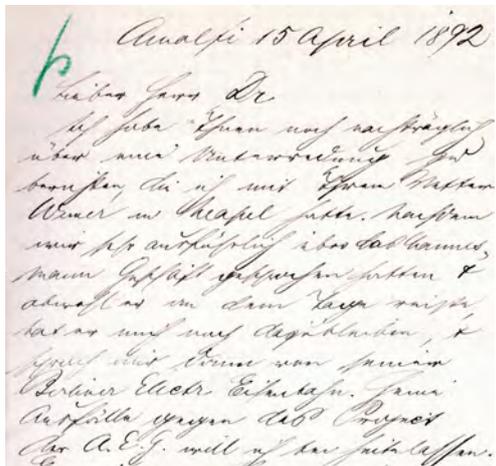


Werner von Siemens around 1885 (left); Max Steinthal in 1893 (right).



Siemens first approached Deutsche Bank in April 1892 to obtain funding for his electric railway in Berlin.

Max Steinthal (1850-1940), a member of Deutsche Bank's Management Board, approached his colleague Georg Siemens (1839-1901) in April 1892 to tell him about a conversation he had had with his cousin – the inventor and entrepreneur Werner von Siemens (1826-1892):

"[He] went on to talk about his electric railway in Berlin. I'll leave aside his tirade against the AEG project. He reckons he will have made sufficient progress by the summer that the issue of raising the necessary capital will need to be addressed then".¹ Werner von Siemens had quite openly been sounding out Steinthal to find out how intensively Deutsche Bank had been negotiating on this issue with those 'pesky' competitors: "You are probably already talking to AEG about their project, aren't you?" I replied that the two were not mutually exclusive and that, in my view, there were no objections in principle to our involvement in his elevated railway. He estimated that the project would require capital of 12 million and asked whether a consortium could raise this sum at present. I said not right now or in the near future but probably at a later date, although probably not by the summer. He added that although I had said it would not be easy to raise the necessary capital, he had the impression that bankers would currently be favourably disposed towards such a transaction, so he planned to approach the general public directly for this funding, as he had previously done in the case of Indo-European Cable. He asked me what I thought of that. I replied: 'You can only do that once. If it fails, the public will not take you seriously the next time'. His response: 'As a technical entrepreneur that doesn't bother me as much as you bankers. If the public is not interested then I'll leave it. [...]'. I replied: 'If you wanted a compromise solution, you could take on 2 million and the bankers could take 4; it sounds quite different then and is a lot less if the public only needs to contribute 6'.²

When Max Steinthal conducted this conversation with Werner von Siemens, he had already been working for several years on the restructuring of Mannesmannröhren-Werke, whose supervisory board was chaired by Siemens.

The two men knew each other well, which explains why they were racking their brains on the question of how to finance a future public transport system for Berlin. The 'tirade' against Allgemeine Elektrizitäts-Gesellschaft (AEG) mentioned by Steinthal referred to their plans for high-speed transport routes, which from the outset, however, were based on underground lines, whereas Siemens was purely aiming to build an elevated railway. However, Berlin's city council was initially not very keen on the idea of an underground railway because it feared that any subterranean lines might cause damage to the recently completed sewerage system.

Deutsche Bank maintained close relations with both of these companies because it attached huge importance to investing in technologies of the future – and the electrical engineering industry had become a key sector in the late 19th century. Although Deutsche's relationship with AEG was actually the older of the two, while planning Berlin's high-speed rail network the bank consolidated its ties with Siemens & Halske, which for a long time had avoided becoming a joint-stock company and funding its operations through the capital markets. It was only once Werner von Siemens had died in December 1892 – just a few months after his conversation with Steinthal – that the company began to turn to the organised capital markets. Siemens & Halske became a listed joint-stock company with Deutsche Bank's help in 1897. A separate public company – what would eventually operate as Gesellschaft für elektrische Hoch- und Untergrundbahnen in Berlin – was to be set up to finance the Berlin railway project through the capital markets.



Map of the planned high-speed train route (as of 1894).

Werner von Siemens' plans to build an elevated railway dated back to 1880. His idea was to reduce the volume of traffic on Berlin's streets, which had grown rapidly during the late 19th century, by creating an extensive network of efficient rail transport. The need for such means of transport was blatantly obvious. Germany's capital city was growing quickly and was becoming increasingly densely populated. Berlin had over a million inhabitants by 1877, and tens of

thousands more came every year. However, negotiations on the exact route of the train lines dragged on for years. Finally there was agreement on a plan to build a line from Zoologischer Garten to Warschauer Brücke, with a branch line leading to Potsdamer Platz, thereby adding a southern extension to Berlin's existing municipal railway. This would combine the lines of the two railways.

The technical issues relating to the construction of an electric elevated railway for Berlin as well as Schöneberg and Charlottenburg, which were still separate towns in those days, had largely already been resolved by the time Steinthal had had his discussion with Siemens. Siemens & Halske presented their project to interested parties by creating elaborately detailed sketches, which were already using photomontage techniques. A transport project whose initial design primarily involved overground train lines required the construction of a number of buildings that needed to be integrated into the existing street scene. And this is exactly where Siemens & Halske had encountered stiff opposition to a similar municipal railway project in Vienna – partly for aesthetic reasons around urban development.



Siemens used elaborately detailed animations to visualise the future elevated railway.

Siemens & Halske defended their plans to build a network of elevated railway lines in the German capital: "Berlin is not only 'Athens on the Spree' with a number of major cultural institutions to its name; it is also the main transport hub and the first industrial city in Germany. If Berlin is to retain this status, we must meet the already highly urgent need to open up new transport routes and accelerate travel as soon as possible. If the new urban railway is not built now with the greatest sense of urgency, however, there is a genuine fear [...] that many obstacles which the municipal railway project is still – with a good deal of agility – just about able to overcome will be simply insurmountable."³

Gustav Kemmann (left) examined the elevated railway's commercial viability, while Paul Wittig was its organiser for several decades.



Resolving these technical issues, however, was just one of the key challenges at the planning stage. Deutsche Bank – as the project's funding partner – was seeking independent expertise to determine the future capacity utilisation of the new transport routes. It commissioned the engineer and transport expert Gustav Kemmann (1858-1931) to assess the project in terms of its commercial viability and, especially, its level of expected demand. Kemmann produced his transport forecasts by conducting traffic surveys and compiling projections of the numbers of passengers expected based on population trends. Deutsche Bank had recruited the right person for the job. When the elevated railway finally came into operation, his calculations turned out to be amazingly accurate.

The challenge now was to devise a sustainable funding model for this huge infrastructure project based on the technical plans and financial calculations already produced. Deutsche Bank – in the form of its Management Board member Max Steinthal – stood ready as a partner. For Steinthal, who had been born and bred in Berlin and hardly ever left the city for more than a few weeks at a time, it was also a matter of local pride that his home town should have a state-of-the-art public transport system.



The 'winged wheel' became Hochbahngesellschaft's logo. It also advertised the company by adorning the ornate columns of Hallesches Tor station, which was built in 1901/02.



Deutsche Bank worked closely with Siemens & Halske over the following years to devise a concept, on the basis of which Gesellschaft für elektrische Hoch- und Untergrundbahnen (commonly referred to as 'Hochbahngesellschaft') was set up on 13 April 1897. The new company was entered in the Berlin commercial register on 8 July 1897. It acted as the client commissioning the construction, while Siemens & Halske managed the construction project. The management board of Hochbahngesellschaft comprised only one person: government architect Paul Wittig (1853-1943). Despite being an architect by profession, his remit mainly consisted of dealing with land-purchasing issues. Over the course of several decades Wittig acted as the only member of Hochbahngesellschaft's management board and thus became the key figure overseeing the construction of Berlin's elevated railway. The company's supervisory board was chaired by the former mayor of Berlin and Prussian finance minister Arthur Hobrecht. More significantly, however, his nominal deputy on this board was Max Steintal of Deutsche Bank. The supervisory board also contained a representative of the firm managing the project in the form of Wilhelm von Siemens, one of Werner's sons.



Elevated railway line being built in Gitschiner Strasse around 1897. However, the architectural design of the supporting pillars and the stations needed to be optimised.

Having conducted lengthy negotiations with Berlin's city council, Siemens & Halske had finally won approval to build an elevated railway line along the route of Berlin's former customs wall, which had been pulled down 30 years previously. The ground-breaking ceremony took place in Gitschiner Strasse in the district of Kreuzberg on 10 September 1896, six months before Hochbahngesellschaft was officially set up.

The engineers at Siemens had developed special supporting pillars for the elevated railway, although these proved to be aesthetically unsatisfactory during the construction phase. The priority of creating a transport-friendly city was thus unable to make any real headway in Berlin. The authorities therefore turn-

ed to Swedish architect Alfred Grenander, who was commissioned to devise an artistically acceptable solution to this problem. Paul Wittig knew Grenander from the time they had both spent in the construction-site office at the Reichstag. Grenander remained Hochbahngesellschaft's in-house architect for 30 years.



The underground and urban high-speed train station at Wittenbergplatz, which was redesigned in 1912, remains to this day one of the most striking buildings in Berlin's public transport network.

Some years later – in the entrance hall at Wittenbergplatz station – Deutsche Bank installed a large plaque commemorating the formation of Hochbahngesellschaft in 1897.



Specimen of the first 1,000-mark shares in 'Gesellschaft für elektrische Hoch- und Untergrundbahnen in Berlin', which were issued in 1897.



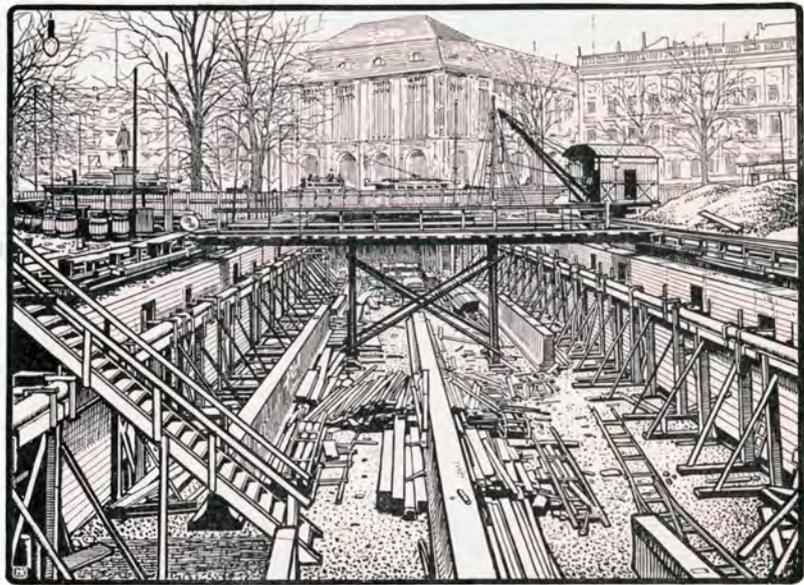
Many of the underground and urban high-speed train stations that he designed – such as those at Wittenbergplatz and Alexanderplatz – remain intact to this day.

After considerable wrangling with Charlottenburg, which was still a separate town in those days, it was decided to build a 'subterranean' railway – rather than an elevated one – in Taentzienstrasse and to extend the line as far as the so-called 'Knie' (now Ernst-Reuter-Platz) to the west of Zoologischer Garten. Berlin's town planning and building control authorities had in the meantime overcome their concerns about a train line being built partially underground. This meant that the line could now be extended further into the city centre, and the amended plans could be incorporated into the ongoing project.

Hochbahngesellschaft initially had share capital of 12.5 million marks. Its shares were issued for subscription at a price of 105 per cent in October 1897. The sales prospectus not only described the exact route of the railway line but also contained details of the track's specifications and the maximum



Start of construction on the underground section of the main line (above) and at Leipziger Platz (right).



□ Ausführung der Untergrundbahn auf dem Leipziger Platz □

train speeds permitted: “The railway will be used to transport passengers and is to be operated electrically. The entire train line is to be built as standard gauge and to consist of two tracks on a special roadbed that is separate from the street traffic. A top travelling speed [...] of 50 kilometres per hour is permitted by the official licence.”⁴

The overall project of Berlin’s elevated and underground railways was now over ten kilometres in length. The majority of the line – roughly eight kilometres – was to be built on viaducts and connect eleven elevated stations. There was also two kilometres of underground line linking three underground stations. The planners at the time specified that the platforms should be 80 metres in length, which was sufficient for a six-carriage train. Lines were subsequently also designed for eight-carriage trains, which required much longer platforms.

The main line from Zoologischer Garten to Warschauer Brücke – including the branch line to Potsdamer Platz – was finally completed after around five-and-a-half years of construction work. The inaugural ‘VIP trip’ took place on 15 February 1902 on the route from Potsdamer Platz via Zoologischer Garten and Stralauer Tor and back to Potsdamer Platz. The VIPs taking part in this inaugural trip included several Prussian government ministers. Travel on the new underground line was opened to the general public on 11 March.

22.5 million passengers travelled on the main line of Berlin’s elevated and underground railways during their first year of operation. Kemmann’s calculations had proved to be almost exactly right: he had forecast 22.7 million passengers.

“By providing an innovative and high-speed form of transportation, the railway increasingly won the public’s applause and the authorities’ goodwill and – which was especially important for future developments – eventually the confidence of the money markets as well”⁵, wrote Paul Wittig in a retrospective article praising Max Steinthal’s achievements on this project. Its financial

Being able to work for a cutting-edge transport company possessed a certain appeal. Train drivers and conductors posed proudly in front of a train on the first elevated and underground train line, which was opened in 1902. Among them was Martin Dibobe (third from left), who originally came from Cameroon and later became a prominent human rights campaigner.



returns initially rose from between 3 and 4 per cent of the share capital to a fixed rate of 6 per cent at the outbreak of the First World War.

However, Steinthal's aspirations went beyond the mere construction of railways. He was the first in Berlin to realise the idea of populating unbuilt, undeveloped areas outside the city by pursuing proactive transport policies. There had been no such thing as the carefully planned coordination of urban development and local public transport in the late 19th century, which is why Berlin's public transport system had to fight its way through the urban sprawl of the time. This was to be more carefully planned in future. Steinthal was instrumental in setting up the real-estate companies Neu-Westend Aktiengesellschaft für Grundstücksverwertung in November 1903 followed by Bodengesellschaft am Hochbahnhof Schönhauser Allee AG in 1906.

The high-speed railway lines were intended to blend in harmoniously with the newly built residential areas.



Schnellbahn im Vorstadtgebiet.



One of the first share certificates issued by the real-estate company Neu-Westend Aktiengesellschaft in 1904. Max Steinthal signed on the left on behalf of the supervisory board.

The necessary funding was based on advance calculations, according to which the costs of railway construction and the operating subsidies required were to be covered by the increase in value that the plots of land concerned would achieve as a result of the high-speed train connection.

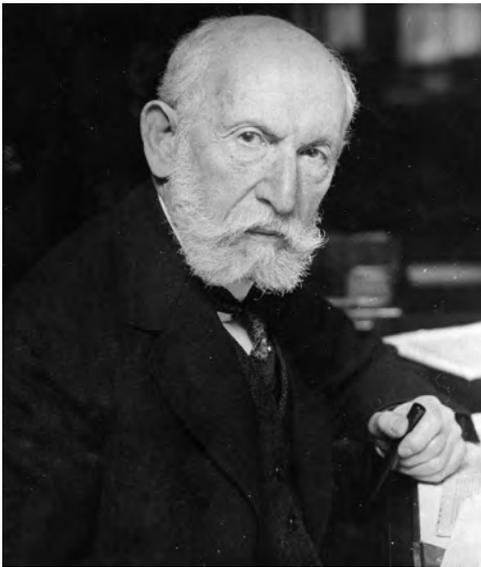
The formation of Neu-Westend Aktiengesellschaft with share capital of 12 million marks had been facilitated by the fact that Deutsche Bank – acting in its capacity as managing director – had acquired 13 hectares of land in the area to be developed west of the centre of Charlottenburg and then transferred this property – as well as all of its rights arising from the existing agreements – to the new real-estate company. Steinthal’s concept proved to be a success and was applied to several other Berlin suburbs.

Steinthal himself had once admitted that the work he did in connection with Berlin’s public transport system and the associated real-estate companies would occupy the time of more than ‘a quarter of a director’ at Deutsche Bank. And yet he remained committed to these causes and tried to use this ‘quarter’ of his working time as effectively as possible, which he achieved by preparing meticulously for the many meetings at ‘his’ companies. And he was prepared for a fight: when a rival consortium tried to acquire a majority stake in Hochbahngesellschaft by buying more and more shares, Steinthal – a highly experienced stock market observer – recognised the danger in time and took preventive action. Deutsche Bank sought to fend off this attack by arranging for 10 million marks worth of shares to be issued immediately and was therefore able to retain its controlling stake.

The period during and after the First World War saw a shift in the guiding principles governing Berlin’s transport policy, abandoning the more private-sector-driven running of the city’s public transport system in favour of a more

municipally centralised organisational structure. Above all, the incorporation of the town of Charlottenburg – whose territory included a sizeable proportion of the capital’s public transport network – into Berlin and the creation of a single municipal administrative authority for ‘Greater Berlin’ in 1920 weakened the position of Hochbahngesellschaft, which now had only one negotiating partner. Berlin’s city council was then able to put considerable pressure on Hochbahngesellschaft, especially as the council already owned a large proportion of the city’s tram and bus network. A contract governing Berlin’s elevated railways was signed on 10 July 1926 and meant that the city council obtained the right to decide how the entire underground train network was run when it acquired majority shareholdings in the various transport companies – including Hochbahngesellschaft – by the end of 1927. Hochbahngesellschaft’s shareholders received an attractive offer from Berlin’s city council to exchange their shares for a 7 per cent municipal bond of the same nominal value (1,000 reichsmarks) – which was redeemable at 102 per cent – plus 200 reichsmarks in cash. From a financial perspective, Max Steinthal welcomed this offer to Hochbahngesellschaft’s shareholders. On a personal level, however, he agreed only reluctantly to the company being transferred to Berlin’s city council, given that he had devoted so much of his time and energy to Hochbahngesellschaft since it was set up in 1897. He stepped down from his position as chairman of the supervisory board on 8 April 1927. Finally, on 1 January 1929, Hochbahngesellschaft sold its property, plant, equipment and vehicles to the recently formed municipal entity Berliner Verkehrs-A.G., which nowadays operates as Berliner Verkehrsbetriebe (BVG), and then went into liquidation – a process that was completed by 1931.

By the time Steinthal stepped down from Hochbahngesellschaft’s supervisory board, the company’s transport network had grown from just over 10 kilometres originally to 55 kilometres. Its initial share capital of 12.5 million marks had increased to 175.2 million reichsmarks. At the end of 1927 – after deduction of repayments that had already been made – fixed-interest bond liabilities totalling 80.7 million reichsmarks were also available, which were used to meet the cost of the railway’s extension works and equipment.



The work that Max Steinthal (pictured in old age on the left) had done on behalf of Berlin’s elevated railway was officially recognised when a commemorative plaque was installed at Alexanderplatz underground station in 1930.



In 2020, by comparison, BVG was operating 173 underground train stations and 803 tram stops, while the nine underground lines currently in operation cover a combined distance of 153 kilometres.

Just as Hochbahngesellschaft was about to become history, bronze plaques commemorating Max Steinthal and Paul Wittig were installed at Alexanderplatz underground station – the city’s largest – in 1930, and these were followed by a similar plaque for Gustav Kemmann in 1932. Just one stop further down the line at Klosterstrasse – very close to the house in which Steinthal had spent his childhood and youth – a relief portrait of him had adorned the underground station since 1913.

Back in 1923, Steinthal had summarised the work he had done for Berlin’s elevated railway as follows: “You know how passionately devoted I am to this undertaking. Representing Deutsche Bank in a financial and commercial capacity, I am extremely proud to have been given the opportunity to take part in this project, which was planned by the brilliant Werner von Siemens and executed by his firm Siemens & Halske.”⁶

Under the National Socialist regime, however, the outstanding achievements displayed by Max Steinthal – who was Jewish – during his more than 60 years of working for Deutsche Bank and over thirty years in the service of Berlin’s public transport system suddenly counted for nothing. He had to resign from all of the official positions he still held. Despite the fact that Jews were increasingly being deprived of their rights, Steinthal decided not to emigrate. He died in a Berlin hotel room two weeks before his 90th birthday after having been forced to sell his house in Uhlandstrasse the previous year. The plaque commemorating Steinthal at Alexanderplatz had been removed as early as 1933. It was only in 2002 that it was recreated and reinstalled there.

Reinhard Frost

¹Letter from Max Steinthal to Georg Siemens dated 15 April 1892, HADB, S305

²Ibid.

³Siemens & Halske’s draft of an electric urban high-speed rail network for Berlin, 1894, p. 17, HADB S305

⁴Quoted from Hochbahngesellschaft’s sales prospectus dated October 1897, HADB, S306

⁵Paul Wittig: Max Steinthal in seinem Wirken für die Berliner Hoch- und Untergrundbahn, in Monatshefte für die Beamten der Deutschen Bank und Disconto-Gesellschaft, Issue 12, 1930, p. 197 f.

⁶Ibid., p. 199