



**European road and electricity networks in the 20th century:  
Imagination, contestation, realization**

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# European road and electricity networks in the 20th century: Imagination, contestation, realization<sup>1</sup>



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## 1. INTRODUCTION

Infrastructures, like roads and electricity networks, are among the largest and most important technical artefacts that exist today. They are omnipresent, pervasive, entrenched in the socio-economic landscape and increasingly taken for granted. They are also considered an important precondition for modernity.<sup>2</sup> For example, according to electrical engineers rationalization was as one of the fundamental elements “strongly associated with the techniques and devices of modernity, especially those that could be seen as challenging physical and conceptual boundaries”.<sup>3</sup> Among infrastructures electricity and road networks have a special position in modern history as they can be considered the epitomes of technological infrastructures of the 20th century.<sup>4</sup> During that century both networks have undergone profound changes and they themselves changed everyday life significantly.

It is important to point out here the dual role of infrastructures. On the one hand, infrastructures enable ‘flows’, which are crucial for international trade. At the same time, infrastructures also create dependence and vulnerability.<sup>5</sup> They can get destroyed, which happened on a massive scale after both World Wars. Furthermore,

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<sup>2</sup> Paul N. Edwards (2003), “Infrastructure and modernity: Force, time, and social organization in the history of sociotechnical systems”, in: Thomas J. Misa, Philip Brey and Andrew Feenberg (eds.), *Modernity and technology*, Cambridge: MIT Press, pp.185-225.

<sup>3</sup> Jo-Anne Pemberton, “New worlds for old: the League of Nations in the age of electricity”, in: *Review of international studies*, 28, (2002), pp.311-336, here: p.327. She gives the example of the book *Forward from chaos* by A.P. Young. He rendered rationalization as a metaphysics which he called ‘Industrial Flow’ and treated electrical machinery and scientific methods as its congealed expressions.

<sup>4</sup> Branding the 20th century as the ‘century of the car’ illustrates the point. See John Urry, “The ‘system’ of automobility”, in; *Theory, culture & society* 21, 4/5, (2004), pp.25-39, here p.27,.

<sup>5</sup> Erik van der Vleuten and Geert Verbong, ‘Under Construction: Material integration of the Netherlands.’ *History and technology* 20, 3, (2004), pp.205-226.

regulatory barriers serving nationalistic and autarkic purposes can hamper their use, as happened after World War I.

This paper takes a European point of view on infrastructures. The ultimate goal is to better understand how network building connected to wider societal changes in Europe.<sup>6</sup> For a true understanding of the process of European integration it is important to investigate the dynamics of material underpinnings of the creation of a common market and a supranational polity. Throughout the 20<sup>th</sup> century ‘Europe’ has not only been an *economic* and *political*, but also a *technological* project. Designs for electricity and road networks can hence be interpreted as network blueprints and visions of Europe at the same time. ‘Europe’ is an actor category in this respect, not a fixed geographical entity.<sup>7</sup>

This paper will give a bird’s eye view of the development of the European electricity and road networks in the 20th century, which nowadays span the continent – and beyond. It focuses on the international level, both in content and sources. It gives a short overview of the diversity of plans, comparing in particular the Interbellum and post-WW II reconstruction period. During the Interbellum a plethora of far-ranging designs caught the minds of engineers and politicians, but they would eventually know little success. In the after-war such plans re-emerged and were partially executed. Contrasting the 1930s and the 1950s and comparing the road and electricity networks can provide insight into factors that played a role in failure and success of infrastructure development on a European level. Thus, this paper brings together how networks were imagined, how they were negotiated and often contested, and to what extent they were realized.

## 2. INTERBELLUM

The atrocities of World War I did not fail to leave their imprint on international relations, but the effects of the war were rather heterogeneous. On one hand, countries retroceded behind their national frontiers. On the other, the League of Nations was created as ‘an international forum for discussion’, seeking solutions for problems in

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<sup>6</sup> Erik van der Vleuten and Arne Kaijser, “Networking Europe”, in: *History and technology* 21, 1, (2005), pp.21-48.

<sup>7</sup> Thomas J. Misa and Johan Schot, “Inventing Europe: Technology and the hidden integration of Europe”, in: *History and technology* 23, 1, (2005), pp.1-19, here p.8. Some even claim that ‘Europe’ only existed in historical relations and fields of power. See John Borneman and Nick Fowler, “Europeanization”, in: *Annual review of anthropology*, 26, (1997), pp.487-514.

need of international coordinated action.<sup>8</sup> It was a reflection of “the belief that a united Europe was the only way to achieve economic stability and peace and thus overcome petty European nationalism.”<sup>9</sup>

The bulk of the League’s work took place in its many technical committees. The League was especially satisfied with its work on communications and transport, of which electricity and road transport both formed part.<sup>10</sup> The link between the technical work and the international socio-economic and political situation was crucial. During the preparations for the first conference on the freedom of communications and transit the claim was made that “the burning question of the hour is world-wide economic restoration, at present menaced by a universal exchange crisis, of which the general disorganisation of transport is at the same time a cause and a result. [...] The Communications and Transit Conference will contribute to this object by endeavouring [...] to remedy the present dislocation or suspension of international communications.”<sup>11</sup>

The League of Nations did not extensively deal with electricity and road transport in its early years. The first General Conference on Communications and Transit in Barcelona did not deal with road transport, for example, whereas it did result in international agreements for other transport modes.<sup>12</sup> But soon both networks gained importance. In the intellectual debate on European decadence and the concomitant fascination for the achievements of the United States electricity and automobility played an important role. Both networks mushroomed in America and became part of the image of America as a technological nation.<sup>13</sup>

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<sup>8</sup> Mark Mazower, *Dark continent*, (London: Penguin Books, 1998), p.64.

<sup>9</sup> Katiana Orluc, 'Decline or renaissance: The transformation of European consciousness after the First World War', in Bo Stråth , ed., *Europe and the other and Europe as the other* (Brussels: Peter Lang, 2000), p. 125.

<sup>10</sup> “The Communications and Transit Organisation [...] has one of the most impressive records of all the technical organisations.”, Secretariat of the League of Nations, *The aims, methods and activity of the League of Nations*, (Geneva, 1935), p.140. On the work of the committees, see H.R.G. Greaves, *The League committees and world order: A study of the permanent expert committees of the League of Nations as an instrument of international government*, (London: Oxford University Press, 1931).

<sup>11</sup> Historical Archive of the League of Nations (LoN), 20/31/58, First general conference on freedom of communications and transit. Preparatory documents. (May 1920), p.17.

<sup>12</sup> See *League of Nations Barcelona Conference: Introduction and complete text of conventions and recommendations adopted*, (Lausanne: Payot, 1921)

<sup>13</sup> See Thomas Hughes, *American genesis: A century of invention and technological enthusiasm 1870-1970*, (New York: Viking, 1989). America as an example for Europe to emulate played an important role in the work of Count Coudenhove-Kalergi, founder of the Paneuropa movement. See Richard Nikolaus Coudenhove-Kalergi, *Apologie der Technik*, (Leipzig: Verlag der Neue Geist, 1922) and *Revolution durch Technik*, (Wien: Paneuropa Verlag, 1932).

The best known attempt at European unification launched by the League was the proposal for European Federation by French minister of foreign affairs Aristide Briand. Less known is that Albert Thomas, the inspired director of the International Labour Organisation (ILO), formulated a comprehensive plan for European public works as a corollary to Briand's initiative.<sup>14</sup> Thomas wanted to tackle the economic troubles of the epoch, combat unemployment and at the same time achieve durable peace on the continent through constructing the elements of a 'new Europe'.<sup>15</sup> International cooperation of a practical kind was deemed an adequate means to these end.<sup>16</sup> Also the plan meant to tie the economies of Eastern and Western Europe closer together. Thomas was influenced by the work of Delaisi, a French economist who wrote several works on this theme and also participated in the formulation of a finance scheme for the European public works, especially those in the east.<sup>17</sup>

Several infrastructures, including electricity and motorway networks, formed part of Thomas' project. Road interest groups were quick in formulating plans in response to Thomas' initiative. They organised two European motorway congresses in the early 1930s to discuss far-flung grand designs for a European motorway network.<sup>18</sup> Motorways were roads for the exclusive use of motorized vehicles with limited access points and without level crossings.<sup>19</sup> The idea of the motorway was launched at the beginning of the 20<sup>th</sup> century,<sup>20</sup> and in the 1920s the Italian Piero Puricelli constructed the first motorways of Europe in the north of Italy. However, his broader ambition was a network across the continent (see Figure 3).<sup>21</sup> In fact, at the time motorways were conceived as inherently international in character.<sup>22</sup>

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<sup>14</sup> LoN, A.46.1930.VIII - LoN: Documents relating to the Organisation of a System of European Federal Union. Geneva, September 15th, 1930.

<sup>15</sup> BIT, CAT 11A/2/3 - Travaux public. II. Production et transport d'énergie. 3. Banque générale pour l'industrie électrique. Conference on 'Reseaux Internationaux', held 12 December 1931, p.2.

<sup>16</sup> Ingrid Heckmann-Strohkark (1999), "Der Traum von einer europäischen Gemeinschaft: Die internationalen Autobahnkongresse 1931 und 1932", in: Martin Heller & Andreas Volk (eds.), *Die Schweizer Autobahn*, Zürich: Museum für Gestaltung, pp.32-45, here: p.34.

<sup>17</sup> The idea to spread modernisation to the less developed eastern part of Europe is best expressed in: Francis Delaisi, *Les deux Europes*, (Paris: Payot, 1929).

<sup>18</sup> Lando Bortolotti, "I congressi autostradali internazionali del 1931 e 1932 e le prime proposte di un sistema autostradale Europeo", in: *Storia urbana* 75, (1996), pp.5-26; Heckmann-Strohkark, op.cit.

<sup>19</sup> Gijs Mom, "Roads without rails: European highway-network building and the desire for long-range motorized mobility", in: *Technology and culture*, 46, 4, (2005), pp.745-772, here: note 3, p.746.

<sup>20</sup> The first *Congrès International de la Route* in 1908 put the issue on the international technological agenda, organising a session on 'la route future', see Mom, 'Roads without rails', p.755.

<sup>21</sup> "der wahre Inhalt meines Planes ist das europäische Straßennetz.", cited in: Hans-Christoph Seebohm (ed.) (1962), *HAFRABA – Bundesautobahn Hansestädte-Frankfurt-Basel: Rückblick auf 30 Jahre Autobahnbau*, Wiesbaden: Bauverlag, p.5, see also: Piero Puricelli, *Autostrada Bergamo-Milano*, (Bergamo: Istituto Italiano d'Arti Grafiche, 1927), p.7 (copy in CAT 11C.4).

<sup>22</sup> Heckmann-Strohkark, 'Der Traum von einer Europäischen Gemeinschaft', p.32.

The initiatives fitted perfectly into Thomas' project and the ILO hosted the first *Congrès International des Autoroutes* in its headquarters in Geneva (31 August – 2 September, 1931). In his address to the second Congress in Milan (18-20 April 1932), Thomas summed up the benefits the motorways would have: “qui ne voit la fécondité d'un projet tel que celui que nous nous permettons de suggérer? Il assurerait un essor nouveau des communications internationales et il fournirait une occasion nouvelle de coopération entre les peuples. Il constituerait un remède immediate à la crise de chômage. Il pourrait amener un renouveau de la prospérité.”<sup>23</sup> It shows quite clearly that Thomas wanted to serve many goals with his plan.

The Technical Commission of the first congress proposed a network that was skewed towards the northwestern part of the continent (see Figure 2). The second congress adopted a 14.000-kilometer design to be built in five years (1933-1937). Thomas was mentioned as its author, but Puricelli was its true creator.<sup>24</sup> The cooperation of the League was actively sought, but the Road Sub-Committee declined to participate. It did not think that there was a true need for motorway networks of this scale, given the low motorization levels. Furthermore, it would prefer to break down regulatory obstacles to international road transport before engaging in such a costly adventure.<sup>25</sup> The League's officials knew that this was not an easy thing to achieve. At the European Conference on Road Transport it organized in March 1931 international commercial motor transport was the single most important item on the agenda. However, the attempt to regulate this kind of traffic ended in complete failure and the conference decided “to suspend its work on the Convention on the International Regime of Commercial Motor Transport.”<sup>26</sup>

The plans would not prosper in the end. First, financing the huge investments needed had been a big problem from the start and it was never solved in a satisfactory way. Second, the plans entailed a degree of international cooperation that was not feasible at the time. Third, many of the stretches had been drawn on the map without taking national interests into consideration. The worsening political climate played its part too, but it did not necessarily put an end to such plans. This is illustrated by a plan developed by the German engineer Kurt Kaftan on the order of Generalinspektor für das deutsche Straßenwesen Todt. Kaftan took the German Autobahn network as a

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<sup>23</sup> Archive du Bureau Internationale du Travail (BIT), Cabinet Albert Thomas (CAT) 6B-7-2-1, Discours de M. Albert Thomas, II<sup>me</sup> Congrès international des autoroutes.

<sup>24</sup> BIT, CAT 11D.1, Letter 7-4-1932; CAT 6B.7.2.2, [Nyffeler] to Puricelli, 31-3-1932; Bortolotti, “I congressi autostradali internazionali”.

<sup>25</sup> BIT, CAT 6B.7.1, J.L. to Fuss, 5-2-1931.

<sup>26</sup> LoN, Final Act, C.234.M.102.1931.VIII, 10-4-1931, p.8.

point of departure for his European network sketch. His design was even more monumental than its predecessors, but it would ultimately share the fate of the predecessors it had so meticulously sought to surpass (see Table 1).

The electric engineering community responded to the opportunities offered by Briand's initiative with the same enthusiasm as the road engineers. French, Swiss, German, Swedish/British, and Hungarian plans for a pan-European electricity network were drafted.<sup>27</sup> But most of these plans were the efforts of individuals.<sup>28</sup> Thomas initiated the most thorough action. As with roads, he actively sought their collaboration and engaged with Swiss banks to ascertain the financial possibilities of a European-wide network. He initiated talks with French experts to determine the technological possibility of such an undertaking.<sup>29</sup> In 1932, just before his death, Thomas had concluded that the use of 400 kilovolt (kV) transmission lines was out of the question, thus making the construction of a single European grid economically inefficient at this stage.<sup>30</sup> According to him, the best solution would be to connect the increasingly expanding national networks with cross-border connections, for which the reigning standard of 220 kV would suffice.

Electricity was marvelled at the time as the harbinger of modernisation, for both ordinary citizens and engineers.<sup>31</sup> In the first four decades of the 20th century, electricity networks slowly expanded all over Europe and national networks were constructed. Business interests were certainly important. In the first decades of the 20<sup>th</sup> century electricity, and the construction of grids and power plants, became the playing field of big corporations, and conglomerates of banks and engineering firms, most of which operated internationally.<sup>32</sup> While serving their firms interests,

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<sup>27</sup> Besides others, see for example: Oliven, Figure 1; Georges Viel, "Etude d'un reseau 400.000 volts", in: *Revue generale de l'electricité*, 28, (1930); Ernst Schönholzer, "Ein elektrowirtschaftliches Programm für Europa", in: *Schweizerische Technische Zeitschrift*, 23, (1930).

<sup>28</sup> R.E.B. Crompton and Alfred Ekstrom tried to have the *Communications and Transit Organisation* of the League of Nations to take their proposal into consideration. This failed as the League could only treat proposals brought forward by governments.

<sup>29</sup> BIT, CAT 11A-2-3-2, - Groupement d'étude de réseaux électriques internationaux. Statuts, n.d.

<sup>30</sup> BIT, CAT 6B-7-3 - Questions économiques; monétaires et financières. Grands travaux publics nationaux et internationaux. Quelques plans de grands travaux publics - super-réseaux électriques Européens. November 1928 - May 1932; Folder 1, Letter Heineman to Henri Cahen, 29 December 1931.

<sup>31</sup> David E. Nye, *Electrifying America: Social meanings of a new technology, 1880-1940*, (Cambridge: MIT Press, 1990), p.157.

<sup>32</sup> An insightful edited volume, dealing with the structure of the electricity supply industry is: Dominique Barjot, Henri Morsel, Sophie Coeuré, and Coraline Clément, *Stratégies, gestion, management: les compagnies électriques et leurs patrons, 1895-1945 : actes du 12e colloque de l'Association pour l'histoire de l'électricité en France les 3, 4 et 5 février 1999* (Paris: Fondation Electricité de France, 2001).

engineers usually worked on projects of unquestionable social utility; hydroelectric dams, street railways, electric machinery that improved working conditions in mines and factories. For the American engineer/inventor Charles Steinmetz, working for the General Electric was a logical step on the path towards socialism, as for him 'the large corporation served as a model of the rationality needed in the rest of society'.<sup>33</sup>

There was a strong incentive for rational organisation of electricity supply. Coal, the most important energy source at that time, was scarce in the immediate post-war period. As an alternative, better use of hydroelectric power was sought. But the main drawback of 'white coal'<sup>34</sup>, as it was called, is that water is not always available in the same volume throughout the year. Therefore, interconnecting hydroelectric with fossil-fuelled plants could lead to an optimised power supply system.<sup>35</sup> As geography limited hydro potential, as well as coal reserves, to just few countries, international cooperation was necessary to exploit this potential.

Besides the economic reasons behind such cooperation, electrical engineers also participated in the 'European project'. With their proposals for networks that physically connected all states and electrified all economies, they would help create mutual dependence. Making the aggregate of European nations dependent on one huge power-supplying network would lower the potential for future conflict by creating common interests, these engineers thought. German architect Herman Sörgel, creator of a hydroelectric power plan for the Europe's electrification wrote in 1932 that: "Die Verkettung Europas durch Kraftleitungen ist eine bessere Friedengarantie als Pakte auf dem Papier; denn mit der Zerstörung der Leitungen würde sich jedes Volk selbst vernichten."<sup>36</sup>

Concurrently, the League of Nation's Subcommittee on Electric Questions was trying to set up agreements for regulating international electricity transit and the construction of power stations in streams or lakes affecting more than one country.

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<sup>33</sup> Nye, *Electrifying America*, p.174.

<sup>34</sup> "The march of science. White coal for black: American achievements in water-power electricity", in: *Current history*, 12, 6, (1920).

<sup>35</sup> This is what Thomas Hughes labelled 'economic mix': profiting from the different attributes of fuel types. See: Thomas P. Hughes, *Networks of power: Electrification in Western society, 1880-1930*, (Baltimore: Johns Hopkins University Press, 1983), pp.346, 366-367.

<sup>36</sup> Herman Sörgel, *Atlantropa*, (Fretz & Wasmuth / Piloty & Loehle: Zurich / München, 1932), pp.118-119. Sörgel envisioned a dam spanning the Gibraltar Strait, capable of generating enough power for the whole Europe, making all European states dependent on this huge power source. Also see: Alexander Gall, *Das Atlantropa-Projekt: Die Geschichte einer gescheiterten Vision. Herman Sörgel und die Absenkung des Mittelmeers*, (Frankfurt: Campus Verlag, 1998); Dirk van Laak, *Weisse Elefanten* :

While being pioneering, the Conventions could hardly be called successful as not many states ratified them.<sup>37</sup> With the Conventions inefficacious and the plans for a European grid rudderless, the role of the state gradually took over in most countries and nationally operated networks were constructed.<sup>38</sup>

Summarizing, we can see that the Interbellum was a period in which many initiatives in the field of infrastructures were launched, several of them in response to or as a result of Briand's project for European Federation and Thomas' initiative for European public works. The plans remained fantasies due to their huge cost and because they left too little room for national interests. Taking the European whole as a point of departure, the designers drew lines on the map that did not always serve the interests of the countries that were supposed to participate, nor took existing infrastructure realities into account. The League of Nations, the most important forum for international negotiations during the Interbellum, approached the subject in a more pragmatic way and focussed more on the *operation* of the networks rather than on the networks themselves.

### 3. AFTER WORLD WAR II

In the atmosphere of reconstruction After World War II, many of the plans of the 1930s reappeared. The road plans mentioned earlier formed a point of reference for those planning Europe's motorised future. The utopian prospects of free (auto)mobility for the masses had cast their shadows forward and caught the minds of those designing a similar post-war network.<sup>39</sup> The same was true for electricity, where people were once more thinking in terms of a super-European network, with centralised European operation.<sup>40</sup>

It is therefore no surprise that both networks had a significant role in the European Recovery Plan (ERP, or Marshall Plan). The provision of good transport

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*Anspruch und Scheitern technischer Grossprojekte im 20. Jahrhundert* (Stuttgart: Deutsche Verlags-Anstalt, 1999).

<sup>37</sup> LoN, Box R1121, section 14, series 18088, document 55656x, November 1926. The ratifying states were Czechoslovakia, Danzig, Denmark, the British Empire, Greece, and Spain. Also see; Sir Osborne Mance, *International road transport, postal, electricity and miscellaneous questions*, (London: Oxford university press, 1946), p.148.

<sup>38</sup> G. Verbong, E. van der Vleuten, and M. J. J. Scheepers, *Long-term electricity supply systems dynamics: A historical analysis*, (ECN, 2002), p.18.

<sup>39</sup> Kurt Kaftan (1955), *Der Kampf um die Autobahnen: Geschichte der Autobahnen in Deutschland 1907-1935 unter Berücksichtigung ähnlicher Pläne und Bestrebungen im übrigen Europa*, Berlin: Wigankow, mainly pp.183-192.

<sup>40</sup> Archive of the United Nations Office Geneva (UNOG), ARR 1360, Box 50, ECE; Electric Power. Collection Rostow, Draft, J.Houston Angus, December 13th, 1947.

facilities and sufficient energy output was a precondition for European recovery. The development of infrastructures within the context of post-war reconstruction served multiple purposes. First, they formed a necessary condition for the envisioned production leap. Second, the networks were important from a strategic point of view. This interest was particularly marked towards the edges of the continent. The American government was very concerned about the security situation in countries like Greece and Turkey, which had suffered major communist insurgencies both during and after the war. Electricity and transport infrastructures would facilitate defence logistics and the beneficial economic effect might take away the feeding ground for communism.<sup>41</sup>

The importance of electricity for the rehabilitation of the European economy was easily recognised. The ERP initially advocated a European Program for strengthening both physical and institutional links between Europe's electricity industries. Whereas the ERP program for European electric collaboration failed utterly, institutional cooperation was brought about by the Union for the Coordination of Production and Transmission of Electricity (UCPTE) in 1951. This organisation was in fact very much favoured by the United States, which facilitated a study tour for European electric engineers and network operators to get them acquainted with American methods and operation practices.<sup>42</sup> The UCPTE united western European countries, and strove to rationalise cross-border production, the coordinated construction of international connections, and national reduction of reserve capacity. In the next decade, two similar organisations were established in Scandinavia (Nordel, 1963) and Eastern Europe (CDO/IPS, 1964). A reason for dismissing the recurrent idea of a super-European network again was that during WW II network-building had continued. Control and coordination had become a national task in most countries. Nevertheless, international - or European - cooperation had also become a reality. In all three regions - Eastern and Western Europe, and Scandinavia - countries became ever more interconnected.

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<sup>41</sup> For a more elaborate analysis of the multiple functions of the road network in post-war Europe, see Frank Schipper, ['You too can be like us': Americanising European \(road\) transport after WWII](#), Paper presented at the T2M Conference, York (UK), October 6-9, 2005, TIE Working document no. 10. For the multiple and strategic functions of infrastructures, see Vincent Lagendijk and Frank Schipper, 'Seducing the Apostate State: Road and Electricity Networks in Yugoslavia, 1948-1980', Paper presented at the TIE-Workshop, Eindhoven/Rolduc, 20-23 April 2005.

<sup>42</sup> OEEC, *Interconnected power systems in the USA and Western Europe: The report of the Tecaid mission, the report of the electricity committee*, (Paris: 1950).

The foremost political aspect of the expansion of the electricity network in Europe became the interconnection with Eastern Europe. A main advocate for such an extension was the United Nations Economic Commission for Europe (ECE).<sup>43</sup> Over the years there were several attempts to connect this Eastern European network with its western counterpart – the main opponents being the United States and its NATO allies.<sup>44</sup> In the 1970s, decreased Cold War tensions brought more opportunities for East-West collaboration in the electricity field. As a matter of fact, opposition from Western Europe diminished, while Eastern Europe - the USSR included - actively proposed *more* cooperation and interconnections.<sup>45</sup> Still, only piecemeal progress was made until the fall of the Berlin wall and the disintegration of the USSR.<sup>46</sup> Then Czech Republic, Slovakia, Hungary, and Poland founded a separate organization named CENTREL, with the specific aim to seek entrance to the Western European system.

The ECE was also active in the field of road transport. After the failure to regulate international commercial motor transport before the war, in September 1949 a *Convention on Road Traffic* was concluded in Geneva under its auspices. It had been preceded by ad hoc ‘freedom of the road’ agreements liberating commercial road traffic between European countries on a large scale.<sup>47</sup> It was an important step forward in breaking down the regulatory barriers existing between European countries.

There was also attention for the network as a corollary of the freedom of the roads agreements. The most important achievement in this respect was the *Declaration on the Construction of Main International Traffic Arteries*, concluded in

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<sup>43</sup> The ECE had been founded in 1947 by a resolution that explicitly asked attention for the European transport situation in the after-war. It was formally part of the United Nations system and meant to stimulate European economic cooperation. For more on its origins see Yves Berthelot and Paul Rayment, 'The ECE: A bridge between East and West', in Yves Berthelot, ed., *Unity and diversity in development ideas: Perspectives from the UN Regional Commissions* (Bloomington & Indianapolis: Indiana University Press, 2004).

<sup>44</sup> Vincent Lagendijk, ['High voltages, low tensions. The interconnections of Eastern and Western European electricity grids during the Cold War'](#), paper presented at SHOT Annual Conference 2005, Minneapolis (USA), 3-6 November 2005.

<sup>45</sup> One of many cooperation proposals was made in: UNECE, *Annual report. Economic and Social Council, official records of the sixty-first session - supplement 8*, p.33.

<sup>46</sup> Vincent Lagendijk, "High voltages, easing tensions. The interconnections of Eastern and Western European electricity networks in the 1970s and 1980s", forthcoming, in: *Actes du Colloque. Milieux économiques et intégration européenne au XXe siècle*, Louvain-la-Neuve, 27-29 May 2004.

<sup>47</sup> The first one came into force on 6 December 1947 for six months. Archives of the United States of America, Record Group 59, General Records of the Department of State, Lot 54D389, box 9, , folder 'Economic Commission for Europe', 'Relations of ECE to ERP', n.d., p.9; European Cooperation Administration, 2<sup>nd</sup> Report, 30-9-1948, p.17; OEEC (1949), *Report to the Economic Cooperation Administration on the First Annual Programme*, July 1<sup>st</sup>, 1948 – June 30<sup>th</sup>, 1949, p.39.

September 1950 and forming the basis for the E-road network (see Figure 5). This “co-ordinated plan for the construction or reconstruction of roads suitable for international traffic” was “essential, in order to establish closer relations between European countries.”<sup>48</sup> Belgium, France, Luxembourg, the Netherlands and the United Kingdom were the first five countries to become full parties to the Declaration.

National interests formed the linchpin of the network. To become part of the network, roads should represent “besides the international, a paramount national interest.” This also implied that each country would finance its own sections of the international network.<sup>49</sup> The role of the ECE was to coordinate the different national plans, establish common priorities among countries to make sure that connections would be made on both sides of the border at the same time, and the removal of bottlenecks, both of a purely physical and a non-physical character. It was suggested that neighbouring countries should engage in bilateral discussions to reach agreement on such issues.<sup>50</sup>

In order to assure sufficient supervision of the construction of E-roads, the International Road Federation (IRF) proposed to create a European Road Office. The IRF, founded in 1948, was an important player in the road transport field. The gist of its proposal was to guarantee that governments would earmark sufficient funds for the construction of the international network, especially from taxes on traffic, vehicles, and fuel. The funds of the Office would come from government contributions, international financial bodies like the World Bank and private capital. The IRF wanted the European network to become independent from the whims of the finance ministries, thus assuring a steady budget for road building. It would have served IRF’s credo “better roads mean better living” well,<sup>51</sup> but the working party dealing with the E-roads did not adopt the proposal because it was likely to run into constitutional difficulties in most countries and conflict with the principle of non-divisibility of budget.<sup>52</sup> The arrangement proposed by the IRF was reminiscent of the centralised plans of the 1930s. The participating countries did not want such control from above. Instead a very loose network emerged.

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<sup>48</sup> United Nations Office at Geneva Library and Archive (UNOG), E/ECE/TRANS/WP17/5, 26-7-1950, ‘Draft Declaration on the Construction of Main International Traffic Arteries’.

<sup>49</sup> UNOG, E/ECE/TRANS/WP17/3, 25-7-1950, ‘Report of the Ad Hoc Working Party on its First Session’.

<sup>50</sup> UNOG, E/ECE/TRANS/WP17/3, ‘Report First Session’; E/ECE/TRANS/WP.17/8, 6-2-1951, ‘Report of the Ad Hoc Working Party on its Second Session’.

<sup>51</sup> The French equivalent of the slogan was “route fréquentée crée prospérité”.

#### 4. CONCLUSION

Summarizing, we can say that the Interbellum initiatives became a reality after WW II, but within certain limits and differing substantially from what was envisioned during the 1930s. First, more attention was given to the important issue of network operation. This importance is reflected in the sequencing of some of the international arrangements. For example the Convention on road traffic was concluded before the Declaration on main international traffic arteries, implying that those involved in the discussions were more conscious of the fact that having a network and being able to use it were in fact two quite different things.

Second, the ambition levels of Interbellum fantasies were sky-high: the proposed networks had to be built from scratch within just few years. After the war, these ambitions were watered down significantly. Rather, the networks were taken bit by bit and the initiative was left to the individual countries. The centralized Interbellum plans were decentralized and bilateral cooperation was promoted where neighbouring countries desired it. The top-down model was changed for a bottom-up approach. The same was true for financial arrangements. Proposals for central control, such as the IRF proposal for a European Road Office, did not fit into this new approach and were not implemented.

Third, and related to the previous point, the plans were based to a greater extent on national interests. In the electricity field, this was reflected in the fact that the European super-network was converted into a plan to link up the *national* electricity networks. For motorways, nationally important trunk routes were proclaimed the basis for the European E-network, thus making it easier for countries to participate. Finance, which had proved too big a hurdle in the pre-war plans, was also left to the care of the nation-states themselves.

We witness something reminiscent of the centralized Interbellum plans when we look at the proposals emanating from Brussels today. The role of the EU is beyond the scope of this paper, but it makes for a nice afterthought. For a long time Brussels left infrastructure policy aside. In the field of transport this even led to an ‘inactivity verdict’ of the European Court of Justice, condemning the Council of Ministers for

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<sup>52</sup> E/ECE/TRANS/WP.17/8, 6-2-1951, §10.

failing to develop a common transport policy, as had been envisioned in the Treaty of Rome (1957).<sup>53</sup>

The Commission has moved forward since then and initiated the Trans-European Networks (TEN),<sup>54</sup> which have been made part of the Treaty of Maastricht (1992).<sup>55</sup> Since October 1995, an integrated network of European electricity grids ranging from Poland to Portugal is 'hidden' behind the plug-socket. Since the fall of the Berlin Wall the EU had been supplying TACIS funds to Eastern European countries in order to upgrade their power systems to Western European standards. Currently there is an interconnected European network, or *Trans-European Synchronously Interconnected System* (TESIS), linking the power systems of Eastern and Central, and Western Europe with a frequency of 50Hz. Current European Union policies, such as the *Trans-European Networks* (TEN), seek to improve infrastructural linkages to ensure optimal conditions for implementing a Single European Market for electricity. For transport, the TEN underlines the importance of a multimodal approach. However, the development of certain motorway axes can certainly be found among the TEN priority projects, particularly in Eastern Europe.

This paper has made clear that many other networks with a similar form and function have preceded the TEN-T (transport) and TEN-E (energy) networks. Some of these predecessors remained a paper reality, others still exist today. In the setting of 'European idealism' during the Interbellum they prospered as designs. Their partial realization had to await the phase of 'national realism' after the war. The bottom line is that the EU cannot operate in a vacuum in this field and that Brussels' networks intertwine with the infrastructural remnants of the past. This paper hopes to have highlighted some of the dynamics behind that process.

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<sup>53</sup> Dieter Kerwer and Michael Teutsch, "Transport Policy in the European Union", in: Adrienne Héritier and others (2001), *Differential Europe: The European Union Impact on National Policymaking*, (Lanham: Rowman & Littlefield, 2001), pp. 23-56.

<sup>54</sup> Yet in 2000 "across the EU there (was) still no infrastructure policy", David Banister and others, *European Transport Policy and Sustainable Mobility*, (London: Spon Press, 2000), p.61.

<sup>55</sup> See [http://europa.eu.int/comm/ten/index\\_en.html](http://europa.eu.int/comm/ten/index_en.html).