Electrifying Europe. The power of Europe in the construction of electricity networks

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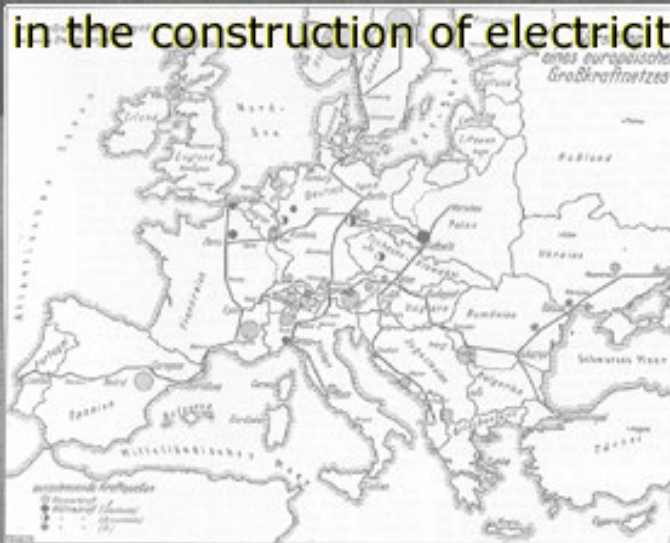
Electrifying Europe

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Research design
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An enabling technology

Gales blazed across the Alpine region as usual at the time of year. In the early morning of the 28th of September 2003 a severe storm forces a tree to sway somewhere near the Italian-Swiss border. Accidentally, and unfortunately, the tree trips a power line. Subsequently, Rome, where an all-night festival in museums, bars, and shops still takes place, plunges into darkness. In the Vatican, where the pope just proclaims new cardinals, backup generators are put into action to light things up.

Not just the capital and the surroundings are affected: from Venice to Sicily, the entire Italian peninsula - except Sardinia - was deprived of electrical power in Italy's biggest blackout ever. Italian authorities point to their neighbours: a damaged ultra high intensity power line in Switzerland or France initiated a chain reaction that resulted in closure of practically every power generator and transmission line in Italy.

Not everyone stomachs this version. Swiss officials, admitting there had been a line failure, deny responsibility. They felt that the inadequate reaction in Italy induced the power outage: "Because of the high volume of exported power to Italy, it is vital that the network operators can be quickly coordinated and react correctly".[2] The French network operator *Réseau de Transport d'Electricité* (RTE) confirms a partial power drop in the Italian grid occurred due to a rupture in a power line spanning the Swiss-Italian border. According to them, there were no failures on the French side, but they found the Italian response all but adequate.

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[1] This research is part of a larger project, funded by the Dutch Science Foundation: Johan Schot, 'Transnational Infrastructures and the Rise of Contemporary Europe', a research proposal awarded by the Netherlands Organization for Scientific Research (NWO), in September 2002, Dossier number 277-53-001.

[2] This was the response of the Swiss Transmission System Operator (TSO). http://powermarketers.netcontentinc.net/newsreader.asp?ppa=8knpq_Zfjqrnpw%5BUok'%40%3E%20bfeiZ!.

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A month after the blackout the *Union for Coordination and Transportation of Electricity* (UCTE) released a report of the events of September 28.[3] The UCTE, in which the Italian, French and Swiss network coordinators participate, presents a chronological overview of the events as well as an analysis of the incident. The report indicates that, although there was a power outage in Italy, the problem transcended the national level. The damaged power line proved to be crucial for the Italian power supply, which mainly relies on the import of electricity.[4]

As usual, the load of the tripped line was divided among other cables. To relieve these lines from excessive load, the Italians decided to cut down their power imports by 300 MW. It did not suffice. A second tree hits a high voltage line, transmitting Swiss power to Italy, causing malfunction. This created an intolerable overload on remaining lines, leaving the UCTE-members no other choice then isolating Italy from the European grid.

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[3] UCTE, Interim report of the investigation committee on the 28 September 2003 blackout in Italy, UCTE report, 27 October 2003, http://www.ucte.org/pdf/Publications/2003/UCTE-IC-InterimReport-20031027.zip.

[4] Notwithstanding the saleability of electricity, it is not a tradable good in the same sense as most commodities - a third observation. In the *Standard International Trade Classification* (SITC), a widely used standard for depicting merchandise, one finds category 77 (*Electrical machinery, apparatus and appliances*) and 873.15 (*Electricity meters*), but not electrical power or energy. This relates to another crucial characteristic of electricity; it cannot be stored for later use. In planning generation, a certain ratio of reserve capacity is maintained to be able to meet peak demand.

This does not prevent trade, on the other hand, but power lines and network capacity restrict its possibilities. Secondly, a network needs to remain stable and in equilibrium at all time; failing parts of the network give extra load to other components. The flow of electricity through the network is difficult to influence, and therefore needs detailed planning.

Related but not interchangeable is *exchange*. Exchange bears on short-term supplies within or between networks. Linking electricity networks can result in a better *economic mix*. A term of Thomas Hughes (in *Networks of power*), economic mix encompasses the increase reliability, security and profitability by combining various types of generation. I will try to clarify this abstract term with an example. Where as Sweden and Norway countries possess aplenty opportunities for hydro plants, Denmark has a thermal-based electricity supply, relying on fuel minerals. Thus through interconnection, hydropower can be exported to Denmark, while the Danish produce extra power in periods of water shortage with their northern neighbours. Also, since electricity producers have to retain a buffer for peak periods, connecting multiple networks results in a common reserve capacity, thus bettering reliability. Therefore, exchange I mostly done on a seasonable basis, and compasses a two-way flow of electricity over the year.

Without such a move, the additional load would also have created imbalances in the Swiss and French systems - the main exporters to Italy -, and through them other nations would be affected as well.

The actual power outage came exactly 2½ minutes after the disconnection of the Peninsula. During this occurrence, parts of Switzerland were covered in darkness as well. In Geneva and its vicinity, the disruption was over after 1½ hours. Italy rejoined the UCTE network two hours later, but it took half a day before the whole of Italy was once again supplied.

Complex interaction

This power outage leads to several observations. A first and more general observation is the obviousness of electricity, or as David Nye puts it, "electricity is an *enabling technology* that is not always noticed".[5] Everyday-practices are depending on an unproblematic and continuing supply of electricity. Without electric current everyday life comes to halt - besides knitting and reading by candlelight of course. Electricity is used unconsciously: it is not only a necessity but also normality. Even the opposite could be argued; those without electricity are looked upon as abnormal and backward – at least in the eyes of Westerners. Electrical appliances are plugged in without noticing difference whether there is Nordic, Eastern European, or Swiss electricity coming out of the wall. Just like numerous other forms of technology, electricity is often treated like a *black box* not to be opened: only if it ceases to run smoothly the content of the "box" is of interest. Or in other words, unless a power failure occurs electricity is conceived obvious.

But such an approach fails to see that, to use David Nye's words, 'in no society was electrification a "natural" or a "neutral" process; everywhere it was shaped by complex social, political, technical, and ideological interaction'.[6] In that sense technology embodies more than just 'hard' physical technological artefacts; they are value ridden. Therefore, Gabrielle Hecht introduced the notion of *technopolitics* in her book on French

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[5] David E. Nye, *Electrifying America. Social meanings of a new technology, 1880-1940*, Cambridge: MIT Press, 1990, 26. My italics.

[6] Ibidem, 138-139. Italics are mine.

post-war identity in connection to nuclear technology, meaning 'the strategic practice of designing or using technology to constitute, embody or enact political goals'.[7] That electricity network constitute of more than just artefacts is well-addressed by Thomas Hughes in *Networks of Power*. Describing the creation of electricity networks in Chicago, Berlin and London as *large technical systems* (LTS), Hughes' definition of a technological system does not only include technical artefacts, but also organizations, components usually labelled scientific, such as books, articles, and university teachings, and legislative artefacts.[8] LTS are social products, constructed by so-called system-builders[9], having their own intern dynamic, which Hughes labelled *momentum*, 'softly' determining future developments and possibilities. For physical objects this is not difficult to imagine, since power plants and lines cannot easily be moved, but institutions can be hard to change as well. Arne Kaijser showed that LTS know 'a soft, institutional legacy', resulting in nation or function specific styles.[10]

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[7] Gabrielle Hecht, "Technology, Politics and National Identity in France", in: Gabrielle Hecht & Michael Thad Allen(eds.), *Technologies of power. Essays in honor of Thomas Parke Hughes and Agatha Chipley Hughes*, Cambridge/London: MIT Press, 2001, 256-257.

[8] Thomas P. Hughes, *Networks of power. Electrification in Western society, 1880-1930*, Baltimore: Johns Hopkins University Press, 1983. Also see Thomas P. Hughes, "The evolution of large technical systems", in: Wiebe E. Bijker, Thomas P. Hughes & T. J. Pinch(eds.), *The social construction of technological systems*, Cambridge: MIT, 1987, 50.

[9] Hughes, "The evolution of large technical systems", 51-52. System-builders, implementers of technological innovations within an institutional and cultural framework, are not necessarily people. Due to up scaling and increasing complexity of systems since the First World War, the system-building process gradually shifted from inventor-entrepreneurs to organisations and governments. After the Second World War, European institutions played a significant role as well.

[10] Arne Kaijser, "The helping hand. In search of a Swedish institutional regime for infrastructural systems", in: Lena Andersson-Skog & Olle Kranz(eds.), *Institutions in the transport and communications industries. State and private actors in the making of institutional patterns, 1850-1990*, Canton: 1999, 223. For a connection between nationalism and electrical engineering style see Mats Fridlund & Helmut Maier, *The second battle of the currents. A comparative study of engineering nationalism in German and Swedish electrical power, 1921-1961*, TRITA-HST Working paper, Stockholm: Royal Institute of Technology, 1996. Hughes came to a similar conclusion in Hughes, *Networks of power*, 404-405.

Unconsciously integrated

A second and more important observation revealed by the Italian power outage, is that the national electricity networks in Europe are, to a large extend, interwoven or integrated. No one - besides the gales and trees - was totally to blame for the blackout, not Switzerland, France, nor Italy: European nation-states rely on other European countries, and do no longer posses full control over power supply and network. The actual blackout occurred because the Italian network was disconnected from the European UCTE-coordinated network, after several incidents happening outside the control of network operators. This shows the interdependence of European countries in their electricity supply, making the electricity network an example of European - infrastructural - integration. In defining integration I distinguish a broad - political integration, economic integration, infrastructural integration, and socio-cultural integration - and narrow definition - meaning the process started after 1952 with the founding of the European Community of Coal and Steel.[11]

Using J. Peter Burgess' definition of European integration, 'the construction of Europe is a *nexus*, an immense meeting place of two radically different – perhaps irreducibly different – orders of discourse: those of *cultural community* and *economic rationality*'.[12] One sees Europe as a mechanism for peace. Naive or not, tying together the European countries by any means possible should prevent the outbreak of destruction like in 1914 and 1939. People like Robert Schuman appealed to such ideals.[13] Another view attributes

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[11] For the broader definition see Hans Knippenberg & Ben de Pater, *De eenwording van Nederland. Schaalvergroting en integratie sinds 1800*, Second revised edition, Nijmegen: SUN, 1990, 13; and Eugen Joseph Weber, *Peasants into Frenchmen. The modernization of rural France, 1870-1914*, Stanford: Stanford University Press, 1976.

[12] J. Peter Burgess, "Coal, steel and spirit. The double reading of European untity (1948-51)", in: Bo Stråth (ed.), *Europe and the other and Europe as the other*, Brussels: Peter Lang, 2000, 430.

[13] The declaration on the 9th of May, 1950 by Schuman, announcing the European Coal and Steel Community contained the phrase: "La mise en commun des productions de charbon et d'acier assurea immédiatement l'établissement de bases communes de développement économique, première étape de la Fédération européenne, et changera le destin des régions longtemps vouées à la fabrication des armes de guerrre dont elles ont été les constantes victimes". Taken from the obituary of Schuman in: Communauté Européenne du Charbon et de l'Acier - Haute Autorité, *12e rapport général sur l'activité de la Communauté. (1er février 1963 - 31 janvier 1964)*, Luxemburg: 1964.

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more importance to the economic benefits of this integration, with Alan Milward as its most outspoken representative.[14] Adapting the narrow definition, as in European integration studies, a distinction is made between the normative proto-integration phase and the actual political integration, after 1957 according to Diez and Wiener.[15] During the actual integration process, both have had their moments and opportunities. To be sure, the two do not necessarily bite each other. Even more, both elements have been very dominant, resulting in a number of political bodies - exemplified by the European government- and economic institutions - clearly represented by the installment of European market with a single currency.

During this proto-phase, collaboration within the range of technological systems, such as infrastructures, was already in place - also on a European base and appealing to ideals of peace through European unity. This technological perspective - material integration - has not yet be examined very carefully. Still, by studying the construction of Europe as a technological project, we can come to new insights of the integration process, and also of the proto-phase. Studying both the construction of the European electricity network and looking at the emergence of a European community thus provides a promising framework. To use Gabrielle Hecht words,

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[14] Alan S. Milward, *The European rescue of the nation-state*, Berkeley & Los Angeles: University of California Press, 1992.

[15] Thomas Diez & Antje Wiener, "Introducing the mosaic of integration theory", in: Antje Wiener & Thomas Diez(eds.), *European integration theory*, Oxford University Press, 2004, 7-10. Of course the value of this proto-phase can be discussed but it remains a fact that most historical works on European integration give attention to earlier ideas of European unity. See for example Derek W. Urwin, *The community of Europe. A history of European integration since 1945*, The Postwar World, London/New York: Longman, 1991 and Pierre Gerbet, *La construction de l'Europe*, Notre siècle, Paris: Imprimerie nationale, 1983. Klaus Larres even goes as far as saying that "post-war movement for European integration is above all rooted in the attempts made after the First World War by [..] Aristide Briand and […] intellectually underpinned by Count Coudenhove-Kalergi's Pan-European Union"; Klaus Larres, "International and security relations within Europe", in: Mary Fulbrook (ed.), *Europe since 1945*, Oxford university press, 2001, 193.

"Opening the black boxes of culture and technology simultaneously can [...] give us insight into how technologies constitute a terrain for transforming, enacting or protesting power relations within the social fabric."[16]

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[16] Gabrielle Hecht, *The radiance of France. Nuclear power and national identity after World War II*, Inside technology, Cambridge: MIT Press, 1998, 9-10.

Electrifying Europe

Interweaving networks

This example of a major blackout shows to that national electricity networks in Europe recently have become largely interwoven. Still, there is no such thing as *the* European network. What is lacking is central control; there is no single European institution building, coordinating, and controlling the whole network. A fundamental question still remaining is what is and was conceived to be *the* European network, since the grid was not build by a collective European effort, but on a national level in between roughly 1910-1970. Since the 1950s a supranational level was added for coordination (e.g. the UCPTE), but this left the actual system-building with the national governments.[17] Since the mid-1990s the deregulation and liberalisation policy of the EU the construction of power plants, and to some extent the building of power lines, is shifting to private companies. Since the 1950s, national networks became increasingly interconnected and integrated, creating mutual dependency, but also excluding other nations.

Initiatives for transnational connections might have been institutionalised after the Second World War, but focussing on pre-war initiatives, cooperation, and interconnection could reveal older patterns and thoughts of integration. Ideas for European transnational connections and a unified electricity grid stem from the post-war period, and that certain visions of Europe were embedded in those thoughts which continued to play a role. In my PhD-thesis, the building of the European grid will be central, as influenced by visions on Europe, while looking at planners, builders, and legislators. In case of our object of study, two reasons for connecting grids stand out: acquiring a better economic mix, and creating interdependency between European countries. Interweaving economic performance and infrastructure development, future conflicts in Europe became harder to imagine. Several engineers and organisations had such ideas and aims. By looking at the way transnational electricity networks were constructed within Europe, by studying the organisations and institutions involved, one should get a better understanding of the impact of thinking about Europe.

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[17] G. Verbong, E. van der Vleuten & M. J. J. Scheepers, *Long-term electricity supply systems dynamics. A historical analysis*, ECN, 2002, 16-22.

What is clear from preliminary work is that there were different definitions of Europe with regards to electrification; were for example the UCPTE was satisfied with consisting of solely Western European countries - until the early '90s that is -, and the European Community was limited to 13 nations, the Electrical Energy section of the United Nations Economic Commission for Europe insisted on a broader definition of Europe, including the Central and Eastern European countries.

That brings me to my research questions: How did (a) European electricity network(s) came about, how was this Europe defined and by who, which actors played an influential role, and what where their visions on Europe? I will thus show that the idea of a European grid is older then the 1950s, what is and was conceived as the European network, and that its creation was not just a matter of political decisions and technical solutions, but ideas on society and Europe, and ideology was important.

Defining Europe

In my thesis I define Europe as follows: Europe exists in historical relations and fields of power', as defined by actors, and not as a stable, sovereign, and autonomous entity.[18] Two reasons attribute for this choice; first because preliminary research shows that different organisations and institutions within the electricity sector held different opinions on the size of Europe, secondly since the academic debate on how to define Europe is still far from over.

This debate has mushroomed ever the Foreign Ministers of the European Community (EC) adopted the Copenhagen 'Declaration concerning European identity', followed by the 1976 'Report on European Union' which introduced the concept of 'a Citizen's Europe'. In the 1980s this policy was further extended with the installing of European symbols like a flag and an anthem.[19] The European Union (EU) also issued several

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[18] Jan Borneman & Nick Fowler, "Europeanization", in: *Annual review of anthropology*, 26, 1997, 489. Or to use Hayden White's words: "For 'Europe' has never existed anywhere except in discourse, which is to say, in the talk and writing of visionaries and scoundrels seeking an alibi for a civilization whose principal historical attribute has been an impulsion to universal hegemony and the need to destroy what it cannot dominate, assimilate, or consume as if by its right divine." White's article in Strath……

[19] Michael Wintle, "Cultural identity in Europe: shared experience", in: Michael ed. Wintle(ed.), *Culture and identity in Europe: Perceptions of divergence and unity in past and presence*, Aldershot: Avebury, 12

research projects, as it still does within the recent installed Framework Project. This has accumulated into a series of books, such as the one edited by prominent French historian Jacques Le Goff. Other tangible results are information packages, schoolbooks, and audiovisual material, all available for educational purposes. Such attempts resemble the 19th century nation-state building.[20]

And why not? In a world were mass communication seems to surpass national boundaries, many sense the 'ability to forge their own identities from the various symbols and memories that are available to each generation and population.'[21] Many authors interpret the nation as an 'imagined community', using Benedict Anderson's term, seeing it as a mental construct and reinforced by common legislation, borders, and the notion (and often selective[22]) of a shared past. The building blocks of this supposed European identity are formed by what some regard as the European legacy, or *European experiences.*[23]

1996, 10. This policy was partly induced by the disappointing partly electoral turn out at the second European elections in 1986. See Pim den Boer, *Europa. De geschiedenis van een idee*, Amsterdam: Fagel, 2003, 150.

[20] See for example Weber, *Peasants into Frenchmen*.

[21] Anthony D. Smith, "A Europe of nations - or the nation of Europe?", in: *Journal of peace research*, 30, 2, 1993, 129.

[22] Forgetting just as important as remembering in building nation-state identities. See Ernest Renan, *Qu'est-ce qu'une nation?*, 1882 and Michael Billig, *Banal nationalism*, London: Sage publications, 1995, 37-38.

[23] Wintle, "Cultural identity in Europe: shared experience", 12-14. Pim den Boer divides this Europe legacy into three notion: a Christian notion, Europe as a notion of civilization, and a notion of freedom. See , Boer, *Europa*; Pim den Boer, *Europese cultuur. Geschiedenis van een bewustwording*, Inaugurele rede Universiteit van Amsterdam, Nijmegen: SUN, 1989; Kevin Wilson & Jan van der Dussen(eds.), *The history of the idea of Europe*, Milton Keynes [etc.]: Open University [etc.], 1995. For more on a Europe of Christianity see Denys Hay, *Europe. The emergence of an idea*, Edinburgh University Publications: History, Philosophy and Economics no. 7, Edinburgh: University Press, 1957. Agnes Heller's view on Europe is in some way comparable with Ernest Gellner's loose equalisation of nationalism and modernisation with her insistence that 'European culture *is* modernity'. Agnes Heller, "Europe: an epilogue?", in: Brian Nelson, David Roberts & Walter Veit (eds.), *The idea of Europe. Problems of national and transnational identity*, 1992, 22, and Ernest Gellner, *Nations and nationalism*, New perspectives on the past, Ithaca, New York: Cornell Univerisity Press, 1983. Other resourceful books on this topic are Anthony Pagden (ed.), *The idea of Europe. From Antiquity to the European Union*, Woodrow

Despite all this scholarly attention for a supposed common European past, justifying the pursuit of a European identity, others have attempted to refute this proposition. Opponents regard the search for a historical foundation to delineate Europe as entity similar to the nation-state proves to be thin, or as Anthony Smith puts it

> *When it comes to ritual and ceremony of collective identification, there is no European equivalent of national or religious community. […] Here lies Europe's true dilemma: a choice between unacceptable historical myths and memories on the one hand, and on the other hand a patchwork, memoryless scientific 'culture' held together solely by the political will and economic interest that are so often subject to change.[24]*

Another counterargument comes from the fact that Europe's boundaries have been relatively fluid throughout history, while 'promoting the idea that Europeans are heirs to a common cultural heritage may simple add to the tide of xenophobia and racism', thus sealing off Europe to supposed outsiders.[25]

Europe has nevertheless become a prominent and symbolic factor in daily life, in many banal forms, in similar fashion as the nation-state[26]. Despite various complains the Euro has been accepted as a common currency and being used on a routine basis[27], the

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Wilson Center Series, Cambridge University Press: 2001 and Wilson & Dussen, *The history of the idea of Europe*.

[24] Anthony D. Smith, "National identity and the idea of European unity", in: *International Affairs*, 68, 1, 1992, 73-74.

[25] Chris Shore & Annabel Black, "The European communities and the construction of Europe", in: *Anthropology Today*, 8, 3, 1992, 11. A less subtle article based on this argument is Jan Nederveen Pieterse, "Fictions of Europe", in: *Race and Class*, 32, 3, 1991.

[26] See the pioneering work of Billig, *Banal nationalism*.

[27] "Arguably, the euro is the most important symbol of European integration and identity beyond the individual EU member states to date", in: Matthias Kaelberer, *The Euro and European identity: symbols, power and the politics of European Monetary Union*, Delivered at the annual meeting of the American Political Science Association, Boston: 2002, 2. "The euro is more than money. Currency is an inescapable dimension of social and political life - at once a medium of exchange and a medium of meaning. National currencies are tangible and visceral emblems of national identity", in: , Mabel Berezin, "The Euro is more than money: converting currency, exchanging identity, and selling citizenship in post-Maastricht Europe", in: *Policity newsletter - Center for society & economy*, 1, 1, 2000, 2.

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European flag is a common sight in daily life, and within a few years we will be able to select our power supplier of any member state.[28] Still, Europe does not supersede the national level, but rather complements it. Whether this leads to a collective feeling of belonging to Europe can be doubted, but some already see a form of an 'embryonic European identity' emerging within the Community institutions.[29]

Determining Europeanness

One way to determine what was seen as *European*, and what was not, is first to look at *actor*s' *perceptions*. Looking at their perception implies that I will examine whether system-builders and legislators held certain visions of Europe: what did *they* define as the European network.

This relates to a concept from political science named *Europeanisation*. This notion is understood as the level of convergence in Europe, in a more narrow sense of the institutional convergence. Most publications use this concept to analyse influence of European institutions on nation-states, and not to identify and analyse European infrastructures.[30] I concluded that the electricity network of EU-members is not interchangeable with 'the European grid'. I propose to base the definition of Europe on my empirical findings of actors' perceptions. Postponing the formulation of Europe's borders holds an advantage: without a geographical definition of Europe on forehand, *Europeanness* becomes a more abstract and footloose set of laws, values, and regulations. Then a degree of Europeanness, or, the Europeanisation effect of integrating of the European electricity network can be measured. I will thus be looking at what is pictured

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[28] For an overview of other signs of 'banal Europeanness' see Shore & Black, "The European communities and the construction of Europe", 11.

[29] Shore & Black, "The European communities and the construction of Europe", 11.

[30] For example Claudio M. Radaelli, *Technocracy in the European Union*, Political dynamics of the EU series, London: Longman, 1999; Maria Green Cowles, James A. Caporaso & Thomas Risse-Kappen, *Transforming Europe. Europeanization and domestic change*, Cornell studies in political economy, Ithaca: Cornell University Press, 2001; and David Levi-Faur, "On the "net impact" of Europeanization. The EU's telecoms and electricity regimes between the global and the national", in: *Comparative political studies*, 37, 1, 2004.

as 'European' *rules*, *standards*[31], and *networks*, from the perspective of the people and institutions that electrified Europe. My approach thus implies to look at formulation and adoption of standards in LTS-components, and try to find out whether *actors* defined this as *European standards* and described the network as *European*.

Another form of identification with Europe, but through nation-state identities, can be observed in the work of Social Constructivists within the school of Integration studies, which focuses on the 'process of interaction, the identities and interests of member states and groups within them'.[32] Their work indicates that Europe became a prominent factor in the post-war nation-state identity. Marcussen, Checkel, Risse. So instead of a European identity, superseding national identity, nation-state identity became more European. A crucial aspect of this is *social learning*, following from the interaction between actors within broad institutional contexts. Social groups tend to define themselves on the basis of a set of *ideas* to which members can relate positively thereby forming a sort of 'imagined community'.[33]

This community could be national, regional, or European. Visions of Europe are not necessarily uniform: studies indicate that Europe became embedded in national and regional thinking.[34] This also happened in the electricity sector. Work by Arne Kaijser on

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[31] Standards play a crucial role in the functioning of LTS, and, using Bernard Joerges' words, "regulate what technical artifacts are allowed to do and forced to do, and how they are allowed to interact among themselves, with people and nature". Bernward Joerges, "Large technological systems: concepts and issues", in: Renate Mayntz & Thomas P. Hughes(eds.), *The development of large technological systems*, Frankfurt am Mainz: Campus Verlag, 1988, 30.

[32] Jeffrey T. Checkel, "Social construction and integration", in: *Journal of European Public Policy*, 6, 4 Special issue, 1999, 548. See also a more critical view in Andrew Moravcsik, "Is something rotten in the state of Denmark? Constructivism and European integration", in: *Journal of European Public Policy*, 6, 4, Special issue, 1999.

[33] Benedict Anderson, *Imagined communities. Reflections on the origin and spread of nationalism*, London: Verso, 1991.

[34] Martin Marcussen, Thomas Risse, Daniela Engelman-Martin, Hans Joachim Knopf & Klaus Roscher, "Constructing Europe? The evolution of French, British and German nation state identities", in: *Journal of European Public Policy*, 6, 4, Special issue, 1999; Thomas Risse-Kappen, "A European identity? Europeanization and the evolution of nation-state identities", in: Maria Green Cowles, James A. Caporaso & Thomas Risse-Kappen(eds.), *Transforming Europe. Europeanization and domestic change*, Ithaca: Cornell University Press, 2001; Ole Wæver, "Nordic nostalgia: Northern Europe after the Cold War", in:
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Nordic cooperation already indicated that hat the common Scandinavian culture played a role in initiating the power pool. Kaijser senses two types:

> *Firstly, the general sentiment of a Nordic community - "Nordism"- based on common cultural, historical and linguistic heritage. Secondly, the sense of a professional community of electro-engineers in the four countries.* [35]

Although this is not directly related to the notion of Europe, one needs to pay close attention to what this Nordic identity is about. Ole Wæver implies that

> *being "Nordic" meant being part of Europe, but being a little better off than the rest. In what respects? In being more peaceful than Europe and in having more social and global solidarity.* [36]

By studying the construction of electricity networks that were identified as European, we might gain a better understanding into visions and definitions of, and identifications with Europe as an idea and entity. Therefore, I will not treat Europe as a stable, sovereign, and autonomous entity: it exists only in historical relations and fields of power'.[37] In fact, preliminary research shows that different organisations and institutions within the electricity sector held different opinions on the size of Europe.

International Affairs, 68, 1, 1992; Bo Stråth (ed), *Europe and the Other and Europe as the Other*, Brussels: Peter Lang, 2000; Mikael af Malmborg & Bo Stråth, *The meaning of Europe*, Peter Lang.

[35] Arne Kaijser, "Trans-border integration of electricity and gas in the Nordic countries, 1915-1992", in: *Polhem.Tidskrift för teknikhistoria*, 15, 1997, 21-22.

[36] Wæver, "Nordic nostalgia: Northern Europe after the Cold War", 84.

[37] Borneman & Fowler, "Europeanization", 489.

Research design

Critical junctures

I will approach my research questions by using at least three case studies, with the hypothesis that such ideas of Europe were of influence in the planning, building, and legislating process. To come to at least three sound cases, interesting actors, and visions have to be proposed. While using a long-term perspective, a change in visions on Europe, and also an alteration of power relations, are to be expected in specific periods. Marcussen calls this a *critical juncture* in his study of nation-state identities and their perspectives of Europe.[38] Therefore, I will focus on three periods of time, as loosely described above: Interwar period, post Second World War, and the period after 1989. This leads to the following (broad) research questions.

What were the visions and stakes in the Interwar period (and wartime) proposals for regional or trans-European electricity networks, and why did they fail or succeed?

How did post-war regional initiatives for trans-border integration in the Western block succeed? What were their visions and stakes? Were there alternative visions that were discarded?

What constituted the borders of the expansion and impeded a truly electrical unification of (Western) Europe? Was Western Europe connected to Eastern Europe across the Iron Curtain? How did initiatives for linking, non-linking, and de-linking play out?

The way my cases are rearranged right now – possibly I will make changes the coming months, see planning – is that I view on two organisations which are more 'worldly' than 'European': the League of Nations and the United Nations Economic Commission for Europe (UNECE). This offers several important advantages. First, it provides an outsiders view on Europe since non-European nations are being represented as well – remember Stråth's construction of Europe 'through demarcation of the Other'.[39] Secondly, the League of Nations and UNECE have commissions that solely deal with electricity issues, including network building. Thirdly, both organisations stage an international

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[38] Marcussen, Risse, Engelman-Martin, Knopf & Roscher, "Constructing Europe? The evolution of French, British and German nation state identities". A critical juncture should be interpreted as "*perceived* crisis situations occurring from complete policy failures, but also triggered by external events".

[39] Stråth (ed), *Europe and the Other and Europe as the Other*, 29.

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forum where other institutions dealing with electricity networks come together; UNECE even was an active participant in other organisations. Lastly, and more from a practical point-of-view, these institutions have a well-maintained archive in Geneva.

Although I feel very comfortable with picking these two sites as primary focus, I keep an eye open for possible other entries. After my period in Geneva, March and April 2005, I will make a final decision on my three cases. Before then, I schedule several exploratory visits as well.

Interwar period 1918-1939 (1st period)

Europe as a project

When sir Edward Grey, the British Secretary of State, looked at a map of Europe on the first night of the First World War, he is assumed to have said

> *the lights are going out all over Europe, and we won't see them lit again in our lifetime.*[40]

Fortunately, he was mistaken in the literal sense; the Great War did do a lot of damage, but it did not end life in Europe. The lights stayed, simply because the power supply remained in tact: sir Grey did not grope in the dark the next night.

But many others shared Grey's pessimism on Europe's future. For example by contemporary Oswald Spengler, the author of *Der Untergang des Abendlandes*, who expressed his concerns on the end of the European civilisation, or by José Ortega y Gasset in *Revolt of the Masses*, who saw "barbarism emerged as the outcome of European civilization".[41] According to him, Historian Michael Adas viewed on the First World War as the end of the European self-imposed image of being the most advanced through technological progress. The war also meant the collapse of Europe's power for Count Richard Coudenhove-Kalergi, founder of the *Paneuropa* movement. Therefore Europe became squeezed between and threatened by the new 'superpowers': military by an invasion from Russia, economically by superior American organisation.[42] According to Peter Bugge, technology played an ambiguous role

> *No one was left unimpressed by the possibilities opened up by aeroplanes, radios, electric light, and cinemas, but in the double-edged nature of technological progress had been demonstrated in the mass destruction of war.*[43]

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[40] Inspired by the quote in E. J. Hobsbawm, *Age of extremes. The short twentieth century 1914-1991*, London: Micheal Joseph, 1995, 36.

[41] Recited in Heller, "Europe: an epilogue?", 19.

[42] R. N. Coudenhove-Kalergi, *Paneuropa*, The Hague/Vienna: Editions Paneuropéennes, 1928, 4.

[43] Wilson & Dussen, *The history of the idea of Europe*, essay two by Peter Bugge.

'Visions of despair and warnings that the social and intellectual foundations of Western civilization were disintegrating featured prominently in philosophical and social commentary and were often a prelude to meditations on the devitalizing impact of modernity', says Jo-Anne Pemberton[44]. The economic crisis that followed in the 1920s only reinforced this image of an ageing and dying European civilisation.

Although pessimism seemed to prevail, some strived to reverse Europe's decent into the abyss. The years after the war, plans to get Europe back on track mushroomed, varying from a European customs union[45] to political union in the United States of Europe. Primary aim of such initiatives was the forestalling of future European wars. To be sure, these ideas were not new. In the decade before the First World War, Quakers and the British National Peace League were in favour of setting up the United States of Europe, and in 1899 W.T. Stead published *The United States of Europe on the Eve of the Parliament of Peace.*[46]

The Interwar period saw the concept of Europe turned into the project Europe, an instrument to avert war, to overcome economic hardship, and re-establish Europe's power in geopolitics. But state of emergency was more or less shared among initiators, the way to overcome Europe's problems were less uniform. The above mentioned Coudenhove-Kalergi plead for the establishment of *Paneuropa*, a political union without Great Britain - since their interest remained with their empire -, and the Soviet Union. In this way, European nations united in a powerful bloc, able of competing with British, Americans, the Soviets, and the Chinese.[47] Others, like Wilhelm Heile, Reichstag member and vice president of the International Association for European Cooperation, founded in 1926 in Geneva, disagreed with a federal Europe that excluded Britain. But other geographical rearrangements of Europe were thought viable as well. C.F. Heerfordt, an English doctor who lived in Roskilde, Denmark, started a Scandinavian initiative for the United States of

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[44] Jo-Anne Pemberton, "New worlds for old: the League of Nations in the age of electricity", in: *Review of international studies*, 28, 2002, 312.

[45] Leon Trotski was a supporter of this. Luisa Passerini(ed.), *Europe in love, love in Europe: imagination and politics between the wars*, New York: New York university press, 1999, 57.

[46] Passerini, *Europe in love, love in Europe: imagination and politics between the wars*, 54-55.

[47] Coudenhove-Kalergi, *Paneuropa*, 1-5.

the European Nation.[48] The Czech philosopher Thomas Garrigue Masaryk show strong opportunities for a *New Europe* consisting of small nations between Germany and Russia.[49] Catholic historian Christopher Dawson even saw prospects for a Christian Europe, in the tradition of Edmund Burke who 'praised the harmony of the European system of life and education based on the values of Christian religion'.[50]

To be more precise, Europe became an *economic*, *political,* and most important in this study, *a technological project*. An evident part of this technological project was electrification. In the first four decades of the 20th century, electricity networks slowly expanded and national networks were constructed. Engineers participated in this debate on constructing Europe by proposing plans for a European network, physically connecting European nations while making them dependent on each other, like Herman Sörgel proposed in his plans for Atlantropa.[51] Other plans for electrifying Europe came from the Swiss engineer Ernst Schönholzer, the French engineer George Viel, and the German Oskar Oliven.[52] Especially the last one proves very interesting. Not only was Oliven's plan published in three languages (German, English, and French) after his address at the World Power Conference, his initiative was taken up by the Commission for Enquiry for European Union. On behalf of this commission, part of the League of Nations, the engineering company Ekström & Crompton held talks with German investers.[53]

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[48] Passerini, *Europe in love, love in Europe: imagination and politics between the wars*, 56.

[49] Josette Baer, "Imagining membership: the conception of Europe in the political thought of T.G. Masaryk and Václav Havel", in: *Studies in East European thought*, 52, 2000, 206-210.

[50] Passerini, *Europe in love, love in Europe: imagination and politics between the wars*, 65-78.

[51] Alexander Gall, *Das Atlantropa-Projekt. Die Geschichte einer gescheiterten Vision. Herman Sörgel und die Absenkung des Mittelmeers*, Frankfurt: Campus 1998; , Dirk van Laak, Weisse Elefanten. Anspruch und Scheitern technischer Grossprojekte im 20. Jahrhundert, Stuttgart: Deutsche Verlags-Anstalt, 1999.

[52] Ernst Schönholzer, "Ein elektrowirtschaftliches Programm für Europa", in: *Schweizerische Technische Zeitschrift*, No. 23, 5 Juni, 1930; Georges Viel, "Etude d'un reseau 400.000 volts", in: *Revue generale de l'electricité*, 28, 1930; Oskar Oliven, "Europas Großkraftlinien. Vorschlag eines europäischen Höchstspannungsnetzes", in: *Zeitschrift des Vereines Deutscher Ingenieure*, 74, 25, June 1930. All three are also mentioned in Fridlund & Maier, *The second battle of the currents*.

[53] Archive of the League of Nations, Transit: Electric question, Box R2572, 9e/30846/1668. This archive folder contains a letter from Dr. Alfred Ekstrom, M.I.E.E. of Crompton & Ekstrom to secretary-general of

Electrical engineers teamed up with political and economical plans for revitalising Europe, while drafting an electricity grid as its backbone. Without it, the lights would probably go out all over Europe....

Case 1: The Commission for Electric Question of the League of Nations

The First World War shook up the old Europe, both internally and externally. More states saw the light of day within Europe, while the newly established Bolshevik Russia secluded itself even more of being a potential European country. This period saw a proliferation of huge and projects plans, not only in both 'constructing' Europe, but also in building a unified electricity grid. Europe was not only a political and economical project; also a technological one, at least within the emerging electrical engineering community. Rationalisation was seen as one of its fundaments, 'strongly associated with the techniques and devices of modernity, especially those which could be seen as challenging physical and conceptual boundaries'.[54]

The crisis of the 'European civilisation' gave impetus, and technological advancements gave the means. The *International Council on Large Electric Systems* (CIGRE) was founded in 1921 as an international non-government organisation with the aim to distribute technological knowledge on the generation and transmission of high voltage electricity.

In 1923 the Scottish engineer Daniel Dunlop established the *World Power Conference* (WPC), a platform were international energy expert could meet, with national committees as its backbone. The first actual Congress, held in London in 1924, attracted 1.700 delegates from 40 countries.[55] As an indication of the organisation's influence, Dunlop would later join the Commission for Electric Question of the League of Nations, representing the WPC.

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the League, Eric Drummond, and also another sheet, *A European super power system*, by R.E.B. Crompton, C.B., R.E., M.Inst.C.E., M.I.E.E. and Alfred Ekstrom, D.Sc., M.I.E.E.

[54] Pemberton, "New worlds for old: the League of Nations in the age of electricity"327. She gives the example of the book *Forward from Chaos* by A.P. Young. He rendered rationalization as a metaphysic which he called 'Industrial Flow' and treated electrical machinery and scientific methods as its congealed expressions.

Another organisation, in existence since 1925, is *l'Union Internationale des Productions et Distributeurs d'Énergie Électrique* (UNIPEDE). Although centred on Europe, it had also members from outside like the United States and China, it served as a forum where technical, administrative, commercial and financial issues were debated.[56] Despite this international membership, an overwhelming number of conferees came from European countries; in fact, the decision to merge UNIPEDE with the Union of the Electrical Industry - solely a European organisation - was infused by this.[57]

A locus where Europe as a technological and political programme came together - as well as the three organisations - is at the League of Nations. The League, an attempt initiated by American president Woodrow Wilson to ensure peace worldwide was founded in 1919. Although mainly known of its failures to contain aggression firstly by Mussolini and later by Hitler, the commissions on technical and intellectual cooperation made some achievements.[58] An important programme of the League was the one on *General Conference on Communications and Transit*. Electricity was part of this, represented by the Commission on Electric Questions.

The attempts to come to world standards and regulations for the use of international rivers for generating energy, liberating the international transit of electricity, and creating more solidarity between nations [59] failed, since only 14 nations signed the treaty of the Second General Conference on Communications and Transit, held in Geneva in 1923. This failure on a global scale led to initiatives on the European level, suggested by the

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[55] *WEC's history*, at the website of the World Energy Council, www.wec.org.

[56] Henri Persoz, "40 ans d'interconnexion internationale en Europe. Le rôle de l'UNIPEDE", in: Monique Trede(ed.), Electricité et électrification dans le monde. Actes du deuxième colloque international d'histoire de l'électricité, organisé par l'Association pour l'histoire de l'électricité en France, Paris, 3-6 juillet 1990, [S.I.]: Association pour l'histoire de l'électricité en France, 1992, 293.

[57] Talk with Union of the Electrical Industry/EURELECTRIC-employee, on Monday 10th of August, 2004.

[58] Secretariat of the League of Nations, *The aims, methods and activity of the League of Nations*, Geneva: 1935; pictorial overview.

[59] Archive of the League of Nations, Transit, Box R-1120, section 14, series 18088, document 23565: *Note relative au Rapport Bignami sur le problème électrique,* authored by Prof. Pietro De Francisi, registered in September 1922, page 7: 'Side by side with the idea of national public utility the conception of international public utility should be evolved and strengthened'.

Belgians, within the context of Briand's Commission on Enquiry of European Union.[60] Although this needs more research work, it is reasonable to say that the idea of a single European network was very much alive, and for more than just reasons of rationalisation:

> *L'un des résultats de la création d'un réseau électrique européen serait d'établir entre les différents pays une communauté d'intérêts bien propres à consolider la paix.*[61]

Archives of interest

This Commission for Electric Questions is thus my first case study, an organisation that corresponded with other organisations. I aim to work in the following archives:

Archive of the League of Nations, Geneva;

Private archive of EURELECTRIC, Brussels (contains UNIPEDE congress reports);

Private archive of the World Power Conference (now: World Energy Council), London;

Private archives of Daniel Dunlop, Crompton & Ekstrom, et.al.

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[60] Archive of the League of Nations, Transit: Electric question, Box R2572, section 9e, dossier 26461, document 28666, Resolution adopteé par la Commission Consultative et Technique des Communications et du Transit à sa seizième session tenue à Geneve du 28 mai au 2 juin 1931. Also see League of Nations publication C.706.M.298.1930.VII Commission for enquiry for European Union, December 19th, 1930.

[61] Archive of the League of Nations, Transit: Electric question, Box R2572, section 9e, dossier 26461, document 29306: Note. Divers aspects de la question du transport et du transit de l'energie électrique et notamment du problème de la création d'un réseau européen. Mostly likely from fall 1931, page 1.

Post-war period 1945-1960s (2ⁿᵈ period)

Rebuilding Europe: the re-emergence of the European project

After the First World War, Europe was projected as a solution to the growing importance of the United States and the Soviet Union, and to revitalise the loss of prestige in the aftermath of the First World War, it did not prevent a second. Despite all efforts, between 1939 and 1945, war once again raged across Western Europe - among other parts of the world of course. It can be doubted whether the Second World War was a real breaking point; on the one hand the World Power Congress was suspended and UNIPEDE went 'into hibernation', on the other hand the Nazi regime continued to strive for a European power system.[62] To some this idea of a European network with German as its hub was nothing new; a Swiss delegate of the Swiss electricity export commission sighted that Switzerland should, according the director of the German RWE, adapt to

> *"den großen europäischen Wirtschaftsplan der im Grunde genomen nur ein deutscher Wirtschaftsplan ist [...]."[63]*

Furthermore, Nazi plans seem very similar to the ones by engineers like Oskar Oliven, George Viel, and Ernst Schönholzer.[64]

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[62] "UNIPEDE itself went into hibernation during the war: its documents were stored with a local electricity company and it did not re-emerge until December 1946 with a first post-war meeting of its Directing Committee." Paul K. Lyons, *75 years of cooperation in the electricity industry*, Brussels: Union of the Electricity Industry/EURELECTRIC, 2000, 16. For the German plans see Maier, "Von Norwegen bis Afrika: Gleichstromübertragung als NS-Sonderweg beim Stromtransport?", Maier, "'Nationalwirtschaftlicher Musterknabe' ohne Fortune. Entwicklungen der Elektrizitätspolitik un des RWE im 'Dritten Reich'".

[63] Schweizerisches Bundesarchiv, Bern, Switzerland, E 8190 (A) 1981/1 - Amt für Energiewirtschaft 1930-1969, 82 Vereinigung exportierender Elektrizitätsunternehmungen 81.1 (E1) Eidg. Kommission für Ausfuhr elektrischer Energie. Protokolle 1945-1980 Sitzung, 1927-1957, Protokoll der 52. Sitzung 12. Oktober 1928, 2.

[64] Oliven, "Europas Großkraftlinien. Vorschlag eines europäischen Höchstspannungsnetzes", Viel, "Etude d'un reseau 400.000 volts", Schönholzer, "Ein elektrowirtschaftliches Programm für Europa" in comparison with the maps in Maier, "Von Norwegen bis Afrika: Gleichstromübertragung als NS-Sonderweg beim Stromtransport?".

Although the Germans made some progress with regards to international connections[65], the balance looked far from positive. After the firing had been ceased and the dust had settled, the actual damage could be vouched; it stood out that the electricity supply either needed to be rebuilt, updated, or expanded. This time the project Europe got momentum, infused by American aid. The Marshall Plan proposed, next to more European cooperation and among numerous other things, the modernisation of infrastructure. Electricity, or more in general *energy*, was prominent.

The OEEC, who was responsible for the programme for European recovery, the allocating Marshall Aid, and liberalising intra-European payments[66], proposed more European cooperation in the electricity sector. Therefore France, Italy, Luxemburg, the Netherlands, Austria and Switzerland - established as the *UCPTE* in 1951[67], on the basis of voluntary cooperation but encouraged by the OEEC. The UCPTE helped shaping an institutional environment were utility managers and network operators from European countries could meet. Its main tasks were increasing efficiency of production, securing supply, and creating of a common reserve capacity. Especially the use of excessive hydropower was emphasised. To reach these goals, more interconnections between the countries were needed.

Other European institutions dealing with energy were founded as well, such as the *European Coal and Steel Community* (ECSC). Generally viewed as the first step to the political and economic integration of Europe, the ECSC operated since 1952 to relief tensions on a stressed coal market. The then scarce coal was, next to playing a vital role in heavy industry, the foremost raw material in electricity production. Although it did develop an energy policy - focussing on coal, oil, electricity, nuclear industry, and gas -

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[65] G. P. J. Verbong, L. van Empelen & A. N. Hesselmans, "De ontwikkeling van het Nederlandse koppelnet tijdens de Tweede Wereldoorlog", in: *NEHA-Jaarboek*, XII, 1998.

[66] Herman van der Wee, *Prosperity and upheaval. The world economy 1945-1980*, London: Penguin, 1986, 354.

[67] The original name was *Union for Coordination Production and Transportation of Electricity*. The 'Production' was left out of the name when the EU decided to deregulate and liberalise the energy production market in the early 1990s.

they did not interfere with network building.[68] In fact, in one of the report on Community policy on energy they explicitly left the network coordination to the UCPTE.[69]

But despite the take off of European integration, it did not include all countries that considered themselves European. There were alternative forms of European integration, like the *European Free Trade Area* (EFTA) and the Nordic Council[70]. To take once again Scandinavia as an example, there regional collaboration was regarded higher than European integration:

> *It is no exaggeration to say that the efforts made in Europe to achieve closer*
> *coalition during the first decade after World War II were not a first priority [...].*
> *Among the four dimensions of Danish foreign policy, the Universal, the Atlantic, the*
> *European and the Nordic, it was obvious that the European had the lowest priority.*
> *[...] However, turning to the subregional - the Nordic - efforts of integration, a*
> *widespread wish for closer cooperation was held by both politicians and the*

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[68] Historical Archives of the European Commission, C.C.E., CEAB 1, No 738, CECE: Haute Autorité Service Jurisdique, 1959-1960, Haute Autorité, 'Aide-memoire au sujet de la mise en òevre d'une coordination des politiques energetiques', Luxembourg, le 10 octobre 1959, DOC. No 6092/59 f.
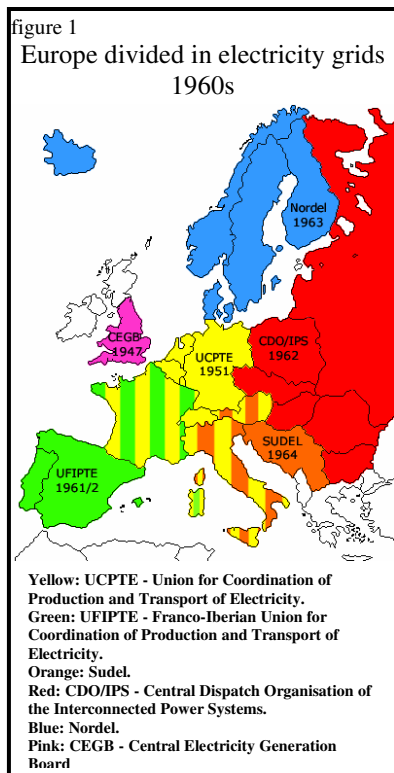
Nevertheless the wish for more interconnections was sometimes expressed, "Die Errichtung leistungsfähigerer Produktionseinheiten kann nur dann sinnvoll sein, wenn entsprechende Netzaufbauten und Bedarfssteigerung möglich sind. Außerdem müssen entsprechend ausreichende Reservekapazitaten bereitgehalten und gleichzeitig spezielle Einheiten zur Erzeugung von Spitzenenergie geschaffen werden", in: Historical Archives of the European Commission, C.C.E., BAC 3/1974 No 71, 1969, Europäisches Parlement, Asschuss für Energie, Forschung und Atomfragen. Entwurf eines Berichts über die gemeinsame Energiepolitiek. Berichterstatter: Herr Leemans. 26.11.1969 / PE 23.106/rev.

[69] Historical Archives of the European Commission*, C.C.E., BAC 3/1974 No 71, 1969.Europäisches Parlement, Asschuss für Energie, Forschung und Atomfragen. Entwurf eines Berichts über die gemeinsame Energiepolitiek. Berichterstatter: Herr Leemans. 26.11.1969 / PE 23.106/rev., 117.*

[70] Urwin, *The community of Europe*, 88-89, 96-100. EFTA did not engage in electricity business, and so did the Nordic Council. Nordel became an important regional electricity organisation in Scandinavia.

population. The same reservations did not exist for Scandinavian cooperation as for European.[71]

Furthermore, the *Cold War* provided a clear distinction between Western and Eastern Europe - politically, ideologically, and rhetorically -, sealing of Central and Eastern Europe from the West (although the electricity network remained partially connected). Various regional co-operations were set-up, rather than one single European network under the umbrella of the European Community.

A crucial observation is that in the 1960s there was no single European electricity network – despite all Interwar and Nazi plans. A quick peek at figure 1 reveals that there were in fact several grids situated in Europe, divided in regions: the *Central Dispatch Organisation of the Interconnected Power Systems* (CDO/IPS) in the East, the UCPTE in the Northwest, *Nordel* in the North, the *Union Franco-Iberian pour la Coordination de la Production et du Transport de l'Electricité* (UFIPTE) and *Sudel* in the South (the latter two later became members of the UCPTE).

figure 1
Europe divided in electricity grids 1960s

Yellow: UCPTE - Union for Coordination of Production and Transport of Electricity.
Green: UFIPTE - Franco-Iberian Union for Coordination of Production and Transport of Electricity.
Orange: Sudel.
Red: CDO/IPS - Central Dispatch Organisation of the Interconnected Power Systems.
Blue: Nordel.
Pink: CEGB - Central Electricity Generation Board

While Europe was divided between East and West because of the Cold War, and the electricity networks more or less in a similar fashion, certain post-war stages were both sides of the Iron Curtain met remained intact. Besides UNIPEDE and the WPC, the most important - and arguably, most influential - was the Electrical Energy Committee of the United Nations Economic Commission for Europe. The Economic and Social Council of the United Nations set up UNECE in 1947 as one of five regional commissions; one of its sections deals with Electrical Energy. To some extent, the organisation resembles the one of the League of Nations: it had correspondence with WPC, CIGRE, UNIPEDE, and also

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[71] Jack W. Jensen, "Sources for the history of European integration in Denmark (1945-1955)", in: Walter Lipgens (ed.)(ed.), *Sources for the history of European integration (1945-1955)*, Leyden/London/Boston: Sijthoff, 1980, 15-16.

with the newfound organisations like UCPTE and CDO/IPS. This is already one of its charms; both West and East remained in contact through UNECE. Derek Urwin writes that UNECE 'remained virtually the only arena in which Eastern and Western Europe met to discuss European affairs'.[72]

Case 2: United Nations Economic Commission for Europe and comeback of the European project

In 1956 the representative of the Federal German Republic in Geneva, dr. Steg, wrote to Gunnar Myrdal, the secretary-general of United Nations Economic Commission for Europe (UNECE), that

> *cooperation and the exchange between the electric power stations in the UCPTE countries (Belgium, Federal Republic of Germany, France, Netherlands, Italy, Luxembourg, Austria and Switzerland) are so intense, that it would not be advisable to conduct special enquiries into the electric power exchanges of the Federal Republic of Germany with Eastern European countries.[73]*

Steg wrote this in his answer to a request for information, to be used in UNECE publication on the future of the European network. While the UCPTE also claimed to be representing Europe[74], UNECE had a broader view of Europe, and a sense of openness to all nations, regardless of ideology. Pierre Sevette, Head of Electrical Energy section of UNECE, criticised other supposable European institutions:

> *Ce vocable "européen" est en effet utilisé à la fois par les six pays groupés dans l'Organisation du Marché Commun, de la Haute-Autorité du charbon et de l'acier et de l'Euratom, par les septs pays que groupe l'Organisation européenne de Coopération économique, dont le siège à Paris, et dont l'Espagne est également*

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[72] Urwin, *The community of Europe*, 14.

[73] Archive of United Nations Economic Commission for Europe, Jacket 1, GX 19/6/1/4 (3815): me/389/56:letter from Steg to Myrdal, 8.5.1956.

[74] In an overview of 6 years of activity in 1956, they gave 'the most important results with regards to European cooperation reached by the Union since its founding.' (My translation from Dutch). UCPTE, *Rapport Annuel 1955-1956*, Milan, 91.

membre, par les pays de l'Est de l'Europe enfin, qui ont consituté entre eux un
Conseil mutuel d'assistance économique.

L'Europe de la Commission économique des Nations Unies doit être comprise dans
son sens géographique le plus large, puisqu'aussi bien la totalité des pays
européens, y compris l'Union soviétique, cést-à-dire 30 pays au total, en sont
membres et participent de façon active à ses travaux.[75]

It is my hypothesis that the important players in the European project, and more precise
in the (re)construction of the electricity network, held different views on Europe. A
second supposition is that there were different thoughts on how to electrify Europe.
Before and during the Second World War several plans hinted at a possible high voltage
transport network all over Europe.[76] In a speech in Yugoslavia, the head of the Electrical
Energy section, Pierre Sevette still preferred one European grid:

Cependent, au lendemain de la dernière guerre mondiale, le développement des
échanges apparaissait couramment comme le plus sûr moyen de réduire la
recommandaient même la construction d'un super-réseau européen qui devait
permettre aux pays défavorisés de bénéficier des sources de production inexploitées
dans d'autres pays plus riches.[77]

Several working groups were established to exploit Europe's resources. Examples of this
are the Enquiry into possibilities of electric power exchanges between the countries of
Central and South Eastern Europe, and Groups of Experts on the Prospects of Exporting
Electric Power from Yugoslavia (Yougelexport). Countries involved were Albania,

[75] Archive of the United Nations Economic Commission for Europe - GX 19/1/22 (13986) Energie
Electrique. Aspects internationaux de l'Energie Électrique, ME/433/60, 60-7416. Printed speech of Sevette,
held before the Spanish Ministry of Industry in Madrid in 1953.

[76] Oliven, "Europas Großkraftlinien. Vorschlag eines europäischen Höchtspannungsnetzes", Viel, "Etude
d'un reseau 400.000 volts", Schönholzer, "Ein elektrowirtschaftliches Programm für Europa".

[77] Archive of United Nations Economic Commission for Europe, Jacket 1, G.X. 19/6/1/4, 3815: Electric
Power. Transmission, operation and interconnexions. Exchanges of Electric Power: *Les echanges d'energie*
electrique entreles differents pays d'europe e leur evolution propable. Résumé de la Conférence prononcée
par M.Sevette en Youslavie.

Greece, Rumania, Czechoslovakia, Yugoslavia, Bulgaria, Hungary, Poland, Turkey, Eastern zone of Germany, Italy, Austria, Federal Republic of Germany, USSR.[78]

The UCPTE, on the other hand, preferred a meshed network of interconnected nations:

> *The construction of super-network connecting all European countries would not be a solution for the problem of cooperation. The examples of England and Sweden [...] only prove on the one hand that it can be just to build a high voltage network in an area that forms a economic unit, and on the other hand that the transmission of electricity over distances of 2.000 km using higher voltages is technical and economically feasible. [...] The UCPTE, that has as its assignment to stimulate interconnected use of electrical plants of countries that form independent and economically separated areas, did never speak out for the construction of ultra high voltage network.[79]*

I will start working on this case from the perspective of UNECE, and their archive. Yearly reports on network situations as well as statistics seem to be available on the whole of Europe. A second advantage is that this is a locus where discussions on a single European grid are continued after the war. In 1952 UNECE published the report *Zwischenstaatlicher energieaustausch in Europa*, which provided an overview of the existing situation in Europe, as well as of the potentials.[80] Correspondence indicates that the book was widely read, and was well accepted. They had regular contact with CIGRE, WPC, UCPTE, and were present at the congresses of UNIPEDE. Therefore I will examine their archives as well.

Archives of interest

Archive of United Nations Economic Commission for Europe, Geneva;

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[78] The final publication of Central and South Eastern Europe-study would be in 1956. United Nations Geneva, *Possibilities of electric power exchanges between the countries of Central and South Eastern Europe*, prepared by the Economic Commission for Europe, UN publication 58.II.E/Mim.2, E/ECE/304, E/ECE/EP/195.

[79] UCPTE, *Rapport Annuel 1958-1959,* Heidelberg, 109. My translation from Dutch.

Historical archive of the European Commission, Brussels;

Archive of the OEEC, Florence;

Private archive of EURELECTRIC, Brussels (contains UNIPEDE congress reports);

Private archive of the World Power Conference (now: World Energy Council), London;

Private archives of Pierre Servette, Gunnar Myrdal, J.C. van Staveren, G.H.J. Bakker.

The relinking of Eastern and Western Europe (3rd period)

Linkages across the Curtain: 1991 and beyond

After Germany had been defeated, Europe was divided in spheres of influence by the victorious Allies, or simply said in a Western and Eastern zone, controlled respectively by the United States and the Soviet Union – the two emerging superpowers. Between those two spheres, an 'iron curtain' had fallen across Europe, citing Churchill's famous phrase. A period of rigid antagonism had begun, of ideological warfare, 'hot' wars in outside Europe 'sponsored' by both parties, and the fear of *mutually assured destruction* (MAD)[81], made possible by massive conventional and nuclear armaments. Notwithstanding appeasement in earlier decades, the actual breakthrough antagonism – literally with the fall of the Berlin Wall– came in the late '80s and early '90s. For several regions in Europe a policy shift had to be made; with the crumbling of the Soviet empire into the Commonwealth of Independent States (CIS) in 1991, the common enemy in the East dissolved.

International relations and security policies thus had to be redefined. In Central and Eastern Europe this meant a comeback for the idea of Mitteleuropa, not only as a historical thought and entity, but also as a way to demarcate oneself from the Soviet Union.[82] In Scandinavia, the fear of becoming periphery with Europe has led to

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[80] Archive of United Nations Economic Commission for Europe, Jacket 1, G.X. 19/6/1/4, 3815: Electric Power. Transmission, operation and interconnexions. Exchanges of Electric Power: *Zwischenstaatlicher energieaustausch in Europa*.

[81] Hobsbawm, *Age of extremes*, 265.

[82] Bo Stråth, "Multiple Europes: integration, identity and demarcation to the Other", in: Bo Stråth (ed)(ed.), Brussels: Peter Lang, 2000, 418-419. For the similarities between regimes in the Czech Republic see Baer, "Imagining membership: the conception of Europe in the political thought of T.G. Masaryk and Václav Havel". An good overview of the idea of Mitteleuropa is given in , Peter Bugge, "The nation supreme: the idea of Europe 1914-1945", in: Kevin Wilson & Jan van der Dussen(eds.), *The history of the idea of*

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'occasional expressions of nostalgia for the Cold War', and has pushed Nordic countries closer to EC membership.[83]

Within the EU, these developments also led to an orientation towards the East since before 1991, as Klaus Larres states, 'the nations of Eastern Europe were not able to become involved in European integration'.[84] Since then the EU has started a policy of 'deepening' and 'widening' in areas as justice and monetary, and set up programs to include Eastern and Central Europe, with the 1st of May, 2004 as its zenith for the time being. If one takes the narrow view of European integration, the idea connections between East and West springs from the 1991 Prague summit. There the basic outline of the Trans-European Network (TEN), already presented in 1989 in Strasbourg, was extended to include Central and Eastern Europe as well.[85] A closer look reveals that there were ties across the Iron Curtain: some physical connections still remained, or were constructed, for example in Austria and East Germany.[86] For the moment I will focus on the first.

figure 2
Europe divided in synchronous electricity grids in 2002

Yellow: UCPTE - Union for Coordination of Production and Transport of Electricity.
Green: Common market United Kingdom
Red: CDO/IPS - Central Dispatch Organisation of the Interconnected Power Systems.
Blue: Nordel.

Austria has a remarkable history in the 20th century; following the First World War, the multi-ethnic empire of Austria-Hungary was

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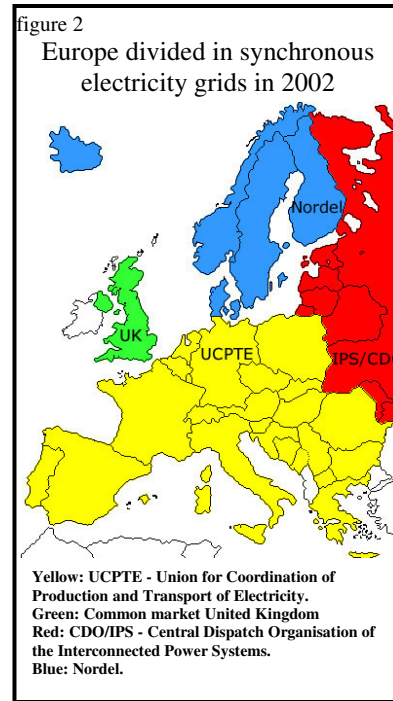
Europe, London/New York: The Open University, 1993, 90-94, and Hans-Dietrich Schultz & Wolfgang Natter, "Imagining *Mitteleuropa*: conceptualisations of 'its' space in and outside German geography", in: *European review of history - Revue européenne d'histoire*, 10, 2, 2003. On identity see Hans-Georg Betz, "Mitteleuropa and post-modern European identity", in: *New German Critique*, 50, 1990.

[83] Ole Waever, "Nordic nostalgia: Northern Europe after the Cold War", in: *International Affairs*, 68, 1, 1992, 78.

[84] Larres, "International and security relations within Europe", 187.

[85] Tamás Fleischer, "Infrastructure networks in Central Europe and the EU enlargement", in: *Paper prepared for the Polish-Hungarian Workshop, organised by the Academies of Sciences of the two countries in Warsaw*, 2002, 6.

[86] Felix Christiaan Matthes, *Stromwirtschaft und deutsche Einheit. Eine Fallstudie zur Transformation der Elektrizitätswirtschaft in Ost-Deutschland*, Norderstedt: BoD, 2000.

dismantled after the Treaty of Versailles and split into the Austrian Republic, Czechoslovak Republic, and Hungarian Kingdom.[87] In those early years there was discussion on a possible *Anschluß* between Germany and the new founded state of Austria -that would come in 1938. After Hitler's defeat, Austria was split into four occupational zones - French, British, American and Soviet -, just like Germany. Still, different from its neighbour, Austria managed to prevent permanent division, by settling a treaty with the Four that gave back independence in return for neutrality. It did join Council of Europe in 1956 and the EFTA in 1960.[88] It joined the EU only in 1995.

In the electricity sector Austria played a more active role, not hampered by their neutrality. They were a founding member of the UCPTE in 1951, and became member of Sudel from the start in 1964. Early on, they had connections with Czechoslovakia and Yugoslavia.[89] In 1968 a connection of 220kV between Vienna and Györ, Hungary, was put into use[90], and in 1974 Austrian delegates visited Poland, Hungary, and Czechoslovakia to see whether more connections were feasible.[91] Ten months later the Austrian representative Erbacher informed the Comité Restreint that the Austrians made a contract with Poland for long-term electricity deliveries.[92]

Fremuth, also director of Österreichischen Elektrizitätswirtschafts AG, was the driving force behind connecting Western and Central Europe. At the time of writing, he led negotiations with Centrel, another regional electricity system consisting of Poland, Czech Republic, Hungary, and Slovakia - their system would be in parallel with the UCPTE since 1995[93] - and he was also in charge of the talks with the COMECON on electricity trade.[94]

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[87] Iván T. Berend & György Ránki, *Economic development in East-Central Europe in the 19th and 20th centuries*, New York/London: Columbia University Press, 1974, 185.

[88] Urwin, *The community of Europe*, 35, 96-97.

[89] UCPTE yearbooks had statistics only since 1960, but already there is some exchange.

[90] UCPTE, *Rapport Annuel 1967-1968*, Vienna: UCPTE, 45.

[91] Archive of UCPTE in Brussels, *Comité Restreint*, 11.1.1974 at Toulouse, 7-8.

[92] Archive of UCPTE in Brussels, *Comité Restreint*, 9.10.1974 in Rome, 18. The contract term would be 25 years and a loan of 25 million Schilling would be granted to the Polish.

[93] UCPTE, *Rapport Annuel 1996*, Vienna: UCPTE, 12.

[94] Archive of UCPTE in Brussels, *Comité Restreint*, 17 & 18 April, 1990 in Berlin, 13.

Case 3: Delinking, linking, and relinking – the Cold War and its ending in the electricity sector

In the *Rapport Annuel* of 1993 then president of the UCPTE Walter Fremuth wrote:

> *The 1990s have marked a period of upheaval throughout Europe. On the one hand there has been rapid progress in the consolidation of institutional and economic ties in Europe in organisations such as the EU and EFTA, and in the context of the recently instituted European economic space. On the other hand, in the wake of radical changes in the institutional and economic order which has been in place in Eastern Europe since the Second World War, reformed countries in the East have sought the most rapid possible inclusion in the process of integration which is currently in progress almost all over Europe.[95]*

A few years earlier, the same Fremuth, who also was in charge of Austria's largest electricity supplier Österreichische Elektrizitätswirtshaft AG, received a letter from UNECE asking

> *Dear Sir,*
>
> *I am sure, that you are aware of the activities of United Nations Economic Commission for Europe, in promoting East-West energy trade, and particularly of electricity.*
>
> *We learned from the "Nue Zürcher Zeitung" from 14 March 1980, that you conducted discussions about a project of electric power exchanges between the USSR and Western Europe.*
>
> *We would be grateful to receive any information on this subject that you could release at this moment.[96]*

Several organisations remained meeting places for both East and West; for example the WPC and UNIPEDE. But one went even further and was an active lobbyer for connecting

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[95] UCPTE, *Rapport Annuel 1993*, Vienna: UCPTE, 7.

[96] Archive of United Nations Economic Commission for Europe, Jacket 4 - GX 19/6/1/4 (3815): Electric Power. Transmission, Operation and Interconnexions: exchange of electric power across European Frontiers. Letter from Groza to Fremuth.

the two through electricity: the Electrical Energy Committee of UNECE. Once again it was UNECE that preferred a Europe at large, and fiercely promoted that idea. When the plans for a connection between the Federal Republic of Germany (FRG) and West Berlin – cutting through the German Democratic Republic (GDR) were unfolded at the UNIPEDE congress in 1988 (figure 3), the representative of UNECE responded very positive:

> *It is clear that is very much at an embryonic stage and I cannot tell you what the outcome of it will be and what influence it will have in accelerating east/west interconnection but, thinking in European terms, we can say now that it is a step towards developing the potential to increase the level of optimisation of the European electrical supply system, by removing some interconnection constraints, if I may put it in this very strict economic language.*

> *But I think there is more than that to be said. This shows in fact that electric power lines can carry not only electric power but a refreshing message of peace and this should be very rewarding for us all.[97]*

In this case study, I will once again start in the archive of UNECE, but also use the archives of the UCPTE. I hope to interview Walter Fermuth and representatives of CDO/IPS. Also, I hope to study contemporary documents on the TEN-project.

Archives of interest

Archive of United Nations Economic Commission for Europe, Geneva;

Historical archive of the European Commission, Brussels;

Private archive of EURELECTRIC, Brussels (contains UNIPEDE congress reports);

Private archive of the World Power Conference (now: World Energy Council), London;

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[97] UNIPEDE, Eleventh Congress, Sorrento 1988, Proceedings of the working sessions and other functions, Sorrento 1988, 377-378.

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