The Notion of Space on Railway Maps of the Habsburg Monarchy / Austria–Hungary

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In this article, the notion of space on railway maps of the Habsburg Monarchy/Austria–Hungary is analyzed and interpreted. Two railway maps from the 1840s and one network map from the 1860s are examined from the perspectives of their visual language and inherent communication mechanisms. A reciprocal approach to maps is applied. The context in which maps are created (production and consumption) is taken into consideration, as is the context which is created by maps (spaces as cultural products). The desired outcome is a synopsis of the plurality of spaces envisioned in the mid-nineteenth century contrasted with the process of unification of space spurred on by the continuous expansion of railway networks. Topics addressed in this article are the rendering of nature and terrain on maps, the beginning development of a railway corridor into a network of lines, the depiction of networks, the hierarchization of territory in the visual language of maps, and the marking of space as a national territory.

Keywords: railway, maps, cartography, space, network, Habsburg Monarchy, Austria–Hungary

Introduction

In the first half of the nineteenth century, the railway started to transform the landscape and, with it, people’s perceptions of the world around them and the ways in which they moved through it. Novel notions of space found themselves translated into railway maps produced by engineers, planners, railway companies, publishing houses of maps, guide books, and atlases. This paper focuses on three railway maps from the middle of the nineteenth century (1845, 1843, 1869), with the aim to show how the presentation of space in the Habsburg Monarchy/Austria-Hungary differed from map to map in the same railway project and also changed significantly over the course of only two to three decades. I outline factors accounting for these altered perceptions of space and their manifestations on maps. My intention is to provide a synopsis of the diversity of spaces (physical, perceived, and conceived) on mid-century railway maps of Austrian/Austro-Hungarian provenance.

In his 1988 essay “Maps, knowledge, and power,” historian and geographer John Brian Harley (1932–1991) formulates the hypothesis that maps are cultural products which have different layers of meaning. Maps are never to be seen only as a presentation of geographical features, but rather must be read as a form of manipulated knowledge. Contextualizing maps is, according to Harley, an effective method of making maps speak about the “social worlds of the past.” Since at least the Middle Ages, when new structures of governance started to form, maps were used to document and legitimize claims of power in space. Images and symbols on the maps which dealt with historical, political, and mythological episodes underline these claims and are part of the communicative vocabulary of cartography. Although maps over time became more accurate due to improving measuring techniques and gained an aura of relative objectivity, they were nevertheless value-laden products of society.

1 For an introduction to the history of the railway and its impact on space and time, see: Schivelbusch, Geschichte der Eisenbahnreise, 35–50.

2 The notion of a plurality of spaces emerged once space was no longer perceived as a container (or dead, passive stage, as Schlügel puts it). Spaces are historically constituted. They have a beginning and an end. They can disappear again. Consequently, we are not dealing with only one space, but a multitude of spaces which exist parallelly. See Schlügel, Im Raume lesen wir die Zeit, 68–69; and also: Marc Augé, Orte und Nicht-Orte. Vorüberlegungen zu einer Ethnologie der Einsamkeit (Frankfurt am Main: S. Fischer, 1994).


4 In his seminal essay, Harley assumes that every map is a socially constructed form of knowledge. The specific codes embedded in the wider geographical discourse can tell us (cartographic communication/cartographic manipulation of perception) about power structures logged by the mapmakers. Harley lists several scenarios in which maps can be employed to convey a distinct message or function as a tool of communication: maps in the context of military and bureaucratic utilization, maps as a propaganda tool, maps as a surveillance tool, maps for legitimizing territorial claims. Harley puts maps in the large family of images, which is why he suggests an iconological approach, as derived from Erwin Panofsky (1892–1968), to decode symbols and imagery of maps. Furthermore, he writes about a cartographic language. Methods drawn from semiotics and literary criticism are suitable to identify the rhetorical and persuasive mechanisms in maps. Lastly, Harley points out the social constructiveness of maps. On the basis of Michel Foucault’s (1926–1984) and Anthony Giddens’ (1938) theories on historiography and social systems, Harley raises the argument that (manipulated) map knowledge is in itself a form of power that lies mainly in the hands of state authorities and transports political and ideological messages. Compare: Harley, “Maps, Knowledge, Power,” 277–312. The author, Rainer Vollmar, delivers a very on-point summary of Harley’s approach: Vollmar, “Die Vielschichtigkeit von Karten,” 381–95.


7 Harley, “Maps, Knowledge, Power,” 278.
In order to decode the visual language of maps an interdisciplinary approach is advisable. Following Harley’s methodology, pictorial, textual, and sociological components of railway maps are going to be taken into consideration to reveal communicative patterns and mechanisms of power in maps and offer, on the basis of this, insights into the ways in which maps can be interpreted as expression of and tools with which to shape perceptions of space.

Railway maps are a relevant addition to the broad field of research related to the history of railway and railway transport in the Habsburg Monarchy/Austria-Hungary. Although in recent decades, especially since the proclamation of different “turns” in the humanities and social sciences, more attention has been paid to the cultural, social, economic, etc. aspects of the railway, plans and maps of railway lines and the inscribed notions of space continue to constitute a hitherto overlooked topic. Consequently, reflecting on historic topics from a spatial perspective can perhaps yield new insights which will prompt further research on railway history.

How the railway Transformed Space and Time — Manifestations of Spatial Perceptions on Railway Maps

Space and time are complex phenomena. They constitute the coordinate system of our terrestrial existence in which, knowingly or instinctively, we place every subject, object, and act. Orientation without the context of space and time is impossible. Without reference points, we would inevitably be lost, and we would lack any understanding of who we are and where we come from. Humanity has continuously endeavored to develop an understanding of time and space and arrive at systems with which to measure them. The invention of calendars and clocks turned time into a cultural product. The superimposed linearity and sequentialness of time, which are also reflected in the ways in which some human languages are composed, make it easy for us to locate events in a chronological order. Historical events become narratable: event A happened at a point in time before event B took place. Both events can be marked with a clear beginning and ending and stand in relation to each other.

Space, however, eludes from our efforts to document and narrate it due to its multidirectional dimensions and the simultaneousness and coexistence of coordinates. Space is not linear. In order not to get lost, we apply similar methods to tracing space as we use to structure time. Movements in space are transformed into lines which can then be transferred to a two-dimensional surface: a map. In the form of lines and points on maps, space, which has no beginning and no ending and is consequently hard to narrate, becomes fixed and more controllable. Maps, thus, are always a reflection of how people see the environment.

The railway system (and maps thereof) can be understood as manifestation of a new spatial awareness and at the same time as tool(s) which shaped space and produced a new form of cultural space.

Historian Wolfgang Schivelbusch argues, that with the reduction of travel time, the railway helped shrink space and brought places closer together. At the same time, the increased speed of travel meant that people could reach faraway places in a much shorter time. For travelers, the space between stations lost importance, while beginning and end points of travel became increasingly significant.
Last but not least, schedules oriented around departure and arrival times made the introduction of a standard time necessary, that by the 1890s replaced local times in Central Europe.

The railway touched and changed many parts of life in the nineteenth century and consequently also replaced an old space-time continuum with a new one. By tracing this novel perception of space on railway maps, we can enhance our understanding of the specific view map producers and map users had of a place or territory (mental maps) and the ways in which this view changed over time. We can learn how authorities, stakeholders, constructors, landowners, and key political players positioned themselves and others in space, how they constructed their identities within a newly emerging understanding of space, and how this understanding of space itself was shaped and controlled.

The Development of the Railway and Railway Maps in the Habsburg Monarchy/Austria–Hungary

The history of the Austrian railway in the nineteenth and early twentieth centuries is commonly divided according to the phases of ownership and financing of railway projects. It should be mentioned however, that a clear timeline of railway periods cannot always be followed, as gaps between the order and final implementation of railway-related laws occurred.

Following a pioneering phase of private funding andplanning of the first railway lines between 1824 and 1841, a phase of railway construction under state initiative took place from 1841 to 1854/58. Having finally grasped the potential of this new means of transportation, the state wanted to bring the railway under its control in order to push the construction of new lines and connections independent of the financial aims of private investors. The expansion of the lines of the Emperor Ferdinand Northern Railway and the Southern Railway were among the most urgent infrastructural development plans. Furthermore, the Milan-Venice railway line (Venedig-Mailänder Bahn) was completed in 1846, and the challenging Semmering railway (Semmering Bahn), as part of the Southern Railway, and the Empress Elisabeth Railway (Kaiserin Elisabeth-Bahn) were built under state control. Financial restrictions put an end to the first state phase in 1854. A new railway law aimed at private investors obliged them to disclose the details of their planned railway projects for the state to check and approve. Between 1854/58 and 1873/80 the railway network of the monarchy grew significantly. However, private investors recoiled from financing railway projects that made sense only for the infrastructural development of the monarchy and promised less profit. Lines deemed important by the state, like the Arlberg Railway (Arlbergbahn) or a railway along the Dalmatian coast, could not be realized during that period. The financial crisis of 1873 forced the state to engage more actively in the railway program once more. The construction of the Arlberg tunnel in 1880 marked the beginning of a second phase of railway construction under state control. In addition to investing more money in private railway projects, the state also funded the construction of lines of pressing importance. In 1896, the k.k. Railway Ministry in Vienna was founded with the function of monitoring and controlling railway traffic and railway projects in the Austrian lands of the Dual Monarchy. In the last phase of railway politics, the New Alps Railways were built. Also, minor connections were created. The collapse of the Austro-Hungarian Monarchy in 1918 lead to the breakup of the vast railway network, as huge parts of it were then situated in the neighboring countries, two of which were newly created states.

Numerous diary entries, episodes from fictional literature, drawings, and paintings demonstrate how the novelty of rail travel was perceived in the nineteenth century. This new medium not only found novel forms of expression...
in art and literature, it also demanded improved techniques and approaches in the scientific documentation of railway tracks.

Before people engaged in travel on a grand scale, the military and the state were the primary users of most of the manuscript maps produced in the eighteenth and nineteenth centuries. These maps were to a large extent kept under strict control and treated as secrets, as in times of conflict and war detailed maps of the territory could provide the enemy with crucial information. The development of the street network in the Habsburg Monarchy and the emergence of the stage coach system in the seventeenth century resulted in the production of new road maps and stage coach maps which were made available to the public as well. At the beginning of this phase, roads and stage coach connections were often added to topographic maps, for instance from the Austrian land surveys. Later, with the rise of rail and steam boat travel, further traffic connections had to be integrated into the maps. In the interest of legibility, thematic travel maps were made in the nineteenth century. Slowly but surely, railway maps started to supersede the stage coach maps. Due to the growing density of the railway network from the middle of the century onwards, railway maps grew in scale and complexity; detailed traffic and railway atlases were published. Furthermore, thematic travel maps were adapted to the users’ needs.

The Railway Line Wiener Neustadt–Ödenburg – A Case Study on Two Different Perceptions of Space in Early Railway Maps

One of the earliest railways of the monarchy, the line between Ödenburg (Sopron, Šopron) in the Hungarian lands of the empire and Wiener Neustadt was planned and built between 1840 and 1847. The plan for this line was a joint venture of the Hungarian aristocrats Pál Esterházy (1786–1866), count István Széchenyi (1791–1860), and the banker Georg Simon von Sina (1783–1856). The Hungarian nobles wanted the railway to come to Hungarian lands. Count Széchenyi greeted the project commissioned by the king Ferdinand I of Austria (1793–1875) with great enthusiasm:

With this project a bright star rose for the West of Hungary; its growing radiance will illuminate the tracks of its [Hungary’s] future rapid progress. (Ein heller Stern ist damit dem Westen Ungarns aufgegangen, dessen wachsender Strahlenglanz die Bahnen seines zukünftigen raschen Fortschrittes erleuchten wird.)

In 1845, construction work under the oversight of Mathias Schönerer (1807–1881) began. The track between Ödenburg and Wiener Neustadt is 31.9 kilometers long and passes through slightly hilly terrain. Leaving Wiener Neustadt, the train crosses the river Leitha (Lajta) and, thus, the former Hungarian Historical Review 8, no. 1 (2019): 52–76

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Austrian-Hungarian border. On its way to Ödenburg, the train passes by the villages Katzelsdorf and Neudorf/Neudörf (Lajtszentmiklós/Najderfl). The track then runs alongside the Rosalien Mountains. Several embankments and cuttings were built to cover height differences of the terrain. Before reaching Mattersdorf (since 1924 Mattersdorf/Nagymarton/Matrőst), the train has to ascend the steepest part of the track (with an incline of 10.5 percent). The station in Mattersdorf was the largest on the entire line. After crossing another hill, the train passes by the villages Marz (Martz/Márcfalva/Marka), Rohrbach (Frknőnádasd/Orbuh), Loipersdorf (Lépesfalva), Schattendorf (Somfalva/Sündorf), and Agendorf (Ágfalva/Agendorf). The station on the western periphery of Ödenburg was then to constitute the end of the line. 

From the beginning of the planning period, the railway line was laid out to be double-tracked, which shows that planners expected a high volume of traffic for the line, which potentially would be prolonged to the south. The double-tracked version of the line was not built, however, because of political tensions between Austria and Hungary in the 1840s. The Southern Railway should not run over Hungarian territory. See Chmelar, 150 Jahre Eisenbahn, 24–27 and Benedek, Mattersburger Viadukt, 12.

Two monumental viaducts were built by Schönerer for the track: the Mattersburger Viadukt and the Wiesenviadukt. Both viaducts show architectural features similar to the architecture later employed in the Semmering route. It is likely that ideas for the challenging Semmering project built as part of the Southern Railway between 1848 and 1854 by Carl von Ghega (1802–1860) were put to the test in this less demanding terrain. Shortly after the line opened in 1847, traffic volume on the route was high, bringing economic growth to the region of Mattersdorf and Ödenburg for a short time.

A brief comparison of the two railway maps of the same line from Ödenburg to Wiener Neustadt produced in 1843 and 1845 (Figure 1 and Figure 3) shows that different ways of presenting one and the same railway line can lead to very different visual results. Consequently, the spaces captured and reimagined by the mapmakers and commissioners differ to some extent. Different reasons might explain the different approaches to the representations chosen for the manuscript maps, with the date of map production, the function of the map, and the prospective audiences being the most obvious. However, we often have little information concerning these kinds of factors, in particular the functions of the maps and the prospective audiences, and thus we can do little more at this point than venture guesses. If we consider the possible visual strategies of which these two maps seem to be the product, we can, however, hazard some hypotheses concerning the aims of the mapmakers.

The Role of Nature In Early Railway Maps

Map number one, entitled Übersichtskarte der zwischen Oedenburg und Wiener-Neustadt im Jahre 1845 im Bau begriffenen LOCOMOTIV-EISENBAHN (Figure 1), is a manuscript map on paper with relatively large measurements (106 × 85 cm). The terrain is not shown in its entirety and the image does not fill the sheet; rather, the user of the map is given a cut-out of the topographic landscape stretching diagonally between Wiener Neustadt and Ödenburg. Large blank spaces on the map’s edges are used for the heading (top center) and a scale bar (bottom left). Linear measures on the map are indicated in Wiener Klafter (Vienna fathom), 158 mm = 2400 Kl. or 1 : 29,000. Further inscriptions are featured either directly on the topographic drawing or next to it. Roads are featured as thin black lines. The border between Austria and Hungary is shown as a thicker, broken line. Still, the border is not over-accentuated or strikingly prominent on this map.

The projected railway line is colored red, establishing also a visual connection between Ödenburg and Wiener Neustadt. Interestingly, shortly before it reaches
Mattersdorf, the track forks, which shows that in 1845 (relatively late in the planning process of the line), another option for the track which had been discussed in 1838 had not been ruled out. Crossing the valley near Mattersdorf was a challenging task which Schönerer was only able to solve almost ten years after the first plans were made with better knowledge of railway construction, which he acquired in part during his travels to England and America. The two town plans of Ödenburg and Wiener Neustadt are executed in greater detail and colored red as well. This accentuation automatically establishes a visual hierarchy among the villages and towns on the map: Ödenburg and Wiener Neustadt are of greater significance.

The visually most striking feature of the map, however, is the depiction of the terrain. Although declared in the title of the map, the projected railway track is not its sole focus. The topography of the landscape is much more prominent to the eye. This begs the question: why did the mapmaker, whose name was not indicated, chose this mode of presentation? Can we perhaps identify visual traditions to which the mapmaker was harking back which would explain the accentuation of nature and the terrain?

The dense placement of hachures to model the form and height of hills and slopes and the use of primarily dark colors like browns and greens make it hard to read the cartographic symbols and labels and spot the course of the railway line at a single glance. Color patches and hachures form a solid visual entity. The visual dominance of landscape features and landscape rendering indicates that the concept of space inscribed into the map was still routed in an environment dominated by nature. Building traffic infrastructure still meant an adaption to landscape. Although humans remodeled the environment according to their needs, until the nineteenth century, hills, mountains, and rivers still presented barriers that could only be overcome only with difficulty and effort. The course of a street or the position of a dwelling, harbor, or bridge were strongly geodetermined. It is thus comprehensible that topographic features seem to be disproportionately presented in especially early railway maps: the supremacy of nature and the achievement of partly overcoming natural barriers (for instance by building viaducts) are inscribed into the visual language of the map: the railway starts to subdue nature. Moreover, for constructors and financiers, the exact course of the line, possible obstacles on the way, the position of stations and the feasibility of a project (which depended on these factors) were of central importance. Maps for this user group had to be detailed and precise.

The visual language of the map from 1845 is from many perspectives in line with stylistic traditions of eighteenth-century and early nineteenth-century topographic cartography. Extensive field measurements were being conducted on a map from 1838 entitled “Übersichtskarte der projektierten Tracen der Wien–Raaber Eisenbahn sammt Nebenzweigen. In der Ausführung begriffen unter der Leitung des Civil Ingenieurs M. Schönerer,” the railway line to Ödenburg was planned to follow a different route north of Mattersdorf. See Chmelar, 150 Jahre Eisenbahn, 12–13. 44

43 On a map from 1838 entitled “Übersichtskarte der projektierten Tracen der Wien–Raaber Eisenbahn sammt Nebenzweigen. In der Ausführung begriffen unter der Leitung des Civil Ingenieurs M. Schönerer,” the railway line to Ödenburg was planned to follow a different route north of Mattersdorf. See Chmelar, 150 Jahre Eisenbahn, 12–13.

44 Ibid.
taken with increasing frequency and regularity in Western and Central Europe in the eighteenth century, as absolute rulers sought to document their entire sovereign space. These were the first attempts to measure every detail of the environment scientifically, resulting in accurate maps of the terrain. The first official field measurements of the Austrian crownlands were taken during the reign of Maria Theresia (1717–1780) by the military (Josephinian Land Survey/ Josephinische Landesaufnahme/Erste Landaufnahme, 1764–1786).47 Between 1764 and 1786, more than 3,500 maps were drawn. A second Austrian land survey was conducted in the first half of the nineteenth century (Franziszeische Landesaufnahme, 1806–1869). Topographic maps produced during both land surveys show stylistic characteristics similar to the stylistic characteristics of the railway map from 1845. From the perspectives of image section, choice of colors, script, cartographic symbols, depiction of terrain, use of hachures, depiction of infrastructure, framing of the cartographic content, etc., especially maps from the second Austrian land survey show striking similarities to railway map.

As pointed out by Krenn, particularly during an early stage of the railway age, railway lines were additionally drawn into older topographic maps.48 Is the railway map from 1845 thus actually an updated version of an older topographic map from the region between Ödenburg and Wiener Neustadt? Without an indepth analysis of topographic maps from the two land surveys, this assumption cannot be proven or ruled out.

New topographic maps of the area around Wiener Neustadt were made in 1820.49 For the Hungarian land, however, the latest maps were only from around 1782–1785.50 The area behind the Austrian-Hungarian border was not officially mapped again until 1856 (e.g. Pöttsching (Pecsenyéd/Pécsva), Pöttelsdorf (Petőfalva), Mattersdorf, Sopron, Agendorf).51 The different dates of origin of the survey maps suggest that the mapmaker of the railway map from 1845, rather than adding information to an older map, used different topographic maps from the area to draw the railway map Übersichtskarte der zwischen Ödenburg und Wiener-Neustadt im Jahre 1845 im Bau begriffenen LOCOMOTIV-EISENBAHN.

Because no information about the cartographer of the map, its customer, or place of presentation or publication is given on the map sheet, we can only speculate about the purpose of the map. Furthermore, we do not know whether copies of the manuscript map were made. A higher number of publicly available copies would also imply a larger circle of potential map users. Given the year in which the map was produced (in 1845, the railway line was still under construction), the prominent heading, and the way in which the railway connection is presented as a red line cutting across the hilly and challenging landscape, it is imaginable that the map addressed potential buyers of stocks for the railway line rather than travelers. In April 1845, during the general assembly in Ödenburg, it became obvious that the railway project would be much more expensive than estimated. Instead of 1.5 million Gulden, construction of the railway line would cost more than 2 million Gulden. The two monumental viaducts, changes in the track, and a restaurant near the station in Ödenburg led to an increase in costs. New stocks had to be sold in order to cover the expenses and advance construction work.

Space as a corridor: The narrow view of mapmakers concerning the railway line from Ödenburg to Wiener Neustadt

A phenomenon present especially in early railway maps is a corridor-like view of the mapmakers concerning the railway lines and the landscapes along the track. The geo-determinacy of infrastructure apparent from the visual language of map one is also reflected in the mapmaker’s relatively narrow view of the terrain. Apart from the projected railway line, other factors relevant for the construction of the track are mapped, such as the terrain, nearby settlements, and infrastructure. As noticeable from map one, a favorable course of the route through uneven, hilly landscape required to some extent an adaption of the track to the terrain, resulting in a situation in which the railway line is more or less enclosed by natural barriers (hills, slopes, rivers, streams, etc.). One gets the

47 The name Josephinian Land Survey relates to Maria Theresia’s son, Joseph (1741–1790), who from 1765 was responsible for military affairs and thus also supervised field measurements of the crownlands. See also: Lindner, “Landaufnahmen deutscher Territorien,” 426–428.
impression of a natural corridor. The terrain outside the sphere of influence of the railway line is irrelevant to the project and user groups of the map, and consequently, this area is not featured (blank spaces on map).

In addition to creating a depiction of nature and natural barriers as a corridor, the engineers’ and mapmakers’ view of space also resulted in a narrow corridor perspective that ultimately was translated onto the map. The design of the railway track, the beginning and end points, and stops on the way compose the corridor. Especially in the first decade of steam-powered rail traffic, when a network of rails had not yet been established and connections existed primarily between cities or other points of economic interest, it was not yet seen as necessary to document other long-distance traffic connections. From the point where a railway line stopped or ended, travel was continued using means which had been in use before the age of the railway: by stage coach or on foot.

On the railway map from 1845 as well as on the map from 1843, roads are shown, but they mostly lead to nowhere. Still, we find indications of direction (e.g. Weg nach Froschdorf, Figure 1).

The railway map from 1843, Situations Plan der Neu anzulegenden Eisenbahn, von Oedenburg bis Wiener Neustadt (Figure 3), pushes the notion of space as corridor even further.

Map three shows another, not realized trace design in which the railway track was planned to go through the villages Pöttelsdorf, Draßburg (Darufalva/Rasporak), and Baumgarten (Sopronkertes/Pajngrt). The mapmaker was Mihály Vágner from Ödenburg. The map is relatively large in size (222 × 48,5 cm), has an elongated format,52 and
is hand-drawn on paper. The elongated manuscript map focuses almost exclusively on the planned railway line, and the surrounding area is left out. From the perspective of style, the map resembles traditional road plans and maps for waterways.

In comparison to the map from 1845, surroundings are rendered more schematic. Landscape characteristics are presented in a plain, nearly geometrical form, as was typical for cadastral maps and site plans of that time. The environment along the track is given little importance. Forests, fields, and streams are cut off at the edge of the corridor. The planned railway line is superimposed onto the existing network of villages and roads, establishing a linear connection between both cities and, thus, a new hierarchy within the region. Within the spatial corridor of the future railway line, the distance between the cities Ödenburg and Wiener Neustadt shrinks significantly. The space to the left and the right the track is considered irrelevant to the new form of travel. Or to use Schivelbusch’s phrasing, the space untouched by the railway gets eliminated.53

Another interesting component of the map from 1843 is that the area behind the Austro-Hungarian border (around Wiener Neustadt) is almost left blank. It is possible that Vágner, who was a Hungarian engineer, official of Sopron County, and land surveyor, had no detailed cadastral information about the Austrian land and that part of the railway line at hand. Also, in 1843, there were still two railway companies responsible for the construction of the line, which is why Vágner might have produced this manuscript map especially for the Hungarian planning team of the Ödenburg-Wiener Neustadt company. A signature on the map sheet with the note “Copirt” indicates that the map is a copy of the original Vágner Situations Plan. The map thus might have been copied several times and spread among a wider group of users. We do not yet know by whom (e.g. constructors, investors, the public) and to what purpose copies of the Vágner railway plan were used.

From Corridor to Network – The Growing Importance of Traffic Junctions on Railway Maps

Although, as discussed above, the Situations Plan from 1843 does not provide information about the landscape on the Austrian side of the planned railway line, the future traffic junction in Wiener Neustadt (marked as Stationsplatz) is already indicated on the map.54 Here, the line from Gloggnitz to Vienna was going to cross, forming a traffic connection between the Austrian and the Hungarian lands. Though frequent travel by train was not yet very common in the 1840s because a network of lines had not yet been established,55 both maps nonetheless seem to presage the importance of traffic junctions for movement and communication in the Habsburg Monarchy. Although in 1843 the line between Ödenburg and Wiener Neustadt had not yet been built and the southbound railway line was only completed between Vienna Südbahnhof and Gloggnitz, Vágner and/or the potential initiator of the map deemed this traffic junction and the growing network of lines significant for the region.

For the next roughly eighty to one hundred years to follow, until the emergence of automobiles and air traffic, railway lines and train stations remained the most powerful hubs and channels along which people, goods, ideas, images, innovation, and ideologies traveled. They hastened the pace of industrialization, migration, and urbanization, as well as the exploitation of nature.

The railway map published in 1869 by Lehmann & Wentzel in Vienna entitled Neueste Eisenbahntekarte der ÖSTERREICHISCH-UNGARISCHEN MONARCHIE: mit Berücksichtigung der Montan und Industrie Bahnen (Figure 4) shows many characteristics with which the modern-day user of traffic maps is accustomed: a stereographic projection of the area’s surface, a network indicating actual geographic position and schematized layout, station names arranged above one another for better legibility, and a color code for the single branches to simplify orientation. The user finds a coordinate system and a legend listing railway lines and associated color codes. Lines planned or under


53 Schivelbusch, Geschichte der Eisenbahnbereit, 35, 37.

54 The crossing of the two railway lines is also indicated on the map from 1845.

55 In the early age of rail travel, the number of passengers on the few existing lines was rather low compared to the number of passengers in the second half of the century. In 1848, approximately three million passengers were transported by railway. In 1873, this number grew to 43 million passengers per year. With the increase in the number of passengers, the importance of railway maps for travel grew. See: Waldmüller, “Quellenkundliche Forschungen,” 75.
Figure 4. Neueste Eisenbahnkarte der ÖSTERREICHISCH-UNGARISCHEN MONARCHIE: mit Berücksichtigung der Montan und Industrie Bahnen, (Newest railway map of the Austro-Hungarian Monarchy: considering also the montane and industrial railway), publisher: Lehmann & Wentzel 50 × 69 cm, lithography, on paper, Vienna 1869 http://sammlung.woldan.oeaw.ac.at/layers/geonodeac04078710_lehmann_oesterreich_1869 Accessed on October 7, 2018.

construction are marked with different graphic signatures (e.g. two thin black lines for a planned track and an alternating pattern of black and white stripes for a railway line under construction). Over the course of twenty to thirty years, a map language for railway lines used in travel developed in Europe and the Habsburg Monarchy/Austria-Hungary which in many ways is still valid today. Given the need to document the growing network and most of all to facilitate travel, the map language focuses on overview and orientation.

The title of the map, displayed in a rectangular cartouche, denotes the fast rate with which the railway network grew at the time. The user holds in his/her hands the newest railway map (die Neueste Eisenbahnkarte) which shows that map production tried to keep pace with the expansion of the network. In the second half of the century, updated maps had to be published frequently; also, the demand for maps was high. Network maps were among the most common in the second half of the century. Between 1857 and 1866 the railway network of the monarchy grew at a yearly rate of 327.5 kilometers. As of 1867, that rate rose to 1,352 kilometers of new railway tracks per year. Isolated corridors evolved into far-reaching networks with travel connections to many parts of the Dual Monarchy and beyond. The network stretches from the Austrian-German border in the northwest to the Adriatic coast in the south, from Innsbruck in the west to Karlsburg (Alba Iulia/Gyulafehérvár) in Transylvania. Particularly in the northwest, Austrian railway lines connect with the German network, making travel and trade truly international.

As a single glance at the map reveals, Vienna is in the center of the railway network. A majority of the lines built by the middle of the century radiate from the capital Vienna towards national traffic junctions, the most important of them being Pest/Buda, Brünn (Brno), and Prague. From here, the network further expands to regional traffic junctions. In the Austrian part of the empire, the railway network is much denser than in the eastern lands of the monarchy. Many of the lines towards Galicia and Transylvania were still under construction at the end of the 1860s, resulting in cities like Lemberg (Lwiw/Lwów), Czernowitz (Csernyivci, Czerniowce, Cernăuți), Kronstadt (Brașov/Brassó), and Hermannstadt (Sibiu/Nagyszeben/Hermestatt) being at the far-flung periphery of the monarchy’s network and thus difficult to reach.

57 Franz Baltzarek, “Die Finanzierung des Eisenbahnsystems,” 222.
The map language, cartographic symbols, and layout and arrangement of content on the map sheet direct the user’s gaze and influence the way the map is read. The center-periphery dichotomy, for example, automatically results in a hierarchy in the virtual space created by the map, which also translates back into perceptions of the physical space. When they see a given site in a central position, map users consciously or unconsciously associate it with power and control. All the other points on the map are of subordinate importance compared to the center, in this case, Vienna. Spatial distance is one factor in the establishment or maintenance of a hierarchy. The duration, frequency, and possibility of travel to a place are others. Mapmakers inevitably create hierarchies in space in the sense that the map language always implies a syntactic ordering of its elements. The reader of a map cannot avoid comparing the sites designated on the map and constructing hierarchical relationship among them.

In contrast to the map from 1845, the display of terrain and landscape features is of minor significance on the network map from 1869. On map four, landscape characteristics were reduced to mere markers for orientation. Lakes, rivers, and coastlines help the user of the map get a rough sense of location. Compared to the visual language of the railway map from 1845, where the terrain was very prominent to the eye, there is nothing overwhelming anymore in nature or natural barriers on the 1869 map. The reasons for this are, on the one hand, the changed purpose and thus user group of network maps and, on the other, the modified significance of nature for the railway. The most important reason, however, was simply the growth in rail travel. In the era of industrialization and growing railways, more than ever before, men remodeled nature according to their needs. Tunnels, viaducts, bridges, and embankments are evidence of men’s desire to tame nature and foster mobility. If feasible, a railway track no longer adapts to the terrain. Rather, it cuts through nature in a straight, linear path. Seen from the window of a train, nature and natural barriers lose parts of their daunting quality. While nature is still of importance for engineers, constructors, and investors in railway lines, for passengers, as can be seen in the network map from 1869, the environment becomes a sign on a sheet of paper, helpful if one wants an overview.

In the same sense, as the significance of natural barriers fade, the importance of the display of the country’s frontier rises. Apart from the railway lines, the border is the only feature on the map rendered in color (light red), and this draws the attention of the map user to it. Furthermore, the width of the border is remarkable. In comparison to the border of Austria-Hungary, the inner frontiers are barely visibly, presented as fine, dotted lines which can easily be overlooked among the railway lines and rivers. The idea of space and territory envisioned by the commissioner and/or mapmaker is one of unification and openness. The map talks about one space: one space of traffic, even one space of language and nationality, communicated by the exclusive use of German. Not only are the title and the legend of the map in German (only), names of cities, towns, and lands are also given only in German (assuming they had German names). This gesture erases or denies differences in language and ethnicity, making space seem more national. The multi-ethnic nature of the Dual Monarchy is overlooked (or denied) on the map. The network of railway lines is what binds the space together.

Conclusion

One objective of this paper was to show, on the basis of three railway maps of Austrian/Austro-Hungarian provenience, how the railway shaped space and produced new forms of (cultural) space and how these forms of altered spatial awareness found expression in maps. Taking the methodological approach of Harley into consideration, I analyzed two railway maps of the same railway project, the line from Wiener Neustadt to Ödenburg, from the perspective of the presentation of certain visual components. I showed that the dominance of presentations of nature in early railway cartography was related to a stronger geo-determinacy of early railway lines. Nature was still seen and also depicted in maps as a barrier which confined travel and was only overcome progressively by the middle of the century. In addition, the purpose and user groups of early railway maps could account for the strong accentuation of the terrain and nature in maps. In particular, investors wanted to be informed about the exact course of the line, the terrain, stations and stops along the track, etc. Natural barriers and the (comparatively narrow) range of use of early maps resulted in a corridor perspective concerning the railway lines. Once a railway line was finished, route maps were also used by travelers. Findings drawn from the 1843 map align with the general notion that the railway helped shrink space and even make space

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58 Monika Gibas uses the term “myth of the middle” in her essay on German collective identity to denote certain topos in which a group of people identifies with the middle as a place of power and superiority. Myths or narratives about the middle oftentimes serve to establish a sense of belonging and shared identity or to preserve inner territorial stability. See Gibas, “Auf der Suche nach dem deutschen Kernland,” 198.
disappear. As fast train connections between important cities and villages were established, the space between stations lost its relevance for travelers, merchants, etc. It started to disappear from maps and, consequently, also from people’s mental maps. The railway also accelerated the hierarchization of space, which gains increasingly importance with the network maps appearing in the second half of the nineteenth century. Network maps were aimed at a broader public wishing to travel through the monarchy. Nature in these maps has lost its restricting character and became, as shown in the map of 1869, a marker for orientation. At the same time, while space was being hierarchized (e.g. a hierarchy of centers versus peripheries), it was also bound together and unified by the network of railway lines, which went parallel with the political aspirations of the time in the Dual Monarchy. The visual language of the network map from 1869 also suggests the nationalization of space. The perspective chosen on the land, the use of German, the emphasis on governmental centers (and thus power), and the stressing of the outer border of the Dual Monarchy are indications of a progressing nationalization and delimitation of space towards neighboring countries. Further research on the notion of space in railway maps will help provide answers to some of the questions raised in this essay.

Bibliography


Schivelbusch, Geschichte der Eisenbahnbewusstsein, 35–37.


