COMPARING HABITATS

Steel versus Asphalt: The Politics of Infrastructure in Post-Independence East Africa

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Abstract (Preamble)

On the 1st of August 2017, I step on an old Chinese train in Dar es Salaam, Tanzania. The aim of my trip was not simply to reach Kapiri Mposhi, the Zambian city which lies at the other end of the tracks, but to be on that train, to be in the in-between space of infrastructure in order to understand how it operates and what are the consequences of its presence on the territories we were crossing. During the following 64 hours we climbed mountains, we crossed plains, natural reserves, deserts, marshes, woods, tunnels, bridges, villages, cities and one national border. My first-class wagon was crowded with “Musungu” (white in Swahili) tourists going to inner Tanzania for a safari tour or heading to the South of Zambia to see the Victoria Falls. But many other people were sitting on that train with their bulky luggage. Unlike me, they all had a destination. Most of them, with their sacks, boxes, baskets, backpacks and matresses would step off the train before the end of the line.

I had been reading about that train before I ever stepped onboard, I knew the answer to many of the questions we usually don’t even ask ourselves while traveling. I knew that the railway was a project envisioned by Zambia and Tanzania right after their independence to emancipate themselves from white colonial domination, I knew that the project was built by the People’s Republic of China (PRC) in the 1970s, I knew its symbolic and political significance but there were also many things I didn’t know, many things that are not written in books. I had to be there, I had to experience them or, to say it with Bruce Robbins’s words, I had to breathe the “smell of infrastructure”, [1] to experience the freezing temperature of the Iringa region, the 16 hours delay, the changing rhythm of the train and the noise of the breaks before entering the stations.

From my window seat, I kept on staring at the landscape and at the highway which runs almost parallel to the railway. The road keeps on changing in size, width and materiality, but it is always the same road: the TANZAM highway. I had been reading about the highway too, I knew that it was originally built to convey British troops to the German front during World War I, I knew it was paved for the first time thanks to the World Bank and other western donors, I knew a lot but I knew nothing about that road before being there. I didn’t know the dust, the potholes and the variety of vehicles which can be found on the highway, the changing colours of the landscape and its silence at night.

The steel lines of the tracks and the asphalt strip of the road are now part of the palimpsest of the territory like rivers, hills and lakes have been long before the train arrived [2]. They created a new geography and defined a new territorial structure. They affected the patterns of mobility, of urbanization, of production and consumption.

In our everyday life, we rarely experience infrastructure with this level of awareness, it is merely an instrument we use to reach places or to send goods. Infrastructure resides in a “naturalized background” [3], it is always out of focus. Walter Benjamin wrote that architecture is the prototype of artwork we experience in a state of distraction [4]. If this is true of Architecture, it is even more true of infrastructure.

Comparing infrastructures

My claim is that infrastructures need to be read not as mere utilitarian and neutral technological artefacts, but as cultural, political and historical phenomena [5]. They are the products of power ideologies entangled with specific historical circumstances and geographic conditions; the result of various, often colliding, agendas and interests.

Transport infrastructures, in particular, are multi-scalar phenomena; they are simultaneously local and global, as are the political forces
and cultural influences that shape them and the effects they produce [3]. In order to unveil their complexity, we need to address them from the global, the national and the local perspective.

The understanding of the relationship between geopolitical rationalities and infrastructure design and materialization draws on Science and Technology Studies (STS) and on the work of scholars such as Gabrielle Hecht and Timothy Mitchell who defined strategic infrastructure design as “technopolitics”, a specific way of governing based on the use of technological assemblages. The space of infrastructure is, conceptually and physically, the space of negotiation between power ideologies and everyday life. Once implemented, infrastructure and other assemblages, might cause unpredictable displacement of power, escape the original intentions of the system designers and have unforeseen consequences on territories and society. Their own material properties can be re-interpreted and recycled for different uses than the original ones [6,7].

The in-depth observation of the microscale and the “everydayness” of infrastructure draws on the Aristotelian concept of “aesthesis”, intended as a form of cognition based on the sensorial experience [8]. The description of this dimension unveils spatial and social dynamics generated by the materiality and technology of infrastructure.

This paper tries to expand the classic comparative model of urban studies -which historically puts two or more cities into dialogue – by comparing two territorial infrastructures, their materializations, their spatial consequences, and their cultural inspirations.

The main hypothesis of this work is that infrastructures are the materialization of a specific system of values and that therefore, comparing infrastructures means comparing different technologies, ideologies, different projections of society and of territory.

The questions I am asking are: Who envisioned the project and for which reasons? Who built it and how? How is the project actually used and what are its social and territorial consequences?

While the historical subject matter of this paper has been researched through existing literature and archival material, the spatial analysis is based on direct observation and on the study of contemporary and historical visual and written sources. Through a dense description of the aesthetic of the infrastructure and the processes it generates I try to unveil the everyday life of infrastructure and the way in which its presence modifies spaces and behaviours.

The two case studies I am analysing are the TAZARA railway and the TANZAM highway. The road and the railroad had been conceived for the same reason, they have been financed by different and competing actors
and built with very different construction techniques; they operate in different ways but they both had unexpected territorial and social consequences.

They were indeed part of the same project of rationalization and control of the African territory promoted by national and international interest, but they also reflect the ideologically divided world of the 1970s and the geopolitical dynamics which lead to the birth of the ‘Third World’.

Freedom and development

Fig 1. TAZARA Railway and TANZAM Highway. The map shows the route of the two infrastructures.

The need for a new link connecting Zambia and Tanzania became evident when, in 1964, Northern Rhodesia (from then on Zambia) won its
independence from Britain. Zambia became a landlocked county whose vital outlet to the sea ran through opponents' territories. In 1964 Portugal was still controlling Mozambique and Angola. Southern Rhodesia was still under British dominion, while South Africa was ruled by a white minority. Moreover, in 1965 Southern Rhodesia proclaimed its Unilateral Declaration of Independence (UDI). The illegal declaration entailed a series of United Nation's (UN) resolutions escalating to a complete embargo on goods to and through the country. The embargo affected Zambia more than Rhodesia, that could count on supply by South Africa. The specific geopolitical situation inevitably led Zambia to turn towards its most politically reliable neighbour: Tanzania. Tanzania has been independent since 1961 and was governed by the socialist and pan-Africanist Julius Nyerere. Despite the fact that both countries had been British colonies since WWI, the only physical connection between the two was a road (the Great North Road) built in 1917 to convey British troops from Northern Rhodesia to the East African Front. In 1968, after 4 years of intensive use since the UDI, the dirt track, which was impassable during the rainy season, ‘had earned the evocative name of “hell run”’ [9].

Establishing the new link had various economic and political reasons. Given the high dependency of Zambian economy on copper exports and the scarcity of internal production of manufactured goods, food supply, and fuel; the new connection mainly needed to provide a reliable import/export route. Within Zambian territory, the link had also another task. At the time of independence, the majority of Zambian people, industries and services were concentrated along the Rhodesia Railway, built by the British in 1911 to export copper towards the South. Away from the North-South line, people were living off subsistence agriculture in sparse villages or small towns. President Kaunda’s hope was, through the new rail line, to make those lands and people productive in order to slow down migration toward the West and increase agricultural production through a cash crop economy [10].

The newly founded states had gained political independence but were far from being economically self-sufficient. Their economies were weak and often remained in the hands of the previous colonizers. Zambia and Tanzania made no exceptions, despite the recurring claim of self-reliance, they couldn’t count on sufficient capital nor knowledge to undertake the construction of what they envisioned as the “Freedom railway”. Their preference for the railway was rooted in their history and in the attempt to reach economic independence. They thought that once the rail was done, it could operate without further foreign imports of oil and vehicles.

The diplomatic effort to gather foreign aid led to an unexpected but paradigmatic African Cold War situation. After the UK, the USA, the Soviet Union and other western donors refused to finance the railway, while the People’s Republic of China expressed interest in providing
funding and expertise for the rail construction. In response to the Chinese proposal, the World Bank offered financial assistance to improve the remains of the “Great North Road”.

After independence, foreign powers who could no longer exert direct political and military control on African territories envisioned a new but not less imperialistic strategy of indirect rule: the funding of development infrastructures. Initially, African leaders could use the circumstance to their advantage, but in the long term, the aid mechanism led to the creation of new and the strengthening of old dependencies [11].

The Tanzanian-Zambian link had also a continental symbolic meaning. Presidents Kaunda and Nyerere were strong supporters of the Pan-African Movement and believed in the principle of collective self-reliance. The role of the “Freedom railway” was to emancipate Zambia from colonial rule and strengthen African unity, subverting the existing pattern of colonial territorial exploitation and arbitrary fragmentation [12].

The idea, both material and utopian, that networks of exchange and trade would bring wealth to the continent was not an invention of Pan-Africanist politicians and intellectuals. A diffuse Saint-Simonian blind faith in communication and transport systems characterized the Modern culture of urban planning starting from the 1930s. Already during the first “Congrès International d’Architecture Moderne” (CIAM) of 1928, architects and urban planners, fascinated by the possibility of individual automobility, envisioned a new paradigm in urban and territorial design based on transport and communication networks. In the following years, seeing the world in terms of networks and, at the same time, using networks to design the world became a diffused tendency [13]. Among the modernist architects who subscribe to this movement, Constantinos Doxiadis deserves to be mentioned here for his specific work in the African continent and for the use he made of transport infrastructure to globally re-balance urban settlements. From 1960 on Doxiadis had been working in close contact with one of the fathers of the Organization of African Unity (OAU) and president of Ghana; Kwame Nkrumah. Influenced by Nkrumah’s pan Africanism, Doxiadis had self-financed a research and the production of a masterplan proposal to solve what he described as the two main issues of the continent: fragmentation and underdevelopment [14]. The solution, his “African Transport Plan”, was offered to the United Nation Economic Commission for Africa (UNECA) and to other African leaders in 1963.

African Cold War

The railway and the highway, which ran partially parallel to each other, have been seen by many as an embodiment of the clash between
a socialist vision of infrastructure development, in which the state plays a prominent role, and a capitalist vision of free-flowing commerce and increasing individual mobility (15). This view is clearly very schematic, but there are some aspects of this “conflict” between the railway and the highway that need to be addressed.

The TAZARA Railway

After 5 years of surveys and negotiations, the construction of the Railway begun from Dar es Salaam in 1970. Given the extreme topographic situation, the assembly of the railroad proved to be complex and invasive. However, the “mobile-construction site” proceeded at the average speed of 3 Km a day and reached the Zambian copper belt 5 years, 300 bridges, 21 tunnels and 93 stations later [9]. Together with the railroad, the project included the construction of side infrastructures and services such as train stations, power plants, electric and water networks, offices and warehouses. Workshops and schools where locals could learn to fix and maintain the rolling stock were also established.

“The working team of the People’s Republic of China” decided to deploy a labor-intensive strategy which was considered more suitable for developing countries with a shortage of capital and surplus of underemployed manpower both Chinese and local.

The Chinese state played a prominent role in all phases, it granted the interest-free loan and coordinated the project from the initial survey to the construction.

The TAZARA was advertised in China and abroad as the “friendship railway”, a common third world struggle against the forces of neo-colonialism based on solidarity among countries who shared a “history of imperial conquest and colonization” [15].

The decision to provide a collective means of transportation and the behaviour of the construction team is also reflecting the Chinese political and social context. The effort of collectivization and industrialization imposed by the ‘Great Leap Forward’ between 1958 and 1962.

Africans were indeed surprised by the humble attitude of the Chinese supervisors who took part in the manual labor, slept with the other workers in the camps along the route and wore the same uniform. Chinese workers would gather in groups and avoid, beyond working hours, any contact with locals. The language issue was surely the first reason for their detachment, but there was also, from both sides, suspect and fear of “political penetration”. From the beginning
of the Sino-African collaboration, western newspapers envisioned what they called “yellow peril”, the threat of communist propaganda and the spread of Maoism in the African continent [16]. More than Communism, though, China needed to export goods and establish new political alliances. After the Sino-Soviet split and the US embargo, indeed, the PRC was left economically and politically isolated.

The TANZAM Highway

Fig 2. Steel versus Asphalt 1. Advertisement on the “Times of Zambia”

Presidents Kaunda and Nyerere believed in a co-operative and egalitarian way of life. As soon as they seized power, they nationalized mineral resources and industries. The railway they envisioned was part of their socialist project of collective development [17]. Increasing individual freedom of movement was not
among their priorities but they both accepted the offer of the World Bank to improve the “Great North Road.”

The alignment and paving of the Highway started from Zambia and was completed in 4 years between 1968 and 1972. The role of the World Bank was to collect the capital and supervise the project from a legal and technical point of view. The funding came from the Swedish government, from the United States, from the UK and from the bank itself. The road was divided into smaller sections, each of which was the object of a separate call for bids. This procedure was intended to “enable smaller contractors to compete with larger firms and thereby help ensure competitive pricing” [10]. Most of the contractors were foreign companies that imported machinery and experts and made little use of local labor. The project consisted only of the alignment and paving of the road, no other facilities were planned.

Western donors decided to support Zambia and Tanzania but on their own terms. Through the construction of the highway, they oriented their efforts towards the creation of what Gramsci defined cultural hegemony: the diffusion and popularization of their worldview, their values, and ideals such as individual freedom, free flow mobility and private property (18). The narrowness of this western idea of progress, sometime a-critically considered universal, is here highlighted by the comparison with the socialist idea of progress as a collective effort.

Encouraging the development of automobility, through the construction of the highway, had also a political and economic meaning. The passage from a coal to an oil-based economy was a consequence of the agreement, signed during Breton Wood conference after WWII, through which Britain and the USA envisioned a new mechanism to control the global movement of money through oil [7]. For Martin Bailey, historian, and author of “Freedom Railway”, there is no doubt that the motor lobby, which was extremely powerful in the US, put strong pressure on the American government to opt for improving the Great north road rather than building the railroad [9].

During the 1970s, within Zambian newspapers (Times of Zambia and Zambia Mail) automobiles were one of the most advertised product. Both costly and modest Ford, Toyota, Volkswagen and Range Rover were promoted as the future of mobility. The number of private vehicles in the country did indeed grow from the 1960s, but in the late 1970s, the oil crisis inverted the growing trend and in the 1980s the numbers of cars started decreasing [19].
Steel versus Asphalt

From the satellite image, the steel rails and the asphalt strip are just two lines in the landscape, but a closer look reveals their different materializations and technologies which generated different uses and spatial consequences.

Steel

During the colonial time, the railway was called “the permanent way”. By drawing straight lines of steel European engineers wanted to impose order to the unknown and unfriendly African landscape. Trains and railways structured the current unequal and fragmented political geography of the continent [20]. The TAZARA freed the railway from its colonial past and converted it into a postcolonial tool of liberation.

The relationship between the competing images of modernity that the road and the highway entail, demonstrate the phenomenon that Benjamin defined as the “illusion of progress under capitalism.” [4]. Railways are not the obsolete ancestors of roads, they are not less advanced or modern, they are just a different technology.

Railroads are complex and rigid systems, they are composed of steel bars and concrete slabs, of straight segments which curve and climb slowly and with difficulty. Even though the TAZARA tracks are often used as pedestrian paths and shortcuts, there is one way of traveling on the railway: on a train.
Travelling on the train is not a continuous experience, the speed is constantly changing, the train is braking, stopping and departing again, its rhythm changes and our perception of the landscape changes with it. The straight line of the rail is punctuated by the presence of the stations which make the line a non-continuous set of fragments. The stations are privileged points of the new geography of the railroad which evolved into centres of both spontaneous and planned new settlements. Such settlement did indeed concentrate the scattered population of the north-east provinces, but they never gained relevance at the national level.

Two times a week the “ordinary train” stops at all 93 stations. People buy and sell goods from the train and from the platforms to travellers and dealers. The goods, which include bananas, potatoes, fried pastry and fresh drinks but also sacks of rice and maize, furniture and other goods, vary along the route. In the almost 2000 km ride, in fact, the climate, the landscape and the rural production change radically.

The railway, initially imagined as a state-controlled transport facility to export the product of nationalized mines, is now a tool for small-scale business and local trades. The stations have been designed following a modular incremental scheme. The smaller stations are the basic unit, the medium size ones are obtained by adding one or two extra modules to the small one. The main stations are specifically designed, they are all different from each other but they present some recurring elements such as perforated panels, platform roof and standardized graphic signage. Some of them are well maintained, some others have been abandoned. The overall consistent aesthetic of the TAZARA underlines its extra-state nature. It is a linear territorial enclave designed by the PRC and managed by the railway authority.

Asphalt
Roads are difficult to frame historically, they have been part of the landscape since the first man inhabited it. Initially, they were narrow paths which then became dirt tracks and then, eventually, paved roads. In his “Toward an Africa Transport Plan”, Costantinos Doxiadis wrote: “A railroad either exists or does not exist but the borders between existence and non-existence of the road are less clear-cut.” [14]. In the same way, a road is potentially never finished.

Asphalt is more resistant than sand or gravel but it is not permanent, it needs to be constantly made and remade. Asphalt is a viscous, malleable, almost liquid substance. It allows for deviations, intersections and plug-ins. Thanks to these qualities, roads tend to become networks. The TANZAM highway never did.

Since the spread of the automobile, roads became a universal and mundane element of the planetary landscape. While Africa has 204 km of roads per 1000 km² (of which only one quarter is paved), North America has 3400 km per 1000 km² and the world average density is of 944 km per 1000 km² [21]. Even though ‘the spatial density of roads in Africa is (...) significantly lower than anywhere else in the world’ [22], everybody knows what a road is and everybody knows how to use it.

What differs in experiencing roads are the tools we use to move along them. Different vehicles provide different speeds and modify our perception of space. The flexibility of the road makes it hard to frame it also from a conceptual point of view, it is the “matter that enables the movement of other matter” [8]. When a road is a base on which other objects operate, the road becomes a system which includes cars, bikes, buses, motorcycle and people.
The image of the car as the main vehicle of the highway is a Global North assumption, a modernist dream that never became reality. What operates on the TANZAM highway are mainly trucks and overcrowded and highly decorated buses. Mobility on the highway is collective (yet, individual mobility and freedom of movement have always been possible, they don’t require any specific tool).

A well paved, non-urban road can provide a constant speed. The smoothness of the road creates a distance between the passengers and the landscape. The interaction begins when the continuity is broken when the speed decreases and when the traveller and the landscape are at the same time and place. The traveller-place encounters happen at bus stops, at crossroads and forks. Such specific, but not necessarily fixed breakpoints with the continuous flow are generating what Philip de Boeck describe as “thickenings of public” and human activity [23].

Alternative conclusion

Economic development and urbanization processes along the railway and the highway didn’t materialize as expected. The daily use of the infrastructures and the local and global political unfolding of the last 50 years subverted the original intentions of the governments and the foreign investors who envisioned them. The two infrastructures have been competing as export routes, but they have also been co-producing the new territorial hierarchies of the country.

The first and main goal of the two lines was to export Zambian copper through Tanzania. In this regard, the highway and the railway were competing in offering the faster and cheaper service. After the end of Southern Rhodesia’s crisis, in 1980, the copper destined to Europe and the Americas could again transit towards the south. The TANZAM highway is still used as a trade route to China, Tanzania and the East but the majority of copper extracted in Zambia is now exported on wheel through the ports of South Africa, Namibia and Mozambique and is directly managed by the, now private, mining companies of the Copperbelt.

The railway and the highway co-created a new territorial structure, shortened travel times and distances but, despite the effort to redistribute population and re-organize the productive landscape of the North and the Muchinga provinces along the Dar es Salaam multimodal corridor, Zambia is still structured along its colonial axis. Migration towards the old line of rail and the Copperbelt didn’t stop after the implementation of the new infrastructures, which, against the initial intentions, increased mobility and made it easier to reach the mining and industrial areas along the old line of rail.

The new shape of the territory as a landscape of lines, axes, points, blocks and flows is just one of the possible materialization of carbon
capitalism [24]. The linear-punctual sprawl that was generated by the highway and the railway is the result of their own material properties but also of the oil crisis of the 1970s which prevented the spread of individual mobility.

The shaping of the territory is not just consequence of the design of infrastructure, but also and foremost, the consequence of how the infrastructure is used.

References

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