÖG*, 20 (1899), pp. 284–87; Gerhard Dohrn-van-Rossum, *Die Geschichte der Stunde. Uhren und moderne Zeitordnungen* (Munich, 1992), pp. 303–308.

[42] Ottavio Codogno, *Nuovo itinerario delle poste per tutto il mondo* (Milan [Girolamo Bordoni], 1608), 'Escusazione' [Foreword].

Table 1: Delivery times for letters guaranteed by Franz von Taxis.[43]

Postal route from Brussels to	Delivery times in hours			
	1505 postal contract		1516 postal contract	
	Winter	Summer	Winter	Summer
Paris	54	44	40	36
Blois	72	60	60	50
Lyon	120	96	96	84
Innsbruck	156	132	144	120 (5 days)
Toledo	336	288		
Granada	432	360		
Burgos			192	168 (7 days)
Rome			288	252
Naples			296	

Table 2: Numbers of postal stations in France and Germany.



Sources: Le poste (1562); Nell (1714); Diez (1794); Arbellot (1991).

[43] FZATTR, Posturkunden 1 and FZATTR, Posturkunden 2, Dallmeier (1977), vol. 2, pp. 3–5.

step-by-step, route-by-route, basis.[44] What we have here, and can track in detail, are the first shoots of a viable infrastructure in Europe. Even in times of crisis, such as the Thirty Years' War, the plagues of the 1660s or the famine of the 1690s, when population and the volume of commercial activity declined, the communications system continued to grow. There are no slumps in the numbers of postal stations or in any of the other statistics mentioned, not even any perceptible cyclical changes: certainly both the *Reichspost*, with its extended structure, and the French postal system show a steady upward trend.[45]

In the early modern period the conveyance of news, goods and people through space—communication in a physical sense—was an enormous problem, because effectively functioning structures had first to be created. In the terminology of the communications model encapsulated in the so-called Lasswell formula,[46] the question was one of a lack of 'channels' serving as means or media of communication.[47] According to Fernand Braudel (1902–1985) the pre-modern period was a '*longue durée*' during which there was little structural change.[48] And many historians believe that 'the communications network of roads and shipping routes, postal services and news transmission' in the early modern period was 'highly irregular and unreliable, did not function well and, above all, was far too wide-meshed'.[49] Central-place theorists, however, have taken a sharply differing view, arguing that from the high middle ages onwards there was a regular pattern of distribution of settlements, determined by the needs of travel and commercial traffic and of administration in the emergent territorial states.[50] Correspondingly, transport

[44] For Britain, see Mark Brayshay, 'Royal Post-Horse Routes in England and Wales: The Evolution of the Network in the Late Sixteenth and early Seventeenth Century', *Journal of Historical Geography*, 17 (1991), pp. 373–89; Mark Brayshay, 'Post-Haste by Post Horse? Communications in Europe, 1400–1600', *History Today*, 42 (September 1992), pp. 35–41; Mark Brayshay and P. Harrison, 'Post Horse Routes, Royal Progresses and Government Communications in the Reign of James I', *Journal of Transport History*, 18 (1997), pp. 116–33.

[45] For France, see Eugène Vaillé, *Histoire générale des postes françaises*, 6 vols. (Paris, 1947–1953); Guy Arbellot, 'La grande mutation des routes de France au milieu du XVIIIème siècle', in *Annales: Economie, Société , Civilisation*, 28 (1973), pp. 765–91; Guy Arbellot, *Autour des routes de poste. Les premières cartes routières de la France, XVIIe-XIXe siècle* (Paris, 1992). For Germany, see Behringer, *Im Zeichen des Merkur*.

[46] 'Who says what in which channel to whom and with what effect?': see Harold Dwight Lasswell, 'The Structure and Function of Communication in Society', in Lyman Bryson (ed.), *The Communication of Ideas* (New York, 1948), pp. 37–51.

[47] Wilbur Schramm, 'Channels and Audiences', in Ithiel de Sola Pool and Wilbur Schramm (eds), *Handbook of Communication* (Chicago, 1973), pp. 116–40.

[48] Fernand Braudel, 'Histoire et sciences sociales: la longue durée', in *Annales: Economie, Société, Civilisation*, 13 (1958), pp. 725–53.

[49] Hans-Ulrich Wehler, *Deutsche Gesellschaftsgeschichte*, vol. 1: *Vom Feudalismus des Alten Reichs bis zur defensiven Modernisierung der Reformära 1700–1815* (Munich, 1987), p. 121.

[50] See Walter Christaller, *Das Grundgerüst der räumlichen Ordnung in Europa: Die Systeme der europäischen zentralen Orte* (Frankfurt/Main, 1950); Brian J.L. Berry and Allan Pred, *Central Place Studies: A Bibliography of Theory and Application* (Philadelphia, 1961–1965).

historians have concluded that pre-industrial land transport had great advantages over sea transport in terms of reliability and regularity and was much more significant than has previously been assumed.[51]

From the sixteenth century onwards, however, the pioneering factor in this development of greater regularity and speed was the infrastructure of the postal system. And it was this infrastructure that served as the trigger for a series of media revolutions.

III: The Communications Revolution and Media Revolutions

In this article the revolution in communications is seen as an over-arching structural transformation that subsumed a series of media revolutions,[52] each of which ushered in far-reaching changes, and that resulted in the lifting of the economic, political and cultural life of Europe—and subsequently, in the course of globalization, of all societies in the world—on to a new plane. The nature of these media revolutions is closely linked to the distinctive features of the infrastructure of the communications system.

III.1: *The Establishment of Postal Routes: The Travel Revolution*

The first point to note is the high degree of division of labour that was created through the portioning-out of space in terms of horse-changing stations placed at regular intervals. This structure divided the long distances into convenient spatial units, both for couriers and travellers. The Imperial postal system that operated between 1490 and 1520, however, had the drawback that it accompanied the court, and the Emperor was frequently on the move. If the Emperor stopped in the Imperial city of Lindau, for example, then there would be a postal operation there for the few days or weeks of his stay, but not before or after. The only fixed point in the postal link between the Netherlands and Austria seems to have been the episcopal village of Rheinhausen near Speyer, where there was a reliable ferry across the Rhine. In 1490 the Imperial city of Speyer had refused to allow a postal station to be set up

[51] See Theo C. Barker and Dorian Gerhold, *The Rise and Rise of Road Transport, 1700–1990* (Cambridge, 1995), pp. 2–5.

[52] Michael Giesecke, 'Als die alten Medien neu waren: Medienrevolutionen in der Geschichte', in Rüdiger Weingarten (ed.), *Information ohne Kommunikation?* (Frankfurt/Main, 1990), pp. 75–79, uses the term 'media revolutions', citing Elizabeth L. Eisenstein, *The Printing Revolution in Early Modern Europe* (Cambridge and London, 1983). The trail-blazer for this approach was arguably Thomas S. Kuhn, in *The Copernican Revolution: Planetary Astronomy in the Development of Western Thought* (Cambridge, Mass., 1957), who sees the original root of the modern notion of revolution in Copernicus's *De revolutionibus orbium celestium* (1543). See also Karl Griewank, *Der neuzeitliche Revolutionsbegriff. Entstehung und Entwicklung* (Frankfurt/Main, 1992). Whereas there can be as many media revolutions as there are media, the term 'communication' will be used here to denote the general concept under which all individual media are subsumed.

within its walls, for fear that this would mean a curtailment of its rights. Accordingly the ferry-master in Rheinhausen served continuously as the postal agent from 1490 onwards, until the first regular post office was established there in 1512. Towards the end of the reign of the Emperor Maximilian I the wealthy Imperial city of Augsburg rose to become another quasi-permanent postal station, though only because the Emperor enjoyed staying there. A permanent Imperial postal route then began to develop, beginning in Brussels, where Franz von Taxis, the postmaster-general, had lived since 1501,[53] proceeding via Namur to Rheinhausen and from there, after 1513, usually on to Augsburg and then in turn to the Imperial seat of government in Innsbruck. It also ran fairly frequently across the Brenner Pass to the South Tyrol and Trent, and thence to Rome, where Imperial postmasters had been based since 1508. An Imperial postmaster from the house of Taxis was also resident in Venice at all times between 1513 and 1796. For a striking piece of evidence concerning the functioning of the new communications system, we can cite the diary of the merchant Lukas Rem (1481–1541), who at this time was an employee of the Welser company of Augsburg, the largest trading company after the Fuggers. Leaving Antwerp on 6 October 1515, he 'posted'—to use the contemporary term for riding with changes of horses at the postal stations—to Augsburg in less than six days, passing through twenty-three stations. He rode back to Antwerp '*auff der post*', using the same stations, two months later.[54]

When Karl (Charles) von Habsburg came to the throne as King of Spain in 1516 all 'old posts' were discontinued and, following the signing of the new postal contract with Franz von Taxis (12 November 1516), all postal routes were re-surveyed and new postal agents appointed. A franchise system emerged: the postmaster sought out suitable people at suitable geographical intervals—usually the richest innkeeper in the relevant community—who would take over the running of the postal service. The franchisees were entitled to display the Imperial coat of arms by their door and earn profits from travellers, but they had to cover all their investment costs out of their earnings and received only a form of annual fee by way of reimbursement. Essentially, this was the system that operated within the realm of the Imperial (*kaiserliche*) post—later the *Reichspost*—until the collapse of the *ancien régime* during the Napoleonic Wars. After the postal routes had been thus established at the start of Charles V's reign, there was an upsurge in travel, as the postal routes were reliable—an invaluable benefit for those whose journeys were urgent. Surviving traveler accounts reveal that travellers were even prepared to make long detours to places that were on a postal route, since the consequent gains in speed and safety more

[53] Berthe Delépinne, *Histoire de la poste internationale en Belgique* (Brussels, 1952; Dutch edn: *Geschiedenis der internationale Post in Belgie, onder ed Postmeesters der Familie de Tassis*, Brussels, 1952).

[54] Bernhard Greiff, *Tagebuch des Lucas Rem aus den Jahren 1491–1541. Ein Beitrag zur Handelsgeschichte der Stadt Augsburg* (Augsburg, 1861), p. 18.

than outweighed the extra distance and higher cost. Travellers from Vienna to Paris, for example, were willing to take the route via Brussels. This communications system reached a high point during the third phase of the Council of Trent, when resourceful Italian publishers invented a brand-new form of travel aid, the *Itinerarie delle poste*, that described all the postal routes of Europe. This publication showed, for example, that the postal route from Brussels to Rome was made up of ninety-six stations, with the station on the Brenner Pass—station no. 48—being situated exactly half-way along the route.[55]

The reign of Charles V was a golden age for communications. There had not been such efficient infrastructure since the days of the *Imperium romanum*—a fact that has gone curiously unmentioned in anglo- and francophone historiography and has therefore also escaped the attention of theorists of communication from Albion to Innis and McLuhan and all later authors.[56] At this phase of Imperial history, the communications system stretched across the breadth and depth of the Habsburg realms, from the North Sea to Andalusia, from Naples to Prague. It took in the whole of Spain, Italy, Austria, Christian Hungary, Bohemia, Germany and Burgundy (that is, all of the Netherlands, as well as the areas today consisting of Belgium, Luxembourg and northern France, Lorraine, the Franche-Comté and French Burgundy).[57] In times of peace the Imperial Spanish postal routes even ran through France, as specified in the contract of 1516. In Italy there were 'Imperial' postal agents in larger towns and cities that were not part of Charles V's domain, such as Rome (the capital of the Papal State), Venice (the capital of the maritime republic), and Trent (the chief city of the prince-bishopric). A further complication arose from the fact that it was not always clear in this period whether the postmasters were responsible to Charles V in his capacity as Emperor or as King of Spain. Matters were more complicated still in Milan, which was actually a fief of the Holy Roman Empire that the Emperor claimed for Spain.

The division of the Habsburg hereditary lands in 1522 clarified the situation only in those lands that now went to the German Habsburg line. Here the postmasters were responsible to the Archduke Ferdinand, the later Emperor Ferdinand I. Strictly, these appointments were not 'Imperial' (*kaiserlich*) but 'Austrian' (or 'Tyrolean' in the case of the *Grafschaft* of Tyrol). In Germany, on the other hand, the appointments were 'Spanish', because they were financed

55 Giovanni da l'Herba and Cherubinus da Stella ['Cherubinus de Stella hoc opus scripsit & composuit de mandato praedicti D. Johannis de Herba.'], *Itinerario delle poste per diverse parte del mondo. Opera piacevole, et utile a quelli che de lei se voranno servire. Con il viaggio di Santo Iacomo di Galitia, & altre cose notabili, con tutte le Fiere, che se fanno per tutto il Mondo* (Rome [Valerico Dorico], 1563).

56 The most recent, reasonably accurate international survey to look beyond the insular English-speaking world was Laurin Zilliacus, *From Pillar to Post: The Troubled History of the Mail* (London, 1956).

57 Pierre Nougaret, 'Histoire de la poste en Bourgogne des origines à 1793', in *Mémoires de l'Académie des Sciences, Arts et Belles Lettres de Dijon*, 113 (1960), pp. 5–173.

from the Spanish Netherlands and the postmaster was based in Brussels. Nevertheless, all these post offices and postal administrations displayed the Imperial eagle in their coat of arms and styled themselves 'Imperial'. After Charles V's abdication, however, confusion set in, as the postmaster-general in Brussels was responsible to Spain, not to the Emperor. With the revolt of the Netherlands, the outbreak of the religious wars and the bankruptcies in Spain, confusion became total, especially since many postal agents in Germany were Protestants. The international postal routes became unreliable as a result of strikes and attacks and because of military activity in the Netherlands, and were sometimes even disrupted altogether. It was not until 1597, after years of negotiations, that the '*Reichspost*' was established and the 'postal reformation' was carried out. The postal service in the Holy Roman Empire was placed under the control of the Emperor and clear legal relationships were set out, even though the 'Imperial Postmasters-General' from the house of Taxis continued to operate in the service of Spain at the same time and retained their residence in Brussels until the French occupation of the Netherlands in the War of Spanish Succession. Once the 'postal reformation' had been completed, the expansion of the postal system got fully under way, beginning with the introduction of '*Fahrposten*'—mail coaches—in the mid-seventeenth century,[58] and not coming to a close until the arrival of railways in the mid-nineteenth century.

III.2: *The Periodicity of the Postal Riders and the Media Revolution*

A qualitative change in the communications system took place with the introduction of the '*ordinari* post'[59] in the 1530s. The impact of this organizational change was enormous. The weekly rhythm of the *ordinari* couriers now shaped the flow of correspondence to and from governments, banks, commercial firms and private individuals.[60] As the leading medium of communication, the postal system had an impact, through this periodicity, on other media such as the segmentary messenger system, and even more so on the *ordinari* newspaper, which had its origins in the first decade of the seventeenth century thanks to the existence of the trans-continental postal route between Rome and Antwerp.

[58] See the article by Klaus Beyrer in the present volume.

[59] *Ordinari* means that the postal rides—later the mail coaches—commuted on a regular basis: *ordinari* was the decisive term for a crucial innovation: periodicity in communications. As soon as the system was adopted in England, the term was as well: this is where the 'ordinary post' comes from.

[60] In the latter case, see for the eighteenth century, for example, the correspondence of Meta Klopstock: Franziska und Hermann Tiemann (eds), *Es sind wunderliche Dinger, meine Briefe. Meta Klopstocks Briefwechsel mit Friedrich Klopstock und ihren Freunden 1751–1758* (Munich, 1980). More generally, see Alexandru Dutu, Edgar Hösch and Norbert Oellers (eds), *Brief und Briefwechsel in Mittel- und Osteuropa im 18. und 19. Jahrhundert* (Essen, 1989) and Bernhard Siegert's original study of the literature of what he calls the 'postal era': Bernhard Siegert, *Relais: Geschichte der Literature als Epoche der Post, 1751–1913* (Berlin, 1993).

This new medium of the newspaper built on the postal system's key features of periodicity, topicality, universality and public accessibility.[61] (The feature of periodicity has recently been examined in depth in a notable book by C. John Sommerville.[62] It has to be said, though, that his study deals only with the British case—as is customary in English-language work on the press, which in other respects is very wide-ranging. Raymond discusses the invention of the newspaper as though it were an entirely British achievement.)[63]

The establishment of the trans-continental postal route between Antwerp, Venice and Rome, which in a sense connected Wallerstein's two medieval 'world-systems',[64] gave the European communications system a solid backbone. With the introduction of periodicity the European systems of messengers and correspondence took on a new pattern. By 1540 princely and civic messengers tended to travel, not to the final destinations of their messages, if these were far-flung, but only to the nearest postal station. Once we grasp this infrastructural fact, many puzzling aspects of the communications system are readily explained. For example, the 1550s saw the appearance of continuously numbered serial newspapers reporting on a regular basis (if at irregular intervals) from particular places. Similarly, in this period we find the first big collections of handwritten newsletters, in which permanently appointed correspondents reported from particular capital cities on a weekly basis.[65] The places from which the news reports in the Fugger Newsletters emanated were, to all intents and purposes, the places that had the large post offices.[66] Later, in the 1580s, the first 'news books' were offered for sale at the Frankfurt Book Fair—the so-called *Messrelationen*. These offered printed weekly news in book form, so they looked remarkably similar to the early periodical newspapers. The reason for this similarity was that the weekly newspapers were bound in book form at the end of the year, the printer providing a special title page for the purpose.

With the *Messrelationen* the compilation principle was exactly the reverse of that of the bound newspapers. Their inventor, Michael Aitzinger von Aitzing (c. 1530–1598), who lived in Cologne, published in 1581 a contemporaneous account of the civil war in the Netherlands under the title *Leo Belgicus*. There was such demand for it that he went on to bring out a news anthology at the Frankfurt Fair in 1583. This anthology was based on a collection of weekly

[61] Otto Groth, *Geschichte der deutschen Zeitungswissenschaft: Probleme und Methoden* (Munich, 1948), p. 339f.

[62] C. John Sommerville, *The News Revolution in England: Cultural Dynamics of Daily Information* (Oxford, 1996), pp. 1–16.

[63] See also Joad Raymond, *The Invention of the Newspaper: English Newsbooks, 1641–1649* (Oxford, 1996).

[64] Immanuel Wallerstein, *The Modern World-System: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century* (New York, 1974).

[65] Johannes Kleinpaul, *Das Nachrichtenwesen der deutschen Fürsten im 16. und 17. Jahrhundert: Ein Beitrag zur Geschichte der geschriebenen Zeitungen* (Leipzig, 1930).

[66] Johannes Kleinpaul, *Die Fuggerzeitungen 1568–1605* (Leipzig, 1921).

correspondents' letters, printed to a deadline coinciding with the Fair. The *Messrelationen* constituted a quite new kind of text in comparison with the '*Newen Zeitungen*'.[67] Not only was the distribution channel different, but so were both their contents and their physical appearance (text without pictures, an elevated style, topicality and periodicity). The interest was so great that from that date onwards Aitzinger supplied his newspaper book to the Frankfurt autumn fair every year. After five years, moreover, he increased the frequency of publication. The *Postrema relatio historica* of 1588—not, as its title implied, the last *Relation* but the first of a newly launched series—inaugurated half-yearly publication of the *Messrelationen* to coincide with the two book fairs in the spring and the autumn. In the process Aitzinger also widened his news coverage. Whereas his first news books had concentrated on events in the Netherlands and on the 'Cologne War' (*Kölner Bistumsstreit*),[68] from the *Postrema relatio* onwards the reports gradually came to cover the whole of Europe. He received the news reports via the Imperial post office in Cologne, which had just been established and with which he maintained close relations.[69] The increase in the frequency of appearance of the news books in 1588 shows how strong the demand for the product was and indicates that news publishing now rested on firm foundations. Aitzinger's death did not alter the situation, as other publishers of news books emerged to take his place, notably in Frankfurt,[70] where the next Imperial post office was opened. Jacobus Francus, alias Conrad Lautenbach (1534–1595), the editor of the Frankfurt *Historicae relationis continuatio*, is also said to have worked closely with Jacob Henot, an important entrepreneur in the communications business, who had newly been appointed Imperial Postmaster in the Imperial city of Cologne.[71] All of the Frankfurt postmasters—beginning with Weigand Uffsteiner, the previous master of the messengers—worked from the outset with the publishers of the *Relationes Historicae* 'in order that the correspondents' letters may be the more rightly delivered'.[72] The

[67] Felix Stieve, 'Über die ältesten halbjährigen Zeitungen oder Messrelationen und insbesondere über deren Begründer Freiherrn Michael von Aitzing', in *Abhandlungen der historischen Klasse der kgl. Bayer. Akad. d. Wiss.*, 16 (1881), pp. 177–265, is still unsurpassed.

[68] The Catholic Bishop and the Electoral Prince converted to Protestantism, which meant that the next Emperor would be Protestant—so Spain, the papacy and Bavaria removed him with force from his see and replaced him by a Bavarian prince. Protestant Europe had promised support but when the Elector Palatine rushed to help the Netherlands and Britain forgot to lend their support. Bavaria prevailed and the protestant alliance was defeated.

[69] Wolfgang Behringer, 'Köln als Kommunikationszentrum um 1600: Die Anfänge des Kölner Post- und Zeitungswesens im Rahmen der frühneuzeitlichen Medienrevolution', in Georg Mölich and Gerd Schwerhoff (eds), *Köln als Kommunikationszentrum. Studien zur frühneuzeitlichen Stadtgeschichte* (Cologne, 2000), pp. 183–210.

[70] The standard work is Klaus Bender, *Relationes Historicae: Ein Bestandsverzeichnis der deutschen Messrelationen von 1583 bis 1648* (Berlin and New York, 1994).

[71] Engelbert Goller, *Jacob Henot, Postmeister von Cöln: Ein Beitrag zur Geschichte der sogenannten Postreformation um die Wende des 16. Jahrhunderts* (Bonn, 1910).

[72] FZATTR, Postakten 2467, fol. 47 v.

question of the news communications channel became the explicit subject of debate in the spring of 1602, when the Frankfurt postal secretary Andreas Striegel used the title page of his *Relationes Historicae* to extol the superior scope of his news coverage: the reports, he claimed, were 'collected and written by Andreas Striegel, Postal Secretary at Frankfurt am Mayn/as [they] arrive each week at His Rom[an] Imp[erial] Majest[y's] Post, everywhere well established'.[73] It was probably true, in fact, that Striegel's news contacts were the best. The son of Felizitas Striegel, he had received his training in the post office in Augsburg, where the administrator and postal secretary was the Novellant[74] Crispin Lamparter (d. 1613), with whom the whole Striegel family had excellent relations. Striegel's brother Matthäus Striegel (b. 1571) worked in Augsburg as a newspaper writer, and Hans (Giovanni) Striegel, who had also trained at the Augsburg post office, rose to become the *secrétaire* of the postmaster-generalcy in Brussels.[75] The Frankfurt postal secretary also maintained close relations with book printers—sometimes too close, as is indicated by his wife Anna Maria's adultery with the printer Matthäus Beck (active as a printer 1598–1602), who was expelled from the city on that account.[76]

As we have noted, in the years around 1600 a series of intensive negotiations led to the placing of the international postal system on a new basis. The Spanish system was separated from the Imperial system and the '*Reichspost*' was established as a communications institution independent of the state and operating as a private enterprise. Through a series of bilateral contracts with other postal institutions and states, each of which sought to safeguard its own interests, the head of the *Reichspost*, the Imperial postmaster-general in Brussels, created a viable foundation for the system of international communication. The functioning of the system thus secured, a steady growth of new branches and networks of communication began, made manifest in Germany by the opening of Imperial post offices in Strassburg and Frankfurt, Regensburg and Nuremberg, Leipzig and Hamburg.[77]

This was an historic moment: it marked a news revolution. In Strassburg the newspaper writer Johann Carolus (Hans Carle) capitalized on the new reliability of the communications system by acquiring a printing works and

[73] Striegel (1603), title page and preface; for facsimile of the title page, see Klaus Bender, 'Die deutschen Meßrelationen von ihren Anfängen bis zum Ende des Dreißigjährigen Krieges: Ein Forschungsvorhaben', in Elger Blühm and Hartwig Gebhardt (eds), *Presse und Geschichte II. Neue Beiträge zur historischen Kommunikationsforschung* (Munich, 1987), pp. 61–70, here p. 66; on the preface, see Stieve, 'Über die ältesten halbjährigen Zeitungen', p. 231f.

[74] *Novellanten* provided handwritten *novellae* (i.e., news). They were the precursors of journalists or foreign correspondents. The term was used in the sixteenth century.

[75] Stadtarchiv Augsburg, Strafamt, Urgichtenakten ['Confessions'] 1599c; FZATTR, Bestand HFS 127, letters of 'Gio. Striegel'.

[76] Joseph Benzing, *Die Buchdrucker des 16. und 17. Jahrhunderts im deutschen Sprachgebiet* (2nd edn., with corrections and additions, Wiesbaden, 1982), p. 130.

[77] Behringer, *Im Zeichen des Merkur*.

beginning to print his handwritten *Relationen*. The newspaper landscape in central Europe quickly became transformed, as the communications network expanded both in a geographical sense and in terms of frequency of publication.[78] Why was the Empire the locus of this media revolution, when it would seem to have been by no means an ideal candidate, lacking as it did major metropolitan centres containing concentrations of consumers with great purchasing power? From the point of view of demand, Strassburg—with perhaps no more than 40,000 inhabitants—was far less plausible as a place for siting a newspaper than big cities like Milan, Paris or London. Two factors played a part: Germany's famously central position within Europe, but also, at least as importantly, its political structures. The Empire had not been placed on the Procrustean bed of the Inquisition, which acted as a constraint on enterprise in the field of communications in southern Europe; equally, it was not subject to the gravitational pull of a centralized state as was the case in France and Britain, where private use of the postal system was restricted until the 1620s and where, moreover, there were tendencies towards censorship. It is worth noting that it was not until the second decade of the seventeenth century that the French and British postal services saw the same degree of public access as had been achieved in the Imperial postal system a century earlier. A proclamation issued by Charles I on 31 July 1635 'was a notable landmark in postal history, for it marked the recognition by the Crown of the essentially public service side of the Posts. From being an official courier system which would take commercial and private communications if convenient, the Posts were now to be run for people as a right rather than a privilege.'[79] The crucial factor underlying the emergence of the new medium, in other words, was not the demand for news but the existence of conditions for the production of news. Newspaper printing was based essentially on undisturbed access to the channels of communication, as far as both news-gathering and newspaper distribution were concerned.[80]

The point becomes clear if we compare Strassburg with Augsburg. Augsburg, the principal site of early capitalism in Europe, was predestined to become a news centre, because it was there that the news routes had converged, from all points of the compass, since the time of Charles V and Jacob Fugger. All news from Rome, Venice, Vienna and Prague went first to Augsburg, and (as an advertising poster produced by the artist Lukas Kilian in 1615 pointed out) it was from the postal house of Octavio von Taxis that news was transmitted to the entire Holy Roman Empire. It was in Augsburg, too, that a separate profession of newspaper writer had developed during the second half of the sixteenth century, similar to that of the *scrittori d'avisi* in Venice

[78] See the article by Johannes Weber in the present volume.

[79] Frederick G. Kay, *Royal Mail: The Story of the Posts in England from the time of Edward VI to the Present Day* (London, 1951), p. 24.

[80] Henri Gachot, *Histoire de la poste aux lettres à Strasbourg* (Saverne, 1964).

and the *novellanti* in Rome. These writers were professional dealers in news, and indeed in Augsburg we also find at least two instances of news agencies, the owners of which employed several writers. It might seem, therefore, that Augsburg—exactly midway between Venice and Antwerp—would have been the natural place where the first newspaper would have been established. However, the authorities in Augsburg were as wary as those in Venice, where printed newspapers were forbidden for political reasons.

The situation in liberal Strassburg, where Johann Carolus obtained permission to print his newspaper in 1605 (though not, as he had wanted, to establish a newspaper monopoly), was different. The establishment of newspaper printing there owed something to Carolus' personal motivation; but it also rested on structural grounds. Only a little earlier Octavio von Taxis had connected the Imperial city of Strassburg to the international postal network, by means of a postal courier service to the Imperial post office in Rheinhausen near Speyer. Rheinhausen was a branch of the Imperial post office in Augsburg: it also belonged to Octavio von Taxis. This member of the Taxis family was the central figure of the European postal system. He operated in Brussels as *lieutenant* to the old Imperial postmaster-general Leonard de Tassis, whose son Lamoral von Tassis—the future postmaster-general—was married to Genoveva von Taxis, Octavio's sister. Two leading representatives of the house of Fugger had stood sponsor to Octavio von Taxis at his baptism, and his postal house was the direct or indirect source of the news carried in the Fugger Newsletters. (It can be shown on the basis of linguistic evidence that the news both in the Strassburg *Relation* and the second newspaper to be founded in Europe, the Wolfenbüttel *Aviso*, came from Augsburg: Tuesday's news is always dated '*Aftermontag*'.[81] This name for Tuesday was used only in the Augsburg diocese: the Imperial city of Augsburg was the only newspaper city to have an *Aftermontag*.)[82]

The new stability of the system, and in this specific instance the linking of Strassburg to the international postal network, provided the conditions in which book printing and the postal service could come together to create newspaper printing. This in turn at once gave rise, as the publishers deliberately intended—and here the present author differs from both Habermas and Johannes Weber (see Weber's article in this volume)—to the formation of a public sphere that changed the nature of politics. In his *Relation* Carolus reported, week by week, on the attempts by the Bohemian estates to obtain a 'Letter of Majesty' from the Emperor Rudolf II guaranteeing religious freedom: the reporting displays clear sympathy with the Protestants' request.

[81] See *Relation* (1609), no. 21, news from Prague, 23 May. The same report, with the same date, is in *Aviso* (1609), no. 20 (date of going to press, 31 May 1609).

[82] The use of the name *Aftermontag* in the Augsburg diocese was intended to wipe out all memory of the heathen god of war—Ares, Mars, Mars Thingsus, Ziu—as enshrined in the names *mardi*, *Tuesday* and *Dienstag*). In Bavaria this day of the week was known as *Erchtag* or *Ertag*; in Swabia and the Alsace it was called *Ziestag*. See Behringer, *Im Zeichen des Merkur*, p. 351f.

Though Carolus was the son of a Lutheran pastor, the motives of this remarkable publisher were not religious. If we analyse his publishing programme, we find that quite contrary to the trends of the time, he brought out no religious literature. Instead, like his predecessor Tobias Jobin, a famous Strassburg printer, he specialized in academic works and, beyond that, non-fiction of all kinds. He had a further speciality too: he printed works of Galileo and published one of the most controversial products of the period, Sebastian Castellio's *De hereticis, an sint persequendi*, the first book to call for a general policy of tolerance.[83] In the light of this programme it is hardly surprising that Carolus—like Aitzinger, incidentally, and also like the printer of the Wolfenbüttel *Aviso*—disdained to print cheap sensational stories.

The very fact that both the Wolfenbüttel and the Strassburg newspapers obtained their news from Augsburg also enables us to scotch an old myth. Contrary to what has always been thought, it is quite clear that the publishers did not simply print their news stories in the form in which they had received them. Rather, they edited them, abridged them, added explanatory material and, in certain cases, made alterations. North German readers, for example, were plainly not expected to understand Italian words: indeed, the printer, in his ignorance of Italian, actually slipped up over the newspaper's title and spelled it as '*Avisa*' in the first number. (Admittedly, this happened only once, as his most important subscriber, the Duke of Brunswick-Wolfenbüttel, had a good command of Italian.) On the other hand, it is evident that linguistic matters were important to the south German readers and were sometimes covered at length: for example, on the occasion of the arrival of a Persian delegation at the Imperial court in Prague during the long 'Turkish War'. North German readers were spared these finer points.[84]

We can deal only cursorily here with the further development of newspapers and journals as a media complex. First, a further marginal note concerning the German newspaper scene. In 1615 the Imperial postmaster of Frankfurt am Main, Johannes von den Birghden (1582–1645), founded a newspaper that was to inspire a distinctive type of publication: the 'postal newspaper'. Von den Birghden was one of the brilliant communicators of the early modern world, an entrepreneur in the mould of Franz von Taxis or Benjamin Franklin. Within the space of a few months, at risk to his life, he established postal routes from Frankfurt to Leipzig and Hamburg and, in so doing, put Frankfurt at the centre of the German postal network.[85] He advertised by means of large-format posters showing views of the city in the style of Matthäus Merian and giving precise courier departure times and information about charges for his communications

[83] *Ibid.*, p. 351.
[84] *Ibid.*, p. 368f.
[85] Karl Heinz Kremer, *Johannes von den Birghden (1582–1645), Kaiserlicher und königlich-schwedischer Postmeister zu Frankfurt am Main* (Bremen, 2005).

services. This implanted the idea that newspapers were inseparably bound up with the postal system—indeed, that postmasters were the only people justified in publishing newspapers.[86] Von den Birghden's newspaper was, along with the Strassburg *Relation* and a Stuttgart newspaper, one of the most interesting early products of the periodical press. Soon, in the 1620s, it found itself at the centre of the first big scandal in press history. Von den Birghden was accused of helping secure advantages for the Protestant side in the Thirty Years' War, by peddling disinformation that caused the Catholics to make bad decisions. The debate gave birth to the notion that a newspaper could serve as the substitute for an army. As a result of the accusations, von den Birghden was relieved of his office as Imperial postmaster and replaced by a Nertherlands Catholic. However, he made an unexpected comeback after King Gustavus Adolphus of Sweden had entered the war, when he was appointed Swedish postmaster-general within the Empire. (There was no postal system in Sweden itself at this time, nor were there any newspapers.) Within weeks von den Birghden managed to set up a geometrical postal system[87] for Germany that was structurally superior to all previous communications systems—though it did break down again a few months later, in the wake of the Swedes' military defeats.

During the Thirty Years' War Germany lost its leading role in the media revolution, not so much because of the war *per se* as because the west European countries now modernized and made up for lost time. As soon as a newspaper system had been established in the Netherlands, for example, it became clear that there was a greater demand for newspapers in Amsterdam than in any city in central Europe. Moreover, Amsterdam at this period had four or five times as many inhabitants as the largest German city. The first newspaper to be published outside Germany appeared in Amsterdam in 1618, and a mere seven years later the chief city in Holland could boast five newspapers, more than any city in Germany.[88] In London the first newspapers were printed at the beginning of the 1620s, though due to censorship they did not last long.[89] However, when the Licensing Act expired in 1642, England became the first European country to achieve a form of press freedom. At a stroke London overtook all its precursors in the newspaper sphere. This development was not surprising, given that the English capital, in turn, had double the population

[86] Wolfgang Behringer, 'Post, Zeitung und Reichsverfassung', in Klaus Beyrer and Martin Dallmeier (eds), *Als die Post noch Zeitung machte: Eine Pressegeschichte* (Giessen, 1994), pp. 40–47.

[87] Geometry was the leading ideal in baroque Europe, held to symbolize divine perfection. See Henning Eichberg, 'Geometrie als barocke Verhaltensnorm: Fortifikation und Exercitien', *Zeitschrift für Historische Forschung*, 4 (1977), pp. 17–50.

[88] See Folke Dahl, *Dutch Corantos 1618–1650: A Bibliography. Illustrated with 334 Facsimile Reproductions of Corantos Printed 1618–1625. An Introductory Essay on 17th Century Stop Press News* (The Hague, 1946); Zdeněk Šimeček, 'The First Brussels, Antwerp and Amsterdam Newspapers: Additional Information', *Revue belge de philologie et d'histoire*, vol. 50 (1972), pp. 1098–115.

[89] See Folke Dahl, *A Bibliography of English Corantos and Periodical Newsbooks 1620–1642* (London, 1952).

of Amsterdam. The crucial factor, however, was the new freedom of expression that now made the English newspapers interesting to read. Unlike the earliest English newspapers, which, like those in Germany and the Netherlands, had mainly carried reports on international affairs, the newspapers of the Civil War period consisted almost entirely of domestic news.[90] These two qualities—a polemical style, and a concentration on domestic questions—have remained characteristic features of the British press ever since. By contrast, French newspapers, which had existed since the early 1630s, remained semi-official in character.[91] The newspaper press was not established in Italy and Sweden until the 1640s; later still in the other countries of Europe.[92]

III.3: *The Growing Density of the Postal Networks and the Introduction of Mail Coaches*

The increase in the density of the postal networks was—except in Italy and Spain—a seventeenth-century development. As is clear from the *Itinerarie delle Poste*, the postal network in Italy was already very ramified by the middle of the sixteenth century, probably because of the growth in the Italian tourist trade, and essentially remained so till the nineteenth century. The Spanish network was less dense and, owing to the decline of Spain, likewise remained so. In Germany, as mentioned, the development of the postal network began after the postal reformation had been completed, with two clear later spurts around 1615 and after the end of the Thirty Years' War. With the granting of *Landeshoheit* (internal sovereignty) to the territories of the Empire under the Peace of Westphalia, the larger Protestant territories—Hesse-Cassel, Brunswick-Lüneburg (later Electoral Hanover), Electoral Brandenburg (later Prussia) and Electoral Saxony—began establishing state postal services. Unlike the *Reichspost*, which had grown organically, postal networks in these territories were set up very quickly, within the space of a few years. Competition thus meant that Germany acquired the densest postal network in the whole of Europe: a locational advantage once industrialization got under way.

In England and France, where postal networks had previously been somewhat notional, because not unconditionally accessible by the public, the communications systems were now opened up to general use. The French model is particularly interesting, not only because the traditional postal network was

[90] See Joad Raymond (ed.), *Making the News: An Anthology of the Newsbooks of Revolutionary England, 1641–1660*, with a foreword by Christopher Hill (Moreton-in-Marsh, 1993); Raymond, *The Invention of the Newspaper*.

[91] See Folke Dahl, Fanny Petibon and Marguerite Boulet, *Les Débuts de la presse française*, vol. 1, *Des Origines à 1814* (Paris, 1969); Howard M. Solomon, *Public Welfare, Science and Propaganda in Seventeenth Century France: The Innovations of Théophraste Renaudot* (Princeton, N.J., 1972); Bob Harris, *Politics and the Rise of the Press: Britain and France, 1620–1800* (London, 1996).

[92] Behringer, *Im Zeichen des Merkur*, pp. 303–436.

made public during the Richelieu era but because, around 1630, the network was enhanced by a new system of postal vehicles. This was a truly revolutionary advance: very soon, there were mail coaches running according to timetables in all parts of the Empire. The charges and departure times of the new services were published on posters, and routes were depicted on panoramic maps and, after 1632, produced in printed form.[93] The result was a democratization of travel unprecedented in history. Previously, travel by horse had been virtually unavailable to certain age-groups (small children and the aged) and to the sick, and had been regarded as unseemly for others (women and mendicant monks): in other words, a large proportion of the population had been excluded from travel or at least severely restricted in its ability to make journeys. The introduction of the mail-coach system changed all this completely. Travel by timetable was now feasible for all. Prices, admittedly, were felt to be prohibitive. In practice, however—as we know from accounts of travels and from enquiries after mail-coach accidents—at least in the eighteenth century, members of all social strata availed themselves of the new form of travel: ordinary people, servants, soldiers, monks, unaccompanied women, and children.[94]

III.4: *Transport Cartography and Road-Building*

It can be said (with some overstatement) that the decades after the discovery of America saw the first opening up of Europe. During the ten generations of the early modern period the European continent became more thoroughly surveyed and understood than any other geographical region had been before. Developments in cartography show this vividly. The very first European transport map, produced by the Nuremberg map-maker Erhard Etzlaub in 1501,[95] abandoned the insular space structure of the middle ages and showed the continent as a Euclidean space, free of dragons and monsters and, in principle, measurable.[96] Dots between the towns represented, not a channel of communication in the form of a road or means of transport, but distances of 1 mile (in Germany, 7.5 kilometres). Nevertheless, to a modern observer the map, which is based on the Ulm Ptolemaic map (with south at the top), is unpractical and disconcerting in appearance. Eighty years later that other great communicator, Michael Aitzinger,[97] published a transport atlas that was much more modern in style, thanks not least to his connections with Gerhard Mercator and Abraham Ortelius, the leading cartographers of the age.

[93] [Nicolas Sanson and] Melchior Tavernier, *Carte géographique des postes qui traversent la France* (Paris, 1632).
[94] Behringer, *Im Zeichen des Merkur*, pp. 436–85.
[95] Fritz Schnelbögl, 'Leben und Werk des Nürnberger Kartographen Erhard Etzlaub', *Mitteilungen des Vereins für die Geschichte der Stadt Nürnberg*, 57 (1970), pp. 216–31.
[96] Bernhard Jahn, *Raumkonzepte der Frühen Neuzeit. Zur Konstruktion von Wirklichkeit in Pilgerberichten, Amerikareisebeschreibungen und Prosaerzählungen* (Frankfurt/Main, etc., 1993).
[97] Stieve, 'Über die ältesten halbjährigen Zeitungen oder Messrelationen'.

Map 24.1: *Carte géographique des postes qui traversent la France*, 1632. French postal map, designed by Nicolas Sanson and printed by Melchior Tavernier. This map provided the prototype for all subsequent post maps and road maps. The network represents the French postal routes with regular mail coach service, introduced only a few years earlier. The map was intended as a planning aid for travellers. It shows early modern infrastructure: Paris and Lyon are clearly the centres of communication in France.

Aitzinger's map, however, suffers from the drawback that the roads marked on it—this was at a time before road-building had begun—did not actually exist.[98] Fifty years later again, though, Melchior Tavernier published a map in Paris which contained a revolutionary innovation. Instead of showing roads, the map depicted postal routes and was based, not on a notional means of communication but on an actual one, which one could book and with which one could travel: namely, the system of mail coaches recently introduced in France.[99] The cartographer, Nicolas Sanson, had obtained the data direct from the general post office in Paris. In other words, the crucial development in transport cartography was not the road map but the postal-route map—a visual representation of a real, existing network of communication.[100]

The Sanson/Tavernier map became the prototype for a whole series of maps showing postal routes rather than roads. Until the mid-seventeenth century maps of this kind were found only in France; later, however, maps covering the whole of the Holy Roman Empire began to be produced. In places where road-building made rapid progress, such as England, usable road maps also began to be published from 1685 onwards,[101] but postal-route maps remained more significant throughout Europe until the middle of the nineteenth century. At the time of the onset of the railway age they reveal an astonishingly ramified network, as a section of Raffelsberger's map of central Europe, published in 1829, shows.[102] To a degree, this image of the infrastructure reflects the density of industrialization, as postal routes, like waterways, constituted locational advantages in the industrialization process. Both were channels of communication: the one for the transportation of goods, the other for the transportation of news, money and people.[103]

The introduction into the existing postal system of timetabled coaches available for personal transport had, of course, a further consequence, given that coaches—unlike foot-travellers or horses—could not simply bypass or hop over physical obstacles: namely, the building of a road system. I shall not go further into this question here: suffice it to say that the French, German and Austrian examples, in particular, demonstrate the close interconnection between the mail-coach system and the need for road construction.[104] Paved

[98] Josef Egon Schuler (ed.), *Der älteste Reiseatlas der Welt [Das Itinerarium orbis christiani]*, preface by Alois Fauser and Traudl Seifert (Stuttgart, 1965).

[99] [Nicolas Sanson and] Melchior Tavernier, *Carte géographique des postes qui traversent la France* (Paris, 1632).

[100] Arbellot, *Autour des routes de poste*.

[101] Alan M. MacEachren and Gregory B. Johnson, 'The Evolution, Application and Implication of Strip Format Travel Maps', *The Cartographic Journal*, 24 (1987), pp. 147–58.

[102] Franz Raffelsberger, *Der Reise-Secretär: Ein geographisches Posthandbuch für Reisende, Kaufleute, Geschäftsmänner und Postbeamte. 1. Bd. mit 2 in Kupfer gestochenen illuminierten Postkarten von Deutschland und Europa* (Vienna, 1829/1830).

[103] Behringer, *Im Zeichen des Merkur*, pp. 485–512.

[104] *Ibid*., pp. 512–49.

roads reduced the wear and tear on expensive coaches and thus increased the return on capital. Moreover, as far as customer service was concerned, they shortened journey times and made timetabling more accurate—in other words, enhanced punctuality. These were virtues that were given a high priority in the postal regulations of the late seventeenth and early eighteenth centuries.[105]

III.5: *The Media Complex of the Late Seventeenth and Eighteenth Centuries*

In the later seventeenth century the communications system became increasingly self-referential. Newspapers reported on unusual aspects of the postal system; they called for the creation of new mail-coach routes and then published reviews of the new routes that were created. As the numbers and frequency of postal couriers and mail coaches rose, so the frequency of publication of newspapers quickly increased. Whereas newspapers had appeared only weekly at the beginning of the seventeenth century, by 1700 there were a considerable number of daily titles. As well as newspapers there were now also journals, willing to voice a range of opinions and report on everything under the sun: these were precursors of the 'moral weeklies' of the early eighteenth century. Some journals, too, now targeted specialized groups, as in the case of the *Philosophical Transactions* of the Royal Society, first published in the 1660s, which was addressed to friends of the newly burgeoning natural sciences. Here is a particularly good example of the synergistic effect of the relationship between experiments and face-to-face meetings, on the one hand, and the international correspondence and publication of results on the other. The new medium for discussion enabled new ideas and theories to be developed and either rejected or confirmed, and all at a pace that had been completely unthinkable before the start of the Communications Revolution. At the beginning of the sixteenth century scholars like Copernicus were still responding to the ideas of thinkers who had been writing two thousand years earlier, and after their own ideas had been published further decades elapsed before other writers were able to make use of them. By the time of Kepler and Galileo the process of reception and discussion had accelerated, to the extent that the two men were able to correspond directly with one another. From the 1660s onwards, however, more or less all of Europe's scholars were able to take part immediately in debates on new theories or projects. Thus it took only a few weeks for a scheme for the construction of a flying machine, proposed by the Italian inventor Tito Livio Burattini (1617–c.1680; resident at the Polish royal court, 1647–48), to be reported on in detail; and it took fewer weeks still for the scheme to be analysed, discussed

[105] See 'Post-Ordnung', in Johann Heinrich Zedler (ed.), *Großes vollständiges Universal-Lexicon aller Wissenschaften und Künste* (in 64 vols and 4 supplement vols., Halle and Leipzig, 1732–1754), vol. 28 (1741), cols. 1812–1827; Joseph Rübsam, 'Die Reichspostordnung aus dem Jahre 1698', *Archiv für Post und Telegraphie*, 29 (1901), pp. 653–62.

and finally shown as unworkable, by such eminent intellectuals as Jan Baptist van Helmont, Christiaan Huygens, Johann Jacob Becher and Marin Mersenne, and Theodore Haak of the Royal Society.[106] Although the Polish king continued to finance the project, it was effectively dead and survived only in literature as a fancy of fools (see, for instance, the space travels of Cyrano de Bergerac). Some decades after the event a travel guide was published in Rome under the humorous title 'The True Burattin'. It claimed to enable the traveller to 'fly' across Europe and was dedicated to the Roman postmaster—whose institution alone was a true guarantor of speed.[107]

The boom in the production of practical travel aids that began in the 1550s is evidence of a rapid increase in mobility and of a new perception of social reality. There had been handwritten itineraries in the middle ages, but, like the messenger system itself, they had been available only to specific groups of people and specific sectors of society such as merchants and monks. As the travel system opened up, so the amount of information published about travel opportunities increased. The new travel aids were put on the market by printers, who were evidently responding to a new demand created by a change in travel behaviour. A good proportion of these new travellers wanted to obtain information in advance, in order to be able to calculate journey times and eliminate uncertainties. Information had to be easy to handle, legible, printed in black and white and transportable: in other words, suitable for use on the journey.[108] Then, at the start of the 1560s, there was a fusion of the older form of road-list (itinerary) with precise specifications of the new postal infrastructure, yielding a new genre in the shape of the *Itinerarie delle Poste*.[109] The sudden surge in the course of the 1560s in the publication of travel aids akin to the *Itinerarie delle Poste* is striking. The most influential of these products was the *Raißbüchlin* brought out by the Augsburg schoolmaster Jörg Gail (c. 1515–1584). Unfortunately, there is no room here to analyse the full range of travel aids that were produced in the second half of the sixteenth century: these evolved from simple itineraries, via sets of travel instructions (or apodemic literature), to fully-fledged guidebooks.[110]

With the introduction of regular vehicular transport, there was a further boom in the production of such travel aids from the 1630s onwards. The regular operation of coaches spared people the irksome task of negotiating travel

[106] See Clive Hart, *The Prehistory of Flight* (Berkeley, 1985), p. 136f.; Wolfgang Behringer and Constance Ott-Koptschalijski, *Der Traum vom Fliegen. Zwischen Mythos und Technik* (Frankfurt/Main, 1991), p. 269ff.

[107] Giuseppe Miselli, *Il Burattino veridico o'vero instruzione Generale per chi viaggia con la Descrizione dell' Europa* […] *e con la Tavola delle Poste nelle vie più regolate, che al presente si trovano* […] *dedicata all' illustriss. Sig. Marchese Filippo Nerli Generale delle Poste della Santità di N. Sig. Papa Innozenzio XI* (Rome, 1682).

[108] See Jörg Gail, *Raißbüchlin* (Augsburg, 1563), Preface.

[109] *Le Poste Necessarie* (1562); *Le Poste Necessarie* (undated, printed 1562 or 1563).

[110] Wolfgang Behringer, 'Südtirol à la carte: Reisehilfsmittel für Reisende Zwischen Deutschland und Italien', in Stefano Consolati (ed.), *Der Weg in den Süden: Reisen durch Tirol von Dürer bis Heine* (Bozen, 1998), pp. 27–45.

contracts on an individual basis with boorish carriers. Travel arrangements were no longer subject to the whim of local providers, but were guaranteed by a public, or publicly regulated, supra-regional institution. A new element of reliability entered into the process of travel, and the new kinds of travel aids reflected this. Scales of travel charges were issued, as were tickets, the latter ensuring the booking of a seat irrespective of the traveller's nationality, language, religion, social class, sex or age. Just as newspapers democratized access to news, so mail coaches democratized access to travel. Anyone who paid would be carried, on a first-come, first-served basis—that was what ticketing meant. Another symbol of the new age was the printed timetable, derived from the posters showing the couriers' departure times that had been printed in Germany and Italy since 1616. The very fact that we have completely forgotten about these precursors of the timetable, even though we encounter all manner of timetables on a daily basis, shows how fundamental this invention was.[111] Perhaps more than any other type of travel aid, however, the postal-route map demonstrates how greatly the mail coaches altered people's perception of time and space. Maps had been depicting space ever more accurately since the beginning of the modern period; with the transport technology of the postal network, space was now opened up. The introduction of public personal transport in regular coaches made space measurable, both for letter-writers and for travellers. Previously unknown and imponderable, space no longer seemed threatening. The channels of communication had revealed it to view, and the introduction of regular traffic had made it accessible.

IV: The Chronology of the Communications Revolution

As we have seen, regular travel using the infrastructure of the postal system began in the first decade of the sixteenth century, the symbolic beginning of the early modern era.[112] Travellers were prepared to incur great costs and make large detours in order to ride, or be conveyed, safely and swiftly along these channels of communication. If we read the accounts left by these 'postal' travellers, we can detect an astonishing change in perception. It is as if space has disappeared: the travellers record only the sequence of stages of the journey, sometimes even merely the number of changes of horses before nightfall. It is from as early as 1500 onwards, in fact, that we encounter the 'shrinking of space' that is usually ascribed to the arrival of the railway.[113]

[111] Wolfgang Behringer, 'Der Fahrplan der Welt: Anmerkungen zu den Anfängen der europäischen Verkehrsrevolution', in Hellmut Trischler and Hans-Liudger Dienel (eds), *Geschichte der Zukunft des Verkehrs: Verkehrskonzepte von der Frühen Neuzeit bis zum 21. Jahrhundert* (Frankfurt/Main and New York, 1997), pp. 40–57.

[112] See also Wolfgang Behringer, 'Reisen als Aspekt einer Kommunikationsgeschichte der Frühen Neuzeit', in Michael Maurer (ed.), *Neue Impulse der Reiseforschung* (Berlin, 1999), pp. 65–95.

[113] Greiff, *Tagebuch des Lucas Rem*.

And with the introduction of those great travelling machines, the mail coaches, from the seventeenth century onwards, we also find a sense of alienation from nature and an anxiety about excessive speed. Poor August von Goethe, the timorous son of an adventurous father, was so tormented by a fear of speed that on his sentimental journey to Italy in the 1820s he gave up travelling by mail coach and used a slow private coach from Basel onwards: 'posting quickly, but not too quickly, through these glorious regions'.[114]

The communications structures of the early modern period brought about a change in the two parameters of space and time, which, though regarded in all traditional societies as unalterable,[115] are in fact determined in large part by social needs and structures.[116] Pioneers of 'subjective geography' such as Donald G. Janelle have confirmed the thesis of a 'shrinking world' in the case of British personal transport from the stage-coach era onwards, by calculating the increase in the speed of the journey between London and Edinburgh.[117] Similar calculations could be made for journeys between any given points. I have compiled data for the journey between Hamburg and Augsburg, where the development of the postal system led to a shortening of the travel time from about 30 days in 1500 to 11 days in 1615[118] and 5 days by 1800 for postal couriers,[119] with a similar time for travellers by mail coach in the 1820s.[120] In purely mathematical terms the increase in speed between 1615 and

[114] See August von Goethe, *Auf einer Reise nach Süden. Tagebuch 1830. Erstdruck nach den Handschriften*, ed. Andreas Bayer and Gabriele Radecke (Munich and Vienna, 1999), p. 17.

[115] On the history of the consciousness of time in Europe, see Rudolf Wendorff, *Zeit und Kultur. Geschichte des Zeitbewußtseins in Europa* (Opladen, 1980).

[116] Pitirim A. Sorokin and Robert K. Merton, 'Social Time: A Methodological and Functional Analysis', *American Journal of Sociology*, 42 (1937), pp. 615–29.

[117] See Donald G. Janelle, 'Central Place Development in a Time-Space Framework', *Professional Geographer*, 20 (1968), pp. 5–10, esp. p. 6, fig. 1. Using the formula *TT1—TT2/Y2—Y1*, where *TT* = travel time and *Y* = year (or date), Janelle calculates that there was an increase in speed of 29.4 minutes per year for the period 1776–1966. See also Donald G. Janelle, 'Spatial Reorganization: A Model and a Concept', *Annals of the Association of American Geographers*, 59 (1969), pp. 348–64.

[118] Stadtarchiv Köln, Bestand Handel, no. 571.

[119] Planned direct route, 1615, see FZATTR, PostAkten [PA] 2521; 1616, FZATTR, PA 1233, fol. 10; 1642, FZATTR, PA 3365. For 1653, see Robert Staudenraus, 'Das Post- und Botenwesen in der ehemaligen Markgrafschaft Brandenburg-Ansbach', *Archiv für Postgeschichte in Bayern*, 13 (1937), pp. 24–37, 95–103; 14 (1938), pp. 177–88, 237–52; 15 (1939), pp. 313–28, 373–88, esp. p. 385. For 1695, see Robert Staudenraus, 'Alte Posthaltereien des Postkurses Nürnberg-Hamburg auf dem Weg durch Franken und Thüringen', *Archiv für Postgeschichte in Bayern*, 19 (1943), pp. 267–288, esp. p. 281. For inspection report for 1715, see Georg Rennert, 'Die Poststation Duderstadt und Posten-Visitierung zwischen Hamburg und Kassel im April 1715', *Deutsche Verkehrs-Zeitung*, 56 (1932), pp. 631–32. For inspection documents for 1726, see FZATTR, PA 1489. For postal time-sheets for 1804, see FZATTR, PA 1113.

[120] Express post was introduced in Prussia in 1821, in Austria in 1823, in Saxony in 1824 and in Bavaria in 1826: see Rudolf Wagenbrenner, 'Die Einführung der Eilpostwagen in Bayern. Ein Beitrag zur Erforschung der Entwicklungsgesetze der Post', *Archiv für Postgeschichte in Bayern*, 2 (1926), pp. 4–20. See also Klaus Beyrer, 'Eilwagen und Schnellpost', in Klaus Beyrer (ed.), *Zeit der Postkutschen: Drei Jahrhunderte Reisen 1600–1900* (Karlsruhe, 1992), pp. 189–97; Friedrich H. Hofmann, 'Das kursächsische Postwesen', in Eberhard Stimmel (ed.), *Lexikon Kursächsische Postmeilensäulen* (Berlin, 1989), pp. 49–78, esp. p. 77.

1820 was greater than the increase between 1820 and the present day. One of the practical consequences of this increase in speed was that the time-difference between places at different degrees of longitude now came to be of significance.[121] The co-ordination of timetables made necessary the introduction of a 'standard time'. The standardization of time is usually cited as a prime example of the effect of railway building. Yet it was as early as 1825 that a 'standard clock' was installed at the main Prussian post office in Berlin, in order to standardize the time between Königsberg and Cleves. All mail coaches and postal couriers were now required to carry portable route clocks, which took the central post office's standard time into the furthest-flung corners of the Empire.[122]

Although recent media theorists have viewed the establishment of the World Wide Web[123] as the real turning-point in the history of communications—sometimes seeing that 'history' itself as not having begun until the invention of the telephone[124]—and although even some eminent historians have taken the view that an awareness that the dimensions of space and time are not unalterable did not emerge until the arrival of the railways,[125] there are many grounds for placing the date far earlier. The increase in the pace of historical events began at the traditional start of the modern period, with the establishment of a system of portioning out space in order to rationalize communication: it began, in other words, not with the 'Gutenberg galaxy', but with the 'Taxis galaxy' of c. 1500. The 'take-off' period of this system of communications was in the seventeenth century: it occurred (perhaps not coincidentally) in synchrony with another major transforming event, the 'Scientific evolution',

[121] See Eviatar Zerubavel, 'The Standardization of Time: A Sociohistorical Perspective', *American Journal of Sociology*, 88 (1982), pp. 1–23; Dohrn-van-Rossum, *Die Geschichte der Stunde*, pp. 296–321 (for the standard clock, see p. 316f.).

[122] See Walter Ehrenfried, 'Kursuhren' (illustrated), in Beyrer, *Zeit der Postkutschen*, pp. 200–201.

[123] See Manuel Castells, *The Information Age*, vol. 1: *The Rise of the Network Society*; Chris Shipley and Matthew Fish, *How the World Wide Web Works* (Emeryville, Cal., 1996); Peter J. Denning, 'The Internet after Thirty Years', in Dorothy E. Denning and Peter J. Denning (eds), *Internet Besieged: Countering Cyberspace Scofflaws* (New York, 1998), pp. 15–28; Stephen Segaller, *Nerds: A Brief History of the Internet* (New York, 1998); James O. Wheeler, Yuko Aoyama and Barney Warf, 'City, Space, Industrial Space, and Cyberspace', in Wheeler, Aoyama and Warf, *Cities in the Telecommunications Age*, pp. 3–17, esp. p. 3; Martin Dodge and Narushige Shiode, 'Where on Earth is the Internet? An Empirical Investigation of the Geography of Internet Real Estate', in Wheeler, Aoyama and Warf, *Cities in the Telecommunications Age*, pp. 42–53, esp. pp. 43ff.

[124] See Frances Cairncross, *The Death of Distance: How the Communications Revolution will Change our Lives* (London, 1997), chapter entitled 'The Roots of Revolution': 'It is easy to forget how recently the communications revolution began' (p. 4).

[125] See Wolfgang Schivelbusch, *Geschichte der Eisenbahnreise. Zur Industrialisierung von Raum und Zeit im 19. Jahrhundert* (Munich, 1977); Hans-Ulrich Wehler, *Deutsche Gesellschaftsgeschichte*, vol. 1: *Vom Feudalismus des Alten Reichs bis zur defensiven Modernisierung der Reformära 1700–1815* (Munich, 1987), p. 120f. H.D. Schonberger, in *Transportation to the Seaboard: The 'Communication Revolution' and American Foreign Policy, 1860–1900* (Westport, Conn., 1971), also argues for the period around 1850 as the crucial turning-point, with the introduction of telegraphy and the increased speed of marine transport playing a central role. Albion, 'The Communication Revolution', had argued the case for the 1760s on similar grounds.

the dynamics of which depended crucially on the rapid and systematic discussion of new ideas.[126] (For an example, see the correspondence of the first Secretary of the Royal Society, Henry Oldenburg [c. 1617–1677].[127] It has rightly been pointed out that such exchanges of correspondence and groups of correspondents, transcending political and religious boundaries, also constituted a form of public opinion.)[128] The onset of the modern epoch around 1500 also saw significant advances in the technologies of spatial and temporal measurement, as the insular space structure of the middle ages was displaced by the Euclidean and geometrical space of modernity.[129]

Why the perception of space changed during the Renaissance has not yet been convincingly explained.[130] The paradigm shift cannot be explained in terms of the inventions and discoveries of Gutenberg, Columbus and Copernicus, contrary to what some writers have suggested.[131] The origins of the change in the perception of space do not lie in the discovery that the universe was infinite, but earlier, in art. The change was signalled by the discovery of perspective, which led both to a revolution in the representation of space[132] and to the production of accurate-scale cartographic records and the development of a new science of terrestrial space, namely geography.[133] Nor can this

[126] See Kuhn, *The Structure of Scientific Revolutions*; Bertita L. Compton, 'Scientific Communication', in de Sola Pool and Schramm, *Handbook of Communication*, pp. 755–78; Marie Boas Hall, 'Oldenburg and the Art of Scientific Communication', *British Journal for the History of Science*, 2 (1965), pp. 277–90; William Eamon, 'From the Secrets of Nature to Public Knowledge', in David C. Lindberg and Robert S. Westman (eds), *Reappraisals of the Scientific Revolution* (Cambridge, 1990), pp. 333–66.

[127] Henry Oldenburg, *The Correspondence of Henry Oldenburg*, vol. 1 (1641–1662), ed. and transl. by Rupert Hall and Marie Boas Hall, with the collaboration of Eberhard Reichmann (Madison and Milwaukee, 1965), p. 481. On the social aspects of networking, see Iordan Avramov, 'An Apprenticeship in Scientific Communication: The Early Correspondence of Henry Oldenburg (1656–63)', in Notes Rec. *Royal Society*, 53 (1999), pp. 187–201.

[128] See Hans Erich Bödecker, 'Lessings Briefwechsel', in Hans Erich Bödecker and Ulrich Herrmann (eds), *Über den Prozeß der Aufklärung in Deutschland im 18. Jahrhundert. Personen, Institutionen und Medien* (Göttingen, 1987), p. 137f.

[129] On measurement, see Thomas S. Kuhn, 'The Function of Measurement in Modern Physical Science', *Isis*, 52 (1961), pp. 161–90. On space and time, see Pitirim A. Sorokin, *Sociocultural Causality, Space, Time: A Study of Referential Principles of Sociology and Social Science* (Durham, N.C., 1943), pp. 147ff.; Max Jammer, *Concepts of Space* (Cambridge, Mass., 1954); Ricardo J. Quinones, *The Renaissance Discovery of Time* (Cambridge, Mass., 1972); Gerald J. Whitrow, *Time in History: Views of Time from Prehistory to the Present Day* (Oxford and New York, 1988); Dohrn-van-Rossum, *Die Geschichte der Stunde*. On insular spatial structure, see Jahn, *Raumkonzepte der Frühen Neuzeit*.

[130] See Sorokin, *Sociocultural Causality, Space, Time*, pp. 147ff.; Anthony Giddens, *The Constitution of Society: Outline of the Theory of Structuration* (Cambridge, 1984), p. 110.

[131] Eg, Alexandre Koyré, *From the Closed World to the Infinite Universe* (Baltimore, 1957); Hans Blumenberg, *Die Genesis der kopernikanischen Welt*, 3 vols. (Frankfurt/Main, 1981).

[132] See Erwin Panofsky, 'Die Perspektive als symbolische Form', *Vorträge der Bibliothek Warburg*, 4 (1924/25), pp. 258–330; Ernst H. Gombrich, *Art and Illusion* (Oxford, 1959).

[133] See Kurt Krause, *Die Anfänge des geographischen Unterrichts im 16. Jahrhundert. Ein Beitrag zur Geschichte der Methodik des erdkundlichen Unterrichts* (Gotha, 1929); Ronald Abler, John S.

expansion of social knowledge be explained by the invention of printing, the factor that is commonly adduced. Giddens links the change to the phenomenon of 'shrinking distances', which has its roots in changes in the mode of physical transport.[134] Mutually influential changes in the perception of space and time took place within a specific socio-cultural milieu.[135] This points to the need for an investigation into these fundamental relationships.

What, then, was the role of printing in the Communications Revolution? Even a recent author such as Giesecke refers to 'information and communications systems', when what he has in mind is printing,[136] thereby perpetuating a conceptual confusion that has been endemic in the social sciences (thanks not least to McLuhan's chaotic terminology). The correct point to emphasize is that the book is a medium for the storage and copying of information.[137] The *distribution* of the medium of the book and the communication of its contents occurred through other media.[138] If we want to think about the impact of printing, we need to take into consideration the media of transmission of information. For any period before the invention of telegraphy, this means looking at transport media, since every form of transmission of information entailed physical movement through space.[139] In fact, even when the transmission of news is instantaneous, the spatial dimension of communication remains important, as the flow of news requires its own space within which the actors operate: it requires what the American sociologist Manuel Castells has called a 'space of flows'.[140] Castells has more recently pointed out that simplistic notions of the

Adams and Peter Gould, *Spatial Organization: The Geographer's View of the World* (Englewood Cliffs, N.J., 1971); Karl-Heinz Meine, *Die Ulmer Geographie des Ptolemäus von 1482: Zur 500. Wiederkehr der ersten Atlasdrucklegung nördlich der Alpen* (Weißenhorn, 1982).

[134] Janelle, 'Spatial Reorganization'; Giddens, *The Constitution of Society*, p. 114. On Giddens's distinctive position within 'social theory' on this question, see John Urry, 'Sociology of Time and Space', in Brian S. Turner (ed.), *The Blackwell Companion to Social Theory* (Oxford, 1996), pp. 369–95, esp. pp. 381–84.

[135] See Sorokin, *Sociocultural Causality, Space, Time*, pp. 158ff.; Anthony Giddens, *Central Problems in Social Theory: Action, Structure and Contradiction in Social Analysis* (Cambridge, 1979), p. 204f.; Urry, 'Sociology of Time and Space', p. 381.

[136] Michael Giesecke, *Der Buchdruck in der frühen Neuzeit: Eine historische Fallstudie über die Durchsetzung neuer Informations- und Kommunikationstechnologien* (Frankfurt/Main, 1991), p. 21f.

[137] Giddens, *The Constitution of Society*, p. 261f.

[138] The distinction is indirectly conceded by Giesecke when, after nearly 400 pages, he suddenly invokes the 'commerce network as a medium of typographic communication' in order to explain why printing had such an impact. The relevant chapter, however, is vague and has recourse to overblown terms such as 'market-economy networks' and 'commercial infrastructure': Giesecke, *Der Buchdruck in der frühen Neuzeit*, pp. 393–405.

[139] Giddens, *The Constitution of Society*, p. 123.

[140] See Castells, *The Information Age*, vol. 1: *The Rise of the Network Society* , pp. 376–428, and the definition given at p. 412: 'Our society is constructed around flows: flows of capital, flows of information, flows of technology, flows of organizational interaction, flows of images, sounds, and symbols. Flows are not just one element of the social organization: they are the expression of processes *dominating* our economic, political, and symbolic life … The space of flows is the material organization of time-sharing social practices that work through flows. By flows I understand

supposed 'death of space' are quite misguided, since although the 'new media' of the present day have generated new patterns of spatial relationships, the transport of people and goods has remained unaffected by these changes.[141]

V: The Communications Revolution and Other Revolutions

By way of conclusion I want to ask, first, what the relation is between the concept of the Communications Revolution presented in this article and Innis's media theory mentioned at its start. Innis—and, after him, McLuhan and others[142]—argued that every new stage of human civilization was dominated by a particular medium of communication and that changes of media led to major social and political upheavals.[143] Daniel Bell essentially agreed with this theory of cultural stages and merely extended the chronology of the 'revolution in communications' to cover the period after Innis's death, since Innis had not witnessed the triumph of television and the onset of the 'computer age' and these omissions had perhaps made his (and McLuhan's) prophecies seem somewhat inadequate. Admittedly, Bell argues that in a 'post-industrial society' the 'present Communications Revolution' is the product, not of any one specific new technology, but of 'a set of concepts represented by the term information theory'.[144] Nevertheless, Bell's concept of communication remains as confused as that of McLuhan (for whom, after all, even money and light were media of communication). And, like Innis, Bell fails to state clearly the relationship between the concept of communication and that of the medium. For these writers, each individual medium merits its own Communications Revolution.

To dispel this confusion, I wish to propose a conceptual hierarchy, in which 'communication' is the over-arching term denoting a universe in which media are operative and which is altered by media. The extent to which media revolutions have brought about changes in society has to be examined on a case-by-case basis. The modern Communications Revolution, however, is a separate phenomenon. Chronologically it coincided with the arrival of the modern period in the decades around 1500, but—as Albion earlier observed in the case of his American Communications Revolution—it led to a permanent revolutionizing of the communications system.

purposeful, repetitive, programmable sequences of exchange and interaction between physically disjoined positions, held by social actors in the economic, political, and symbolic structures of society.' Although Castells is thinking particularly of the internet, his account is also a good description of the early modern postal network (except for the reference to 'sounds').

141 See, for example, Castells, 'Grassrooting the Space of Flows', in James O. Wheeler, Yuko Aoyama and Barney Warf (eds), *Cities in the Telecommunications Age: The Fracturing of Geography* (New York, 2000), pp. 18–30, esp. p. 18, which takes issue with Cairncross, *The Death of Distance*.

142 See Garth S. Jowett, 'Communication in History: An Initial Theoretical Approach', *Canadian Journal of Information Science*, 1 (1976), pp. 5–13.

143 Harold Adam Innis, 'Minerva's Owl', in Innis, *The Bias of Communication*, p. 3.

144 Bell, 'The Social Framework of the Information Society', p. 169.

In answer to the question whether the Communications Revolution changed society, it needs to be pointed out that the great political revolutions in England, north America and France, as well as the Scientific Revolution and the Industrial Revolution, took place in the era of the postal system.[145] A critical public sphere was formed, not in Habermasian coffee houses and salons,[146] but in Castells' freely accessible 'space of flows', the physical communication space[147] that first made permanent critical discussion possible. The Communications Revolution created a public sphere that was sustained by regular topical news; the news was given added point through selection, was copied by means of printing and was rapidly disseminated along the channels of communication. The breakdown of censorship in England in 1642 dramatically illustrates the effect of the new media complex, with an unprecedentedly powerful new species of public opinion being generated within the space of weeks. Shortly beforehand, indeed, the Bohemian engraver Wenceslaus Hollar had published his famous print 'The World is Ruled and Governed by Opinion'.[148] Once ignited, the desire for free expression could never be entirely extinguished, and with the second expiry of the Licensing Act at the time of the 'Glorious Revolution' press freedom was made a reality, thereafter remaining the hallmark of a free society.

The periodical press had its foundations in the early modern postal system. This was the most advanced communications system ever to have existed. Within a few years of being established, it had begun to influence people's perceptions of space and time, religion and politics. Both the flow of news and the pattern of personal travel were shaped by the system's infrastructure. There had been no such 'universal' system before 1500, and after 1850 there was never to be one again, because thereafter the functions of communication were split among different media.[149] During the early modern era the network of the postal system proved to be a template for the development of other 'new media'. The early-modern postal system was a template for all standardized communications processes, inasmuch as it was the first system to possess many of the features that have characterized all subsequent communications networks: reliability, uniformity, regularity, predictability with regard to time and calculability with regard to communications costs.[150] In its wake, 'new media' were invented, the

[145] Bernard Bailyn and John B. Hench (eds), *The Press and the American Revolution* (New York, 1980).

[146] See the article by Andreas Gestrich in the present volume.

[147] See Castells, 'Grassrooting the Space of Flows'.

[148] Henry Peachum, *The World is Ruled and Governed by Opinion* (with an engraving by Wenceslaus Hollar, London, 1641).

[149] Thus optical telegraphy began to be used for the transmission of news after about 1800, and electric telegraphy after 1844, while from the 1830s the railways began to be used for personal travel. See Klaus Beyrer (ed.), *So weit das Auge reicht. Die Geschichte der optischen Telegraphie. Eine Publikation des Museums für Post und Kommunikation Frankfurt am Main* (Karlsruhe, 1995); Michael North (ed.), *Kommunikationsrevolutionen im 16. und 19. Jahrhundert* (Cologne, 1995).

[150] This list tallies with the features 'precise, punctual, calculable, standard, bureaucratic, rigid, invariant, finely coordinated, and routine' listed by Zerubavel as characteristic of the rationalism of

existence of which is now taken for granted: lists of roads, gazetteers,[151] transport maps, transport atlases, route maps, travel guides, diagrammatic maps, newspapers, timetables on posters, in calendars and newspapers and books, tables of postal charges and travel costs, advertisements on posters and in newspapers, and travel tickets.[152] These were accompanied by road-building and the erection of milestones—giving visual representation to the notional portioning-out of space by the postal system—signposts and place-name signs.[153] The most widely disseminated travel book of the eighteenth-century Enlightenment needed to be used in conjunction with the 'Accurate Post and Messenger Maps of the Principal Cities of Europe' which from 1700 were always provided with it.[154] Using the institutions and media connected with the postal system, any individual was now readily able to establish contact with any particular place on the European continent, either in person through travel or by means of correspondence.[155] Today we may wonder how people ever managed to travel without these aids. In future, not even 'post-modernists' will be able to dispense with them—or if they do, they will never be heard from again.

We may conclude, therefore, that contemporaries who gave euphoric accounts of this communications system were not overstating their case.

western culture: see Eviatar Zerubavel, *Hidden Rhythms: Schedules and Calendars in Social Life* (Chicago, 1981), p. xvi.

151 See, for example, Christian Friedrich Goldschadt, *Sammlung nöthiger Nachrichten oder deutliche Beschreibung derer Marktflecken, Flecken, Stifter, Klöster, Schlösser, Ämter und dergleichen in Deutschland, mit einer Vorrede von Gottlieb Stolle* (Jena, 1735); Christoph Ludwig Eber, *Geographische Reise-, Post- und Zeitungslexikon von Teutschland, oder gesammlete Nachrichten von denen in Teutschland liegenden Städten, Marktflecken, Flecken, Schlössern, Klöstern, Dörfern u.s.w. in alphabetischer Ordnung, samt deren Lage, Herrschaft, Gerichtsbarkeit, Merkwürdigkeiten, Distanzen, Poststraßen, Postberichten u.d.m., zum allgemeinen Nutzen derer Postämter, Reisenden, Kauf- und Handelsleute und überhaupt aller Correspondenten herausgegeben. Mit Röm. Kaiserl. und Königl. Pohln. und Kurfürstl. Sächs. Allerhöchsten Privilegiis*, 2 vols. (Jena, 1756).

152 Cf Behringer, 'Der Fahrplan der Welt'.

153 Travel without such signage carried serious risks. The Benedictine monk Plazidus Scharl (1731–1814), on a journey through Middle Franconia in 1757, was given false directions by a peasant who disliked monks. 'For a long time we wandered in the forest, lost track of one path after another, came up against barriers and fences, found ourselves on mossy ground and on rocky outcrops, and were often hard put to it to battle our way through.' See Hildebrand Dussler (ed.), *Reisen und Reisende in Bayerisch Schwaben*, vol. 1 (Weißenhorn, 1968), p. 229.

154 *Die Vornehmsten Europäischen Reisen/wie solche durch Teutschland/Franckreich/Italien/Dännemarck und Schweden/vermittelst der dazu verfertigten Reise-Carten nach den bequemsten Post-Wegen anzustelln/und was auf solchen Curöses zu bemercken. Wobey die Neben-Wege, Unkosten, Münzen und Logis zugleich mit angewiesen werden. Welchen auch beygefügt LI. Accurate Post- und Bothen-Carten* […], 2 vols. (Hamburg, 1703) (its predecessor *Das geöfnete Teutschland*, Hamburg, 1700, publ. by Peter Ambrosius Lehmann, 1663–1729); 3rd edn., 2 vols., 1706; 4th edn., 2 vols., 1709; 5th edn., 2 vols., 1713; 6th edn., 2 vols., 1724; 7th edn., 2 vols., 1729; 8th edn., 2 vols., 1736; 9th edn., 2 vols., 1741; 10th edn., 2 vols., 1749; 11th edn., 2 vols., 1755; 12th edn., 2 vols., 1767, publ. by Gottlob Friedrich Krebel (1729–1793); 13th edn., 3 vols., 1775–1783; 14th edn., 4 vols., 1783–1791; 15th edn., 3 vols., 1792–1796; 16th edn, 4 vols., 1801. A French edition was published in Strassburg in 1786.

155 For a critique of this thesis, see Michael North, *Kommunikation, Handel, Geld und Banken in der Frühen Neuzeit* [= *Enzyklopädie deutscher Geschichte*, vol. 59] (Munich, 2000), p. 51; for a response, see Behringer, *Im Zeichen des Merkur*, p. 661.

Werner Sombart (1863–1941), picking up a comment on the post made by Marie de Rabutin Chantal, the Marquise de Sévigné (1626–1696), put the point very forcibly: 'This innovation,' he said, 'was more than a "*belle invention*", an invention very pleasant for the individual: it completely revolutionized the whole of cultural life.'[156] Representative of many judgements that might be quoted is that of the *Reichspublicist*[157] Johann Jacob Moser, who declared in 1742 that the introduction of the postal system had 'cast the world into another mould'.[158] These words were, in effect, a contemporary diagnosis of the Communications Revolution. They also, incidentally, bring us back full circle to the contemporary statements that John cites in his analysis of the Communications Revolution. Moser's eulogies to the inventor of the postal system, Franz von Taxis, reflect a recurrent theme in the public debate within the Holy Roman Empire. Whereas Prussia and other Protestant territories in north Germany introduced a state postal service on the French pattern, and refused to grant the Taxis family the right to operate a public postal institution, from about 1600 onwards the advocates for the Taxis system could point to the beneficial effects that it had created since its 'invention'. The argument was familiar to everyone writing on constitutional and legal questions. Emigrants to the United States such as Franz (Francis) Lieber and Franz (Francis) Joseph Grund found that the standard metaphors they used for describing the blessings of the communications system received a ready welcome in their new homeland.[159]

The concept of the Communications Revolution as a long-term, highly ramified process that radically and irreversibly altered the structures of communication helps deepen our understanding both of the early modern period as such and of the period's special place within the wider historical context. With the introduction of a viable communications infrastructure, the world was transformed. Politics, economics and society all changed in dramatic and fundamental ways, as is shown by the unstoppable growth of diplomacy and regular correspondence, the latter reflected in systematic compilations of news. Media revolutions based on the new infrastructure—such as the invention of the periodical press and the periodical journal, and the introduction of

[156] Werner Sombart, *Der moderne Kapitalismus. Historisch-systematische Darstellung des gesamteuropäischen Wirtschaftslebens von seinen Anfängen bis zur Gegenwart*, 3 vols. (Munich and Leipzig, 1916–1927; new edn., Munich, 1987), vol. II/1, p. 372.

[157] A *Reichspublicist* was a jurist dealing with public law within the Holy Roman Empire: someone who was publishing on—and engaging in the public sphere with—legal matters.

[158] Johann Jacob Moser, 'Postwesen', in *Teutsches Staats-Recht*, 50 parts in 25 vols. (Leipzig, 1737–1775), *Fünfter Teil, Worinnen sonderlich die Materie von dem Postwesen, so dann von denen Rechten und Freyheiten, welche der Kayser denen Reichs-Ständen und deren Unmittelbaren in Ansehung ihrer Lande und Unterthanen mitzuteilen befugt, nicht weniger denen Pflichten, dazu er wegen eben solcher Unterthanen verbunden ist* […] *enthalten seynd* (Leipzig, 1742), pp. 1–272; (2nd edn., 1752), p. 262.

[159] Eckart G. Franz, 'Franz (Francis) Joseph Grund', in *Neue Deutsche Biographie*, 7 (1966), pp. 218f.; F.B. Freidel, *Francis Lieber, 19th Century Radical* (Baton Rouge, 1947).

regular personal transport and systematic road-building—each constituted new spurts of development within the secular process of rationalization that became the hallmark of western, or modern, history. Unless we pay heed to the early modern Communications Revolution we will not properly understand other fundamental structural changes of the era, such as the Scientific Revolution or the Industrial Revolution, or even the political revolutions. Indeed, the Communications Revolution left a greater mark on the early modern era than did any other structural change. It transformed people's perceptions of space and time so radically that we find it difficult actually to comprehend the view of reality that prevailed in the pre-modern world. The Communications Revolution did more than any other change to replace a world of the miraculous with a world of the measurable.

The distinctive feature of the early modern communications system lay in the fact that functions which previously had been separate (and were to become separated again later), namely the transmission of news and personal transport, were combined into a single, universal infrastructure.[160] The postal system was, in Castells's terminology, the 'space of flows' of its period. According to Castells, a 'space of flows' consists of, first, a 'technological infrastructure of information systems, telecommunications, and transportation lines'; secondly, 'nodes and hubs' at which exchanges of all kinds can take place and whose functional logic is dependent on their position within the network; and thirdly, the 'habitats of the social actors who operate the network'.[161] This description of the internet applies equally well to the postal system of the early modern era. The system of portioning out space was not an 'invention' akin to the invention of a tool or piece of machinery. Unlike roads or railway lines, it was not the kind of entity that left physical remains in the landscape for archaeologists to rediscover. Like the air-transport network or the internet, the postal system had concrete existence only in its portals: as with the connections between airports or computers, the only connection between post houses was a virtual one, not a material structure.[162] It is perhaps this very immateriality that has prevented the early modern communications system from achieving the recognition it deserves.[163]

There is a strong case for arguing, then, that the early modern postal system was not only a medium but a creative template, since it gave rise to a series of subsequent innovations, all of which had a bearing on the communications universe. The system of portioning out space led first to a revolution in the realm of news, then to one in travel, then to a change in the nature of

[160] See Behringer, 'Reisen als Aspekt einer Kommunikationsgeschichte der Frühen Neuzeit'.
[161] Castells, 'Grassrooting the Space of Flows', p. 19f. See also note 139 above.
[162] 'The Internet is largely an invisible communications phenomenon. It is used by millions of people every day, yet there is little physical evidence of its existence' (Dodge and Shiode, 'Where on Earth is the Internet?, p. 42).
[163] The very terms 'invention', 'instruments of modernity' and the like can be treacherous: see Engelhard Weigl, *Instrumente der Neuzeit. Die Entdeckung der modernen Wirklichkeit* (Stuttgart, 1990).

correspondence, diplomacy and international banking and credit, and thence to a change in the organization of long-distance trade. We can accordingly speak of the 'emergence of a new spatial structure'.[164] The most striking consequence of this change of infrastructure is a media revolution the history of which—notwithstanding an accumulation of factual accounts—remains unwritten: namely, the development of the periodical press and the string of consequences that flowed from it. Of primary importance here is the growth of new forms of public sphere, the first signs of which were already becoming apparent in both the politics and the everyday life of the early seventeenth century. The 'structural transformation of the public sphere' was a far more complex process than Jürgen Habermas was able to discern when he wrote about it in the late 1950s.[165] It took place over a long period and certainly did not reach its teleological fulfilment in the French Revolution. The changes it wrought in politics and society began earlier, were felt on a much broader front and were much longer-lasting than Habermas realized.[166]

The Communications Revolution, as analysed here, is part of the prehistory of the modern world. Its importance is as fundamental as that of the Scientific Revolution, the Industrial Revolution and the revolutions in politics that took place in the same period: indeed, it preceded them and, to some extent, was a precondition of their success. That said, although it helped bring about a lasting transformation of social structures and thereby had a determining effect, we cannot posit an autonomous sphere of communications as a new base for social change: in other words, we cannot speak of 'media determinism' pure and simple. Even when we look at the Communications Revolution as a totality, comprising numerous media revolutions each of which had an influence on the others, we have to recognize that the invention of letterpress printing, for example, had little to do with the introduction of the postal system. Rather, it is clear that economic and political motivating forces underlay both of these innovations: on the one hand, the complex of phenomena which, since Sombart, has been labelled 'early capitalism', and, on the other, the dynamic of political competition that was so typical of a politically fragmented Europe. Unlike other civilizations, Europe was not a unitary empire but a highly complex microcosm. This was true, most especially, of the 'Holy Roman Empire of the German Nation', within whose borders political and religious control was even

[164] Castells, 'Grassrooting the Space of Flows', p. 19.

[165] Jürgen Habermas, *Strukturwandel der Öffentlichkeit. Untersuchungen zu einer Kategorie der bürgerlichen Gesellschaft* (Neuwied and Berlin, 1962).

[166] Habermas's work, only translated into English in 1989, has been enthusiastically received in recent American publications. Thompson, at Cambridge, has maintained that 'three traditions' have helped in the construction of a 'social theory of the media'. He argues that the Frankfurt School, predating both the tradition leading from Innis and McLuhan to Meyrowitz and the hermeneutic tradition of Gadamer and Ricoeur, ranks as the initial 'resource', although (in his view) none of the Frankfurt School theories, apart from those of Habermas, remains of practical relevance today. See John B. Thompson, 'Social Theory and the Media', in David Crowley and David Mitchell (eds), *Communication Theory Today* (Cambridge, 1994), pp. 27–49, esp. pp. 28ff.

less easily exerted than was the case within the neighbouring kingdoms, the emergent nation states. To be sure, some historians will be resistant to the whole idea of postulating grand historical processes of this kind. Doubtless the concept of the 'Communications Revolution' is as open to deconstruction as that of the 'Scientific Revolution'.[167] Nevertheless, in the same way that it is beyond dispute that there was a transformation in the sphere of technology and industry—one hesitates to use the word 'progress'—so it is equally incontestable that profound changes took place in the sphere of media and communication. What did these changes amount to, if not a Communications Revolution?

Translated by Richard Deveson

Abstract

This essay explores the origins and the development of a 'communications revolution', which would give rise to a new concept within historiography. It proposes that the Communications Revolution can be explained as a macrohistorical process, comparable to the Scientific Revolution and the Industrial Revolution, which have both had permanent and irreversible consequences in the modern era. The communications revolution, like the other two, began in the early modern era, and is still ongoing. The concept of a Communications Revolution encompasses smaller 'media revolutions', more easily ascribed to a specific historical period, and to a large extent mutually interrelated and dependent. The development of postal services gave rise to a new understanding of space and time, and it is this development that the essay identifies as the mainspring of change in the communications revolution. Postal services enabled faster movements of people, goods, and information. The new medium of the printed book, newspaper or sheet magnified the effects of this faster dissemination of information and news. So the Communications Revolution can be argued to have been the motor that enabled the construction of the infrastructure of the modern world, newspapers, cartography, and the 'public sphere' of politics, of warfare and diplomacy. Indeed, there is scope for discussion as to whether it was in fact the Communications Revolution which may have opened the way for both the Scientific Revolution and the Industrial Revolution.

[167] See Roy Porter, 'The Scientific Revolution: A Spoke in the Wheel?', in Roy Porter and Mikulas Teich (eds), *Revolution in History* (Cambridge, 1986), pp. 290–316; David C. Lindberg, 'Conceptions of the Scientific Revolution from Bacon to Butterfield', in Lindberg and Westman, *Reappraisals of the Scientific Revolution*, pp. 1–26; H. Floris Cohen, *The Scientific Revolution: A Historiographical Inquiry* (Chicago, 1994); Steven Shapin, *The Scientific Revolution* (Chicago, 1996).