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LEBANON VIEWED THROUGH ITS TRANSPORTATION NETWORKS: A “FLUID NETWORK” IN A FRAGMENTED TERRITORY?

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Abstract: The present paper looks at transportation as a key to Lebanon. Geopolitical fluctuations have been determinant in the historical processes of openness and closure that have built superimposed networks. Some of these networks have been destroyed or abandoned, and the country is now reliant on a complex roads network. A geographical analysis at different scales reveals many fragmentations in a fractured territory. In addition to a new system, organized around multiple centers and peripheries and subject to complex centrifugal and centripetal forces, great flexibility and adaptability seem to be the main factors to take into account. Thus, Lebanon’s transportation infrastructure can be considered a “fluid network”.

Introduction

Lebanon’s territorial organization is the result of an alternation between openness and closure that is profoundly linked to the complex geopolitics of a splintered Near East (CORM, 2006). Past and recent events in the country’s history

(civil war from 1975 to 1990 and the 33-day war with Israel in 2006) have fragmented the territory in numerous ways. The population is also highly compartmentalized, dividing the country into a mosaic of areas dominated by different communities. Viewed from afar, this mosaic can be seen to reflect the four main elements in the country's topographical structure: the Mediterranean coast, the Lebanon Mountains, the Bekaa Plain and the Anti-Lebanon Mountains. By applying the hypothesis of synchronous territorial processes championed by OFFNER (1993) in his concept of congruency, the present article provides an interpretation of Lebanon in terms of transportation and an interpretation of transportation networks in terms of the territorial issues currently in play in Lebanon (VERDEIL, FAOUR and VELUT, 2007). In other words, transportation as a key to Lebanon, and Lebanon as a key to transportation.

A simple modal and statistical picture of the current transportation situation in Lebanon reveals an incomplete network that shares many characteristics with networks in developing countries and that has inherited distinct features from the country's colonial past (most notably its domination by the Ottoman Empire and the French Mandate). Considering the country as a whole (Lebanon is a small country of 10,452 km²), only road transportation is currently truly functional (see map n°1), albeit with a very average connectivity index (N° routes/N° nodes). BALLANCHE (2005) showed the limitations of the current port system, and civil air traffic is restricted to Beirut international airport. With 3,409,000 passengers in 2007 (source: civil aviation authority), traffic levels at Beirut airport are similar to those at Damascus, but three or four times lower than those at Cairo. Despite these limitations, all relevant parties understand the political and socio-economic importance of transportation and have made it a development priority. The organization of both the territory and mobility reflect the complex ways in which the people of Lebanon have appropriated the nation's transportation networks. This appropriation is characterized by a high degree of flexibility and adaptability, which can be considered one of the most singular aspects of Lebanese transportation.

The superimposition of transportation networks and systems as a reflection of geopolitical fluctuations

In Lebanon, more than elsewhere, the question of heritage is a major factor in the way transportation has developed (BAVOUX et al., 2005), and one that is expressed in an original center(s)-periphery(s) model. Because evaluations of how the different networks and territories function must take into account

the multiple fragmentations that characterize the country, on-going processes cannot be explained via spatial analysis alone. As LEVY (2003, p143) pointed out: “Geopolitical dominance is often a societal response to a peripheral position, that is used to achieve a development that is difficult to obtain in other ways”. In Lebanon, this observation can be applied on several different scales and can be seen in the way transversal and longitudinal networks have developed.

CHOUËIRI (2008, p. 157) summarized Lebanese transportation in terms of the intersection of two major roads (“The first follows the coast [between Tripoli and Tyr], the second the course of the sun” [the road from Damascus to Beirut]). However, this “sideways-T” structure is too simple to describe the complexity of flows. Nor is this configuration as ancient as it may seem, because it had already entered into the mores of the population in the late 19th century. The “sideways-T” pattern was reinforced in this by the development of heavy infrastructures. First came the railways, with the opening of the Beirut-Rayak-Damascus line in 1895, the Rayak-Homs line in 1906 and the Homs to Tripoli line in 1911. The apogee of Lebanon’s railways came with the opening of the Tripoli-Beirut-Saida-Haifa lines in 1942, at which time it was possible to travel by train from the major capital cities of Europe to Cairo! More recently, the construction of a network of freeways and major highways has clearly followed this pattern. The highway network includes a coast road between Lebanon’s northern border and the southern city of Tyr (Sur), which had not yet been reached in June 2010. It also includes the famous “Arab Highway” to the capital of Syria. Although the Arab League had pushed for the building of this road as early as 1967-1968, construction work, in successive sections, did not start until reconstruction of the country began in the late 1990s. It is easy to recognize the geopolitical contexts in which these two periods of major infrastructure development took place: contexts that brought both hopes for development and fears of dependency. Thus, the Beirut-Damascus railway is identified with the French Mandate, whereas the coastal railway (built by New Zealand and Australian troops) was built mostly to serve British ambitions in the region. To cite another example, the Damascus highway is a symbol that has long aroused ambivalent feelings in Beirut, especially before Syria’s withdrawal from Lebanon in 2005. In addition, its strategic importance made it a target during recent wars, particularly at the Dahr El Baïdar Pass, where it crosses the Lebanon Mountains (BERNIER, 2007).

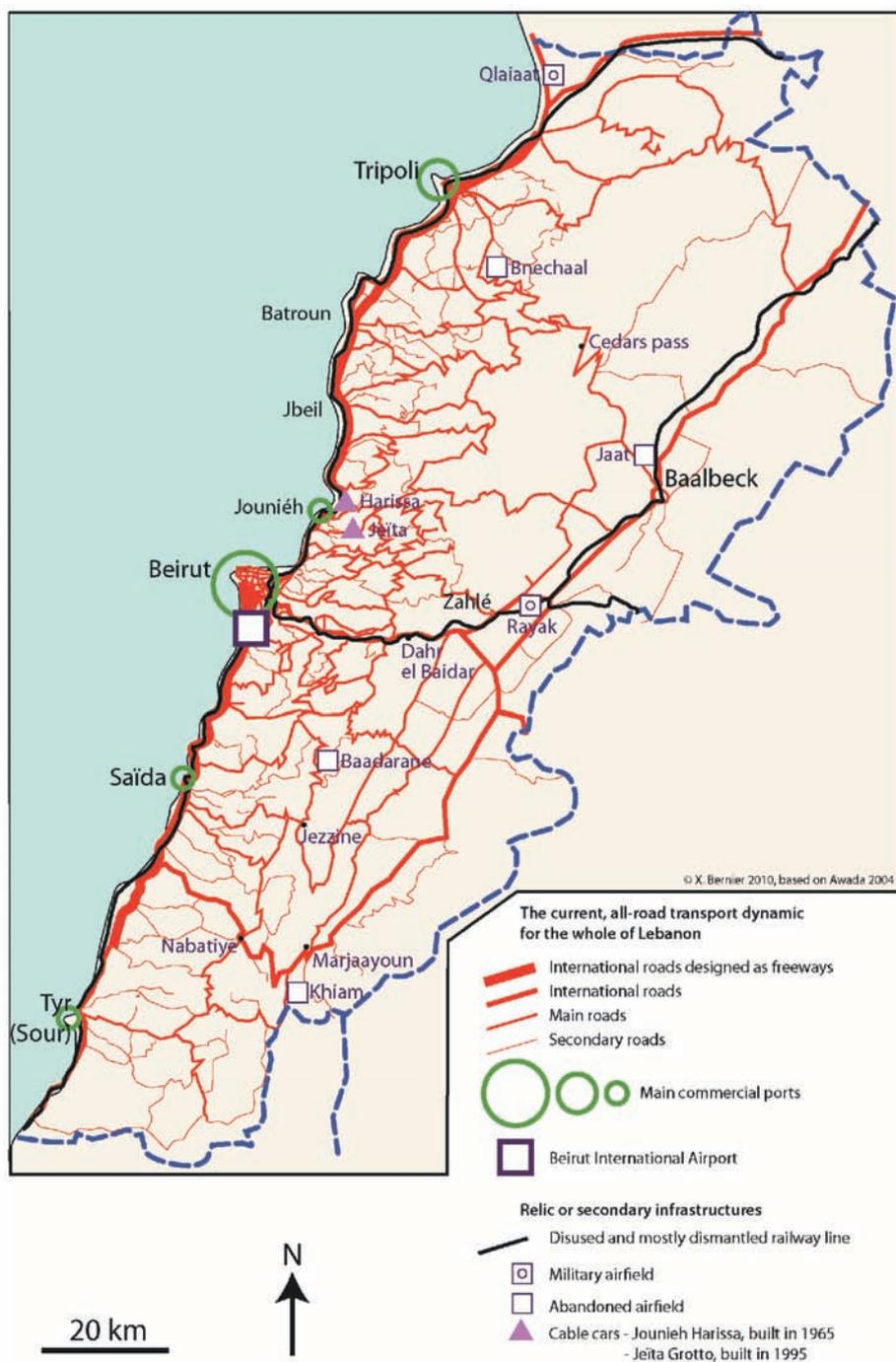


Figure 1: The current state of transportation in Lebanon

Lebanon's mountains are the subject of other preconceived ideas that must be revised. It is true that winter snows occasionally close roads for a few days, disrupting road traffic at Dahr El Baïdar (1556 m) or at the Ainata Pass (or Cedars Pass, 2650 m) in the north. There have even been occasions, such as late January 2008, when snowstorms have blocked roads above 700 m and disrupted traffic for a few hours in Bekaa. Nevertheless, there are lower altitude alternatives to these roads, for example, via Jezzine, and it is possible to get to Bekaa and Damascus by going north round the mountains (from Beirut towards Tripoli, and then via Homs in Syria). Lebanon's mountains have never been an obstacle to transportation. On the contrary, a map of the country shows a much higher road density around the Lebanon Mountains, which have long provided a refuge in troubled times. In addition, periods of conflict have frequently been the trigger for intensive road building, as occurred during the civil war, when the Christian militia built large numbers of tracks in the north of the country, and after the 2006 war, when work began on a dense road network between Tyr and the Bekaa Plain.

Thus, a secondary network has been superimposed on the main highway network. This is the case on the western side of the Lebanon Mountains, where a "toothcomb" pattern of roads has grown up to serve mountain communities. Many of these mountain roads go straight up the line of the slope, thereby increasing the associated dangers. There are also many second-level roads that run north-south, for example, the old coast road or the roads between Baalbek and Marjaayoun on the Bekaa Plain. Furthermore, in several areas numerous "*feeder roads*" have been grafted onto this pattern, following a model that is commonly seen in developing countries (KEELING, 2010). Once again, this level of network has developed to meet the needs of the large populations living in the "refuge" of the Lebanon Mountains or on the Bekaa plain, the country's granary. In addition, CHOUEIRI (2008) stressed the ancestral role of goat tracks, which form a very dense network in some mountain areas. To complete this picture, mention must be made of cable transportation systems, such as the cable cars at Jounieh (linked to Harissa since 1965) and Jeita, which was built for tourists in 1995.

These superimposed networks include all the different forms of spatial structure (parallel or perpendicular to the coast, fanning-out from the coast, etc.) described by BAVOUX (1994). However, the polarization exerted by Beirut adds another layer to this pattern. Like the international airport, the capital's port is no longer a major regional player (since the civil war) because it lies off the main Suez shipping route. Consequently, in 2007 it handled a mere 5.3 million tons of merchandise and the trans-shipment of 580,000 containers

(source: Lebanon-CAS transportation department). Only the northern port of Tripoli, which handles 770,000 tons of merchandise, has developed a significant business, thanks to a favorable location and to development aid. Activity at the southern ports of Saida and, particularly, Tyr is currently highly reduced, whereas the port of Jounieh specializes in oil (745,000 tons) and Jieh and Zahrani are terminals attached to the ports of Beirut and Saida, respectively. On a national scale, and given the size of Lebanon, the smallest state in the Near East, Beirut has become a focal point for urban polarization rather than the origin of nationally structured networks. As the hub of the highway network, Beirut has several bus stations, most of which are served by private operators. The publicly run *Lebanese Commuting Company* (LCC) only serves the greater Beirut area. The Cola bus station, which has developed haphazardly around the *Résistance and Libération* intersection, serves routes to the suburbs and to Saida, Chtaura, Masna (border) and Damascus; the Sayyad bus station serves the Beirut Metropolitan Area (BMA) and the Bekka; whereas the Dora bus station mostly serves the north of Lebanon. Finally, Beirut's only formally structured bus station, Charles Helou, is situated close to the port. Located below a multi-storey car park, it has three zones (A-B-C) on the ground floor, each of which corresponds to a different scale of journey.

In zone A, large companies, such as *Zeitouni* and *Middle East Pullman*, provide international luxury bus services to Syria, Jordan, Iraq, Turkey, Bulgaria and Saudi Arabia. In Zone B, *Connex* and *Abiad* provide inter-city minibus or express bus services, particularly to the north (Tripoli). Finally, in Zone C, other companies provide less regular or on-request services, and *services* (collective taxis) and private taxis wait on the other side of the road to provide travelers with shuttle services.

This situation of superimposed services is combined with a fragmented situation that can be seen on different temporal and spatial scales.

Multiple fragmentations in a fractured territory: a prism through which to view transportation

On an urban scale, particularly within the BMA, fragmentation is favored by a number of parameters. For many years, the urban population has been divided along politico-religious lines and the civil war has resulted in numerous fractures, particularly either side of the famous Damascus Road. On a countrywide scale, mobility is also affected by the north-south divide, which produces a sometimes-telling degree of compartmentalization. This compartmentalization is reinforced

by the continued existence, especially along main roads, of military roadblocks, where drivers have to slow down and, at night, switch on their interior light. Some of these roadblocks were originally set up by Syria but have not been removed, even though Syria withdrew its forces in 2005 (e.g., the El Barbara roadblock between Jbail and Batroun). Many people see these roadblocks as a way for the State and army to maintain a visible reminder of their authority. Although these fractures do not always create periclaves (areas that are physically connected to the surrounding area, but cut off in functional terms) or isolates, the resulting fragmentations greatly affect the ways local people experience and perceive geography and mobility.

There is a very strong relation between transportation and identity. For example, the vehicle a person drives has great emotional and identity significance. Whether it is a painted trucks (KASSATLY, 2010) or a private car (of which there are 1.5 million in Lebanon, with an average of more than two per household), vehicles provide people with a way of expressing their identity or their membership of a particular group or community, through their license plate (the smaller the number, the more expensive the plate, therefore the higher the economic or socio-political status in Lebanese society), the tune played by the car's horn, the flying of a flag, or the brand of car being driven, etc. Outside Beirut, in the mostly Christian mountain areas, the roads are dotted with numerous votive offerings (mazars), as another affirmation of identity.

Functional urban isolation caused by the constant increase in road traffic produces a further type of fragmentation in the transportation/territory dyad in Lebanon. More than 800,000 cars enter and leave the capital every day (BARAKAT, 2006 and *Le Commerce du Levant*, 2008), leading to traffic jams that are now a permanent part of daily life, and to endemic atmospheric pollution (AZIDJIAN-GERARD, 2006; CHELALA, 2008). In 2004, private cars accounted for 69% of motor vehicles in Greater Beirut (source: Lebanon-CAS transportation department). Parts of West Beirut, such as Hamra, the Corniche El Mazraa and Mar Elias, and the areas of East Beirut near the Hôtel Dieu or the road from Tabaris to La Sagesse, are notorious traffic black spots and produce significant forms of diurnal compartmentalization on weekdays. In addition, the interminable lines of traffic entering and leaving the capital, particularly in the north between Zouk and Beirut and on the road to Damascus, contribute to the fragmentation of the capital (VERDEIL, VELUT, 2005, 2006, 2007).

This all road situation is the consequence of the history of transportation in Lebanon during the 20th century, as other networks (rail and air), which are more likely to be cut in times of war, have suffered from geopolitical instability. NAMMOUR (2002) clearly described the history of the Beirut tramway. Inau-



Photo 1 : Road traffic at the root of functional urban compartmentalization (Beirut near the port – urban highway northbound) (Photo by Bernier, June 2010)

gured in 1909 under the auspices of the Ottoman Tramway and the Lighting Company of Beirut (less than a decade before the fall of the Ottoman Empire), it had four lines serving the inner suburbs (see figure), all of which ran through the city center at Canons Square. Each line was identified by a different color (red, yellow, green and blue). The tramway closed in 1965, largely due to a lack of urban planning and modernization.

The end of the tramway also corresponded to the move to private cars, which had seen timid beginnings at the beginning of the 20th century (BERGAIN, 1919), and to 40 years of poorly controlled urban development (VELUT, VERDEIL, *op cit*). Although subway and tramway projects were put forward in the 2000s, trams are now just a memory for the people of Beirut (all that remains are some very short sections of railway and a few buildings that have been turned into fast food outlets).

The railway lines suffered a similar fate, although more frequent reminders of the railways remain in the Lebanese countryside. Photos 2 and 3 show, respectively, the remains of tunnels for the railway at Dahr El Baïdar Pass and a disused metal railway bridge on the coast near Jbail (Byblos). In the background of the latter picture, taken from the old coast road (railings in the foreground), it is also possible to make out the Beirut-Tripoli highway. Photos 4

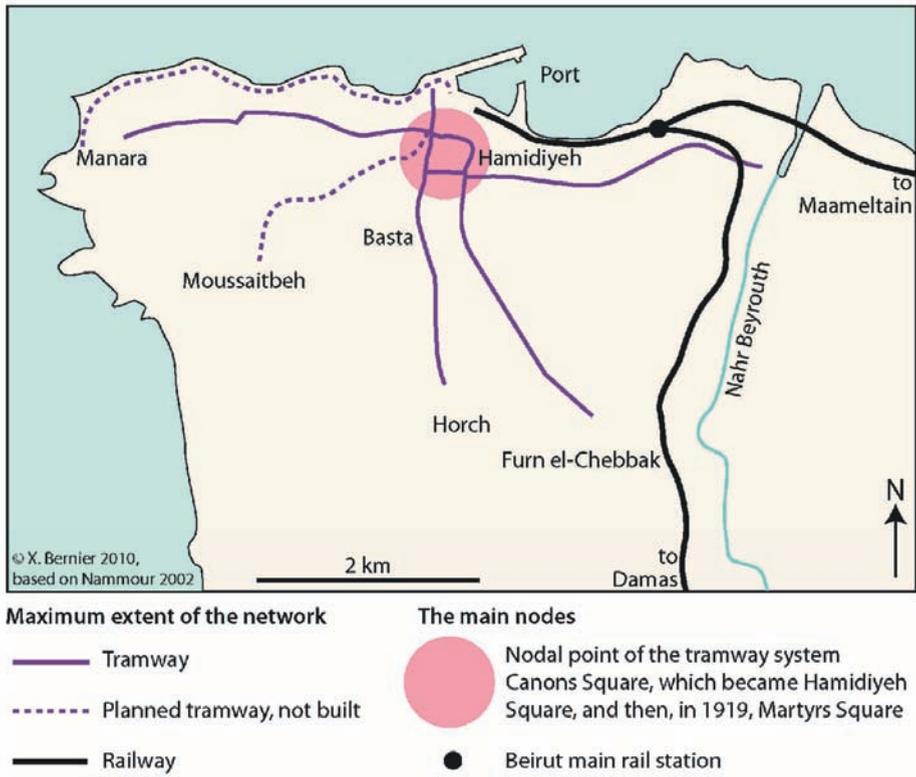
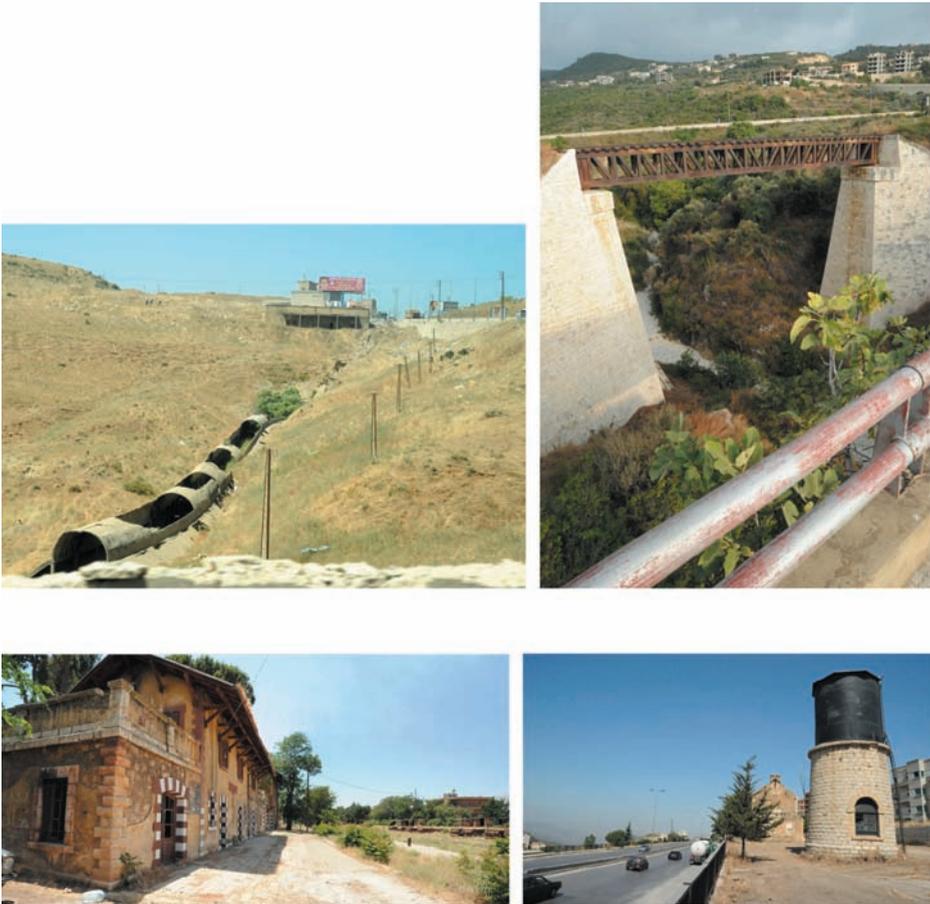


Figure 2: The Beirut tramway network at the beginning of the 20th century

and 5 show the disused stations at Rayak (note the presence of old wagons on the rails on the right-hand side of the picture) and at Bhamdoun (Lebanon Mountains), beside which passes the Damascus highway. Similarly, nearly all of Lebanon's aerodromes have stopped operating, and most of their runways have been abandoned (see figure 1). Only the airfields at Rayak, in the Bekka, and at Qlaiaat, in the north, which are used for military purposes, are still operating.

In fact, the dismantling of these networks, which were set up during the first half of the 20th century (ELEFTERIADES, 1944 and JADAYEL, 2005), occurred before the civil war. The newly formed independent State was first fragmented just after World War II, when the southern part of its transportation network was cut off by the 1948 Arab-Israeli war. In 1959, four years after Syria, Lebanon nationalized its decrepit rail network with the intention of modernizing it. Unfortunately, a large proportion of the infrastructure was destroyed during the 1975-1990 civil war; although rail traffic was never brought to a complete standstill.



Photos 2-3 (top) and 4-5 (bottom): 2 (Abandoned railway facilities at Dahr El Baïdar Pass), 3 (Three parallel transportation axes near Jbail – Byblos-), 4 (Disused railway station at Rayak – Bekaa-) and 5 (Bhamdoun – Lebanon Mountains-: Damascus highway and former railway station) (Photos X. Bernier, June 2010)

Many people saw a symbol in the “Peace Train”, which ran from Beirut to Jbeil in October 1991, but no trains have run in Lebanon since 1995. In addition, reconstruction projects for the coastal line and the Bekaa line, which were launched in the early 2000s were extensively damaged during the events of 2006. None of these disused infrastructures have been the focus of any real effort to conserve them or promote their heritage value. The development of the road network also contributed to the dismantling of the rail network. Comparison of the maps (figures 3 and 4) shows that a multi-modal system dominated by outside interests, particularly links to the Ottoman Empire, has been replaced by a mono-modal network that is more centered on Lebanon, and that must be analyzed differently.

LEBANON VIEWED THROUGH ITS TRANSPORTATION...

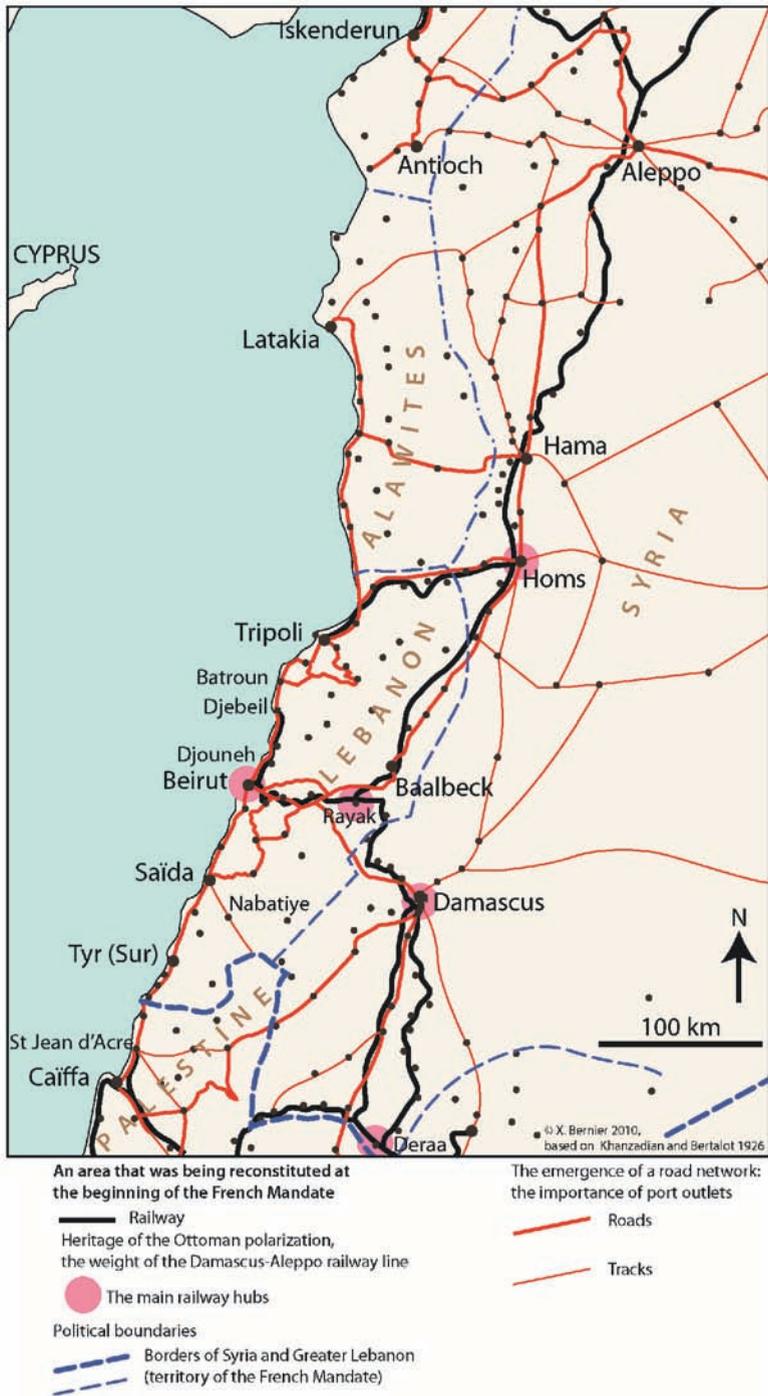


Figure 3: Transportation networks in 1926

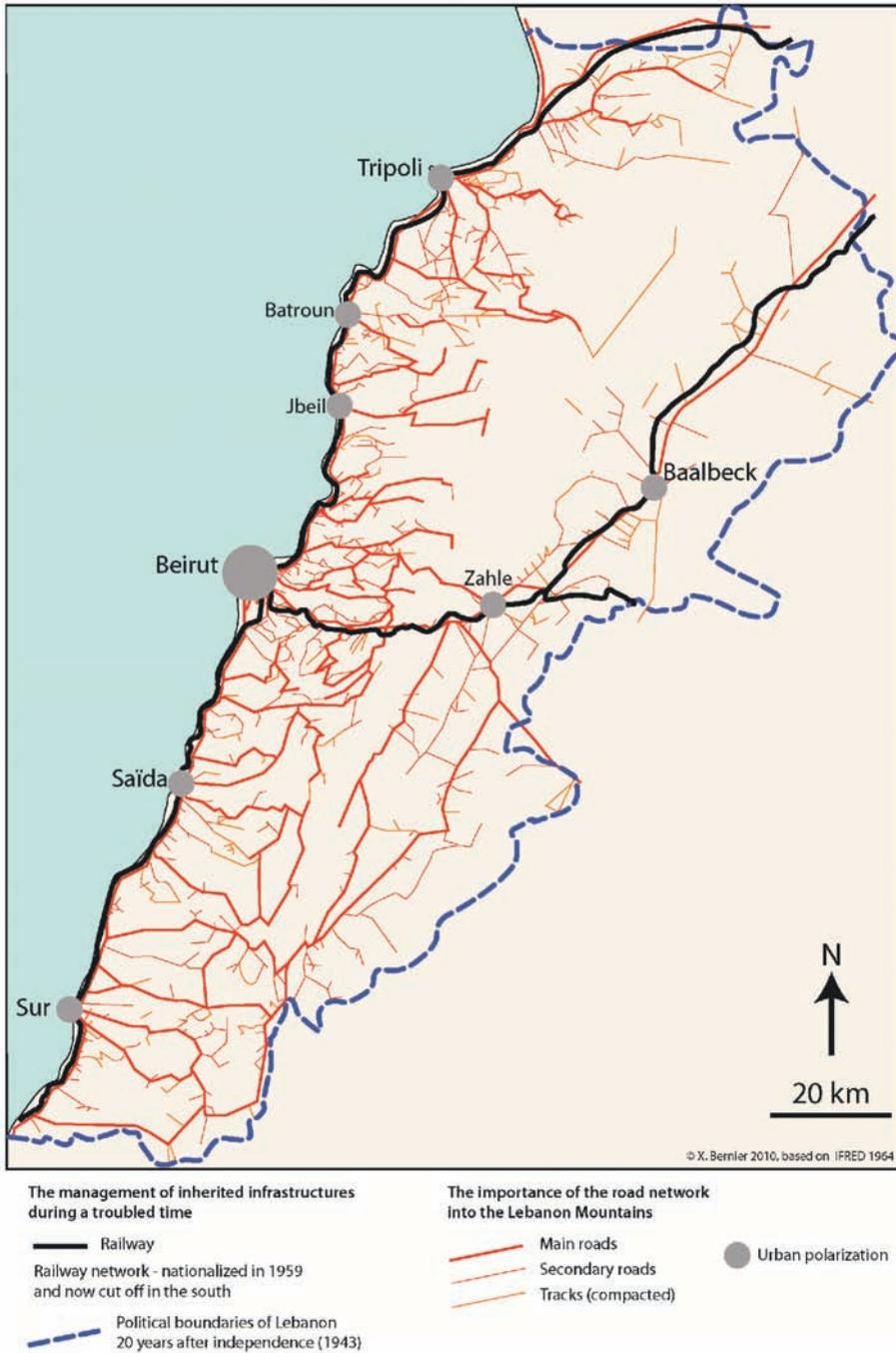


Figure 4: The state of transportation in 1964

Transportation and territories: towards a new pattern?

Figure 5 uses chorematic modeling to interpret the transportation situation in Lebanon, taking into account a number of inherited features. In terms of port geography, BALANCHE (2005) clearly showed the role of outside interests linked to the Ottoman period and Syria's desire to gain access to ports. These issues have been very important in determining Beirut's current place, notably with respect to Tripoli, Lattakia and Iskenderun. As mentioned above, the north-south railway network historically focused on serving the interests of the Ottoman Empire and Syria.

Hence, Lebanon now has a number of superimposed networks, including the "sideways-T" described earlier, on which has been grafted a double-barred "H". The toothcomb structure, which characterizes the western side of the Lebanon Mountains, was formed by accumulation and to meet "local objectives and clientelist pressures. Members of Parliament have also long diverted the sums earmarked for local development" (VERDEIL, FAOUR, VELUT, 2007, p165). In addition to the Beirut-Damascus route, there is no lack of roads over the mountains, built for economic or strategic reasons. For example, the road to the north of Jabal el Knisse between Zahle and Antelias provides an alternative to the Damascus highway. Also to the north (near Qornet El Saouda, the highest point in Lebanon, at 3083 m), the Cedars Pass road provides a route to Baalbeck. Because the roads through the mountains can be closed for weather, political or military reasons, alternative routes have been created. For example, low altitude roads via Tripoli and Homs can be used to get from Beirut to Damascus. During the civil war, the political isolation resulted in a different way of organizing transportation in the north, with the use of mountain trails, initiatives to reconstruct stretches of railway line in 1983 and 1989, the use of the aerodrome at Qlaiaat for civil flights, and the introduction of a cabotage system from the port of Jounieh. During the events of 2006, and after the bombing of international airport, when it became necessary to evacuate civilians, the ports of Beirut and Jounieh regained their strategic role, thereby reactivating older, less centralized networks. Similar adaptation strategies also emerged in the south of the country, between Marjaayoun and Nabatiye and between Machghara and Jezzine. Since 2006, Jezzine has started to become a real hub, thanks to reconstruction work and the building of alternative networks of mountain roads, in order to ensure links between southern Lebanon and the Bekaa. The Jezzine road also offers a much lower-altitude (around 1000 m) crossing point than the main road passes.

Due to this great flexibility and adaptability, the transportation system in Lebanon can be described as a "fluid network", to reprise the concept used by

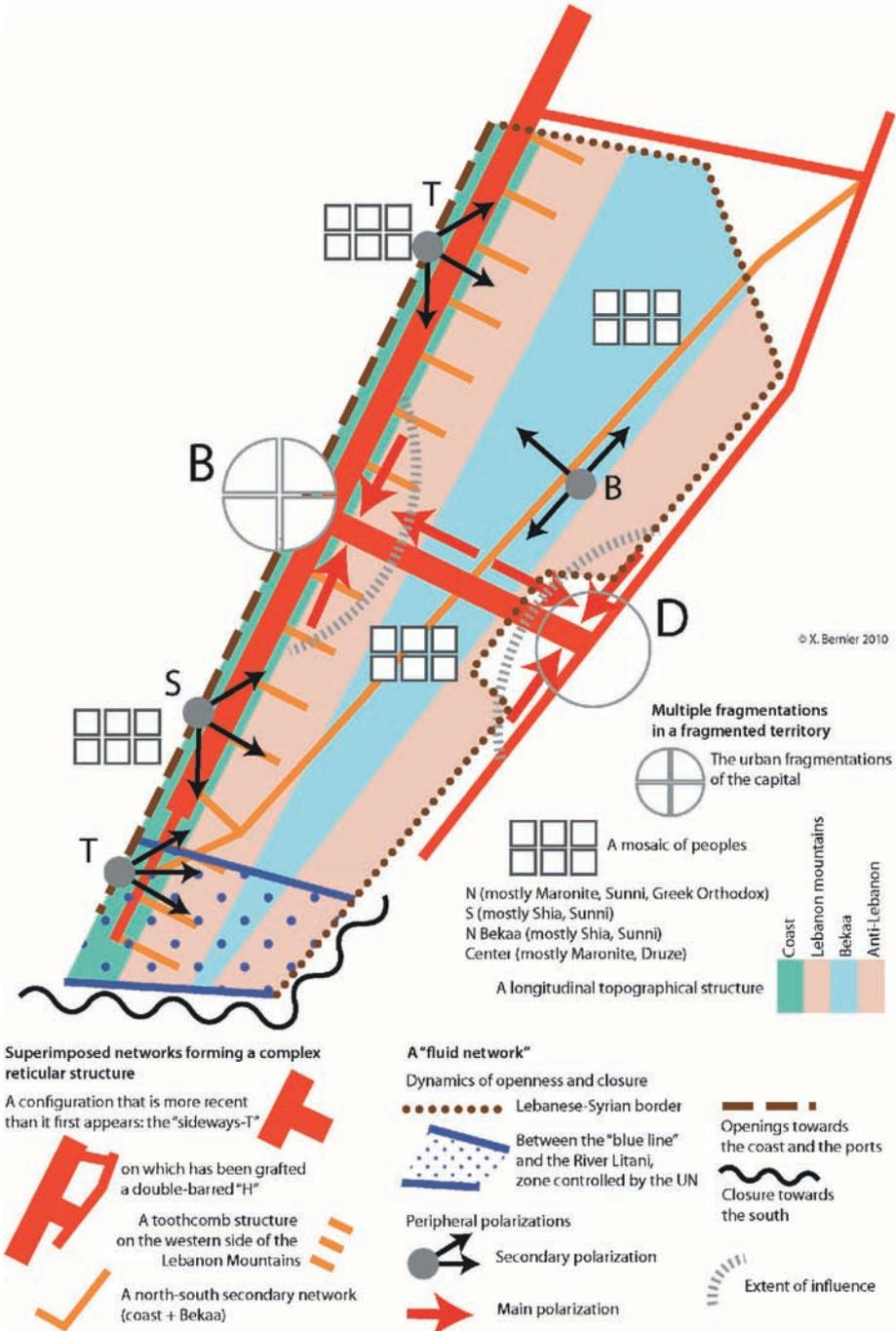


Figure 5: Chorematic approach to a "fluid network" in a fragmented territory

FREMONT (1999) and DI MEO (1998) to describe certain models of regions. Transportation infrastructures in Lebanon can be considered “fluid” because of the country’s ability to very quickly rebuild infrastructures after they have been destroyed (VERDEIL, 2006; MERMIER and PICARD, 2007) and to set up and optimally use parallel networks, in particular in mountain areas. This fluidity is particularly evident in the way Lebanon’s people appropriate the networks, which is based on dynamic processes that allow the population to react quickly to temporary or long-term closures of infrastructures and regions (BERNIER, 2007).

Conclusion

In summary, Lebanon appears to be an example of a new system, structured by multiple centers and peripheries and subject to complex centrifugal and centripetal forces. Lebanon’s political geography is as much a product of its transportation system (SANGUIN, 1977) as its transportation system is a product of Lebanon’s political geography. The wars that have torn Lebanon apart over the last few decades have had a major impact on the country’s infrastructures and territories. In the Middle East (HERODOTE, 2007), as in Central Asia (THOREZ, 2007), populations are drawing up the paradigms of a new geopolitics, and transportation is undoubtedly one of the main keys to this process. Although developing an appropriate transportation network cannot solve the country’s problems, it is an essential element in meeting the challenges facing the country. One of Lebanon’s biggest challenges is to overcome the recent and long-term processes of fragmentation. This means working within the current Near East context to move beyond its peripheral status, a status that is sometimes prized and sometimes disparaged. On a countrywide scale, the development of transportation and mobility is a means by which isolates and “periclaves” can be brought back into the fold (REYNAUD, 1992). For a country that has never stopped evolving, this is the price that has to be paid in order to achieve territorial coherence.

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