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Infrastructural scripts
Histories and futures of urbanisation along the Ethio-Djibouti Railway

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Declaration

I hereby declare that the contents and organization of this dissertation constitute my own original work and does not compromise in any way the rights of third parties, including those relating to the security of personal data.

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Abstract

Every day, a constant stream of trucks and people moves between Addis Ababa and Djibouti City, the capital of the eponymous nation and one of the largest and busiest ports in the Horn of Africa. It is from this port that most goods transit to and from Ethiopia making this route a strategic economic corridor for both countries. The importance of this corridor can be traced to the colonial past when, at the beginning of the 20th century, a French company built the *Chemin de Fer Djibouto-Éthiopien*, providing landlocked Ethiopia with railway access to the sea. Partly following this colonial infrastructure, a new standard-gauge railway has been planned and built by China, and inaugurated in January 2018: the Ethio-Djibouti railway. The new rail link is a key component of an ambitious effort to take a country of nearly 100 million people to middle-income status by 2025. It is part of a political strategy that plans to spur industrialisation, urbanisation and economic growth through the construction of new infrastructures and industrial parks.

This dissertation follows the architectural traces — what I call "infrastructural scripts" — of the Ethiopian railways over an extended period of time, during which the desire to connect Ethiopia to the Red Sea for commercial purposes coexisted with various other political rationalities pursued during the French colonial period, during the Italian occupation, and, eventually, during the government of the Ethiopian People's Republic Democratic Front. The railway, intended at once as a narrative device and an object of study, charts the making of a territory according to the different visions of capitalist development that have followed one another in the course of time, revealing the multiple spatial and political logics embedded in its architecture.

By drawing on technopolitics, development scholarship and architectural history, this work brings new insights into the understanding of infrastructure in Africa,

opening new perspectives on the interplay between architecture and ideologies — both political and economic — behind its construction. Methodologically, it combines ethnographic and archival material collected between 2019 and 2020, using the concept of *scripts* to underscore the architectural traces at the base of the investigative process. In doing so, this thesis argues that infrastructures are polyvalent artefacts which reveal at once the recursiveness and the discontinuities and incompleteness of territorial building processes. The architectural traces of Ethio-Djibouti railway, specifically, speak to the ways in which infrastructures give form to different ideologies of statecraft, entangling histories, material realities, and future expectations.

The dissertation is divided into three chapters. The first chapter presents a diachronic narrative by identifying three historical moments in which infrastructure was the protagonist of relevant spatial transformations on the African continent. The following two chapters focus on the case study — the Ethiopia-Djibouti railway — in which traces of the colonial past are juxtaposed with the political narratives of the present Ethiopian government.

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Introduction

Infrastructure is much more important than architecture[1]
Rem Koolhaas

Overview and research questions

In his seminal manifesto *Vers une architecture* (1923), Le Corbusier celebrated the industrial aesthetic of the American grain elevators and factories. He referred to those architectures as "the magnificent first-fruits of the new age" (p. 20) and considered the factory as the object that best matched the 19th and early 20th century societies. Almost one hundred years have passed since Le Corbusier's words; the logic of neoliberalism and globalisation have transformed the economy by affecting production processes, altering localisation principles and relations between markets, commodities and labour. In this context, connectivity infrastructures[2] play a crucial role as key engines of the world economy (Castells 1989, 2011; Khanna, 2016). Infrastructures determine the ways in which people, goods and data move, their pace and speed within a system that spatially replicates a society's political and economic protocols. In this sense, while factories were the tangible incarnation of the early 20th century, infrastructures seem to embody the spirit of our time **[fig 0.1]**.

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[1] When asked "What defines a modern city?" Koolhaas replied in a 2012 interview: "When I was 12, I saw a picture of Brasilia in Time and it triggered me to be an architect. It suggested that through architecture you can control cities. But cities are reaching a new scale and a level of organisation where architecture has to recede in terms of its claims. Infrastructure is much more important than architecture" - https://www.newstatesman.com/culture/art-and-design/2012/05/ns-interview-rem-koolhaas-architect - last visited 10 January 2021.

[2] Infrastructures can be defined as "physical networks through which goods, ideas, waste, power, people, and finance are trafficked" (Larkin, 2013, p.327). In this thesis, infrastructure mainly refers to physical infrastructure, in particular transport infrastructure.

Infrastructural standards creep into the walls of buildings to regulate indoor climate, energy and water flows, as well as construction techniques, affecting the development of architectural design. Operational requirements define the width of tracks, the formats for data transfer, the depth of harbours, the length of airport runways, while also determining the spatial organisation of mobility networks, their location and aesthetics **[fig. 0.2]**. From logistics centres, industrial clusters, mining sites, energy plants, greenhouses, transport corridors to informational networks, the number of these infrastructure objects is increasing in density, especially in cities (Amin & Thrift, 2017, p.74), where their connective fabrics overlap both horizontally and vertically, joining undersea abysses with the highest skies of the atmosphere (Graham, 2016; McNeill, 2020).

Infrastructures, however, are not just functional systems designed to move people, things and information. They are also a medium through which power — especially the power of the state — is exercised and given a material form. As such, infrastructures reveal forms of "political rationality" (Larkin, 2013, p.328) by transforming ideologies into artefacts of government: devices used by the state, and by other economic forces, to enact their power (Scott, 1998). This fraught relationship between infrastructure, capitalism and political ideologies is particularly evident in the history of the modern African state, in which infrastructural concerns have been one of the driving rationalities of both colonial and postcolonial statecraft. Still today, the narrative of the infrastructure "gap" is at the centre of African polity, in the nexus of finance, urbanization and the formation of political power (Goodfellow, 2020).

One conspicuous example of this complex interface between infrastructures and economic development in Africa is in the history of the modern Ethiopian state, which is at the centre of this thesis's investigation. In particular, my dissertation focuses on the railway that connects Ethiopia's capital, Addis Ababa, to the port city of Djibouti, looking at its evolution during the colonial and post-Derg periods and using architecture as an entry point of the inquiry. A narrative device and an object of study at once, the railway allows us to move along a space with defined but elastic boundaries, which expand or contract according to the different development visions that have followed one another in the course of time, revealing the multiple spatial and political logics embedded in its architecture.

The first railway connecting Addis Ababa to the Gulf of Aden was built at the beginning of the 20th century by the French. It emerged within the imperial project to innervate Africa with exploitative commercial corridors, but it was also a powerful tool in the making of colonial urban space and in disseminating ideas of modernity and progress. In 2018, a new standard-gauge railway, funded with Chinese capital, replaced the old one and reactivated the infrastructure corridor, giving a new boost to the country's logistics and industrial sectors. This is part of a national development plan based on strategies that seem to replicate those of emerging Asian economies. It is an example of what can be defined as *infrastructure-led* development, an emerging regime that is booming in Ethiopia — but in general throughout the African continent — and triggering a restructuring of developmental policies (Schindler & Kanai, 2021).

The thesis follows the architectural traces — what I call "infrastructural scripts" — of the Ethiopian railway over an extended period of time, during which the desire to connect Ethiopia to the Red Sea for commercial purposes coexisted with various other political rationalities pursued during the French colonial period, during the Italian occupation, and, finally, during the government of the Ethiopian People's Republic Democratic Front (EPRDF)[3]. By drawing on technopolitics (Mitchell, 2002; Von Schnitzler, 2008) — that is, the idea that infrastructure and politics are mutually constituted — this work brings a new perspective to Ethio-Djibouti railway, offering new insights on the historical interplay between architecture and ideologies — both political and economic — behind its construction.

The main research question addressed by this dissertation is therefore:
- *What do the architectures of infrastructure tell us about the politics of the Ethiopian railway?*

Specifically, I will address the the following sub-questions:
- *How does the Ethiopia-Djibouti railway contribute to the construction of the Ethiopian territory as a recursive project between colonialism and contemporary*

[3] The Ethiopian People's Revolutionary Democratic Front was an ethnic federalist political coalition that existed from 1988 to 2019. It was formed by four political parties: Tigray People's Liberation Front (TPLF), Amhara Democratic Party (ADP), Oromo Democratic Party (ODP) and Southern Ethiopian People's Democratic Movement (SEPDM). After leading the overthrow of the communist regime, it dominated Ethiopian politics from 1991 to 2019. In November 2019, the EPRDF was dissolved, and Prime Minister and EPRDF chairman Abiy Ahmed gave rise to the new Prosperity Party.

development?
- Which political imaginaries can be identified by following the recursive history of the infrastructure and its architectural scripts? What are the recurrences? What are the ruptures?
- What kind of architectural typologies, urban environments and territorial configurations appear along the railway as manifestations of infrastructural logics?

Using a methodology based on architectural traces layered on the territory I argue that infrastructure represents a polyvalent artefact in which recursive and contrasting ideologies of state and development coexist. While on one hand infrastructures make visible the continuities of technopolitical projects of modernity, on the other, my work demonstrates that their architectures are capable of revealing their ruptures, fragility and incompleteness (Guma, 2020). Therefore, my thesis contributes to a growing body of work that looks at the interface between political and architectural forms embedded in the longer histories of infrastructure that connect colonial and contemporary corridors[4].

The spatial politics of infrastructure

By extending their networks, infrastructures transform space. Nevertheless, their generative power goes beyond that: not only do they shape space, they also build territory. Although the two terms are often used indifferently, the notion of territory incorporates in its meaning a relationship with power that foregrounds its political nature. The etymology of the word territory is indicative of this. Territory comes from *terre*, the Latin word for earth, but its root also refers to the Latin verb: *terrere*, to frighten. It is linked to an act of instrumental violence for the creation and defence of borders, which operate as an "excluding or including limit" (Elden, 2009, p. xxix). In this sense, the meaning of territory implies the existence of values and ideologies that "direct the way those who occupy [a

[4] See here, for example: Lesutis (2021), Scotto (2021), Cupers and Meier (2020), Kimari and Ernstson (2020), Cowen (2020).

portion of space] must behave" (Duarte, 2017, p.3). Thereby, territory emerges as a sub-category of space defined through the imposition of power . The geographer and political theorist Stuart Elden recognizes two constitutive levels of the political nature of the territory: the political-legal and the political-technical (Elden, 2010). If the former refers to the ways in which territory is connected with jurisdiction and sovereignty, the latter is entangled with mapping, measuring and the other actions that involve a rational and scientific approach in dealing with space . The main point for Elden is that what makes possible the production and re-production of territory is the capacity of transforming the geographical space in a quantitative — and therefore controllable — variable through which to exert political authority **[fig. 0.3]**. In this regard, my research questions infrastructures to understand their logics in shaping the territory of the Ethiopian state.

Infrastructures, as socio-technical artefacts (Latour, 2005; Vermaas et al., 2011), were one of the first forms of technology used by states and economic actors to arrange and transform relations among people and their environment. From the 19th century onwards, the wide diffusion of technologies together with the reorganisation and refinement of state machinery allowed different governments to implement large-scale territorial transformation projects through the development of infrastructural networks (Scott, 2008; De Block, 2021). In their research on the evolution of the French territory, Desportes and Picon (1997, p.13) point out that "the notion of territorial organisation in fact presuppose[d] that one can act on society by the intermediary of a well-thought-out transformation [...] by means of infrastructure". The same concept has been iterated by other scholars who — by observing different infrastructures in different geographical contexts — have explored how the development of infrastructure networks was a tool used in the nation-building process[5].

Understanding infrastructures as political tools challenges the notion of a neutral technical system, and by extension the idea that their design emerges as a purely aesthetic or engineering concern. This is evident in the Ethiopian railway and other African infrastructures discussed in my thesis, where ideologies linked to colonialism, modern capitalist development, postcolonial nation building and the new Ethiopian state coalesce around train stations, industrial parks and other

[5] See for instance: Bess (2014), De Block (2011), Divall (2003), Ficek (2016), Høgselius et al. (2015), Martí- Henneberg (2017), Van der Vleuten and Kaijser (2005), Weber (1976).

urban infrastructure projects. In fact, the territorial transformation induced by infrastructures takes place simultaneously on two levels. The first level concerns the palpable side of infrastructures: the material components that make them appear and be experienced as physical objects. This is what can be defined as *hardware* (Bélanger, 2013). The second level, on the other hand, relates to the intangible economic protocols and political ideologies underlying their construction, which makes infrastructures a spatial *software* that continuously reshape the contemporary world (Easterling, 2014). These two coexisting components emerge concurrently throughout my thesis, in which I move back and forth between the technical, the formal and the ideological scripts embedded in the infrastructure of my case study.

In the specific example of the Ethiopian railway, the hardware coincides with the stations, tracks and building spaces that were directly designed and built in close relation to the railway. Looking at these spaces — but in general to infrastructure spaces — implies a disciplinary approach that reframes architecture and repositions it within a broader field that includes the whole built environment[6]. It is close to what Upton defines as architecture with a "lower-case *a*", encompassing "the entire material world — or cultural landscape — that people make and think" (Upton, 2002, p.707). For this reason, my architectural gaze has been directed towards the ordinary landscape produced by infrastructure, where buildings and spaces are not designed by well-known architects and their aesthetic qualities are neither unique nor particularly innovative. Designers in this case coincide with public institutions, engineering companies or minor architectural firms whose works are marked by a degree of "anonymity that derives from [...] [their] undated and apparently insignificant quality" (Harris, 1997, p.3). The lineage of this approach to architecture is in the book *Learning from Las Vegas* by Venturi, Scott-Brown and Izenour (1972). The authors immersed themselves in the American mass culture, capturing its material aspects and studying the commercial landscape of the Las Vegas strip **[fig. 0.4]**, its advertisement system and the organisation of flows, car parks and casinos. In this way, they were able to bring architecture back into "the untidinesses of urban life" (Scott Brown, 1973,

[6] Relying on Lawrence and Low's definition (1990, p. 454), the built environment refers to "everything that has been produced by humankind and that has altered the environment". In this sense, the definition also includes construction and design processes such as those relating to French and Fascist construction sites or the artistic impressions used to envision future infrastructure projects.

p. 389) constituted by infrastructures. In my thesis, I followed the same path, choosing not to prioritise exceptional architectures, but charting an ordinary landscape — both in the archive and in existence — made of warehouses, logistics hubs, construction sites, fences, shacks, wide paved surfaces, over which individual expectations and technopolitical imaginaries overlap.

In this dissertation, these ordinary architectures are my entry point into what I call "infrastructural scripts" of the Addis-Djibouti railway. These are the political, economic and cultural rationalities whose traces accumulated over the territory formed by the infrastructure, and whose stories reveal the sometimes recurring, sometimes conflicting narratives that shaped modern Ethiopia. In the pages that follow, we will see how the birth of the railway was inscribed within the colonial project and centred on the desire to link Addis Ababa with the port of Djibouti, as "[a tool] of empire" (Headerick, 1981) . We will also see how alternatives to this infrastructural corridor emerged during the Italian occupation, while responding to the same imperial logics, and how the revival of the railway, today, elicits both old and new visions of economic development and statecraft.

Methodology

The methodology of my research is informed by the notion of infrastructural script as well as by the practical constraints stemming from Ethiopia's geographical and cultural distance, and from the outbreak of a global pandemic and civil war during the time of my doctoral studies. Conducting fieldwork in a context like Ethiopia, where archives, public offices, official documents and projects are often inaccessible, or non-existent, and where not all sites can be reached or visited, meant questioning the research methodology that I had originally in mind. In fact, my initial attempts to set up the work according to more conventional fieldwork were unsuccessful. It was not possible, for example, to rely exclusively on architectural blueprints and drawings. At the same time, a methodology based exclusively on interviews would have been practically very difficult, given the variety of languages spoken in Ethiopia. Therefore, it was necessary to develop a *modus operandi* suited to these conditions and at the same

time capable of taking full advantage of the variety of traces that I could collect **[fig. 0.5]**.

The case-study approach, as Yin explains, has among its advantages that of investigating "a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (Yin, 2009, p.18). This seemed particularly appropriate for this specific research, in which the evolution of infrastructure in a specific context is explored through the analysis of architectural projects, their design and their construction. In its materiality and spatial articulation, the case study assumes the dual role of object of inquiry — recognized as a direct manifestation of political ambitions — and, at the same time, of methodological gateway to explore the politics of the built environment. As Lisa Björkman (2015) argues, studying infrastructures imply accepting from the beginning a constitutive indeterminacy of the research path, which depends on the multiple possibilities of following one or another branch of the network or one of the multiple socio-technical dimensions that it gives form to. A researcher, from time to time, has to choose where to direct the observation, which scale of analysis to consider, and which issues are worth analysing in order to answer the research questions driving the overall work — the modes of access? the rules of operation? the management? the construction? The research process is therefore not linear but rather fragmented, which in my thesis is also a consequence of the difficulties encountered in accessing both research materials and research sites. Consequently, my research reassembles and reprocesses sources collected in different places, informed by the existing literature on the political and economic background of the Ethiopian state and its developmental regimes. In this way, the discontinuous history of the Ethiopian railway, made up of objects belonging to distant places and times, are repositioned within an interpretative framework that groups them according to the different state ideologies that led to their formation.

More specifically, my methodological approach to the case study refers to two main sources. The first reference is Ginzburg's essay *Spie. Radici di un paradigma indiziario* (1979), in which the author describes the circumstantial method used by Sherlock Holmes, Morelli and Freud. Traces, clues and even the most marginal details are those elements that allow "the detective" to grasp some deeper aspects of reality, otherwise unattainable. The cognitive process is based on medical semiotics, the discipline that studies signs — *objective* — and symptoms —

subjective — to reach a diagnosis of the investigated phenomenon. For Ginzburg, it is possible to reach an understanding of historical phenomena without relying on dominant narratives and signs, but instead using fragments and traces, which, while seemingly mundane, are also useful to reveal "the weak, and sometimes invalid, relevance of analyses built on the macro-historical scale" (Ginzburg & Poni, 1981, p.136). In my work, infrastructural scripts are the architectural traces that embody and, at times, contradict, the politics of the Ethiopian state along the railway corridor.

A further source of epistemological inspiration for articulating my methodology is the research carried on by the multidisciplinary group Forensic Architecture (FA), based at Goldsmiths, University of London. Their works investigate cases of human rights abuses, environmental violations or episodes of violence through careful analysis of evidence and materials from a range of sources and media related to the built environment. FA's methodology replicates the investigative techniques used to reconstruct the scenario and the sequence of events as in a scientific legal proceeding. To do this, they rely on digital modelling, spatial and architectural analysis, open source investigation and immersive technologies, as well as documentary research, situated interviews, and academic collaboration. FA investigations often involve potentially dangerous conflict spaces. This makes access to the sites difficult, so that most of the work, from evidence collection to analysis and processing, is conducted remotely. To some extent, a similar situation occurred during the last period of my doctorate, with the outbreak of the Covid-19 pandemic and the subsequent war conflict in Tigray, which forced the cancellation of an in-depth ethnographic fieldwork in Ethiopia[7].

FA's methodology has been described by Schouten (2015, p.3) as "architectural" due to the centrality of space in their investigative operations and the

[7] The origins of the current political instability date back to 2018, when Tigray's main party, the Tigray People's Liberation Front (TPLF), which has always maintained a pivotal role in the region, rejected the prospect of a single party at the national level proposed by Prime Minister Abiy. The situation exacerbated when the Prime Minister postponed the national elections due to COVID-19, effectively extending his mandate. In response, the TPLF called for regional elections completely independent from the national political process, receiving a very severe reaction from the government: the elections were declared illegal and the government stopped any kind of funding to the Tigray region, pushing it into a harsh state of isolation. The result of this escalation was the outbreak of the conflict on 4 November 2020, which is still ongoing in the regions between Ethiopia and Eritrea.

technological tools borrowed from architecture. Scrolling from frame to frame, FA identifies contextual references and details through which events can be reordered in their temporal and spatial evolution. This is followed by validation, geographical localisation and cross-checking with other information **[fig. 0.6; fig. 0.7]**. In FA's work, architectural objects spatialise and translate the political in tangible forms. The assumption is that architecture turns political intentions into reality by transferring them into the arena of everyday life — in other words, that architecture has technopolitics.

The inspiration FA's used in crafting their way of researching is archaeology. Weizman — the director of the research team — states that architects can be regarded as archaeologists of the present because of their ability to dig into the folds of the present from the available traces and "understand the organization of built matter as a negotiation of different periods, forces, builders and intentions" (Weizman, 2012, p. 167). What FA clearly shows is an intention to go beyond aesthetics as a field related to style, rhythm and proportion, and instead understand aesthetics "as a field of inquiry" (Schouten, 2015, p.4) registering the material transformation of the built environment. Similarly, this dissertation charts the multiple political and technical rationalities that shape the aesthetics of infrastructure through its architectural forms.

Different types of traces have been collected throughout the research. While the overall background of Chapter 1 is based on architectural plans, photographs, planning documents and secondary texts, the in-depth analysis of the Ethiopian railway was supplemented by diplomatic documents, historical travel reports, interviews, satellite photos and ethnographic fieldwork notes. Through a process of qualitative tracing, I then organized these disparate materials and aligned them to the object of study — the railway — which guided the investigative research process. In addition to these visual and textual materials, I also produced original visualizations using aerial pictures, sketches and fieldwork pics. These maps and axonometric drawings were useful traces in highlighting the relationship between forms and uses of the infrastructure. The possibility of these visualizations depended on digital technologies, and in particular on the emergence of citizen-journalism, which has resulted in an explosive amount of videos, recordings and documentation. Such proliferation of data consequently amplified the spatial information available and made possible the production of the descriptive drawings that are part of this work.

Thereby, the approach used in the case study analysis aims to reconstruct links between *micro* and *macro* history, as defined by Marc Bloch in the journal *Les Annales*, that is between the close-ups and the blurred backgrounds on which everyday life is staged. As a consequence, applying this methodology implies the acceptance of a discontinuous field of inquiry where the scalar dimension becomes fluid and the research moves from the single case to the context, or vice versa. According to this perspective, the case study has been explored following multiple trajectories of investigation carried out through the consultation of secondary sources[8] on one side and two fieldwork periods on the other — November/December 2018 and July 2019. Regarding secondary sources, initial library searches revealed the difficulty of finding texts on architecture in East Africa: no specific reference text exists and, in general, scientific literature and publications are limited and fragmentary. In the texts consulted, the narratives focus on a few cities describing particular aspects of their evolution — such as the effects of globalisation, post-coloniality, informality, but none specifically deals with architectural design. Moreover, information about railway development in Ethiopia is scattered in more general texts on architectural history and urban development in Africa, mainly looking at the subject in a continental perspective. Therefore, the work that I carried out in the libraries was mostly about gathering background information as well as written and iconographic sources as a first operation to get closer to the context.

The archives, on the other hand, informed more directly the main questions addressed in the dissertation, especially in its historical sections. Most of the material consulted concerns the construction of the railway by the French and the Italian occupation of the Horn of Africa. The direct sources accessed online in the ANOM website are diplomatic notes, financial documents and reports of missions and visits supervising the progress of the construction sites, which were sometimes accompanied by photos illustrating the progress of work on the site. The documents consulted at the ACS (Rome) and the Istituto Agronomico per

[8] The libraries and archives visited are: the Istituto Agronomico per l'Oltremare (Florence), the Archivio Centrale di Stato (Rome), the Archive Nationales d'Outre Mer - ANOM (Aix en Provence), the SOAS library (London), the Berhanou Abebe Library of the Centre Français des Études Éthiopiennes (Addis Ababa), the Institute of Ethiopian Studies (Addis Ababa), the library of the Ethiopian Institute of Architecture Building and Construction (Addis Ababa),the Social Science Library of Oxford University and the National Libraries of Rome, Florence and Turin.

l'Oltremare (Florence), on the other hand, deal more closely with the field of architecture, which was, given its scope and characteristics, a matter in all respects part of Italian colonial policies. The materials consulted refer to the funds of the Opera Nazionale Combattenti and the Ministry of Italian Africa of the Fascist regime. In particular, they include documents that refer to the development of master plans, residential quarters and various infrastructures. Some maps, as well as most of the landscape and rural photographs consulted, belong to the collections of the Istituto Agronomico per l'Oltremare.

Ethnography contributed to enriching the research with further traces that interweave the multiple narrative strands of the railway emerging from libraries and archives. The two fieldworks were an opportunity to explore the physical realities of the infrastructure and to observe people and objects while moving along its territory. Addis Ababa is the city where both my field missions started and where I had the opportunity to visit the Berhanou Abebe Library of the Centre Français des Études Éthiopiennes (CFEE), the Institute of Ethiopian Studies and the Ethiopian Institute of Architecture Building and Construction in search of texts and iconographic material. From there I travelled using disparate means of transport — car, plane and train — stopping along the railway in the towns of Dukem, Bishoftu, Metehara and Dire Dawa — the easternmost station that I was able to reach. The data collected during the interviews[9] and the other ethnographic activities were recorded in the form of notes, images, sketches and voice memos as additional fragments of the overall infrastructural scripts mapped in this research. As Paola Viganò (2010) observes, the architect and the urban planner are privileged tourists, capable of reading and interpreting space by operating at the same time on parallel planes, making them interact with each other to elaborate a design-oriented thinking. Here, the figure of the architect-researcher is similar to the *flaneur* (Benjamin, 1982), where the act of exploration turns into an urban surveying tool following the Situationist experience (Vachon, 2004).

The fragmentary nature of my research process is also mirrored in the writing of the thesis. The resulting storytelling is an intertwining of several threads made of

[9] The people I interviewed were: Marie Bridonneau (the director of the Centre Français des Études Éthiopiennes), Asmamaw Ayele (architect and former head of the Architecture Department in Dire Dawa), Biniyam Gebretensay (the head of Dire Dawa Plan Development Office), Atnatewos Melakeselam (architect in Addis Ababa) and Miram Driessen (anthropologist based at the University of Oxford and conducting research on Chinese construction companies in Ethiopia).

traces, signs and documents in a changing time-space, all sharing the same interest: exploring the forms and ideologies hidden in the architecture of infrastructure. The following pages therefore juxtapose text and iconographic materials. My intention is to chart a narration of the Ethiopian railway made of both visual and textual traces, primary and secondary sources, remote and ethnographic observations, all convergingging towards an understanding of the technopolitical scripts of this infrastructure.

Case study presentation

The construction of the first Ethiopian railway dates back to colonial times. After a period of negotiations and several changes to the initial plan, on 9 March 1894, Menelik II granted Alfred Ilg, a Swiss engineer and advisor to the emperor, the right to form a company, build and operate a railway from Djibouti to the White Nile. The railway ran for 784 km through Ethiopia, ascending the Rift Valley and reaching the green highlands of Addis Ababa, the new capital of the empire and the final terminus of the line **[fig 0.8]**. Although Ethiopia was not under colonial rule, the railway functioned as an imperial tool to exert control over the region's trade routes.

The new infrastructure significantly shortened the commercial journey time towards the sea and triggered a process of economic growth for the entire country. New towns and villages emerged along the line, with their own markets and commercial facilities. European goods and tools became more widely available and were exchanged for leathers and agricultural products. Ethiopia entered the global trade circuit and within a few years the railway corridor became a vital axis of urban development, radiating an ideal of progress and technological modernity throughout the nation, mixed with some traces and subtle shadows of colonialism **[fig. 0.9]**. The enthusiasm and prosperity of the first decades of the 20th century were soon replaced by a long period of uncertainty and conflict that stretched over into the following century. During both the Italian colonisation and Mengistu's military regime, there was little concern for the railway, which gradually fell into disuse over considerable portions, therefore interrupting the connection with the

port of Djibouti.

Ethiopia had to wait until January 2018 for the re-establishment of the rail connections with Djibouti. The new standard-gauge railway, which runs roughly parallel to the old Ethiopia-Djibouti metre-gauge one, is a key component of an ambitious effort to take a country of nearly 100 million people to middle-income status by 2025. It is part of a political strategy that plans to spur industrialization, urbanization and economic prosperity through the construction of new infrastructure and industrial parks. The railway is also part of the Chinese government's Belt and Road Initiative **[fig. 0.10]**, an infrastructure investment plan aimed at fostering trade and commercial exchanges in the territories crossed by the new Silk Road (Styan, 2020; Yalew & Changgang, 2020). China has therefore become a central player in Africa's infrastructure boom, as a major percentage of the continent's infrastructure projects — the Addis-Djibouti railway included — are led by Chinese companies and backed by Chinese funding (Foster, Butterfield & Chen, 2009; Edinger & Labuschagne, 2019).

Along the route, the train currently stops in very few cities while traveling for the majority of time across *teff*[10] fields and vast uninhabited areas dotted with sporadic villages and nomadic settlements. According to international data, only 20% of the nation's inhabitants live in urban areas and Ethiopia will be one of the last countries in the world to urbanise (Gebre-Egziabher, 2019; OECD/PSI, 2020). Despite this, the Ethiopian Rift Valley is particularly suitable for observing ongoing city making processes driven by infrastructure: the high rate of urbanisation — about 4,8%[11] — combined with a small percentage of urban population, makes the impact of the railway and its ancillary infrastructures clearly evident in its many forms, and, at the same time, reveals the "enormous challenges for all who are directly involved in the process – whether as a government minister in an air-conditioned office or as a squatter living in a disused quarry" (O'Connor, 1983, p. 16).

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[10] Teff, or *Eragrostis tef,* is an annual grass, a species of lovegrass native to the Horn of Africa. It is grown for its edible seeds and also for its straw to feed the cattle. Ground into flour, teff is used to make the traditional bread, injera: a flat, pancake-like, fermented bread that constitutes the basis of their daily diet.

[11] To make a quick comparison and grasp the exceptional nature of the phenomenon in Ethiopia, we can look at the 2019 urban growth rates of the European continent, South Asia and the African continent equal to 0.5%, 2.5% and 4% respectively - https://data.worldbank.org/indicator/SP.URB.GROW - last visited 15 June 2021.

Secondary towns, such as Dukem and Dire Dawa, both located along the railway line, and among the twelve identified as major growth poles by the Ethiopian government, are expanding faster than Addis Ababa. Manufacturing clusters and logistics centres are beginning to grow around the new stations and in the expansion areas. These can be interpreted as the first tangible signs of a future foreshadowed by national industrialisation policies and mirrored in the real-estate-driven transformation and reuse of the old colonial stations. This overlap between infrastructure, architecture, statecraft, industrialisation and development — understood here in its broadest sense of a political, technical and speculative project — informs the case study chapters of this research in an attempt to capture the ideological reasons embedded in the construction of the railway corridor.

Contribution

In exploring and interpreting the architectural traces of infrastructure development, this thesis contributes in different ways to the fields of architecture research and scholarship of infrastructure. Some of these contributions are theoretical and concern the methodological approach to infrastructure tested with this work; others are inherent to the case study and belong to the phenomenological sphere by providing a description and a synthetic interpretation of objects and processes that have so far been scarcely investigated.

In different fields of scholarship, infrastructure is a key object of research. Anthropologists and geographers have followed canals (Button & Pearce, 1989; Carse, 2014), roads (Dalakoglou, 2010; Campbell, 2012; Harvey & Knox, 2015; Filippello, 2017), railways (Monson, 2009; Aguiar, 2011; Fisch, 2018), energy and oil networks (Ferguson, 2005; Apter, 2008; Appel, 2012; Shamir, 2013; Barry, 2013), water and sanitation systems (Gandy, 2008; Von Schnitzler, 2008; Anand, 2011; Meehan, 2014, Bjiorkman, 2015, Kimari, 2019) as they unfold in space, each time constructing narratives that focus on different aspects of the relationship between infrastructure and power: their modes of access, protocols, functioning,

management, or their economic fallout and social impacts. These works take inspiration from technopolitics — "the strategic practice of designing or using technology to constitute, embody, or enact political goals" (Hecht, 2001, p. 256) — and recognise infrastructures as technological artefacts capable of materialising forms of power in space. In this sense, the contribution of my work, which differs from those mentioned above, relates to the way of looking at infrastructure. In this thesis, my gaze is directed at the architectural traces of infrastructure, its buildings, blueprints and representations. While there is a large body of work on the politics of architecture (Edensor, 2011; Kraftl, 2010; Jacobs, 2006; Jenkins, 2002; Lees, 2001; King, 1984), and increasingly on the relationship between state propaganda and architectural visions, large African infrastructures such as the Ethiopian railway have rarely been considered through the lenses of their architecture.

Moreover, my work seeks to enrich the architectural debate on infrastructure by proposing a different approach from the more traditional ones that have used urban morphology or landscape urbanism as a support for analysis (Fariello, 1967; Shannon & Smets, 2010; Cattoor & De Meulder, 2011; Hung & Aquino, 2013, Bochicchio & Secchi, 2020). In particular, I interpret the Ethiopian railway corridor as a technopolitical artefact that responds to changing ideologies cast on space throughout time. The original element here is not in the choice of having adopted a historical perspective; other scholars such as Cupers and Meier (2020), D'Auria and De Meulder (2010) have focused on earlier historical periods of infrastructural development. The novel contribution of my work is in connecting the analysis of the colonial birth of the infrastructure to its present day forms (see Cowen, 2020) — moving from French colonialism, to the Italian domination, to the post-Derg period — identifying the recursiveness and ideological differences to which it gave form.

Still on a theoretical level, I have tried with this work to approach the study of infrastructure looking at spaces that are generally part of what was once labelled as "developing world" and, because of this, mostly investigated with a narrow view that typically focuses on issues such as informality, poverty, dispossession, vernacularism and rarely has been debated linking economic development, political imaginaries and architecture. A clear divide between different spaces and the ways in which urban research is approached and addressed still exist (Parnell & Robinson, 2012). As Connell (2007) has argued, cities and regions in the

southern hemisphere are seen as sites for data collection rather than sites for reflection and theorisation. In this regard, my work was not limited to a collection of architectural traces in a peripheral territory — or as Jennifer Robinson (2002) would put it, in space that is "off the map" — but rather it enriches the interpretations on the relationship between infrastructure and technopolitics. Specifically, the architectural fragments unveiled the simultaneous existence of different infrastructural scripts that over time recorded recurrences, overlaps and ruptures in the processes of territorial construction. At the same time, there is a gap of situated knowledge about the politics of architecture in Ethiopia — but more generally in Africa— which my work tries to fill with a contribution that sheds some light on the construction of the Ethiopian railway and the urban spaces along it, their types, transformations and the political reasons of their design.

Structure of the dissertation

The dissertation is divided into two parts. The first part — Chapter 1, "Three eras of African infrastructure" — investigates the relationship between infrastructure and the making of African space. It provides a diachronic narrative by identifying three historical moments in which infrastructures are protagonists of relevant spatial transformations in the continent. The chapter included in this section of the thesis focuses on the political and economic mechanisms behind infrastructural development and showcases their architectural outcomes through a series of examples.

The second part — Chapters 2 and 3 — of the thesis delves into the case study. The structure of this part has been shaped by considering infrastructure as *spatial software*, echoing Mudler's (1998), Easterling's (2014) and Amin and Thrift's (2017) research. Using this metaphor, the thesis identifies three processes that become occasions for the investigation of spatial features along the Ethiopian railway, resulting from the infrastructural software and captured from the observation of artefacts and dynamics related to architecture. These three processes are *scripting* and *off-scripting,* and *de-scripting*.

Scripting — Chapter 2, "Along the Ethio-Djibouti Railway(s)" — looks at the scripts that build the software and their material outcomes detected on the territory. Since the beginning of the 20th century, documents, plans, policies and all the other records directly linked to the construction of the railway have shaped the multiform alphabet — consisting of stations, industrial parks, logistics centres, tracks, junctions, roads — that have configured the space of the infrastructure. The rules of this language have changed over time in response to evolving social, political and economic ideologies. Nonetheless, many have left an imprint that makes it possible to reconstruct the underlying spatial logic and grammar of infrastructure.

Off-scripting, on the other hand, considers some of the indirect and unintended spatial phenomena related to the railway. Among these, particular attention is given to the practices of spatial transformation that occurred after the dismantling of the old colonial railway. Some examples of infrastructural space unforeseen uses are collected here, such as the conversion of the old Dire Dawa station into a museum and a residential space inhabited by the *cheminots*, the role of the old Addis Ababa station in becoming the symbol of the largest real estate investment in the city, and the spatial mutations that are affecting the road between the old and new Dire Dawa stations. Due to the Covid-19 pandemic and the cancellation of the fieldwork, it was not possible to collect much of the information that would have constituted the material for structuring a stand-alone chapter[12]. The material collected has been used in the elaboration of what I have called *traces*: visual explorations of collateral infrastructural spaces, that intersperse Chapter 2, creating a contrasting dialogue between the two logics of scripting and going off-script.

De-scripting — Chapter 3, "Infrastructural imaginaries: the Ethiopian space between Italian Fascism and the EPRDF" — expands the field of investigation towards the imaginary, the hidden scripts. The chapter traces the infrastructural ideals used by the fascist regime to promote colonisation over East Africa through the design of a road network alternative to the railway. The second part of the chapter tackles the infrastructural policies that the current Ethiopian government

[12] The fieldwork would have included a series of interviews with real estate developers, inhabitants and railway workers, and a more in-depth surveying of the sites to analyse recent spatial transformations.

is adopting to advance ethnic federalism. In both cases, infrastructures reveal their capacity to shape an envisioned political space through prefigurations of temporalities that bridge the past and the future.

The dissertation is bookended by concluding remarks that summarise the key contributions and indicate future areas of research that complement and extend the arguments presented.

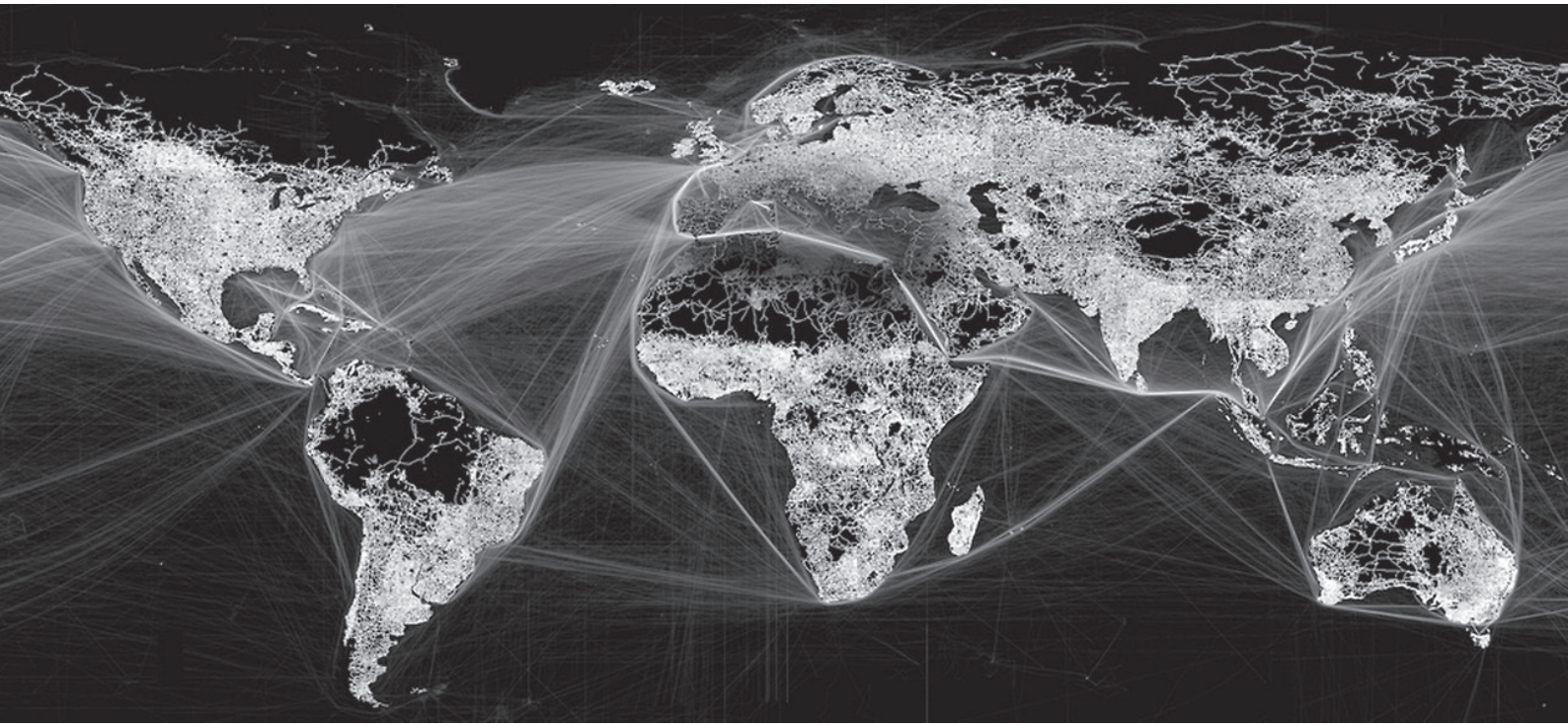

fig. 0.1 - Global connectivity, Harvard Urban Theory Lab, map, 2011.
The map shows the major routes along which people, goods and information move.

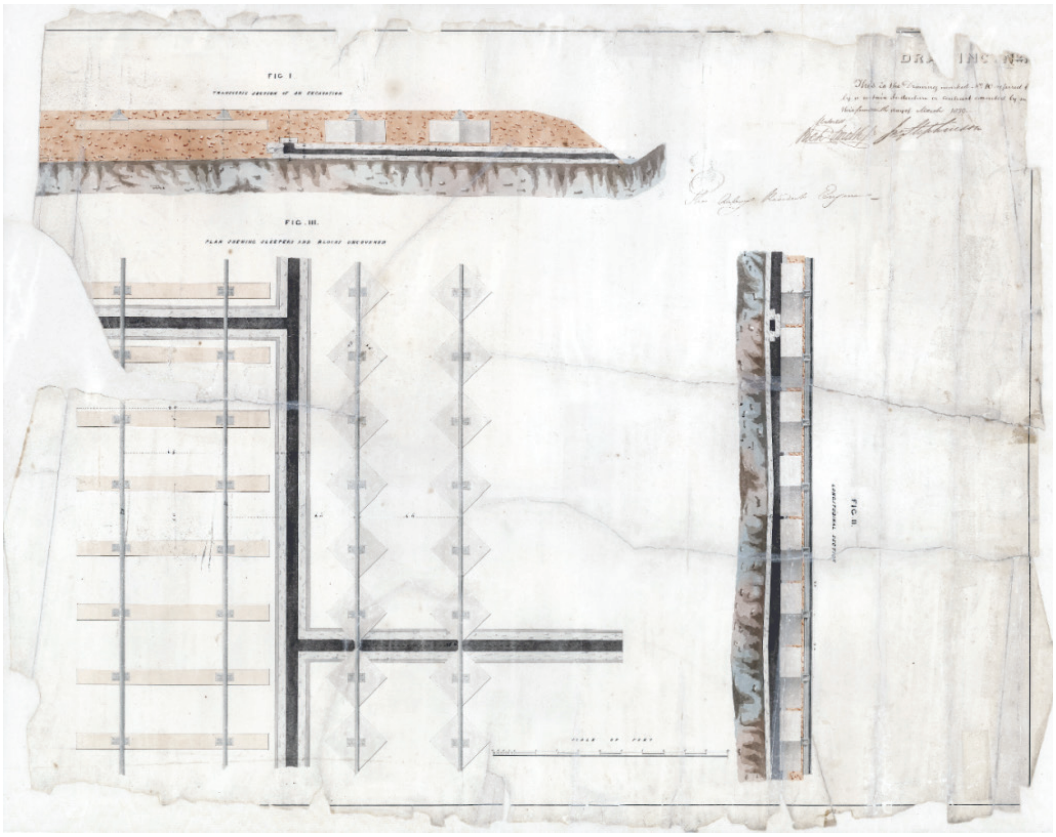

fig. 0.2 - The standard gauge, Network Rail, drawing, 1835.

fig. 0.3 - The Great Trigonometrical Survey of India, map, 1870.
Promoted by the East Indian Company, the survey aimed to map the territory of India with scientific precision and to acquire data for territorial control.

fig. 0.4 - Las Vegas Strip, Venturi Scott Brown Associates, photograph,1972.
The ordinary infrastructural landscape exalted by *Learning from Las Vegas*.

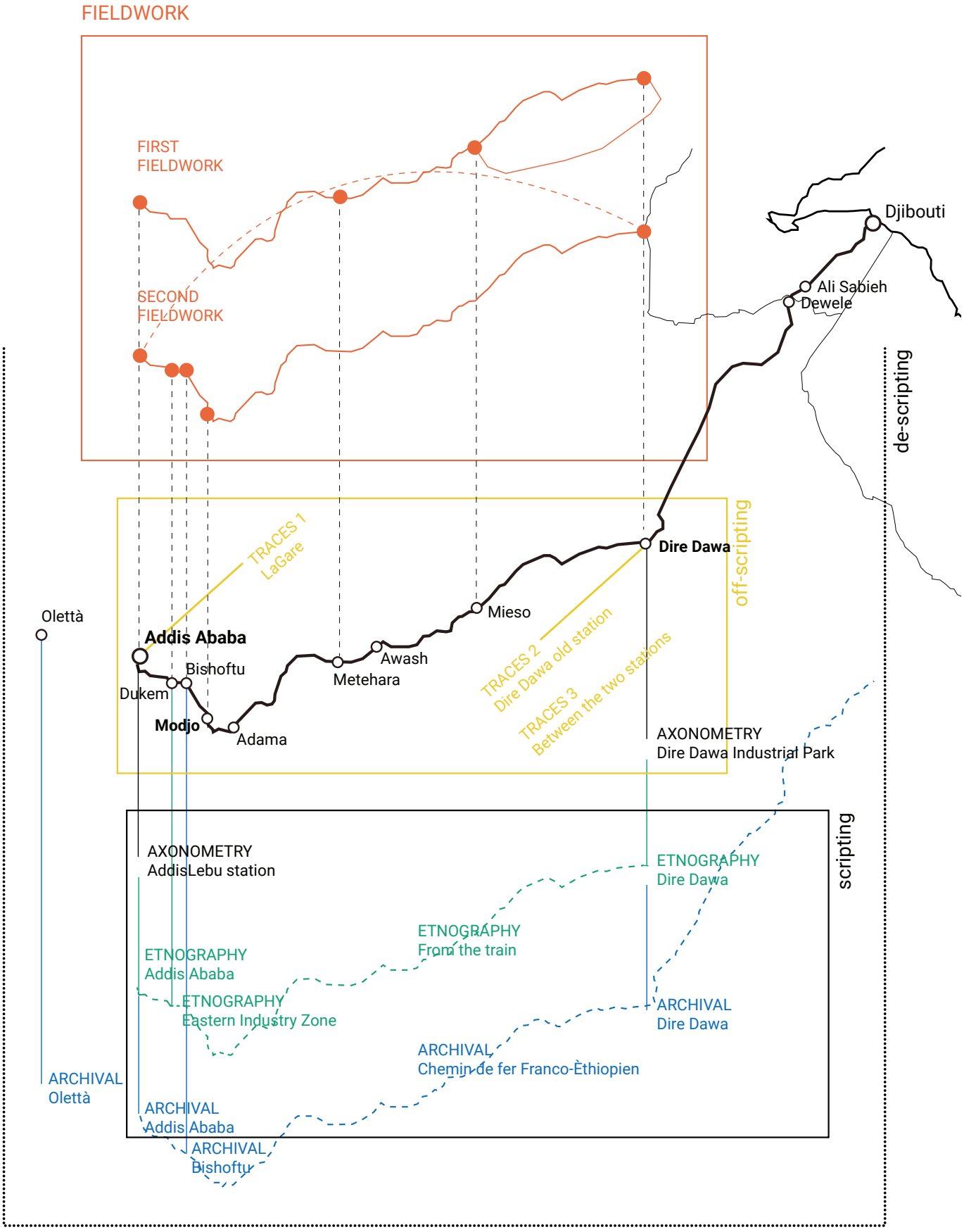

fig. 0.5 -Methodological diagram, illustration.

fig. 0.6 - Drone Strikes (Pakistan), Forensic Architecture, picture, 2013.
Animating the shadows cast on different days and at the different times enabled a comparison of the model with the shadows visible in the satellite and video images.

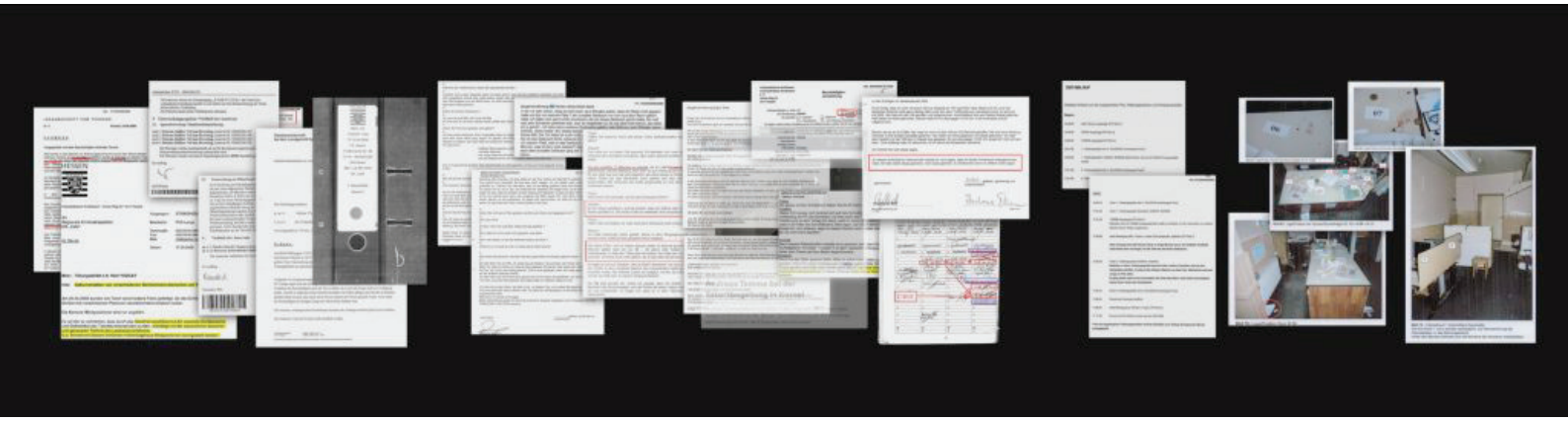

fig. 0.7 - 77SQM_9:26MIN, Forensic Architecture, picture, 2017.
Documents, interviews, pictures and other traces used by FA in the investigation of one of the Nationalist Socialist Underground murders in Germany.

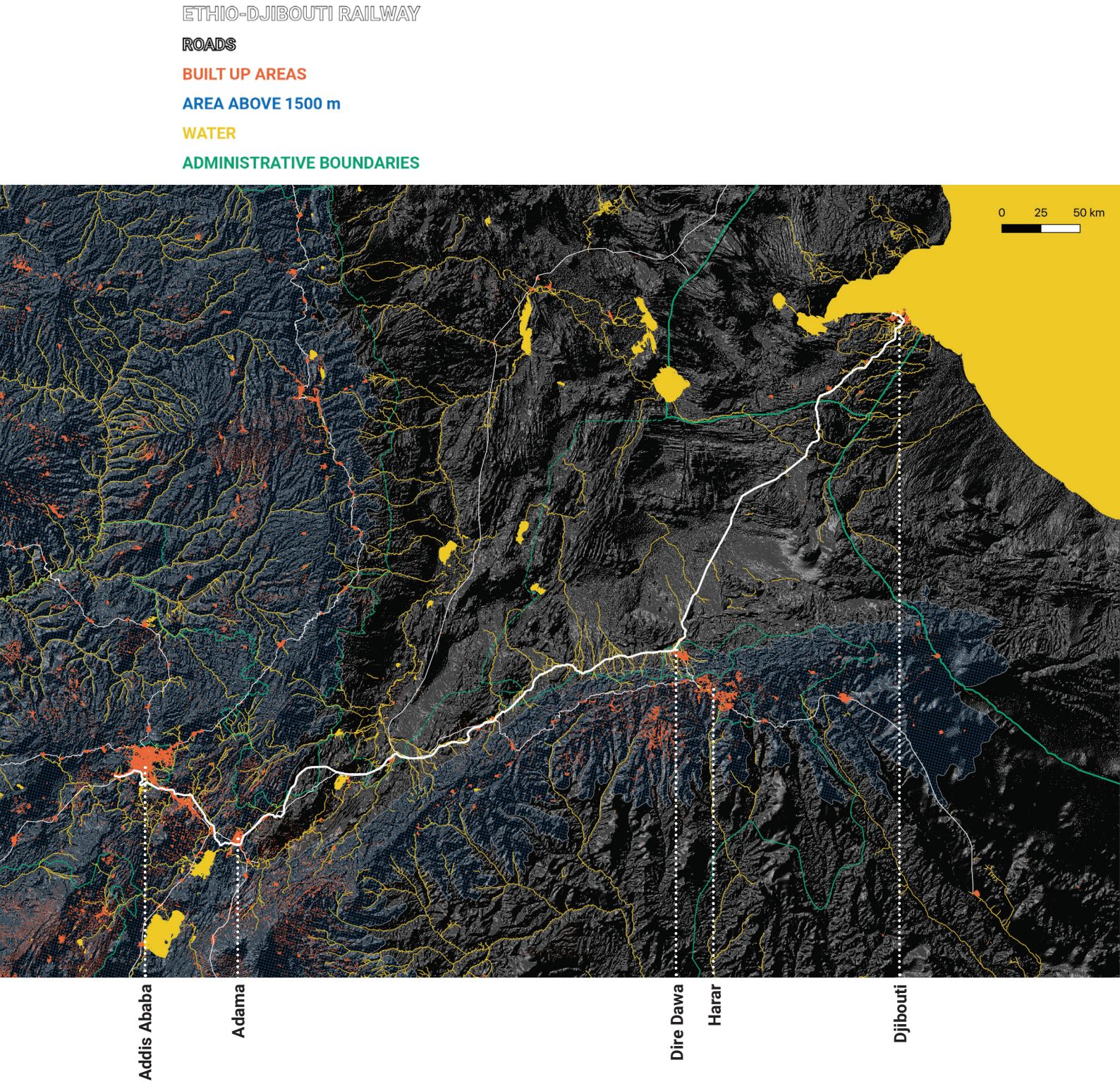

fig. 0.8 - The Ethio-Djibouti Railway within the territorial context, map.

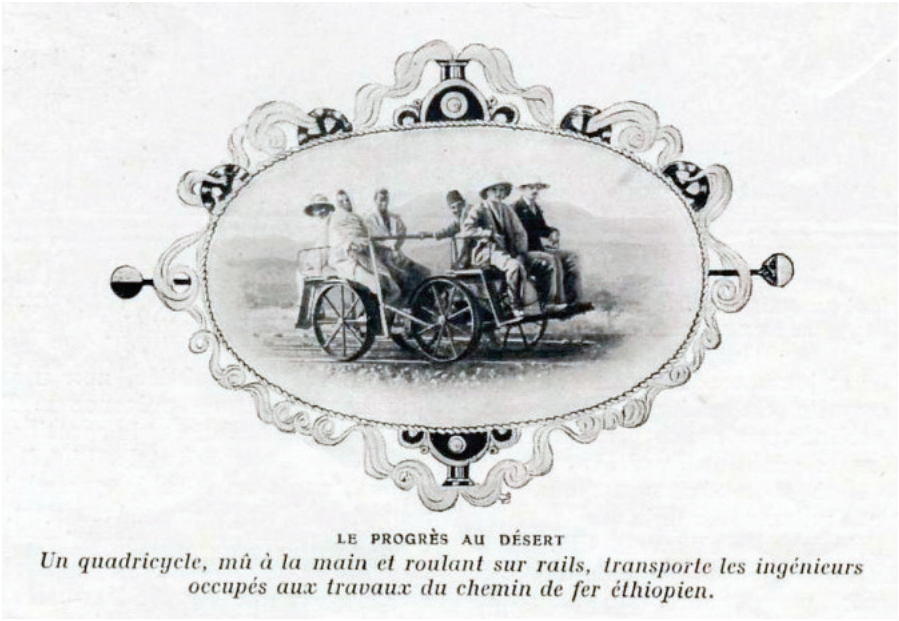

fig. 0.9 - "Progress reaches the desert", postcard, 1900.
A hand-powered vehicle drives the engineers to the railway construction sites.

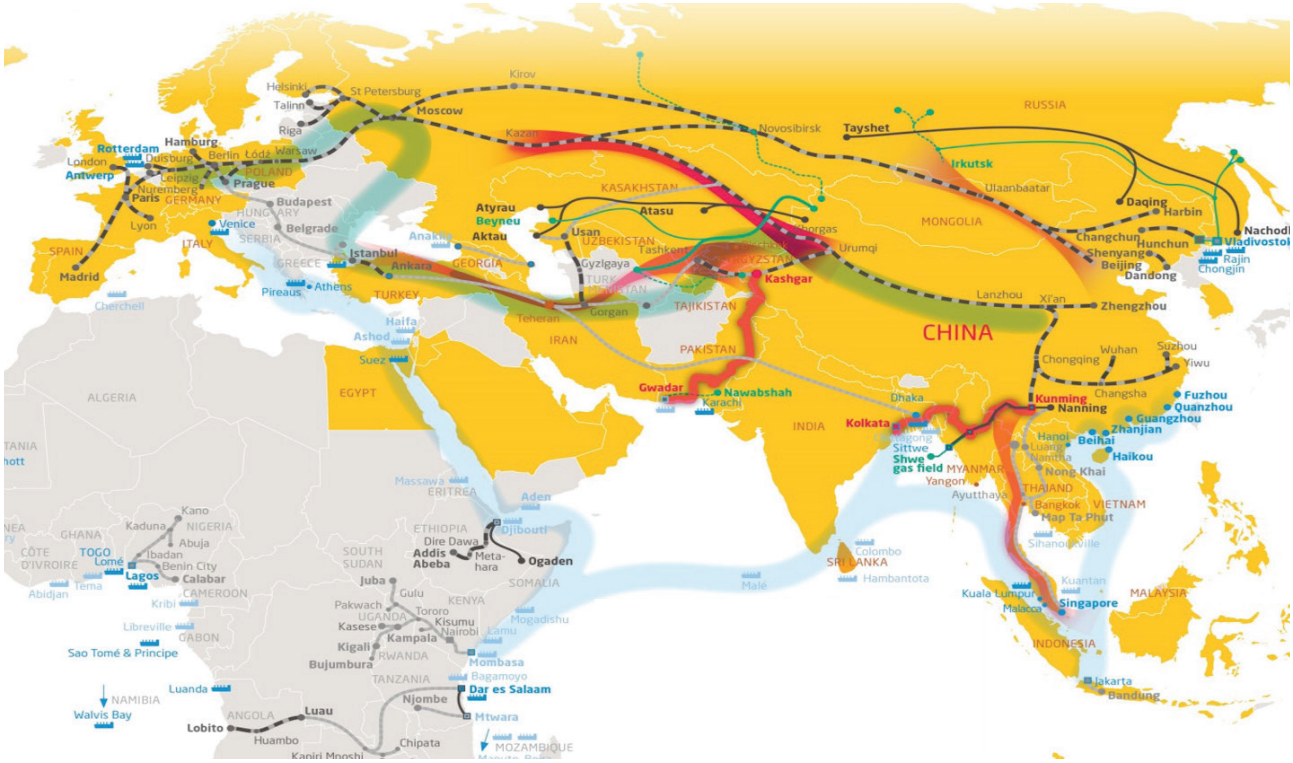

fig. 0.10 - The Belt and Road Initiative, Mercator Institute for China Studies, map, 2018.
The Ethio-Djibouti Railway is among the projects subsumed under China's BRI.

1 Three eras of African infrastructure

Last decades have been characterized by a great revival of infrastructure projects around the world, both in the developed regions of the Global North, as well as in several countries of the Global South[13]. Dodson (2017, p. 88) describes this renewed and growing planetary interest in infrastructures as a *global infrastructure turn* in which "the production of mega-infrastructure projects in cities [and urban areas] is supported by a new set of discursive, political and technical arrangements". Relatedly, Rubio and Fogué (2013, p. 1039) claim that cities are witnessing a "technological and infrastructural invasion".

This chapter explores the role of infrastructures in the African continent using an extended temporal perspective. My goal in the pages that follow is to reveal the recursiveness of certain ideas of modernity through infrastructure. This approach refers to the way Ann Laura Stoler[14] interprets the Foucauldian concept of *genealogy* as an operation aimed at uncovering permanences and continuities — rather than ruptures and disconnections — by reinterpreting the present looking at the "duress" (Stoler, 2016) of imperialist ideals. Actors, institutions and spatial configurations may change over time, while what transcends different temporalities is the logic behind technopolitical discourses on infrastructure and development.

The three main sections of the chapter refer to three different historical moments in the relationship between infrastructure and the making of African territories:

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[13] The term refers to "the regions of Latin America, Asia, Africa, and Oceania. It is one of a family of terms, including "Third World" and "Periphery", that denote regions outside Europe and North America, mostly (though not all) low-income and often politically or culturally marginalized" (Dados & Connell, 2012, p. 12). The same authors underline the shift from a development/cultural to a more geopolitical perspective linked with the use of the phrase Global South.

[14] http://blogs.law.columbia.edu/foucault1313/2015/11/19/ann-stoler-on-society-must-be-defended-reading-foucault-today/ - last visited 15 June 2021.

the New Imperialism, the *Development* era — i.e. the decades between the end of the Second World War and the late 1970s — and the current period (the last 20 years) marked by Chinese infrastructural expansionism in the world. For each of the three eras, several issues are explored in order to reveal connections between infrastructure and economic or political ideologies of development. The tangible effects of these infrastructural moments are then investigated more in-depth by presenting a selection of projects — either imagined or built — that materialise the specific conditions of each period.

1.1 New Imperialism[15]

1.1.1 A tool for modernity

Although imperialism is often coupled with the industrial revolution and the formation of European nation-states, it began much earlier. The first phase of imperialism — often referred to as *Old imperialism* — started at the end of the XV century with the expansion of continental trade routes towards overseas lands. The ideological principles were embedded in the motto *Gold, God and Glory,* where the three words summarise the main reasons behind this first colonial expansion: profit and economic wealth — *gold*; cultural and religious imposition — *god*; and political and symbolic power— *glory*. To this end, European governments and monarchies financed several exploratorations that led to the establishment of urban settlements in the Americas and Southeast Asia.

The last quarter of the XIX century saw a dramatic expansion of imperial missions. This period, labelled as *New Imperialism*, saw most European states

[15] In this work, the term imperialism differs from colonialism following Horvath's (1972) classification. Both definitions refer to the exercise of power by one nation — or state — over another. The difference lies in the "presence or absence of significant numbers of permanent settlers in the colony from the colonising power" (p.47). Imperialism is linked to the ideology of exercising power without necessarily implying a material expansion that is inherent instead in the concept of colonialism.

engaged in the *Scramble for Africa*[16]: the invasion, occupation and colonisation of the African continent. In about 40 years, from 1870 to 1914, the percentage of territories under European control rose from 10 to 90 percent. This second phase of imperialism was marked by a change in colonial administration and management policies. Generally, it is possible to observe a shift from a more subtle to a stronger and more extensive regulatory system over the colonies — for example this can be traced in the shift from having joint-stock companies to fully fledged colonial administrations[17]. The exertion of power over local communities no longer took place solely through military and economic agreements but through the implementation of new institutions and regulatory systems specifically created to increase control on overseas territories (Shillington, 2005, p.301).

Post-Marxist and liberal theorists have contributed to enrich the interpretation and debate on imperialism. Both recognised the problem of the economic surplus generated by capitalism as a trigger point for imperial expansion (Winslow, 1931). However, while the former recognised imperialism as a crucial evolutionary phase

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[16] The Berlin Conference (1884), which led to the establishment of geopolitical agreements and shared rules for the colonisation of the African continent, is usually referred to as the starting point of the Scramble for Africa (Bratlinger, 1985).

[17] This general tendency was translated into forms of power practice derived from various European ideas on colonial development. France, for example, pursued a policy based on the principle of *assimilation*: the idea of turning Africans into future French citizens by virtue of the superiority and universality of French culture (Lewis, 1962). The strategy required constructing a centralised power system directly linked to the metropole to undermine local institutions and identities. On the other hand, Britain applied a more preservationist policy of partially transforming or modifying local power apparatuses rather than replacing them completely (Crowder, 1964, p. 198). It was a more flexible way of dealing with colonial affairs that nevertheless did not fail to result in a stricter exercise of power: "informal control if possible, formal rule if necessary" (Gallagher & Robinson, 1953, p. 13). In contrast to the French, the British were not interested in "Europeanise" Africans but instead used local cultures to their own advantage through recognition and eventual manipulation (Letsa & Wilfahrt, 2020, p. 542).

in order to ensure the conditions for capital accumulation (Lenin, 1917)[18], the latter regarded imperialism as avoidable and replaceable instead by national welfare policies and wage regulation (Hobson, 1902)[19]. According to both interpretations, by the late XIX century technological advancement had enhanced industrial productivity, while reducing production times and costs. The inability to absorb the resulting supply of products had led to a general surplus of commodities, raw materials and capital needing to be reinserted into the capitalist circuit. The solution was to expand the market to new regions not yet touched by the capitalist system (Wolfe, 1997). Overseas territories suited this purpose perfectly. They were considered a potentially eligible geography to absorb the surpluses generated by industrialisation, and further reduce the supply cost of raw materials.

It would nonetheless be reductive to think of imperialism as the effect of purely economic interests. Instead, the coexistence of several reasons — political, social, economic, cultural — led to the necessary conditions for the rise of the imperial project. Moreover, as Headrick (1979, p. 234) points out, a "complex process like imperialism... [requires] both appropriate motives and adequate means", referring to the importance of technology as an essential element of colonialism. A continuous exchange of information between industrial Europe and the new frontiers channelled and stimulated scientific research and technological progress towards the exploitation of the colonial environment. The improvement of the engine and guns, the spread of steel and concrete, the telegraph and the discovery

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[18] "As long as capitalism remains what it is, surplus capital will be utilised not for the purpose of raising the standard of living of the masses in a given country, for this would mean a decline in profits for the capitalists, but for the purpose of increasing profits by exporting capital abroad to the backward countries. In these backward countries profits are usually high, for capital is scarce, the price of land is relatively low, wages are low, raw materials are cheap. The export of capital is made possible by a number of backward countries having already been drawn into world capitalist intercourse... The need to export capital arises from the fact that in a few countries capitalism has become "overripe" and (owing to the backward state of agriculture and the poverty of the masses) capital cannot find a field for "profitable" investment." (Lenin, 1917, p.53) - retrieved from https://www.files.ethz.ch/isn/125485/6000_Imperialism_Highest_Stage_Capitalism.pdf.

[19] "Aggressive Imperialism, which costs the tax-payer so dear, which is of so little value to the manufacturer and trader, which is fraught with such grave incalculable peril to the citizen, is a source of great gain to the investor who cannot find at home the profitable use he seeks for his capital." (Hobson, 1902, p. 44) - retrieved from https://www.cscd.osaka-u.ac.jp/user/rosaldo/Hobson_Imperialism_1902.pdf.

of quinine prophylaxis were some of the key technologies that became the "tools of Empire" (Headrick, 1981), permitting to "open vast stretches of hinterland and undeveloped wilderness to colonization" (Adas, 2015, p. 223).

Therefore, through the development of an infrastructural network, European states were able to penetrate the innermost territories of the African continent. Fewer and fewer areas remained independent, and more and more fell under the influence of the capitalist economy. Infrastructure provided military support for the deployment of troops and weapons, a tool for ensuring better management and control of the land,and an essential apparatus to increase trade and exploit resources (Gallagher and Robinson, 1953). Through trade corridors, even the few states that remained independent, such as Ethiopia, were inscribed into the movements of imperial circulations (as we will see later in this dissertation). In all three functions, the logistical role of infrastructure emerges in facilitating and accelerating the flow of people, goods and information from one place to another.

According to a common-sense perspective, the control of time was subordinated to the conquest of space. The optimisation of infrastructure, from individual components to the overall management, had consequences in the spatial configurations of the networks and nodes, which evolved and changed in response to the need to accelerate the capacity to overcome spatial distances and barriers[20]. Nevertheless, as Mitchell (2019) suggests, the relationship between infrastructure and time is more articulated and at times subverts the notion of time compression. Mitchell examines infrastructure as an instrumental artefact of the capitalisation process. In his interpretation, infrastructures have been primarily a means of moving financial capital, or as Richard White (2011) put it, to move investment paper: loans, bonds, equity certificates. Capitalisation transforms infrastructure into durable accumulation structures where a certain profit can be expected in the future and sold in the present. It is indeed a very materialist act that is at the heart of finance. It started from the idea of the stock company and the modern business firm, but it ended up being a crucial point for determining urban configuration worldwide (Abourahme & Jabary-Salamanca, 2016). The first urban outcomes linked to capitalisation were not related to real estate but railways. In fact, financial investments and the exchange of company shares were largely directed

[20] Harvey (1990) coined the expression "time-space compression", referring to the tendency inherent in capitalism to recreate an economic space in which the distance and time factors played an increasingly irrelevant role.

towards the railway sector and other infrastructures. If we take Britain as an example, railways accounted for more than 40 % of the overall stock capital in 1913 (Fishlow, 1985). A similar situation occurred in the United States where "railroads made up more than half of U.S. market capitalisation at the turn of the 20th century"[21]. What made railways an ideal object to incorporate into the financial market was their durability. This very ability to span space and time was the feature that allowed investors to speculate on the future revenue that the infrastructure would generate by selling shares in the present.

1.1.2 Infrastructural configurations, railways and the remaking of African space

During the 19th century, the desire to expand their territories into the continent's resource-rich interior led many European governments — and entrepreneurs — to envisage projects for the infrastructuring of the African continent. This period was therefore punctuated by the emergence of large-scale infrastructure projects. After the opening of the Suez Canal, everything seemed possible. Confidence in progress and technology had nurtured the belief that modern society could change the Earth without any geographical or technical restrictions: "large projects were lining up. The era felt ready to overturn the face of the world" (Marçot 2003, p. 153). Among the sectors that saw the greatest interest in developing ambitious infrastructural plans were hydraulics and rail transport.

An extraordinary example for its radicality is the one conceived in 1874 by the French captain Élie Roudaire. He proposed to fill the vast depression located in the Sahara region, south of Tunisia and Algeria, with water drawn directly from the Mediterranean **[fig. 1.1]**. According to research carried out during his stay in Algeria, the construction of a 320 km wide channel — 60 km wide, 25 m depth — would create a vast inland sea with a volume of about 480 billion cubic metres in

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https://www.wsj.com/articles/railroads-growth-stocks-of-the-19th-century-are-hot-again-11617706806 - last visited 3 June 2021.

the middle of the desert (Roudaire, 1874, p.345)[22]. The new water basin would make available a large area of land where an agricultural oasis of 600,000 hectares was planned around its shores. The infrastructure project did not aim to guarantee the availability of freshwater for irrigation but rather to trigger a climatic transformation that would create fertile lands. Sea breezes would push the desert humidity towards the Aurès Mountains, where local currents would then push the clouds formed upwards. The cooling brought by the clouds would then cause rainfall across the Sahara Sea region. Albeit visionary, Roudaire's project was perfectly in line with the economic and social logic of imperialism, which aimed to spread Western modernity across overseas territories by reengineering their geological nature. Furthermore, it is a significant case in which the potential of modern engineering goes beyond the resolution of technical problems to embrace ecology and climate issues (Berdoulay and Soubeyran 2000). It was not an isolated case: an English project for the creation of an inland Moroccan sea was drawn up by Mackenzie (1877), the German geographer Penk devised a system for energy production by exploiting the water of the Nile and the drop in elevation that exists with the Qattara depression[23], while the architect Herman Sörgel (1932) imagined the possibility of lowering the Mediterranean Sea to obtain new land for settlements and at the same time installing hydroelectric power stations at strategic points such as the Strait of Gibraltar or the Bosphorus **[fig. 1.2]**.

However, many of the hydraulic projects of that time remained on paper. On the other hand, railway projects mostly turned into reality, making this type of infrastructure the one that more than any other began the transformation of Africa's precolonial geographies. The first railway line on the continent was the Alexandria-Cairo, built between 1852 and 1856, as the first part of a longer route that would reach Suez in the following years. Egypt was one of the states crossed by the Indies trade route. The new railway eased the journey between the Mediterranean and the Red Sea naval hub, significantly reducing journey times (El Din, 2006, p. 22).

Following the construction of the Egyptian infrastructure, other railways were

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[22] "Supposing that the basin of the chotts has an average depth of -25 meters, the capacity would be about 480 billion cubic meters".

[23] http://mragheb.com/NPRE%20498ES%20Energy%20Storage%20Systems/Pumped%20Storage%20Qattara%20Depression%20Solar%20Hydroelectric%20Power%20Generation.pdf - last visited 31 March 2021.

built in the Northern and Southern African colonies. Connections with the motherland and the significant number of foreign communities that settled in these territories accelerated the expansion of the network. From an economic point of view, trains were seen as necessary to strengthen the links between port cities and inland territories both to promote their development and support existing commercial and industrial activities (Chaléard et al., 2006). Nevertheless, from a quantitative point of view, it was only from the 1880s that the African railway boom began. Within a few decades, the network reached 44,300 km (1913), rising to 69,200 km in 1929 (Wickins, 1986, pp. 26, 27). The diffusion of railway infrastructure, however, was not homogeneous within the continent: regions with a dense infrastructure network coexisted with areas that were completely lacking or barely reached **[fig. 1.3]**.

The intensification of urbanisation processes along the African coasts, due to the foundation of several European port cities, was one of the reasons that influenced the spatial development of infrastructure resulting in the following network configuration. The first colonial cities faced the Atlantic Ocean or were located along the route that circumnavigated Africa towards the Indies. Following the opening of the Suez Canal in 1869, international naval routes were reorganised, with a consequent traffic growth in the Red Sea that led to the establishment of additional commercial bases to support and give shelter to the fleets along the coasts of East Africa (Hoyle, 1968, p.163; Fletcher, 1958, p. 556). The strategic ports, scattered around the perimeter of the entire continent, became significant urban nodes where traders from all over the world gathered in search of profit. Some of these coastal settlements — as Douala (Doti, 2020), Beira (Bennett, 2005) and Djibouti (Imbert-Vier, 2008) — were little more than villages prior to the arrival of the Europeans. Others were established commercial centres under the influence of Arabic/Swahili commercial routes. Nevertheless, within a few years, they developed as centres of global logistics with a dual geographical orientation. On the one hand, they related to the already established naval routes towards the Old Continent, Indochina and the Americas, on the other, they became the hubs from which various exploratory missions ventured into the landlocked regions of Africa.

This logic of exploration responded to a systematic rationality, combining the imperialist idea of European supremacy with the needs of industrial capitalism. The expeditions had their origin from those coastal cities that turned into ignition points of a violent and speculative exploitation of the precious resources —

humans included — that African lands had to offer (Hance, 1960; King, 2015, p. 15). A network of railways and roads thus began to penetrate towards mines, fertile lands and strategic locations along rivers, lakes or at the crossroads with other main routes, from where it would be easier to travel further.

The configuration reached by the railway network during the scramble for Africa mirrors the interests of the great European powers on the continent. It is the indelible trace of colonial logistics that, at different scales, marked the African territory. Such an approach to the making of a network consisted of applying the principles of efficiency to control the *unpredictable* — wild lands, indigenous populations — and transform nature and its resources into profitable commodities (Scotto, 2018) for the modern era. Trains, for their ability to "transport not only people but a complex culture and civilisation [...] between places radically different in geography, social conditions, economy and very often climate" (Carey, 2008, p. 2,3), were the vehicles through which European, resource-hungry, capitalist modernity radiated into the colonies.

Trains were tools of modernity but, at the same time, were themselves a product of modernity, a symbol of the technological advances of the industrial revolution. The propagation mechanism of modernity seems to be self-feeding; that is, modernity amplifies its effects by a recursive logic relying on its achievements and failures. In this way, echoes of the modern spirit have survived over time, influencing the culture of 20th century society in various fields, including architecture as a discipline. Le Corbusier is perhaps one of the most prominent figures in whose life and writing the mixture of infrastructure, technology, belief in progress and Western civilisation is most palpable. In his book *Aircraft* (1935, p.86), he juxtaposes an image of a nomadic camp with a gas station out in the middle of the desert **[fig. 1.4]**. The caption reads: "the white race goes forth to conquer". The carefully constructed framing of the second image, where objects appear in a straight line, and geometry appears as the ordering criterion of space, is a metaphor for the triumph of modernity over the primitive, of straight lines over organic forms, of white over black (Hooper, 2003, p. 67).

However, the influences of modernity did not simply rest on the ideological dimension. The legacy of colonial modernity can still be traced in the physical and economic configurations of contemporary Africa. Several imperial railways are still in use, connecting most coastal cities to their hinterland. Due to the flow of goods carried by the railways and the consequent growth of commercial,

manufacturing and political activities, many of these cities evolved into conurbations with several thousands or millions of inhabitants, becoming the main cities and capitals of the newly independent African states. As Myers (2011, p.51) has shown, 46 of the 53 capitals in 2010 are former colonial capitals or major ports. The figures are representative of the powerful legacy of colonialism in directing urban development through infrastructure projects and imperial logistics.

1.2 The *Development* era

1.2.1 New development paradigms, new development policies

It was after the Second World War that a second period of intense infrastructure funding and construction began. The world was trying to forget the horrors of the war, and cities were slowly recovering from destruction; these were the years that saw the restructuring of the world's geopolitical structures into two opposing territorial blocs — the Eastern and the Western — and the establishment of some of the most well known international organisations — including the World Bank[24] and the United Nations[25]. In this same period, political initiatives from the African continent began to gain momentum, calling for a change in power relations with

[24] The Word Bank was created in 1944 at the Bretton Wood conference. It is an international financial organisation that provides grants and credits to governments of low- and middle-income countries to pursue development projects.

[25] The United Nations is an intergovernmental organization established in 1945 that aims to maintain international peace and security, develop friendly relations among nations, achieve international cooperation, and be a centre for harmonizing the actions of nations. - from the Charter of the United Nations, retrieved from: https://web.archive.org/web/20171028091648/http://www.un.org/en/sections/un-charter/chapter-i/index.html - last visited 3 Jun 2021.

the Western world[26]. Within this background, the concept of development drastically changed its meaning, moving from defining an unjustifiable and harmful practice — as seen from the motherland side — to a strategy of remedy for poverty and its consequent unrest that increasingly plagued former and remaining colonies (Cooper, 2010, p. 9). However, the discourse of development should not be limited to policies promoted after WWII: development existed before. Post-WWII Development reframed relations between the colonial and the metropolitan world along existing trajectories that had been established as imperial endeavours. Traces of development were already detectable in the religious missions, hospitals and infrastructure of the early colonial period. Although they may be interpreted as minor achievements, they were fragments of the idea of modernity and progress that pervaded European imperialist culture at the time (Cooper, 1996; Cowen, 2003).

With the establishment of international development institutions at Bretton Woods, the objectives of development became shared among a larger number of nations including those that had no responsibility in colonisation. The principle on which to build a common vision — and split the costs of development among a wider spectrum — was based on the universal ethic of overcoming inter-country inequalities. This is what Hart (2002; 2004) identifies as *Development* — with a capital *D* — referring to it as relying on moral principles and solidarity in response to the colonial era. It differs from *development* — with a lowercase *d* — which is instead rooted in the economic sphere and capitalist profit. While the principles and general objectives diffused by the international organisations fell within the definition of *Development*, the means and strategies to implement them seemed to lean towards *development* based on economic logic.

In fact, the actions promoted and the projects financed aimed at reproducing in Global South countries those conditions of the capitalist world that would allow them to evolve towards a state of increased wealth and prosperity, mimicking the evolutionary path of the Western world (Rist, 2019, p.85). This led to the diffusion of industrialisation and infrastructure policies throughout the 1950s and 1960s, grounded in the *stages of economic growth* theory (Rostow, 1959) and in other

[26] In 1945, the Fifth Pan-African Congress marked a turning point in officialising the demands for broader rights and forms of independent sovereignty. The final document signed by the representatives of the participating states formalised the request for political independence and exposed the atrocities of colonialism (Ransby, 1996).

theories of what is known as Development Economics.

Development was understood as a linear and progressive process guided by a scientific and rational approach in which most variables were reduced to statistical calculations (Ferguson, 1990). This is evident in the 1956-1957 cost-benefit analyses carried out by France and Great Britain. Through the use of quantitative data, the economists of the two nations hypothesised different scenarios of intervention in the colonial territories that eventually led to the choice not to hinder independence movements but instead to preserve a peaceful relationship with colonies, even in the contingent post-colonial era (Hart, 2010). Assessments of the return on investment guided this choice: the results of the analyses showed that transferring part of the sovereignty and control to local governments would ensure higher returns for European nations — here again, behind *Development* lay the other *development*.

Infrastructure was seen as an essential prerequisite for the take-off phase — the key stage leading to the self-sustaining growth of a national economy (Rostow, 1956). It was during this period that the concept of infrastructure, within the policy arena, expanded its boundaries to include, in addition to transport and energy, social infrastructure — the education system, health — and other supporting sectors for the economic growth — institutional, organisational, industrial (Myint 1962; Krueger et al., 1989). The transformative process of turning infrastructure into an all-encompassing category has its starting point in the debate that arose after President Harry Truman's Four Points Speech in 1949. He explicitly referred to the urgency of spreading knowledge and technology to underdeveloped nations[27]. Infrastructural policies for development thus broadened their range; from then on, they pursued multifaceted objectives generally aimed at reducing the distance between the stage of underdevelopment and the following

[27] "We must embark on a bold new program for making the benefits of our scientific advances and industrial progress available for the improvement and growth of underdeveloped areas… For the first time in history, humanity possesses the knowledge and the skill to relieve the suffering of these people… Our aim should be to help the free peoples of the world, through their own efforts, to produce more food, more clothing, more materials for housing, and more mechanical power to lighten their burdens." Extract from the 20 January 1949 Harry Truman's inaugural address — the so-called Four Points Speech. Retrieved from: https://www.bartleby.com/124/pres53.html - last visited 12 June 2021.

one[28].

As noted by Rankin (2009, p.72), the development practices introduced since the 1950s "involved new types of coordination" at different levels. As a matter of fact, a need for coordination between different international organisations at a planning and strategic level coexisted with an urge for coordination at the local scale, between operating agencies and the national governments. This resulted in the emergence of frictions stemming from overlapping powers over space: local territorial authority vs international policies agency. These new configurations of powers gave rise to infrastructural planning initiatives with unusual and variable geographies: river-basin planning, continental transport strategies, sectoral regional initiatives, transport corridors (Sharp, 1952) in a sort of what Brenner (2004, p.115) defines as *spatial Keynesianism:* "a multifaceted, multiscalar, and contradictory amalgamation of state spatial projects and state spatial strategies" imbued of an international attitude and bound by development ideals. The governance structures of these new forms of planning were beyond the full control of local authorities but also beyond the control of the international institutions that supported the projects. They show how development has inevitably had to deal both with the space of local contingencies — political, social, physical — and international expectations that embraced lofty ethical principles and imperatives reminiscent of the colonial experience.

The 1970s represented a turning point. The collapse of the Bretton Woods agreements, the oil crisis and the shift towards a neo-liberal reconceptualization of development — *laissez-faire* and downsizing of the role of the state within the economy — led to the promotion of structural adjustment policies with cuts in social spending and infrastructure projects for many sub-Saharan governments[29].

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[28] It is worth noting here, however, that Rostow's model of development came after Truman's speech.

[29] https://www.un.org/development/desa/dpad/publication/policy-brief-53-reflection-on-development-policy-in-the-1970s-and-1980s/ - last visited 4 Jun 2021.

1.2.2 Infrastructure projects between Pan-africanism and the Cold War

Decolonisation was an opportunity for many African governments to promote large-scale land development policies to spur economic growth. To this framework belongs the Volta River Project launched by Ghanaian President Nkrumah in the 1950s. The centrepiece of the whole operation was the construction of an artificial dam on the river Volta to generate hydroelectric power enabling Ghana to gain independence from external supplies and at the same time to encourage industrialisation thanks to cheaper energy costs. The philosophy was aligned with international development policies that saw infrastructure as a necessary requirement for triggering modernisation processes. The desire for economic, political and cultural emancipation of the nascent African states was condensed around post-war infrastructure projects. Nonetheless, development was also an opportunity for Western states to continue to exert control over colonial territories, offering technical assistance and capital to secure future supplies of African resources and raw materials.

The Volta River Project was much more than a hydraulic infrastructure project. It did not end with the construction of the Akosombo Dam — the artificial lake that, occupying 4% of the national territory, would become the largest in the world (Moxon, 1969). It recalled the multidimensional aspect of development and specifically envisioned, in addition to a new power infrastructure network, the construction of industries, a system for agricultural irrigation, urban settlements, a new port and efficient roads to connect the various hubs (Hart, 1980) **[fig. 1.5]**.

The first stage in Nkrumah's extended territorial vision was the construction of the port city of Tema, 30 km east of Accra. Ghana was not yet independent and the influence of the metropole had led to commission the urban plan for the new city and its port to a team of British architects, guided by Maxwell Fry and Jane Drew. The spatial organisation followed the strategies outlined in Drew's 1947 manual *Village Housing in the Tropics* while at the same time expanding on the complexity of the compositional principles by rooting them in a real territory. The settlement of Tema Manhean **[fig. 1.6]** — conceived to relocate the fishermen of the village where the new port was to be built — was based on the Neighbourhood concept. Around the commercial hubs — intended to accommodate market and logistical functions — collective units of 95 rooms were grouped together, updating the concept of open compounds contained in the

manual (D'Auria & De Meulder, 2010). The communal dimension of the settlement persisted in later versions of the project: toilets, kitchens and washing areas were designed as communal facilities detached from the residential units and arranged in independent buildings. The settlement reflects the architects' desire to preserve a close relationship with the surrounding environment: it was one way of preserving the traditional character described in their manual as a principle to be followed in the new tropical architecture. The intent was to break with the past and the typical grid associated with the colonial city.

The years following Ghana's independence (1957) were marked by a renewed influx of funding from the World Bank, the United States and the UK. The Volta project entered its crucial phase. Preparations for the flooding of the gorge involved the resettlement of the 740 villages that were going to be submerged. A total of 52 new settlements were planned to relocate the population (D'Auria, 2014) equipped with services and social facilities to ensure a prosperous life in line with Nkrumah's aspirations for the new state. The project was a tool for conveying modernity through spatial restructuring, focusing on developing multiple infrastructures. It was a different kind of modernity from the early stages; with independence grew a stronger desire to break away from the colonial past and reaffirm the values of the new Ghanaian state.

The effects also spilled over in opening the design team to new — non-British — architects (Miescher, 2012). Among the architects was the Greek Doxiadis, who was entrusted with the master plan for the new Akosombo Township **[fig. 1.7, fig. 1.8]**. No longer organic forms as in Tema Menhan; instead, there was a resurgence of more “neutral, scientific [...] technically sound compositional principles to conveniently lubricate the reinsertion process” (D'Auria & De Meulder, 2010, p.133). James Scott (1998) would refer to a way of acting in which the supremacy of the aesthetic and formal order made it possible to simplify the processes of territorial occupation, reducing the relationship with existing practices and giving the authorities the possibility of exerting greater control over people.

However, Doxiadis's project cannot be fully understood without looking at its larger scale. Akosombo was conceived as part of an extended territorial vision. It was the result of the *ekistic* approach[30] that considered social, infrastructural,

[30] *Ekistics* - the science of human settlements - is a discipline developed by Doxiadis with the aim of renewing the approach to global urbanisation. It is based on the study of the

environmental and economic issues as essential components to investigate and direct urbanisation processes beyond any fixed scale. Doxiadis' spatial perspective embraced the whole world. He “reject[ed] the inherited model of the bounded city, and focus[ed] instead on the variations among population distributions within and among zones of agglomeration across the earth’s surface” (Katsikis, 2014, p. 491). According to his idea, world-scale planning was the recipe for tackling the inevitable population and urban growth.

In the specific case of Africa, giving importance to an extended scale of intervention was a potential solution to uneven colonial urbanisation practices that led to the development of infrastructure and cities mainly along the coasts, ignoring large portions of the continent. Moreover, Doxiadis’ continental vision was a strategic approach in overcoming political frictions over the territorial boundaries of the new African countries (Phokaides, 2013, p. 80). His thought was aligned with Nkrumah's and the Pan-Africanist leaders who believe in the idea of a cohesive and united Africa, in opposition to the resulted fragmentation of the colonial period which they blamed for underdevelopment. Within this framework lies the Africa Transport Plan **[fig. 1.9]** that Doxiadis, on his own initiative, presented to the United Nation Economic Commission for Africa (UNECA) in 1963. The plan envisaged the rebalancing of Africa's uneven urbanisation by creating a transport network that would connect the entire continent. In the late 1960s UNECA, inspired by Doxiadis' project, promoted the idea of the *Trans-African Highways*: a series of road corridors across Africa, from north to south and from east to west. The new highways “play[ed] a part in bringing about a fundamental shift in the goals of African development, away from concentration on raw material production and a dependent relationship on Europe and towards a more varied economy of greater self-sufficiency and interdependency” (Thriscutt & O'Sullivan, 1975, p. 338).

The role of infrastructure was predicated upon the fundamental economic principles of supply and demand. Highways would have provided an extensive logistical network spread across the African space as a stimulus to the productive sector but were simultaneously an indispensable tool for expanding the movement of commodities to support consumption. However, the ideals embodied by the *Trans-African Highway* clashed with reality. Despite the involvement of several

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five elements that shape the urban environment - "nature, humans, society, shells (i.e. buildings), and networks" (Doxiadis,1968, p.393) - in an integrated and comprehensive way that sees the world as a whole.

transnational institutions — UNECA and the Organization of African Unity, now African Union — the responsibility for the project's implementation fell on the shoulders of the individual countries (Cupers & Meier, 2020, p.68). The network went therefore, from being envisaged as a unitary project to a collection of fragments, whose success was very much dependent on the interests and contingencies of the different states. The project was never fully realised with only a few sections of the network being completed.

Yet other logistical infrastructures were reshaping the continent, overlapping or flanking each other. The race for development exerted an incredible incentive in seeking funding and technical support from the various potential international donors. Aid came from both countries of the two opposing Cold War blocs, especially in terms of assistance with industrial and infrastructural planning[31], and despite the fact that support from the Soviet bloc was sometimes a fallback due to the West's reluctance (Stevens, 1976). Afterwards, aid also flowed in from non-aligned partners like China[32].

The episode that saw the East and the West side in a tight confrontation was the construction of two infrastructures between the port of Dar es Salaam and present-day Zambia. The latter was suffering from the repercussions of the embargo imposed by the international community on Southern Rhodesia — present-day Zimbabwe — and needed an outlet to ensure the flow of imports of foreign products and exports of mineral resources from its territory. The two socialist governments of Zambia and Tanzania aimed to build a railway line, rather than a road, thinking of the advantages that the train would have brought in terms of a greater future independence: the railway, once built, would have operated without relying on oil imports or other vehicles.

The United States, Great Britain and Russia refused to finance the railway. China

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[31] The Socialist Bloc could count on Russia and China's experience in planning new manufacturing settlements, and in the hydraulic enterprise of regimentation and control of reservoirs in vast regions of Central Asia (Suyarkulova, 2014). On the other hand, the initiatives promoted by the United States drew on the successful development of the American railway network and Tennessee Valley Authority planning agency, celebrated as a model for regional planning in which the social dimension of labour was perfectly integrated with the landscape - a productive one! - and the urban interdependence (Ekbladh, 2002; Sneddon, 2015)..

[32] See Brautigam's *Dragon Gift* (2011) for a detailed history of aid and development between China and African countries.

provided technical expertise and financial capital to help the two countries; it was a way to establish new international contacts after the weakening of ties with Moscow and the embargo imposed by the United States (Scotto, 2019). The World Bank responded immediately, agreeing to fund the completion and upgrading of the road already linking the two countries. It would become the interstate highway, known as the Tanzam highway.

The railway reached the Zambian Copperbelt in 1975, after five years of construction work spreading along the track more than 300 bridges, 20 tunnels, around 100 stations, power plants, water pipelines, offices and training schools for future railwaymen (Monson, 2011, p.72). During the same years, Tanzania was promoting a massive resettlement of the rural population towards agricultural centres planned by the government: the so-called *ujamaa* or rural villagization[33]. It was natural to combine this rural development strategy with the new railway. The *Kando Kando ya Reli — Living along the Railway —* project **[fig. 1.10]** envisaged integrating stations within ujamaa settlements that "combined elements of administrative regularity, order and legibility linked to a general Cartesian order" (Scott, 1998, p. 237).

The railway was by its very nature a rigid infrastructure, made of steel and concrete sleepers that paced the route. It was tied to timetables and stations. In contrast, the motorway ran more freely through the landscape, overcoming orographic differences more easily. The asphalt ribbon was representative of a different idea of development that believed in freedom of movement, private property and a liberal market. No settlements were planned together with the highway, rather urbanisation was free and independent. On both sides of the road and in the proximity of its junctions, linear urban clusters sprang up spontaneously as a consequence of the opportunities generated by car traffic **[fig. 1.11]**.

The two infrastructures were concrete materialisations of the opposite political thinking of the two Cold War blocs. Two different technologies were used generating two different spatial configurations and uses of space but at the same time enriching and pluralising the idea of development.

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[33] In determining the location of the village, "the only and almost only factor taken into account was the availability of infrastructure and ... proximity to major road networks" (Shao, 1986, p. 234).

1.3 The return of infrastructure led-development

1.3.1 Recent infrastructure mechanisms

African countries have been recently subject to a return of big infrastructure projects (Nugent, 2018) that reflects a paradigm change in international development and financial policies. After decades of disregard, infrastructure investment has risen again bringing development trajectories back along similar routes as those navigated in the post-World War II period (Easterly, 2006, p. 33). The logics behind the flow of investment are informed by the assumption that development depends on GDP growth and technological innovation, echoing the 1950s and 1960s policy agenda in the belief of massive investment in infrastructure as the key to modernisation (Hansen and Wethal, 2015). The Africa Rising narratives — sustained by a decade of high commodity prices — themselves helped to spread confidence about economic growth and contributed to a climate of optimism that has pushed the continent back into the centre of economic debate. In order to guide Africa towards a form of development aligned with the global economic system, it was essential to address a number of structural problems that made Africa stand out as a backward continent. Underdevelopment became a mismatch in terms of performance and fixed standards set by international organisations. It was decoded in the form of a shortfall, a deficit or a gap, thus emphasising the divide between the actual condition and the optimal one identified within Western economies (Goodfellow, 2020).

Among all the gaps, particular concern was given to the infrastructure gap: it seemed to be the most critical. Official reports and discourses described it as "large" (Calderon, 2018, p. 2), "colossal" (ACBF, 2016, p.4), "massive"[34],

[34] https://www.unep.org/news-and-stories/speech/sustainable-infrastructure-bridge-gap - last visited 13 June 2021.

"serious" [35]stressing the severity and urgency of the problem. The adjectives used hint at the unidirectionality of the gaze that permeates the development world in how it looks at the African continent. Although the gap exists — and that is undeniable — the reality of African facilities is more complex. The fact is that much of what exists does not meet our expectations, let alone those of the financial world (Hildyard, 2016). African infrastructures often use different mechanisms, incremental logics, they rely on informal relationships or operate through less tangible interpersonal connections resulting from disruptions or the absence of more institutionalised forms (Simone 2004; Mbembé & Nuttall 2004). In many cases, heterogeneous configurations of different practices and rationalities operate in African space (Lawhon et al., 2018).

Nonetheless, international institutions and development banks have built a political scaffolding that has interpreted infrastructure problems as a shortage of big infrastructure - and therefore big money. This appealed to many large financial operators which increased their investments to Africa, triggering what Kanai and Schindler (2018) have called an "infrastructural scramble". The policy turn of the last two decades has further encouraged the entry of the private sector into development financing. Back in 1994, the World Development Report (World Bank) denounced the poor results of previous infrastructure projects, suggesting as one of the causes the lack of effective governance (p.4) and the absence of intra-market competition (p.6). The solution for a more efficient infrastructure was found in liberalising the sector in the belief that the market could respond more autonomously to the demand. Private firms gradually entered the infrastructure sector resulting in the consequent retreat of state authorities in many African countries (Bond & Carter, 1994).

The 2009 global finance crisis further contributed to directing private investment towards Global South, making African "infrastructure [sector] more relevant" (World Bank, 2010, p.15). Global finance saw emerging opportunities in developing country markets as the chance for greater investment returns than conventional financial assets linked to developed economies (Fernandez & Aalbers, 2017; Whiteside 2019). Africa has become a profitable frontier in the global investment market with average returns in the infrastructure sector

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[35] https://www.afdb.org/fr/news-and-events/developing-african-infrastructure-for-the-continents-structural-transformation-11790 - - last visited 13 June 2021.

hovering around 19%[36] but with projected growth in the coming years that would take returns to 30% (Hildyard 2016, pp. 49-50). To stimulate investment, contractual clauses offering a minimum return or other advantages have been used to transfer part of the responsibility of financial operations to public bodies (Hildyard 2016, 33-38).

A complementary factor that has marked recent development is the revival of the regional dimension. Following independence, African states concentrated many of their resources on projects within the national territory often mimicking one another with the risk of increasing competitiveness (Nugent, 2018; p.23). In contrast, contemporary development looks more and more towards space in a way that goes beyond borders by promoting transnational projects. The new regionalism is indicative of the desire for economic integration among Africa as well as for the creation of better conditions for the circulation of commodities in the global trade network. In this vision, logistics corridors represent the key element of territorial policies to connect ports with industries, urban markets and mining sites (Schindler & Kanai, 2019).

The development engine has seen the weights of the players involved change over time, and consequently the geopolitical agendas and balances. Asian partners are acquiring greater importance, with China at the forefront of this trend. At the end of the 1990s, the Chinese market was approaching its saturation point: domestic demand was no longer sufficient to absorb supply. The 1999 *Go Global* policy[37] was the first attempt to solve the problem. China was to initiate a series of reforms aimed at supporting Chinese foreign investment, encouraging the diversification of production and developing new financial channels. Africa seemed to be the ideal terrain to experiment with this policy: it was rich in mineral resources useful to the Chinese economy, it was a vast potential market yet to be exploited and it lacked infrastructure — one of the flagships of the Chinese industry (Brautigam, 2011). Chinese construction companies, counting on easier access to credit, advantageous contractual conditions — partly due to the strengthening of relations between African countries and China — as well as strong international

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[36] The average return for infrastructure investments in developed countries is around according to the same author.

[37] http://www.gov.cn/node_11140/2006-03/15/content_227686.htm - last visited 13 Jun 2021.

competitiveness due to low Chinese labour and material costs, were able to penetrate the continent with force.

In the 2000s, the Chinese construction sector expanded, making China the leading infrastructure provider in Africa. In 2002 it held a 9.9% market share, in 2011 40.1%, surpassing Europe which accounted for 34.6% (Huang & Chen, 2016, p.8). Moreover, China plays an important role in the financing of African infrastructure. Through its state-owned banks - first and foremost the China Development Bank and the Exim Bank - it has provided loans amounting to $13bn per year over the period 2012-17 (ICA, 2018; IMF, 2018). Although the contribution was lower than 20% of the total funding directed to infrastructure projects, it is targeted at financing large-scale projects such as the Addis-Djibouti Railway, the Mombasa-Nairobi and the Abuja-Kaduna fast train services (Gu & Carey, 2019, p.154).

Ties with the African continent seem to have been further strengthened thanks to the Forum for China-Africa Cooperation (FOCAC) launched in 2000. FOCAC is the collective venue for outlining "comprehensive strategic partnerships" (Li & Carey, 2016) and negotiating agreements on a plurality of political and economic issues — debt, loans, investment, infrastructure, security, peace, agriculture. It has marked a change of pace in China-Africa relationships, which, compared to the previous period, have become "less ideological and more commercial" (Van Staden, Alden & Wu, 2018, p. 5). FOCAC has also become the operational platform to implement strategic projects included in the Belt and Road Initiatives maritime route. As stated in the FOCAC Action Plan (2019-2021): "the two sides believe that Africa is an important partner in Belt and Road cooperation, and pledge to leverage the strengths of the Forum and support China and Africa in jointly building the Belt and Road"[38].

Although operating in parallel, FOCAC and BRI are not mutually exclusive. Instead, they are two integrated initiatives that aim at expanding economic opportunities. As outlined in the action plan *Vision and Actions on Jointly Building Silk Road Economic Belt and 21st Century Maritime Silk Road*[39], the main purpose of the BRI remains linked to the economic sphere as a solution to

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[38] http://www.focac.org/eng/zywx_1/zywj/t1594297.htm - last visited 14 June 2021.

[39] http://2017.beltandroadforum.org/english/n100/2017/0410/c22-45-3.html - last visited 14 June 2021.

enlarge the Chinese market and absorb overproduction. However, this does not mean that geopolitical motivations are absent. The various actions promoted, such as the remodulation of customs agreements, or the encouragement of cultural, scientific and educational exchanges, reveal an intention that is unlikely to be purely economic.

The BRI narratives have often been described in terms of infrastructural investments spread along several east-west routes from China to Europe. The railways, ports, and highways that are part of the programme represent the hardware of a larger network of investments, special economic zones, and development corridors. China is exporting to Africa and Central Asia its development model in which overlapping infrastructure and initiatives are the first pillars for economic growth implemented through plug-in components grafted onto the main routes and their ramifications (Hilgefort, 2019, p. 249). In some cases, infrastructures do not exist in reality but are only imaginary; they are political or economic connections that make BRI resemble a fluid constellation of points rather than a physical infrastructure network. In Africa, for example, ports on the western coast appear as nodes in the Maritime Silk Road map, even though none of the corridors envisaged by China circumnavigates Africa.

A more direct involvement occurs in the Horn, given its strategic position that intercepts flows towards the Suez Canal and the Mediterranean. Djibouti is the entry hub to Ethiopia, Kenya, through the port of Lamu, will provide access to Sudan and its oilfields. Regions hitherto off the world economic map will be crossed by new infrastructures and investments becoming places for the spatial-fix of capital. This will result in new territorial configurations that will prompt urbanisation dynamics to which the continent is expected to respond.

1.3.2 Development corridors

The new development paradigms have condensed into space by implementing specific forms of spatial organisation tailored to an increasingly global environment. Under these conditions, local development has reconfigured spatial relations in terms of integration processes. The effects can be seen in the emergence of translocal spaces, where relations “linking the *local* to the *local* elsewhere” (Zoomers & Van Westen, 2011, p.377) are privileged over integration at the national level. An example that is closely affecting the African continent is

the explosion of development corridors: currently, more than 30 are under development (Enns, 2018; Laurance et al., 2015). Having a precise idea of what a development corridor is may be challenging. The definitions as well as the objectives linked to the notion of *development* are manifold. Corridors are designed to trigger urbanisation, logistical integration, and industrial growth, but they often seek a mix of these and other objectives (Gannon et al., 2020). In general, their common denominator is their win-win development perspective, whereby multiple benefits are combined over an infrastructural axis.

The entry point of the corridors often coincides with a logistical hub — usually a port — thereby improving the movement of inward and outward flows. This has led to the modernisation of many African ports, which did not meet the modern logistics standards because of their shallow draught and lack of adequate transhipment and storage facilities. The port of Lamu is one of these. The small island town has been chosen as the starting point for the Lamu Port-South Sudan-Ethiopian Transport corridor (LAPSSET) **[fig. 1.12]**. The Kenyan government has included the corridor in its strategic development plan *Vision 2030* as a platform to reconnect peripheral areas of the nation while providing opportunities for economic development. Once completed it will cross a region of more than 160 million people. The corridor will include the construction of a highway from Lamu to Isiolo — a town in the central region of Kenya — where it will branch off towards Ethiopia and Sudan. According to official documents (LAPSSET, 2015), the road will be complemented by a standard gauge railway, two oil pipelines — one leading to Sudan, the other for the Ethiopian market — three international airports connected to three resort cities — Lamu, Isiolo and Lake Turkana — a refinery and a fibre optic network.

The region crossed by the corridor seems to be envisioned as a *new frontier* (Mosley & Watson, 2016) for development creeping into rural areas that were once seen as peripheral. The British had already considered the northern regions of Kenya as a buffer space dividing colonial possessions from politically unstable Somali and Nilotic regions (Donham & Wendy, 1986). With the discovery of oil fields in Sudan and the Lake Turkana area, the “empty” and “underused” territory (Mosley & Watson, 2016, p. 459) began to animate political interests. The first consequences materialised in the form of land enclosure intended for future extraction activities at the expense of local pastoralist communities (Enns & Bersaglio, 2015, 2016).

The imaginative power of infrastructure has also extended to the tourism sector. The resort cities planned along the route will occupy large portions of land — 450 hectares in Lamu and 5000 hectares in Isiolo[40] — in relatively sparsely populated areas. They will become clusters of leisure activities for mass tourism with collateral alterations in the relationship between rural local communities and the landscape. As can be seen in the images **[fig. 1.13, fig. 1.14, fig 1.15]**, the planned facilities consist of large hotels, tourist resorts and shopping centres inspired by global architectural formal paradigm with sporadic addictions of stereotyped "African" architectural elements.

The winds of development are blowing with particular intensity over the whole of East Africa, where various corridors are being planned **[fig 1.16]**. The routes start from the coast and penetrate the interior of the continent following parallel trajectories, although at times they intersect, as in the case of Tanzania. The starting point of the Tanzanian corridors is the port of Dar es Salaam. This is the starting point for the TAZARA railway corridor as well as the second outlet of the Tanga Corridor toward Moshi, and the Central Corridor that extends westwards to Burundi, Rwanda and Uganda. They are intersected by the Cape to Cairo Highway, several existing and planned railways and inter-regional roads that link with ports on Lakes Victoria and Tanganyika. It is an infrastructure asset designed to provide greater logistical flexibility across the multimodal transport system and absorb greater volumes of traffic to better compete with competing corridors. The question that still remains open will be how these infrastructures will be integrated within actual economic growth and local infrastructure networks.

The distance between the planning documents and the reality is fraught with uncertainty. It is difficult to imagine the promised new towns or special economic zones as pieces of the physical world when today's target locations are empty and poorly connected spaces. Imagination, however, is part of the engine that drives the construction of modernity paths. But looking at the authors of possible new African futures, we find that they are either European or American. Tanzania's *Vision 2025* for example was conceived by McKinsey & Company (Edwards, 2016) by projecting onto the East African nation's space an idea of development extraneous to *the local*. The consequences are then reversed on the communities

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https://www.businessdailyafrica.com/bd/markets/swazuri-team-plans-lapsset-land-payouts-2129290 - last visited 15 June 2021.

that inhabit the places, who were initially asking for development and modernity but now are seeing their land and future in the hands of global powers.

1.4 Coda

In this chapter, I have reflected on the "duress" (Stoler, 2016) of infrastructural ideals in the making of African modernity. We have seen how, since colonialism, large infrastructure projects have shaped the territory of the African continent, casting on its space ideologies of power and exploitation.

Drawing on historical sources, scholarship of colonialism and development, and on a few architectural examples of these three moments, I have argued that while actors, institutions and spatial configurations may change over time, there is a recursiveness of the infrastructural logics, of the technopolitical discourses that inform the relationship between infrastructure, capitalist development and modern statecraft.

In the next chapter, we will see how this recursive logic of infrastructural capitalism has played out in the two iterations of the Ethio-Djibouti railway, the French Chemin de Fer first, and the Standard Gauge Railway today. I will chart how the technopolitics of imperialism, capitalism and postcolonial statecraft were given an architectural materiality, and how these architectural traces reveal the recurrences as well as the fragmentations and incompleteness of capitalist development in modern Ethiopia.

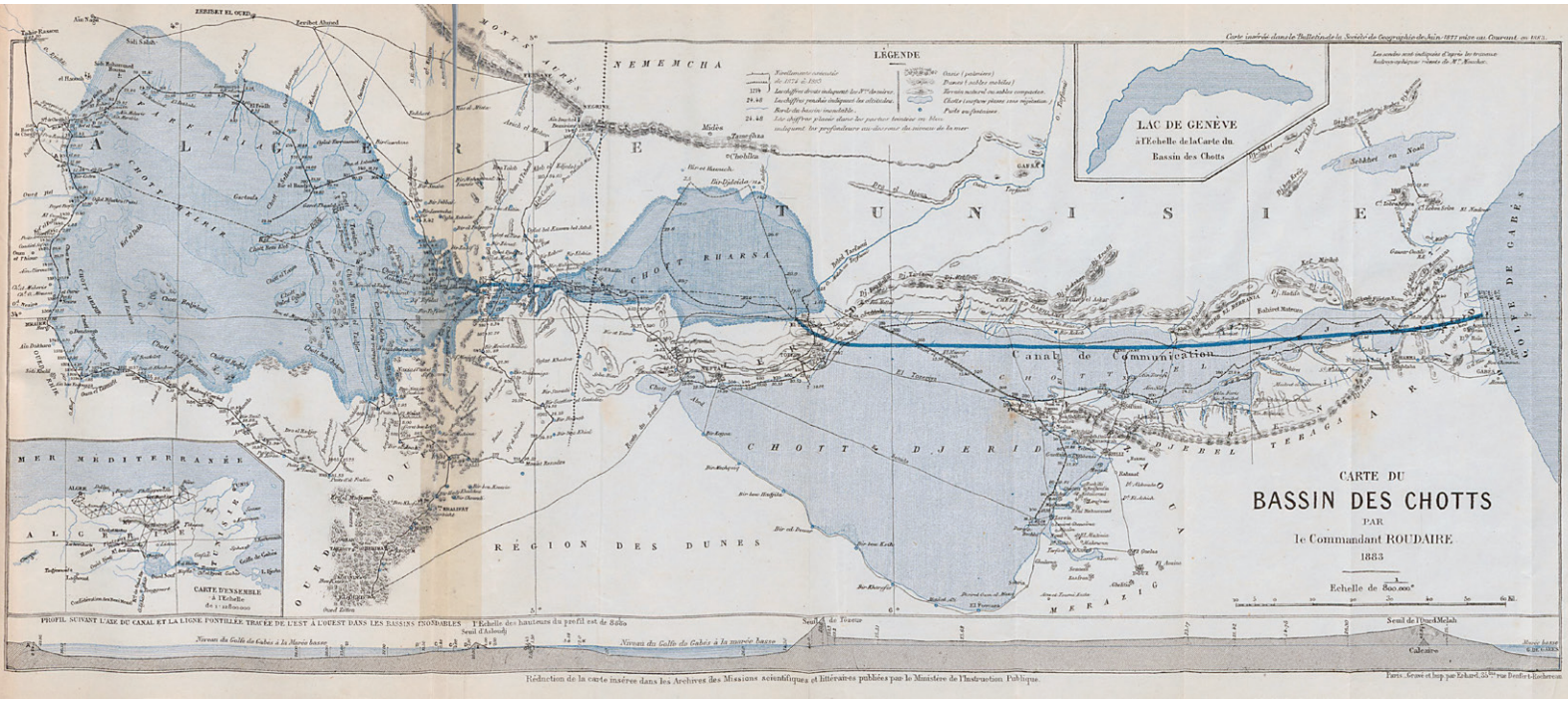

fig. 1.1 - La mer intérieure africaine, François Élie Roudaire, map, 1874.

fig. 1.2 - Atlantropa, Herman Sörgel, illustration, 1932.
The project was devised to contain several hydroelectric dams in key points of the Mediterranean Sea to cause a sea level drop and create new land to settle.

fig. 1.3 - The African railway system, map, 1927.

Here a water-hole ; nomad's outpost (strategy). **106**

Here finally " Le Bidon 5," nerve-centre on the imperial highway. The white race goes its conquering way. The filling station is a symbol of white civilization. **107**

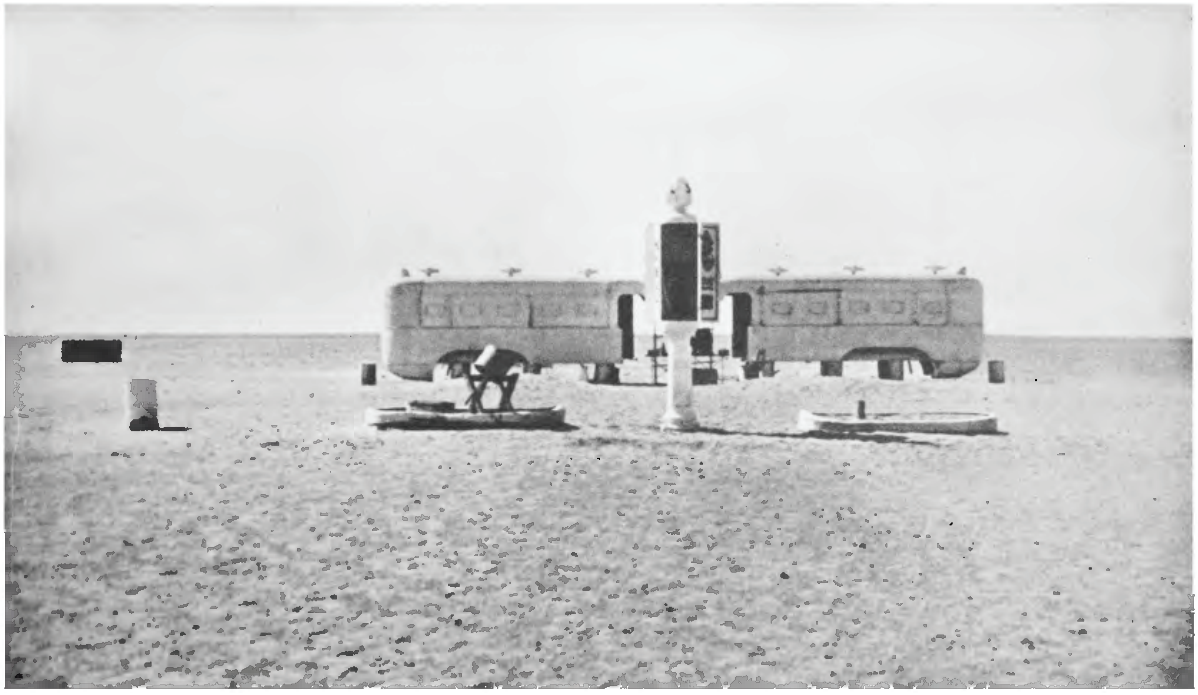

fig. 1.4 - *Aircraft*, Le Corbusier, 1935.

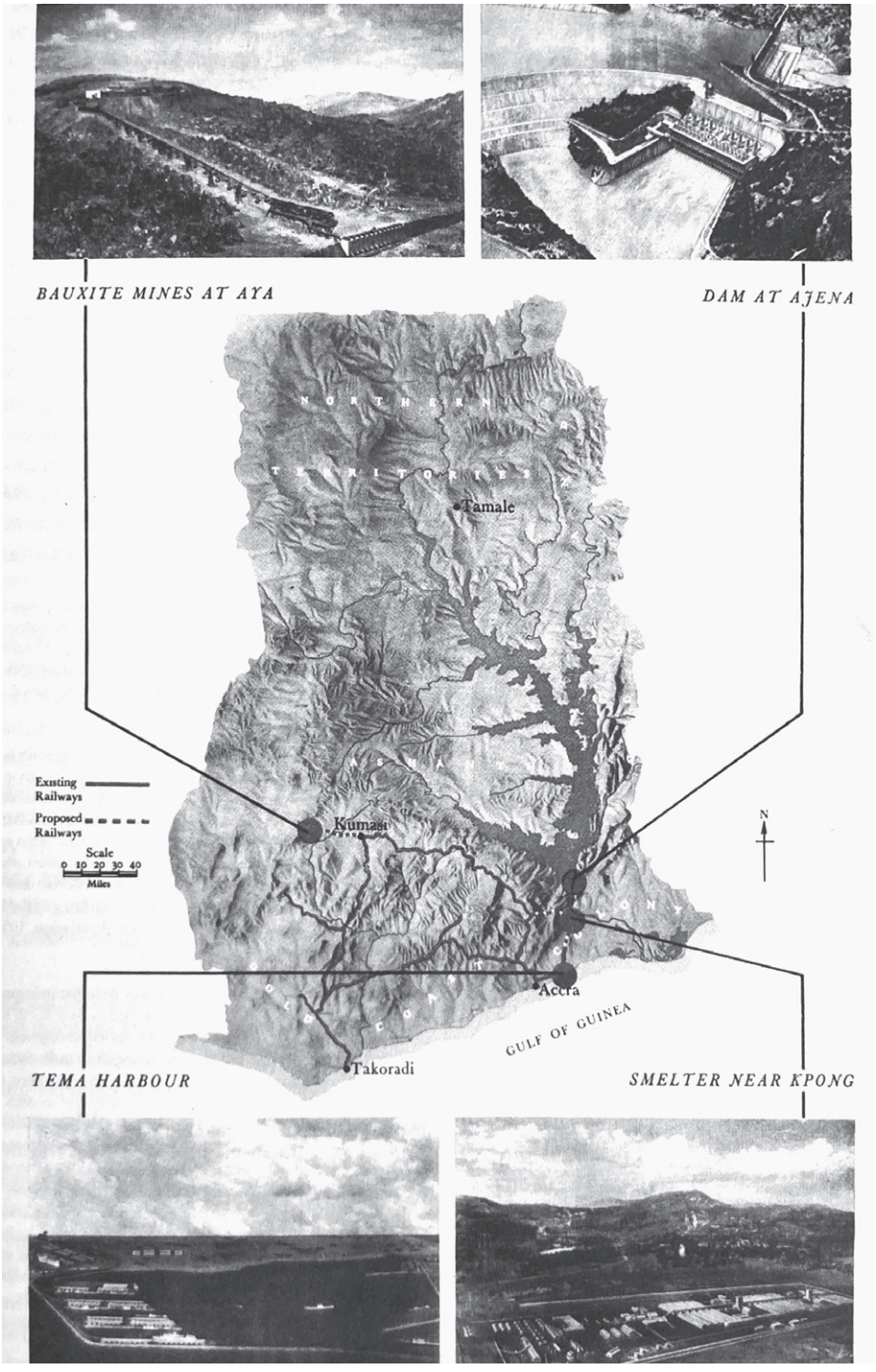

fig. 1.5 - Territorial map of the Volta River Project, Preparatory Commission of the VRP, illustration, 1956.

fig. 1.6 - Final proposal for Tema Manhean, Fry & Drew, ca., drawing, 1956.

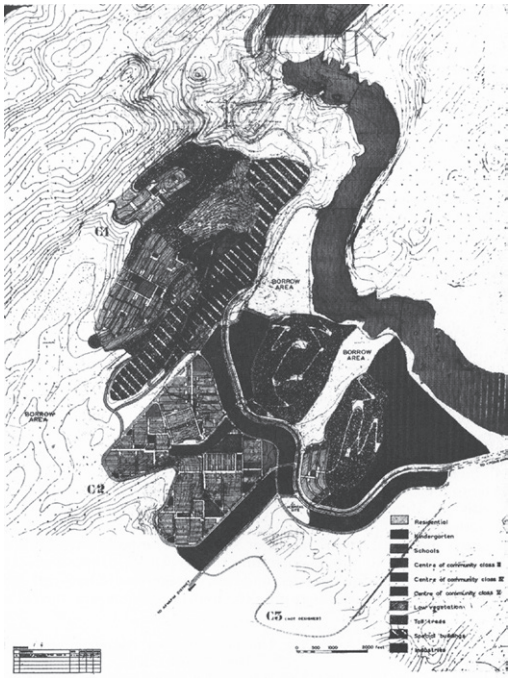

fig. 1.7 - Akosombo Township Plan, Doxiadis, map, 1962.
fig. 1.8 - Akosombo, aerial image, 2021.

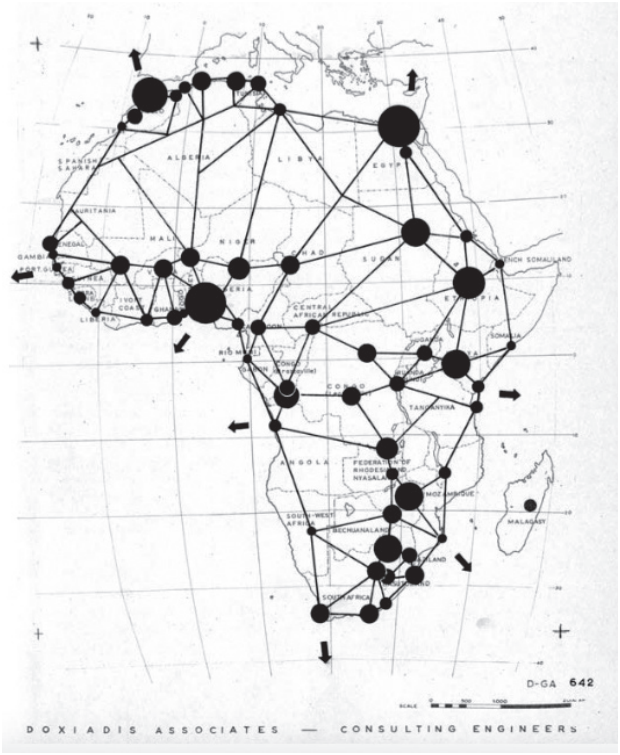

fig. 1.9 - African Transport Plan, Doxiadis, map, 1962.

fig. 1.10, 1.11 - Ujamaa settlement along the TAZARA railway vs. spontaneous settlements along the Tanzam highway, aerial images, 2021.

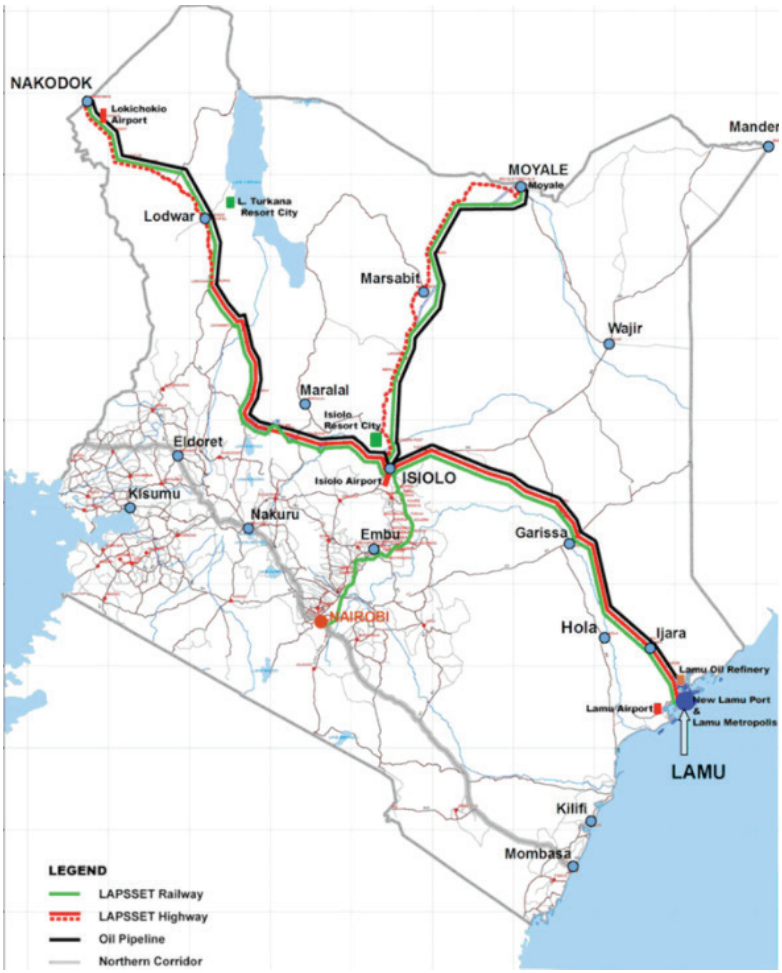

fig. 1.12 - LAPSSET corridor, map, 2018.

fig. 1.13 - LAPSSET Lamu Resort City, CGI, 2020.

fig. 1.14 - LAPSSET Isiolo Resort City, bird's view CGI, 2020.

fig. 1.15 - LAPSSET Lake Turkana Resort City, bird's view CGI, 2020.

fig. 1.16 - Main corridors in East Africa, map, 2015.

2 Along the Ethio-Djibouti Railway(s)

This chapter investigates the construction of the two Ethio-Djibouti railways, focusing on the traces that, at different scales, have affected and are affecting the territory crossed by the infrastructure. The starting point of this chapter corresponds to the construction of the French railway at the turn of the XIX and XX centuries. It represented a turning point in Ethiopia's history since it was the first widespread and tangible sign of the country's openness to the Western world and to the logic of colonial capitalism. It ignited trade growth and at the same time proved to be an "important urban tentacle" (Akalu Wolde, 1973, p.1) with multiple spatial impacts visible in the architecture of Dire Dawa and the other *villes ferroviaires*.

After sketching the infrastructure's historical background, the chapter explores the development of the new standard-gauge Ethio-Djibouti railway. It was inaugurated in 2018, reactivating the rail link with Djibouti. The project is the key component of a broader developmental plan to revive the country's economy by promoting industrialization policies. Funding for the construction of the railway and related industrial parks was mainly provided by Chinese financial institutions, making the Asian country the largest foreign investor in Ethiopia and one of the most influential players in the country's development path (Nicholas, 2017). The new railway, mirroring what happened in the colonial era, is poised to trigger a second wave of urbanisation along the Addis-Djibouti corridor.

A second purpose of the chapter is to investigate some of the architectural and urban components — the stations, the industrial clusters, the logistics hubs — which I analyse as traces of the infrastructure. My analysis, in this sense, combines a plethora of different traces, ranging from historical iconographic material to personal impressions in the form of ethnographic vignettes. Historical data comes from primary sources — photographs and colonial documents —

reviewed and cross-checked with the limited secondary sources available. The investigation of contemporary urban space has been based on fieldwork observations that allowed the selection of specific places and objects indicative of the ongoing transformations. Here, the methodological inspiration from FA's work was useful to redraw maps and iconographic material, combining my photos, aerial imagery, pictures collected from the web, together with information gathered from other primary sources and specific literature. Part of the material collected has been used in the elaboration of three traces: initial explorations of collateral infrastructural spaces: the old Dire Dawa and Addis stations, and the space between the Dire Dawa's city centre and the new station, where the SEZ masterplan is ongoing.

2.1 Looking back

2.1.1 The *Chemin de fer Franco-Éthiopien*

On 9 March 1894, the Ethiopian emperor Menelik II signed a concession authorising Alfred Ilg, a Swiss engineer who had been in Ethiopia for several years at the emperor's court, to set up a company with the aim of studying a rail link between Djibouti, Harar, Entoto — the urban centre near Addis Ababa, home of Menelik II's first residence — and the White Nile, towards British Egypt. The railway was an opportunity for Ethiopia to finally interrupt its geographical isolation and shorten travel times with the Red Sea port, a privileged outlet for commercial traffic with Europe and the East. For the French, on the other hand, it represented an opportunity to expand trade in the port of Djibouti, recently under their control, and at the same time acquire political power in the Horn region, disputed with two other European powers: Britain and Italy (Thompson & Adloff, 1968).

The first studies of the route imagined a railway with a double terminus on the

coasts of the Horn of Africa. The terminal stations were Djibouti and Zeyla, while El-Bah was the bifurcation point. In this way, two ports would be used, one controlled by the French, the other in the territory of Somalia controlled by the English **[fig 2.1]**. This would have prevented the possibility of a French monopoly on the port, as feared by Menelik II (Bekele, 1991, p. 368). The project changed several times over the years[41], but the logic behind the planned rail infrastructure network was clear. The railway departed from the eastern coast heading towards major cities and local capitals, with the idea of rejoining the network built on the other side of the continent. The intention was to create a network of transcontinental railways by aggregating the individual sections built in the different colonies to facilitate logistics, exploit and control over territories.

In 1896, two years after the concession was signed, the *Compagnie Impériale des Chemins de fer Ethiopiens* (CIE) was founded. Construction work began on 1 October 1897 from Djibouti, starting with warehouses and depots. This first phase was followed by the laying of the first 8 kilometres of tracks in the direction of Ambouli, a small settlement in the hinterland that was strategic in the development of the project as it supplied water to the city of Djibouti, where the CIE would have installed reservoirs to supply the trains[42].

In the first 150 kilometres, 49 bridges and viaducts for a total length of about 720 metres were built on the slopes that divided the French colony from the Harar region (De Pineda, 1995, p. 225). Two artefacts more than others were representative of the leap in scale and technical innovation that the railway construction brought about: the Chébélé viaduct **[fig. 2.2]**, 156 metres long and 20 metres high, and the Holl-Holl bridge **[fig. 2.3]**, 138 metres long and 28 metres high. The latter was mentioned in the chronicles of the time as a construction site that involved more than 1800 people and was celebrated as a success of the French colonial project[43]. Both viaducts, credited to engineer Théodore Seyrig of the Eiffel company, were designed according to principles that were at the forefront of construction technology; the structural elements shared the same shape and dimensions of the joints, thus facilitating and speeding up assembly

[41] Additional sections of the line from Harar to Lake Turkana and South Sudan were considered (De Pineda, 1995, p.182).

[42] Archives Nationales d'Outre-Mer (ANOM), folder 1 TP 697.

[43] Le Petit Journal de Paris, 5 Apr 1900.

Traces 1 _ LaGare

LaGare is a 36-hectare luxury real estate complex backed by Abu Dhabi based Eagle Hills. It is located in the city centre and occupies the area around the former station of Addis Ababa. The developer envisages the construction of a mixed-use district with residential, commercial, leisure and hotel facilities[44]. The real estate project, with an approximate value of $1.9 billion, is the result of an agreement between Addis Ababa City Administration and Eagle Hills (Terrefe, 2020). The price per square metre for the apartments is around $3,000[45], suggesting that potential buyers are from the wealthier social class, the Ethiopian diaspora or foreign investors. The aesthetics are based on the examples of Dubai and other Emirati cities, promoting an image of modernity that stands in stark contrast to the EPRDF's previous policies of social housing and poverty alleviation. Most of the buildings in the area will be demolished to make way for the new glass skyscrapers. The station is one of the few buildings that has been saved - the historic *buffet de la Gare* has instead been demolished. LaGare is a *trace* that shows how Addis Ababa's urban policies are moving towards the global market, trying to attract new capital and increase urban rents but it also stands out as an example of the symbolic use of infrastructure becoming an object to promote real estate speculation.

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[44] https://www.lagare.com/project/la-gare/ - last visited 27 June 2021.

[45] Speech by Prime Minister Abiy Ahmed at Addis Wog "One Year Review of Reforms" in Addis Ababa on 23 March 2019.

fig. T1.1, fig. T1.2 - LaGare urban development project, CGI, 2019.

fig. T1.3 - LaGare Masterplan, plan, 2019.

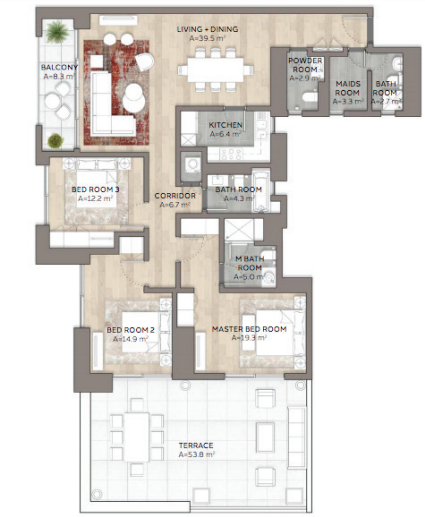

fig. T1.4, T1.5 - LaGare residential apartments layout, plans, 2019.

fig. T1.6 - Traders around LaGare construction site, photograph, 2020.

fig. T1.7 - Working progress in LaGare construction site, photograph, 2021.

operations[46]. The positivist logic that guided the entire design process was evident in the standardisation and modularity of the various building components which helped to reduce unforeseen events and make construction sites more efficient.

The infrastructure, first imagined on drawings and maps, gradually became a tangible artefact. The elements of its spatial grammar "embodied the great material advances associated with the first Industrial Revolution and dramatized the gap which that process had created between the Europeans and non-Western peoples" (Adas, 2015, p.221). Steel beams, reinforced concrete pillars, reservoirs and coal depots became the ingredients of a new spatial configuration aligned to the railway. Infrastructure development generated what Horvath (1974) defined as a *machine space*[47]: a functional space relatable to the operational dynamics of the railway, which overlapped and transformed a region according to different spatial and temporal logics compared to the one already existing linked to caravan trade, pastoral, institutional and administrative practices.

The design of the new railway drew together technological, political and economic issues. They all contributed to the final configuration, which diverged from what was originally envisaged. Among the most significant shifts was the decision not to extend the railway line as far as Harar but to divert it toward an oasis in the foothills, which was easier to reach and more cost-effective. The oasis would have become the site of Addis-Harar — the new Harar — the terminal station of the first section of the railway, later renamed Dire-Dawa. The site was not chosen by chance. It was located along the historic trade routes through the Ethiopian Rift Valley and was known as a post station where mules or camels could rest[48]. Five years after the beginning of construction, the train arrived in Dire Dawa; it was 24 December 1902.

By then, the geopolitical context had shifted towards scenarios other than those imagined when the concession was signed. This led to the interruption of

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[46] The structure of the Chébélé viaduct consists of 9 beams of 12 metres supported by 8 metal piers 6 metres wide, the Holl-Holl viaduct structure of 8 beams and 7 metal columns. ANOM, folder 1 TP 055.

[47] Horvath refers to the space occupied and used by cars to trace and explore the spatial dimension of technological phenomena. In the present research, the *machine space* does not refer to automobiles but the train. The concept is therefore used in a more general sense to indicate spaces occupied, generated or linked with infrastructures.

[48] Djibouti, n. 200, 24 Jan 1903.

construction works[49], resumed only in 1909[50] on the initiative of a newly established company, the *Compagnie du Chemin de Fer Franco-Éthiopien*. The new company had to modify the original project several times to meet the challenges posed by the extreme environmental conditions. It was decided, for example, to shorten the distance between the stops to a maximum of 51 kilometres — instead of the previous 69 kilometres — to cope with water supply difficulties (Maggi, 1996, p. 135). Strategically, it was also decided to move the General Directorate to Dire Dawa. Here, mechanical workshops, functional for the realization and the assemblage of many of the metal elements of bridges and viaducts, were established, thus removing the need to receive supplies from Djibouti (Bekele, 1989, p. 85).

It was only on 7 June 1917 that "the laying of the tracks... as well as the erection of temporary barracks to serve as a station, depot, and worker housing units, were about to be completed"[51]. Twenty years after construction began, after having laid 783 kilometres of track and overcome a vertical drop of 2400 metres, the train arrived in Addis Ababa. The railway infrastructure settled in the territory a logical system of objects and functions that changed the way of moving and living in line with the political and economic interests of France and Menelik II.

Since then, there were periods of decline and recovery in the history of the railway. In their imperial vision, the fascists for example had relegated the railway to a minor infrastructure, preferring the road and the automobile instead[52]. However, until the 1960s the railway remained the major means of transport for

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[49] Bekele (1991, p. 356) summarises the motivations that led Menelik II to stop the work in this way:"part of Ethiopia's territory between Djibouti and the Awash, through which the railway would pass, would not be owned by Ethiopians any longer and that he [Menelik II] would have no right over the railway line which was vital to him. Above all, placing in the hands of an ambitious foreign power, a powerful tool of domination such as the railway would have brought into question the very survival of the country's independence".

[50] On 12 December 1908 Menelik II signed a second concession for the extension of the railway line. The concession banned the possibility of building any other railways between Djibouti and Addis Ababa, but not any secondary branches on the main line, an attempt to protect French interests while at the same time ensuring the development of an infrastructure network to support the Ethiopian economy. Another constraint, crucial for future territorial developments, was that the number and location of new stations had to be defined following the Emperor's approval.

[51] ANOM, folder 1 TP 1049, Technical Report n.81.

[52] See Chapter 3 of this thesis.

commercial purposes; the decline began in the subsequent period of the DERG socialist dictatorship and continued until the 1990s (Gascon, 2013, pp. 130-131). With the end of the regime, several projects to upgrade the railway line emerged. Although none of them has been implemented, they were indicative of a political intention to relaunch the infrastructure (Kozicki, 2015, pp. 165-167). Still, it was not until 2018 that the train reconnected the two capital cities.

2.1.2 *Villes ferroviaires*: a new urban form

The railway line ran through a scarcely inhabited area. The route followed the Rift Valley, the least impervious and smoothest path to Addis Ababa that runs through mostly arid territory. For this reason, the *proto-urban* settlements of the local communities had historically sprung up at higher altitudes, on the highlands and generally in sites with greater water availability.

The issue of Ethiopian urbanisation still arouses debate within the scientific community. The origin of the different positions goes back to the disagreement on defining cities from a historical perspective. Some scholars (Diamantini et al., 1993; Mesfin Wolde, 1965) argue for a general absence of urbanisation until the 20th century, linking it instead to some key events that followed: the permanent designation of Addis Ababa as the capital of the state — thus interrupting the phenomenon of the so-called "wandering capitals" (Horvath, 1969) — the increased contacts between Ethiopia and other nations following Menelik II's policies, and later the Italian occupation.

Other scholars, including Tamru (2013) and Akalu Wolde (1967), recognise the existence of urban forms in a less recent past. Rather than in the presence of relevant commercial or religious activities, they identify urbanity in the political and military functions that clustered within certain settlements. Traditionally, the organisation of urban space originated from the residence of the governor — or military chief — who controlled the region **[fig. 2.4]**. These settlements were

comparable, at least in their early stages, to real military camps[53] and were usually located on the highest terrains, following a polar growth pattern, centred on the governor's building (Antonsich, 2000; Gascon, 1989). The resulting morphology was marked by fragmentation and a multi-centred layout around a few main buildings, suggesting the existence of a social hierarchy within the settlement. This type of pattern evolved in different variants, depending on the ethnic group, the dimension of the community and the functions settled. We may not properly refer to urban planning but rather to a mechanism for regulating space that followed customary rules part of the local culture.

By contrast, the *villes ferroviaires* triggered a new type of urbanisation with their own specificities. The geo-climatic conditions of the context and the presence of stations along the railway infrastructure played a fundamental role (Basuyau, 1991; Benti, 2016). Technology, equipment and devices imported from Europe played a part in the development of urban centres by guaranteeing a minimum supply of services, turning them into poles of territorial relevance. Availability of water was one of the most critical technical challenges related to the environment. It was tackled by equipping the stations with reservoirs and artificial wells. Water was functional to the railway system but also proved to be an attractive factor that helped transform the stations into regional centres. Beyond the presence of water, the stations were an opportunity for the inhabitants of neighbouring territories to increase their trade. When the train stopped, stations were crowded with local people who set up linear markets along the tracks **[fig. 2.5, fig 2.6]**. In the beginning, human presence was not continuous but followed the train's schedule, giving rise to settlements of varying densities that switched on and off at the arrival and departure of trains.

The *villes ferroviaires* were thus comparable to small regional logistics centres that facilitated trade and allowed many new products and materials to enter Ethiopia (Akalu Wolde, 1973, p. 11). They all followed the same linear growth pattern, originating from the buildings and the other structures the railway company built **[fig. 2.7]**, with little growth in the perpendicular direction (Mesfin Wolde, 1965, p.17).

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[53] The so-called *kätäma*. Originating in the Middle Ages, they became an instrument of power and control during the empire of Menelik II. For further discussion, see Gascon (1989), Ayenachew (2009) and Tamru (2013), in particular chapters 3 and 9.

Among these settlements, some continued to expand, especially those that were located at the crossroads of trade routes or in places with greater water availability becoming proper towns — as Awash, Adama and Modjo. People's presence no longer depended exclusively on the railway but on the new activities and services that emerged in these urban nodes. Bakeries, butchers, and a whole series of functions related to hospitality and tourism, such as hotels, bars and restaurants, diversified and enriched the landscape with buildings of previously unknown functions and forms (Basuyau, 1991, p. 41). From being mere stations functional to the infrastructure, stops on the railway had evolved into small autonomous urban communities.

2.1.3 The rise of Dire Dawa

> *Dire Dawa, jewel of the railway,*
> *hidden beyond the mountains which remind*
> *one of hell,*
> *standing on fine sand*
> *in the middle of Somali steppes,*
> *is full of smiles with its flower-scented villas*[54].

Dire Dawa was the first truly *urban*[55] settlement travellers would encounter coming from Djibouti in the 1920s. The verses above are the memories of a traveller who, after crossing the arid regions of French Somalia, reached Dire Dawa where he was struck by its architecture and lush vegetation.

The opening of the railway service with Djibouti in 1902 had been the main driver

[54] Unknown author. Courrier d'Éthiopie, 24 Septembre 1926.

[55] According to Western culture, the meaning of *urban* was at that time comparable to that of city. Simmel (1903), for instance, defined the city as a place dense with people and a variety of economic activities. Engels (1845) stressed the idea of a city as the space where capital is concentrated and operates. A place of industries and entrepreneurial activities with bustling streets and overcrowded neighbourhoods. For both, it was the density of buildings, people and activities that were associated with the image of the city in the late 19th and early 20th centuries.

of urban growth, contributing, within a few years, to make the settlement one of the most important transit centres in Ethiopia (Bekele, 1989, p. 82). The reasons that had led to the choice of that site for the railway station were the presence of freshwater springs and the proximity to Harar, where the railway line was initially supposed to stop over (Baldet, 1970, p. 5). The first urban core consisted of small pavilions and tents, but, already in 1903, the American delegation described Dire Dawa as a "boom city" (Skinner, 1906, p. 9): the station had already been built with the first warehouses and, although they were nothing more than simple wooden buildings, they stood out as exceptional in the desert landscape **[fig. 2.8]**. Roads and pavements began to appear around the stations and gradually were extended to other surrounding areas. Starting with the railway on which it relied, the city began to grow. During the 1920s, it was referred to as "the most advanced city in Abyssinia, among those of modest size" (Rey, 1927, p. 22) and "the most modern city" (ISPI, 1936, p. 103), according to a fascist-era memoir.

The *Compagnie* was the *concessionaire* for 99 years of a 500-metre-wide strip on each side of the tracks[56]. The land was entrusted to investors, who were required to comply with special rules on building typology and maintenance, with the aim of preserving the integrity of the railway district. While the land was initially granted free of charge, from 1910, the concession was subject to a rental fee, a policy shift that reveals the attractiveness of the city. Most of the goods entering and leaving Ethiopia via the port of Djibouti transited through Dire Dawa, which became the country's main commercial hub. About 30 trading concessions were active in the first years after the arrival of the first train: Ethiopians, French, Greeks and Indians bought and sold agricultural goods directly outside the station and around the areas of the new customs house (Bekele, 1989, p.90).

The population increased at a significant rate, with estimates of between 15,000 and 20,000 residents in the 1920s (Pankhurst, 1985, p. 272). Kezira, the neighbourhood around the station, had the most significant growth. Here, travellers were able to find the first hotels and restaurants, while traders could rely on a transport service with connections to Harar and Addis Ababa (Bekele, 1988,

[56] Article 4 of the 1908 concession defined the width of the strip as 1 kilometre for the Djibouti - Dire Dawa section, 200 metres from Dire Dawa to Awash, and 50 metres for the last section to Addis Ababa. It was a further attempt to limit the power of the CFE and France by gradually restricting their ability to install equipment as they approached Addis Ababa.

p. 81). At the same time, new urban infrastructures were established, including the first aqueduct network, built and managed directly by the railway company.

The design of this water and sanitation network and its extension reveal evidence of exclusion and privilege within the urban space. Most houses and hotels in Kezira were equipped with running water and toilets; in contrast, Magala — the district beyond the Dechatu stream bed — where most of the local population lived, was excluded from the network. Water was instead channelled into a single reservoir to be used by all residents of the district. The storage capacity was however insufficient, and soon the reservoir became the target of clashes and protests. As the number of residents increased, new settlers started an autonomous water distribution system — using donkeys and camels — to transport water directly from the springs. In this way, and with their inventive action, people become the means by which interruptions and inefficiencies in the system were overcome, reestablishing the water supply between infrastructural nodes.

Dire Dawa emerged as a dual space, in which the building forms and urban organisation reflected two opposite worlds **[fig. 2.9]**. If Magala, with its traditional buildings and urban fabric, embodied the needs of the local community, Kezira mirrored the scientific rationality of the European urban planning discipline. Kezira's urban design followed the principles of French colonial architecture. Plots were as regular as possible, separated by wide rectilinear streets “pavées à la parisienne” (Basuyau, 1991, p. 43), with trees on each side, recalling the boulevards of the Haussmannian urban renewal project, which had replaced narrow and winding streets with straight, tree-lined roads **[fig. 2.10]**. On the other side of the creek, another city appeared to travellers’eyes. The Magala neighbourhood grew according to a more organic pattern, determined by successive annexations and divisions of space, very similar to Harar to the urban structure of other Arabic cities.

While in many ways Addis Ababa could still be regarded as a collection of villages scattered around the *Ghebi*[57], Dire Dawa showed proper urban features. In the new railway city, foreigners and visitors found “all the feverish activity and social bustle of Europe” (Montandon, 1913, p. 386). For the commentators of the time, the signs of western modernity had thus begun to sprout in the middle of the

[57] The Emperor’s palace.

Ethiopian Rift Valley.

2.1.4 Addis Ababa train station

Construction of the Addis Ababa station began in 1926 and continued until 1930. The first design hypotheses considered connecting additional railway lines to the station, branching off from the Ethiopian capital towards other urban centres and Sudan (Gilmour, 1906). Although never realised, these plans speak of the greater ambitions behind the train station as the hub of a future national and international infrastructural network.

Critical issues concerning the choice of the site emerged from an early stage. The Ethiopian government argued that it was not a viable option to locate the station in the city's central area, preferring a peripheral area instead; on the contrary, the CFE management favoured a central site (De Pineda, 1995, p. 606). The impasse was solved by opting to construct a temporary outpost in the outskirts of the capital. This interim station was inaugurated in the summer of 1917 with a twice-weekly service to Djibouti. Historical photos show the crowded spaces around the provisional wooden building, a “simple hut” (Busayu, 1991, p. 25), with a double Latin/Amharic alphabet sign announcing the final destination **[fig. 2.11]**.

While waiting for the final decision on the location of the permanent station, various design studies were carried out. The intention was to build a station that would celebrate the magnificence of the infrastructure and the technological progress brought in Ethiopia by the French. At the same time, it had to meet the aesthetic requirements imposed by the emperor (De Pineda, 1995, p. 609). The project was continually revised to cope with the significant increase in the volume of goods transported after the railway’s opening. On the one hand, the CFE sought to increase the amount and size of the station services. On the other, the Public Control Office aimed to limit the construction costs as much as possible, minimising the equipment and installations needed. In the end, a compromise was reached, which involved building accommodation for the railway staff around the

main building[58]. However, the most controversial issue related to the architectural nature of the building itself. It was a matter of finding the right balance between aesthetics and functionality, the main reasons behind the clashes among designers and the other actors involved[59].

Additional political issues intertwined the different layout proposals: opinions differed on whether the station should be a colonial or an imperial one. The main differences concerned the degree of accessibility of the new building complex and how closely it should be integrated into the emerging urban fabric. French authorities intended to use the station as an instrument to underline the existence of an external power in the Ethiopian territory and to avoid the possibility that "the Abyssinians [felt] the Compagnie du Chemin de Fer as their home"[60]. Moreover, they wanted to curb unwanted intrusions of Ethiopian authorities and soldiers in the CFE's buildings, preferring a more peripheral location of the station.

Such an attempt at strengthening the independence and autonomy of the railway company was reflected in the architectural and urban design of the new terminal. The first idea to emerge concerned the construction of a double station: a building in which the areas for the natives and for the French were separated, thanks to the doubling of the facilities and offices in the plan **[fig. 2.12]**. The division that emerged in the design could also be traced back to events surrounding the implementation of the emperor's telephone line. Specifically requested by Ras Tafari himself, a second private telephone line was installed to connect the imperial *Ghebi* with the train station, where the line was initially supposed to end. This was meant to prevent external intrusions that could threaten his communications while reaffirming his autonomy. Different visions about infrastructure control came to the fore and, more generally, political dissent emerged among the various players and subjects involved.

Architects Lagrave and Barrias[61] designed a building with an overhanging roof and facade decorated with elements and motifs inspired by traditional Arabic

[58] ANOM, folder 1 TP CFS Bonneau.

[59] ANOM, folder 1 TP 1049.

[60] ANOM, folder 1 TP 1050.

[61] ANOM, folder 1 TP 1050.

architecture slightly revised to suit European taste. The project was approved in 1920 after few modifications to its decorative apparatus, which had raised opposition from the emperor's officials who found it disrespectful of the Christian cultural tradition deeply rooted in Ethiopian society and imperial tradition **[fig. 2.13]**. The final dimensions of the station and ancillary buildings were the result of a compromise reached on passenger and goods transit estimation. Both were classified according to their origin — European - African — or type — perishable or not — which led to the formal solutions of the submitted project. In 1926, the location of the station was agreed, and everything was in place to start the construction. In November of the following year the foundation stone was laid and on 3 December 1929 the station was officially inaugurated in the presence of the future Emperor Haile Selassie. It was described in *Le Courrier d'Éthiopie*[62] as "a sober and elegant architecture", 66 metres long and 23 metres high, surmounted by a clock tower and facing a square with "a charming public garden and a golden lion" to guard the city against potential enemies.

The railway remained in operation during the Italian colonial period, still operated by the French company. However, after World War II, a long period of decline began: portions of the railway were blown up during the war, and railway operations were halved[63]. The link between Addis Ababa and Dire Dawa ended in 2008 and it was only with Chinese funding in the 2010s that it was restored and upgraded to suit the needs of modern logistics.

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[62] 6 December 1929.

[63] "Ethiopia". *Middle East Economic Digest,* 22 Nov 1978. "The railway line was cut frequently during the Ogaden war, but has been operating at 50 per cent capacity since July".

2.2 Moving forward

2.2.1 The new Addis-Djibouti Railway

The new Addis-Djibouti railway started to operate regularly in January 2018, after a trial period that lasted for about two years, during which various sections of the line were tested and improved. It is the first electrified railway to cross two different countries on the African continent, running for 756 km to connect the city of Djibouti with the Ethiopian capital. The infrastructure is included among the strategic interventions endorsed by both first (MoFED, 2010, p.70) and the second (MoFED, 2015, p.174) EPRDF Growth & Transformation Plan[64].

Conceived together with other industrial infrastructures, such as logistics centres, industrial parks and Special Economic Zones, the new railway is the backbone that will support and give meaning to the long-term developmental policies envisioned by the government. This will involve the extension of the railway network to Ethiopia's main cities and industrial parks, which are gradually being built in almost every region of the country **[fig. 2.14]**. Future plans envisage integrating the railway network with other East African railway lines — Tanzania, Kenya, South Sudan — to facilitate cross-border trade within the region (Anthony, 2013) as also part of Africa 2063[65] and PIDA initiatives[66].

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[64] GTPI and GTPII are 5 year-plans formulated by the Ethiopian government to stimulate economic growth and bring the GDP to a projected year-on-year increase of over 10%. In order to achieve this goal, actions have been planned to increase FDI, equip industrial zones with basic infrastructure, improve the national road network, quadruple electricity production in the country, and increase productivity in the agricultural sector.

[65] It is a strategic framework for the socio-economic transformation of the African continent. The Agenda builds on present and past initiatives, such as NEPAD (New Partnership for Africa's Development) and the Nigerian ECOWAS and AEC Treaties of Lagos and Abuja, and on the foundations of the African Union, which provided the overarching aspirations for an integrated, prosperous and peaceful Africa. Among the actions envisaged is greater openness of borders and freedom of movement through the adoption of a continental passport. - https://au.int/en/agenda2063/overview - last visited 15 May 2021.

[66] It is a long-term plan, endorsed by the Heads of State and Government of the African Union (AU). PIDA — Programme for Infrastructure Development in Africa — foresees investments in the order of USD 360 billion by 2040 to implement more than 400 projects, including 54 energy plans, which include the construction of ten hydropower plants with a

Poor maintenance of roads and a general lack of transport infrastructure on the national territory are the main reasons behind this project's conception that aims to reduce travel times and, consequently, transport cost between Ethiopia's main urban nodes and the port of Djibouti. The government's objective is to trigger industrialisation in order to support urbanisation, largely made of internal migratory flows of people that see in cities work opportunities and better living conditions. (Berhanu & White, 2000; Ezra & Kiros, 2001). New manufacturing plants are designed to create employment, thereby decreasing the actual social pressure of the growing urban areas.

From Addis Lebu station, located in the southern outskirts of the city in the proximity of the first Ethiopian Export Processing Zone, the railway slips into the fertile farmlands of the Oromia region, travelling across the industrial settlements of Dukem, Bishoftu and Adama. As the train progresses along the route, the landscape becomes arid and barren, with the altitude dropping to 1300 metres when reaching Dire Dawa — about 440 km from Addis Ababa **[fig. 2.15, fig. 2.16]**. The last stretch to Djibouti alternates small villages and settlements of nomadic shepherds. The tracks of the new railway mostly run parallel to the old French ones. The distance between the two infrastructures is not constant but changes along the way. Nevertheless, they remain two tangible signs that interact within the space in different ways. From the existing structures, the impression is that the new railway is mainly projected outwards towards the global space and trade flows of the new Silk Road. There are few interchanges and few connecting roads between the new stations — often located in suburban areas — and the towns.

Borrowing a metaphor from Secchi (2011), the new railway is a "pipe" that conveys heavy traffic to the port of Djibouti while simultaneously excluding most of the region it runs through from the possibility of connection. Mobility issues are connected with issues about efficient and rapid circulation as well as questions related to local percolation. Here, the presence — or absence — and form of infrastructure may constitute a discriminating social factor. In this way, the operational logic of the colonial railway, which served local communities with its numerous stations, has been discarded. It has been replaced by a train that stops

capacity of more than 22 GW (GigaWatt) and 236 projects related to the development in the transport sector. - https://www.au-pida.org/ - last visited 22 June 2021.

Traces 2 _ Dire Dawa old station

The old Dire Dawa station is located on the northern edge of the Kezira district — Arabic for *island*. It is the area from where the city started to grow, thanks to the commercial activities in the surroundings of the train station. Today, the station buildings no longer accommodate passengers or goods but house the *Chemin de fer Franco-Éthiopien* museum. The old wagons and locomotives — carefully preserved by the *cheminots* of the *Compagnie* — lie among the early 20th century buildings. The cast-iron trusses, the verandas and the warehouses are proof of the colonial past that still survives in those spaces and in the french words of the railwaymen who guide tourists around.

Pictures taken during my visit show the activities still carried out in the station: there are mechanics at work dismantling engines and putting them back into operation. Nonetheless, the station is not merely a place for work; over time it has become a place for living. Some of the carriages have been turned into dwellings where the *cheminots* live with their families.

The Dire Dawa station is a *trace* of the railway's legacy both in the architectural domain — in the sense of material heritage — and the social sphere — in terms of labour and interactions. It is also a space that witnesses the capacity of infrastructure in being a malleable artefact able to adapt to different scripts throughout the time.

fig. T2.1, fig. T2.2 -Dire Dawa train station depots and *Cheminots* at work, photographs, 2019.

fig. T2.3, fig. T2.4 -Dire Dawa old station spaces, photographs, 2019.

only in few stations, instead of the former's 36 outposts[67] **[fig. 2.17]**. As remarked by an Awash's citizen, “the new train is simply passing through”[68]. Local communities perceive the train as an Addis-based elite project and a symbol of politics (Terrefe, 2018) rather than a spatial device that brings real benefit. The railway is owned by the Ethio Djibouti Railway, an ad-hoc company — shared by the two state-owned railway companies: the Ethiopian Railway Corporation (ERC) and the Société Djiboutienne de Chemin de Fer (SDCF) — established in April 2017 following the signing of the bilateral agreement between Ethiopia and Djibouti[69].

The decision-making process **[fig. 2.18]** that led to the implementation of the infrastructure saw its starting point in 2007, with the formation of the Technical Advisory Group under the Ethiopia Ministry of Transport. It was responsible for developing a feasibility study, including a cost-benefit analysis and a preliminary proposal for the layout of the entire route (Yunnan, 2021). The Advisory Group emphasised the importance of future network expansion to provide Ethiopia with its first extensive mass transit system. Moreover, the study underlined the need for integration between the railway and the port of Djibouti, recommending the standard gauge in order to smooth the movement of goods between different infrastructure nodes.

The following step involved creating the Ethiopian national railway operator (ERC) as the institution responsible for the entire operation soon followed by the establishment of the first contacts with China — resulting in the integration of the Ethio-Djibouti railway within the Belt & Road Initiative — and with Djibouti — with the signing of the MoU that sanctioned the agreement for the development and management of the project. Construction began in 2011 with China Railway Group and China Civil Engineering Construction Corporation winning the contract to build the 320km Addis Ababa to Mieso and 436km Mieso to Djibouti sections. The same two companies are expected to operate the infrastructure until

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67 https://www.train-franco-ethiopien.com/photos_cfe/titres_cfe/images/image/3%20Ticket%20Cfe%201972%20.JPG - last visited on 24 May 2021.

68 https://pulitzercenter.org/stories/ethiopias-bushlands-promised-riches-railway-boom-turn-dust - last visited on 15 May 2021.

69 https://edr.gov.et/en/ - last visited on 17 May 2021.

2030 (Leviker, 2021, p.250). The total cost of the infrastructure is unclear, varying from one source to another, although estimates are around 4.5 billion dollars[70]. Chinese institutions — the Exim Bank, the China Development Bank and the Industrial and Commercial Bank of China — are involved in the project. The three Chinese banks funded 70% of the total cost while the remaining 30% was financed with money from the Ethiopian and Djibouti governments[71].

The Ethiopian railway is not an isolated example. It is just one of the several examples of China's involvement in transport infrastructure financing and construction on the African continent (Brautigam & Hwang, 2016). The project is being celebrated by Ethiopian and Chinese media as a success. Asiamoney called the railway one of the most successful BRI projects in the Middle East and Africa region[72]. Moreover, the Ethiopian national press agency referred to the railway as the "road towards prosperity"[73].

However, these claims have been countered by Western media and researchers who have equally stressed the controversial aspects of the deal, focusing on the inadequate compensation paid to dispossessed farmers, the failure in achieving the intended economic goals, and the exponential growth of land values around the stations.[74] Moreover, and despite its portrayal as a financial success, the railway has not performed as well as expected due to design-related issues. While between Addis Ababa and Adama, the railway has a double track laid on embankments that raise the height of the infrastructure above ground level — even through whole sections supported by reinforced concrete pylons designed to cross watercourses or better adapt to the topography **[fig. 2.19]** — in the next tract to

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[70] https://ethiopianembassy.be/ethiopia-djibouti-railway-begins-commercial-operations/ - last visited 18 June 2021.

[71] https://www.gihub.org/resources/showcase-projects/addis-ababa-djibouti-railway/ - last visited on 22 May 2021.

[72] https://www.asiamoney.com/article/27i6gralrq1bhg3whzzls/awards/new-silk-road-finance-awards/middle-east-and-africa-best-individual-bri-project-or-initiative-in-the-region-2018 - last visited on 17 May 2021.

[73] ENA - Ethiopian News Agency, retrieved from https://www.ice.it/it/news/notizie-dal-mondo/165042 - last visited on 17 May 2021.

[74] https://www.latimes.com/world/asia/la-fg-china-africa-ethiopia-20170804-htmlstory.html - last visited on 25 May 2021, https://www.theguardian.com/global-development/2018/may/12/ethiopia-railway-boom-promises-turn-to-dust- last visited on 25 May 2021.

Djibouti, the railway is single-track, with less embankment, making the tracks run directly on the ground and not allowing frequent crossings. The railway thus constructed becomes an artificial barrier to livestock movement in the region **[fig. 2.20]**. After its inauguration, accidents occurred. Camels, cows and goats were killed while trying to cross the tracks. The shepherds reacted by blocking the train until the compensation for the animals killed was paid. Incidents of this kind were frequent and resulted in significant sums of money that the railway company had to pay back. The solution was to slow the train down to 60km/h - instead of the planned 120km/h - in the riskiest areas. As a result, journey times increased[75].
During the fieldwork, a similar situation occurred:

> *I was on the train heading towards Dire Dawa. A Somali couple with their kids was sitting in front of me. They were excited. It was visible from the movements of their heads in trying to follow the electricity pylons that continuously ran out of their sight due to the speed. Meanwhile, they were smiling, and the kids were shouting at every new pylon they could count. We started to chat. It was their first time on the train. They used to travel by bus, but this time would have been dangerous for the escalation of protest in Hawassa, so they had no chance other than the train. The conversation went on. We shared some dry seeds and I remember they said they would have always taken the train from then on: it was safer, faster, and more comfortable. After some minutes, the train slowed down and stopped: a herd of cattle crossed the tracks*[76].

What happened during my journey helps to consider certain aspects of infrastructures that lie beyond the perception of being mere engineering artefacts, designed after political decisions. Precisely when there is a breakdown, infrastructure reveals facets not perceivable in their ordinary functioning (Larkin, 2013). Disruptions reveal ties and contrasts between society and the environment, opening up a hidden dimension behind the smooth flow of data, people and goods moving between the network branches. The technology embodied in the Ethiopian railway infrastructure — now a symbol of modernity and hope — collides with the traditional rural culture, bringing to the surface critical points of the project

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75 https://www.economist.com/middle-east-and-africa/2018/02/10/camel-trains-are-holding-up-ethiopias-new-railway-line - last visited 22 May 2021.

76 29 July 2019.

and the overall relevance and complexity of the context. As argued by Larkin, one of the intrinsic abilities of infrastructure is of "generat[ing] complicated emotional investments that induce a range of sometimes counterintuitive responses and distinct [...] sensibilities" (Larkin, 2013, p. 334). On the one hand, the train produced optimism and reinforces the country's expectations; on the other hand, it inspires anger and disapproval towards both technology and the politics that have supported it. In these traces lies the non-linear path towards development, consisting of detours and deflections, slowdowns, and accelerations.

2.2.2 Train stations

The railway infrastructure project included the construction of 21 stations between Addis Ababa and Djibouti. Many of them are still not operational, as only 5 are currently open for passenger service — Addis Lebu, Adama, Dire Dawa, Ali Sabieh, Djibouti Nagad — while some of the others are dedicated exclusively to freight transport. When the railway is fully operational it will have 2 freight yards stations, 2 passenger stations, 13 stations that will handle both passenger and freight flows and 4 that will function exclusively as passing loop stations along the single track section between Adama and Djibouti to ease the crossing of two trains simultaneously (CCEC & CREC, 2016).

The railway infrastructure is configured as a system with nodes that have different functions. Stations serving people and goods coexist along the line with a number of *technical* stations, specifically designed to ensure the functioning of the infrastructure system. They materialise the concept behind the design of the railway as an expression of the engineering culture, making explicit its mechanistic character and technocratic approach (Graham & Marvin, 2002). No passengers will ever disembark or goods unload: *technical* stations are introverted[77] terminals that do not interact with external flows, but only with the infrastructure itself.

[77] It is a spatial feature that tends to hide what exists or takes place inside, insisting on privacy, isolation and secrecy. Functioning looks to internal rather than external logic, minimising unnecessary relationships with the context.

All stations along the line are newly built, while none of the old inner-city stations have been redeveloped. The architectural language is eclectic, with different decorative elements coexisting in buildings that recall the spatial layout of high-speed stations in China. The design of each station was developed directly by Chinese companies. The projects combine a mixture of "typical" architectural elements of the local or European culture with a more modern approach on formal solutions and construction materials. The *typicality* was determined in full autonomy by the Chinese designers[78] and resulted for instance in the quotation of battlements, reminiscent of Ethiopian military fortresses and visible in Dire Dawa station **[fig. 2.21]**, or cornices and roofing solutions inspired by XIX century European stations although recombined and reinterpreted according to Chinese taste — as in Adama, Addis Ababa, Modjo stations **[fig. 2.22]**. In some cases — in Dire Dawa and Djibouti Nagad stations — the mix of references to the past is enriched by shiny glass curtain walls that evoke a high-tech construction style and link the infrastructure to the idea of modernity reflected in the images of the new Chinese and Western stations.

The geographical location of the new buildings differs from city to city, though in all cases peripheral locations were chosen because "the compensation costs of demolishing homes and businesses in city centres would have been too high"[79]. The new Adama station, for example, is located on the southern edge of the city, close to the recently inaugurated motorway to Addis Ababa. In order to proceed with the construction, part of the residential areas surrounding the station had to be demolished causing the resettlement of some inhabitants. The urban fabric that has since emerged around the new terminal is a mixture of industry — close to the motorway access — and housing — filling the urban voids between the infrastructural belt and the consolidated city. Similarly, the new Addis Ababa Lebu station **[fig. 2.23]** was built in the south-west outskirts of the capital, about 15 km from the old station and the centre — twice the distance from the city to the airport. While in 2008 the area was predominantly agricultural, with a few clusters of greenhouses for floriculture, from 2011 onwards it began to be affected by residential development starting from the arterial road that runs towards Addis

[78] Information retrieved from the interview with Biniyam Gebretensay — head of Dire Dawa Plan Development Office - Dire Dawa, 31 July 2019.

[79] Getachew Bertu former chief executive of the ERC - https://pulitzercenter.org/stories/ethiopias-bushlands-promised-riches-railway-boom-turn-dust - last visited on 15 May 2021.

Ababa. The beginning of the railway construction involved the demolition of the on-site greenhouses. It has been followed by an incremental buildup of new residential estates that have increasingly invaded the rural spaces and trapped it between the railway line and the northern road.

Despite the fact that the station is expected to become the main railway hub for Ethiopia, my personal impression was different.

> *The driver turned left. After calling a friend and asking for directions, the car took a side road. Condominium complexes gave way to smaller buildings: one-storey houses or shelters made of corrugated metal sheets and chika[80]. The road was no longer asphalt-paved and clouds of dust shrouded our car, turning the landscape into a blurred scene. Cows and goats appeared along the roadsides. The tracks ran to the left, beyond the fence dividing the road from the infrastructure. Suddenly the station building popped up. Industrial sheds took the place of residential fabric. Twenty minutes later, the driver managed to find a way to cross the tracks. Still no asphalt until we reached some warehouses. We arrived at the station from the back. The area was deserted except for a few soldiers guarding the entrance to the building, a few railway employees and a small number of taxi drivers waiting on the unpaved areas in front of the station. A monumental staircase led up to the main building. When I reached the top, I turned back and the view that opened up in front was of a landscape made of greenhouses, vacant plots of land and construction sites of new housing estates.*[81]

The railway node included the station building and a few others to house staff and additional functions. It lacked connecting infrastructure and interchange areas, services and parking space **[fig. 2.24]**. "We first had to build the main line", explained an ERC official[82]. The project prioritised the construction of the railway line, leaving behind all the secondary works and links to main urban centres,

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[80] A traditional building technique consisting of a timber grid structure covered with mud and clay.

[81] 28 July 2019, Addis Ababa.

[82] https://www.thereporterethiopia.com/content/absence-trunk-lines-operational-depot-hinders-launch-fuel-train-transport - last visited 22 May 2021.

industrial and logistics parks. The same official explained that the main reason for that stemmed from the exclusion of such works from the official contract.

This state of the art compromised the efficiency of the station by reducing the number of potential users and related activities that could emerge. An analogous situation — even if in a different context — has been described by Tess Lea and Paul Pholeros (2010) in their research on new housing developments. The curious point they made was that what might appear to be a house was actually a *non-house*: many pipes did not connect to sewers, some rooms were incomplete, thus making the house uninhabitable. The perceived image from the outside was distorted from the substantial reality. The same misalignment applies in the case of the Addis Ababa station which, due to unfinished infrastructure works and weak spatial layout, turned out not to be a functioning station.

The isolation of the station from the context and the lack of adequate facilities brings out other critical issues about urban planning in Ethiopia. As highlighted by several researches (Dube, 2013; Spaliviero & Cheru, 2017; Girma et al., 2019) the poor integration between different levels of planning[83] and the exclusion of many stakeholders is the cause of inconsistent or poor urban outcomes. This is exemplified in the development of the new station area. In the new Addis Ababa master plan there is no reference to the new railway hub, nor to the provision of infrastructure or specific strategies for the redevelopment of the area.

While the Addis Ababa and Adama stations are located on the outskirts of the two urban centres, the Dire Dawa station is a slightly different case. The new building is 10 km west to the city centre, close to Melka Jebdu, a village whose economy is based on the illicit trade of *khat* (Gebissa, 2004). In this case, the planning strategy behind the location choices followed the principle of transport-oriented development (TOD). Conceived by Peter Calthorpe (1993) in the 1980s and 1990s, it became a key principle of the American *New Urbanism* movement. The strategy is based on promoting compact, mixed-use urban development around transit stations in order to promote the use of public transport and slow mobility. More recently TOD-based projects have also been implemented in China, where new railway stations have become the focus of a national urban policy promoting

[83] The Ethiopian urban planning system relies on national, regional, municipal. Moreover, sectoral planning can be integrated in case of strategic or transcalar questions — and this is the case of the Ethio Djibouti railway.

integrated city and railway development in an attempt to address widespread suburban growth (Shen & Wu, 2020). If we look, for instance, at the cases of the HSR Wuhan-Guangzhou and the HSR Beijing-Shanghai, we can see respectively that most of the stations — respectively, 17 out of 18 and 18 out of 24 — are newly built and located on the outskirts of the major cities (Tagaki, 2001; Haixiao & Ya, 2019). Additionally, to capture rising land values, many of these projects include commercial and residential redevelopments in the surrounding areas (Garmendia et al., 2012).

The Ethiopian railway project adopts the Chinese planning model, with similar criteria for the location of stations. It is evident in the case of the Dire Dawa where, as envisioned by the new master plan — elaborated by China Association of Development Zone and China Development Institute — a second urban node with factories, services and residential buildings is in the process of being developed **[fig. 2.25]**. It will be the first step of a megaproject that by 2045 aims to saturate the space that today separates the old core of Dire Dawa and the new station (CADZ & CDI, 2014). One criticism of this approach relates to the short and medium-term impacts on existing cities, their environment and communities. While the master plans envisage a future of economic development and modernity, the new stations have negatively affected some economic activities by forcing the resettlement of farming communities, and have diverted the expectations of people who managed economic activities near the old stations. As explained by an Awash resident: "Passengers used our restaurants and hotels, all services. But this time such things won't happen"[84].

2.2.3 Industrial clusters

> *Buses and trucks were parked outside the Eastern Industry Zone. In front of the entrance a giant led screen displayed the words:* Labour Creates Happiness **[fig. 2.26]**. *Yellow letters on a red background. There was a bustle of people. Some were walking towards the entrance, others towards*

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https://pulitzercenter.org/stories/ethiopias-bushlands-promised-riches-railway-boom-turn-dust - last visited on 15 May 2021.

the buses. People were sitting on the edge of the square. I approached the men controlling the entrance, asked if I could enter. I mentioned Zhengli Huang, a Chinese researcher I have met a few days before in Addis Ababa. All that was useless. They would not have let me in without a written permit. I turned back heading toward some of the people sitting around. They were girls. They were laughing among themselves, and it got louder as I moved closer. I asked what they were doing there.
"We are waiting".[85]

The Eastern Industry Zone is Ethiopia's first industrial park. It Opened in 2009, 30 km south of Addis Ababa, in Dukem, one of the towns of the linear settlement formed over the years along the road to Adama. Several urban centres follow one another, starting from the capital: they alternate industrial settlements, greenhouses and plots still used for agriculture. Land acquisitions at a bargain price and the provision of infrastructure at government expense (Giannecchini & Taylor, 2018, p.30) demonstrates the country's commitment to boost industrialisation using a mechanism of land acquisition that was originally designed as part of the socialist land reforms and redistribution.

Inspired by the economic successes of the Asian late-developing countries such as South Korea and China, the Ethiopian government decided to embark on the same trajectory. The Industrial Parks proclamation 886/2015[86] is the formal act that defines a first regulatory framework in which the state becomes an active player in the construction and management of the industrial infrastructure. In addition to entirely private industrial parks — such as the Eastern Industry Zone — public and mixed-owned industrial parks were established. While in the former, land has been directly leased to the foreign investor, in the latter two cases, the state operates as a developer and directly leases industrial sheds to private companies.

The public body responsible for the development and the management is the Industrial Parks Development Corporation (IPDC). IPDC's plans include the development of 100,000 hectares of land between 2016 and 2025, resulting in an

[85] Dukem, 22 July 2019.

[86] Retrieved from http://www.investethiopia.gov.et/images/pdf/Industrial%20Parks%20Proclamation%20No%20886_2015.pdf - last visited 20 May 2021.

allocated productive area of 20 million squares metres[87]. Its tasks include planning at the national scale to strategically identify the site for the industrial parks. In the interview with Biniyam Gebretensay[88] — head of Dire Dawa Plan Development Office — it became clear that the criteria that influenced the choice had been mainly political. The geographical distribution of the industrial parks could not ignore ethnic issues. The fifteen planned parks are evenly distributed among the various regions governed by different ethnic groups. The choice of the specific site on the local scale was then determined by cross-referencing a parameter that took into account the number of unemployed people within an area[89] and the existing — or planned — infrastructure provision. No in-depth economic feasibility studies or consultations were predisposed. Location was considered basically a government affair (Azmach, 2019, p.53).

Ethiopian industrial clusters lack proper integration with the social and economic environment, which is reflected in their spatial conformation. They are fenced-off and securitised urban enclaves derived from the operational logic of neoliberalism. In order to maximise profit, capital is indeed transferred from one region to another, materialising in physical assets with multiple configurations. This is what Harvey (1981; 2001) defined as the "spatial fix" of capital: the territorialisation mechanism of capitalism through which the landscapes of production and consumption are shaped in a way that is consistent with the logic of the economic system so as "to generate, secure and realise surplus value" (Herod, 2019). Different forms correspond to different resources to be extracted. In Ethiopia, the main exploitable resource is labour, widely available at cheap rates, and enabling a rapid accumulation process (Abbink, 2011). Anthropologist James Ferguson (2005, pp. 379-380) highlights the phenomenon by pointing out that often "capital does not flow" but instead "hops over unusable Africa". The result is the creation of disjointed spaces — such as industrial parks or mining and oil industry compounds — condensed in specific points of the continent but disconnected from the context.

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87 The Ethiopian Messenger Apr-May 2016, retrieved from https://medium.com/@EthiopiaEU/industrial-parks-development-in-ethiopia-f09eb704d741 - last visited 3 May 2021.

88 Dire Dawa, 31 July 2019.

89 The area was determined using a 150 km radius. The size of the radius indicates the hypothetical attractiveness of industrial parks considered by the government.

Traces 3 _ Between the two stations

The new Dire Dawa station is located 10 km west of the city, near the Somali settlement of Melka Jebdu and the industrial park. The new master plan foresees the construction of a new urban centre around the station, which is expected to become the future main hub of the city. A 4-lane road will connect the new centre with the old town and its station. Along this infrastructure, the first signs of urban development begin to appear, anticipating what has been envisioned by the urban plan. The landscape is made up of some mixed urban fabrics with social condominiums, workers'dormitories interspersed by non regulated activities. The road is a *trace* that brings out the contradictions of development when it clashes with local contingencies: near Melka Jebdu the asphalt breaks and the road turns into a dirt track. This road seems to mirror the real condition of uncertainty and precariousness for the future often forgotten from the political development narratives.

fig. T3.1, fig. T3.2 - Urbanscape along the road connecting the two Dire Dawa stations, photographs, 2019.

fig. T3.3, fig. T3.4 - Urbanscape along the road connecting the two Dire Dawa stations, photographs, 2019.

Ethiopia's industrial parks were created as monofunctional spaces dedicated to manufacturing. Their architecture matches the little diversity in their programme: the industrial sheds are identical, based on the repetition and combination of a module — approximately 145x35m — that corresponds to the standard module. The module is the same in Dire Dawa, Hawassa, Addis Ababa and Mekelle. Differences are minimal and relate, for instance, to the detailing of portals, openings or colours. Allotments are based on a grid layout adapted to industrial needs: parcels are relatively large to attract manufacturing companies — often multinationals seeking cheap unskilled labour — and roads are designed in accordance with the requirements of the vehicular traffic of trucks and containers **[fig. 2.27]**.

Environmental sustainability, touted by the government as an advanced feature of industrial parks, is realized by planting trees, providing permeable surfaces around the plots and providing water reclamation systems (UNIDO, 2019, p.40). No other evidence of efforts to address other issues as indoor comfort, energy supply or environmentally friendly building materials. Even more critical is the attitude adopted concerning social sustainability: wages are meagre — about $25 per month[90] — and not adequate to maintain decent livelihoods or even to pay rents. In order to survive, people have to rely on illegal housing solutions in the form of shacks often built without any agreement or approval from the authority, which in recent years have expanded, especially in areas around industrial clusters and the peripheries of cities (Oya, 2019; Hassan et al., 2020). In response, the government is taking new measures to build residential buildings for industrial park workers. Several options have been explored, including encouraging the expansion of existing houses for renting out the additional rooms to workers or the construction of dedicated dormitory buildings.

Both solutions failed to meet the ILO's Workers' Housing Recommendation[91] due to the overcrowding of the living spaces and the lack of adequate environmental

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90 https://www.theguardian.com/global-development/2017/dec/05/ethiopia-industrial-park-government-investment-boost-economy-low-wages - last visited on 26 May 2021.

91 ILO R115 - Workers' Housing Recommendation, 1961 (No. 115) - https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:R115 - last visited 26 May 2021.

standards, forcing the revision of the projects with consequent delays. However, the new design proposals do not guarantee better architectural quality or affordability, due to the limited capacity of the Ethiopian construction industry and the high costs required to meet ILO standards.

According to Ethiopian laws, the right to access housing translates for many citizens into a waiting experience that is temporarily filled with the construction of informal shelters. Sophie Oldfield and Saskia Greyling (2015, p. 1109) speak of the ability of waiting to "shape a politics of finding shelter in the meanwhile", delaying or reshaping the encounter between citizens and the — often absent — state. What distances the two political actors — workers and government — is the inability of the state to guarantee basic services and rights. Displacement translates into a practice of diversified waiting that has resonances in space. Some people are waiting for a home, which they compensate for by living in precarious shelters; others are waiting for a job, such as the girls sitting in the Eastern Industry Zone parking area, hoping for daily employment.

These practices highlight the collision between the efficient and neat image of capitalism and the ground into which some physical extensions of its operational logic land. As Rosa Luxemburg (2005) argued, capitalism needs an *outside*: a *non-capitalist outside* to sell its products and exploit its resources. Moreover, the times of the two spaces are not in sync, and while the first runs fast, to cope with production processes, the second, made of expectations and hopes, is on hold.

2.2.4 Logistics hubs

> *The minibus dropped me along a four-lane road. It was a high traffic road with trucks in both directions and few people around. I raised my hand, and a bajaj stopped. He drove me to Modjo Dry Port. High piles of containers and buildings under construction were visible behind the boundary wall. Trucks again. They were waiting to get into the logistics centre, parked along the road or in the open space outside the gate. A shop, a few restaurants and a petrol station were on the opposite side of the road. They were recently built. A new road led to the new station after*

crossing the old tracks [fig. 3.28]. *Although the building was new, it had cracks and water leaking on the facade. In the background, the sound of cars travelling on the Addis Ababa-Adama highway.*[92]

Modjo Dry Port is the main logistic hub in Ethiopia. It was established in 2009 as part of the Ethiopian Trade Logistic Project, whose objective is to enhance the performance of the Addis-Djibouti corridor[93]. In 2011, the dry port covered an area of 3,5 hectares; in 2017, the area reached 62 ha (JICA, 2018). A new project financed by the World Bank is further expanding the area of the dry port to 150 hectares, thus transforming the rural town of Modjo into a logistics node. Currently, the commercial traffic handled by the port is mainly based on imports — about 80 per cent of the imports entering Ethiopia from Djibouti and Berbera transit via Modjo — reflecting the asymmetry of the national trade balance, which sees export values being more than five times lower than imports[94].

Containerisation and globalisation are among the causes that have led to the emergence of dry ports: "inland intermodal terminals directly connected to seaport[s] with high capacity transport mean[s], where customers can leave/pick up their standardised units as if directly to a seaport" (Roso et al., 2009). Africa has recently seen a significant spread of this spatial typology[95]; aside from Modjo, other examples representative of this trend include the TRCB in Bobo Dioulasso, Dosso Dry Port in Niger, Parakou Dry Port in Benin, Tororo Inland Port in Uganda, many of which are under construction. The benefits of these logistics spaces are mainly related to improving the performance of the supply network by incorporating the functions required for customs clearance and thus relieving ports (Kunaka, 2013). For Ethiopia in particular, this meant a reduction in storage times in the port of Djibouti and thus in transport costs.

Crucial for the optimisation of the corridor was the integration of the railway, the port infrastructure and the logistics centre in a unique system that operates with

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92 Modjo, 22 July 2019.

93 https://www.eslse.et/dryport.html - last viited 16 May 2021.

94 https://unctadstat.unctad.org/countryprofile/generalprofile/en-gb/231/index.html - last visited 18 May 2021.

95 https://www.engineeringnews.co.za/article/various-trends-shaping-africas-port-infrastructure-2020-03-27/rep_id:4136 - last visited 17 May 2021.

continuous exchanges between the different components. The logistics landscape emerges as a relational space that tends towards standardisation in order to increase overall efficiency and minimise delays. In light of this condition, the localisation seems to respond to economic performance rather than social and political aspects (LeCavalier, 2016, pp. 148-149). In other words, the reference context is no longer the local one, but it is enlarged to the global economic system. In this mechanism, architectural forms follow operational logics, which means strict adherence to economic protocols that tend to reduce space to a pure surface for exchange (Easterling, 1999, 2014; Bensi & Marullo, 2018, p.1).

Looking at the spatial outcomes of these dynamics, various infrastructures have overlapped with and beyond agricultural land. In 2012, the railway construction led to the removal of some newly built residential areas on the eastern side of the dry port. The new infrastructure has imposed itself on the existing environment, reconfiguring the space and the future prospects of the residential area under construction. The role of logistics appears predominant in the urbanization process. Its dynamics have set a new paradigm for the emerging city that actively interacts with the "intensification of circulation, supply-chain management, and containerization... without regard to its historical stratifications" (Marullo, 2015, p. 110).

Logistics uses the horizontal plane as a tool for ordering functions, minimising the need for buildings by transforming dry ports into what Reyner Banham referred to as "flatscapes with containers" (Banham, 1968). The planimetric organisation becomes the main element that guides the design and ensures its rational and efficient operability. These sites are part of the planetary urbanization *operational landscape* (Katsikis, 2018)[96]. They are spaces in which local contingencies connect with the flow of the global economy implementing an "overall [spatial] continuity" (Allen, 1999, p. 55) made of infrastructure elements. However, the process of spatial transformation that took place in Modjo cannot be reduced solely to an action of substitution of a residential area by an infrastructural and logistical space. The new logistic hub has been the occasion for an overall transcalar territorial rebalance. On a regional scale, the location choice will influence the urban hierarchy by making a secondary town along the railway the

[96] Meaning specialised sites of "production, extraction and circulation where land, energy and labour are invested in the... operationalization of all physical and material substances that sustain contemporary urbanisation" (Katsikis 2018, p. 43).

main infrastructure node, on which the entire Addis-Djibouti corridor will be centred. This is a consequence of the non-isotropic features of space (Secchi & Viganò, 2011), of the "differences that the uneven distribution of the network creates, between those sites which have something and those ones which do not yet have it" (Ramos, 2016, p. 67).

At the small scale, the temporal evolution, visible from the comparison of satellite images, shows the emergence of a new urban cluster on the opposite side of the dry port gates **[fig. 2.29]**. It is a hybrid urban fabric in which spaces dedicated to container storage and heavy vehicle parking coexist with functions and services in support of workers. A few shops and improvised restaurants alternate with truck repair and tyre replacement dedicated spaces. This facilities strip **[fig. 2.30, fig. 2.31]**, functional to the activity of the dry port, has emerged as the result of an interweaving between official planning policies and what can be defined as "opportunistic urbanism" (Ramírez-Lovering, 2008). It consists of spatial practices and activities generated by the specific contingencies of the site. However, not all the outcomes of these practices turn into buildings or designed spaces, many rely instead on the generative capacity of interpersonal interactions and social ties to shape the physical space of the urban environment[97].

Beyond the facility ribbon, a new residential allotment with elongated blocks and regular lots is currently under construction. It has developed from a secondary road that gives shape to a fishbone settlement negotiating its existence with the advance of the railway and logistics infrastructure. Residual spaces are awaiting development while contributing to increased fragmentation, one of the most critical issues related to contemporary Ethiopian urban space (Terfa et al., 2019).

2.3 Coda

The chapter has focused on the materiality of the two railways — the French one and the new Chinese SGR — built to provide a commercial outlet for landlocked Ethiopia. These corridors emerged as technopolitical artefacts of capitalist

[97] See for instance Simone (2004).

development ideologies, as evident in the logistics and productive systems that they have shaped. This main narrative has been tracked along the corridor through the investigation of traces of urbanisation processes and architectural objects. At the same time, the same traces have revealed the creeks and the incompleteness of capitalist territorial development, as well as additional scripts through which this infrastructure operated as tools for the exertion of racial policies.

The following chapter will investigate the infrastructural imaginaries linked to the Fascist occupation of AOI and to the post-Derg EPRDF government. I will argue that infrastructure is a malleable tool in the support of ideologies of statecraft, both on a symbolic and on a territorial level.

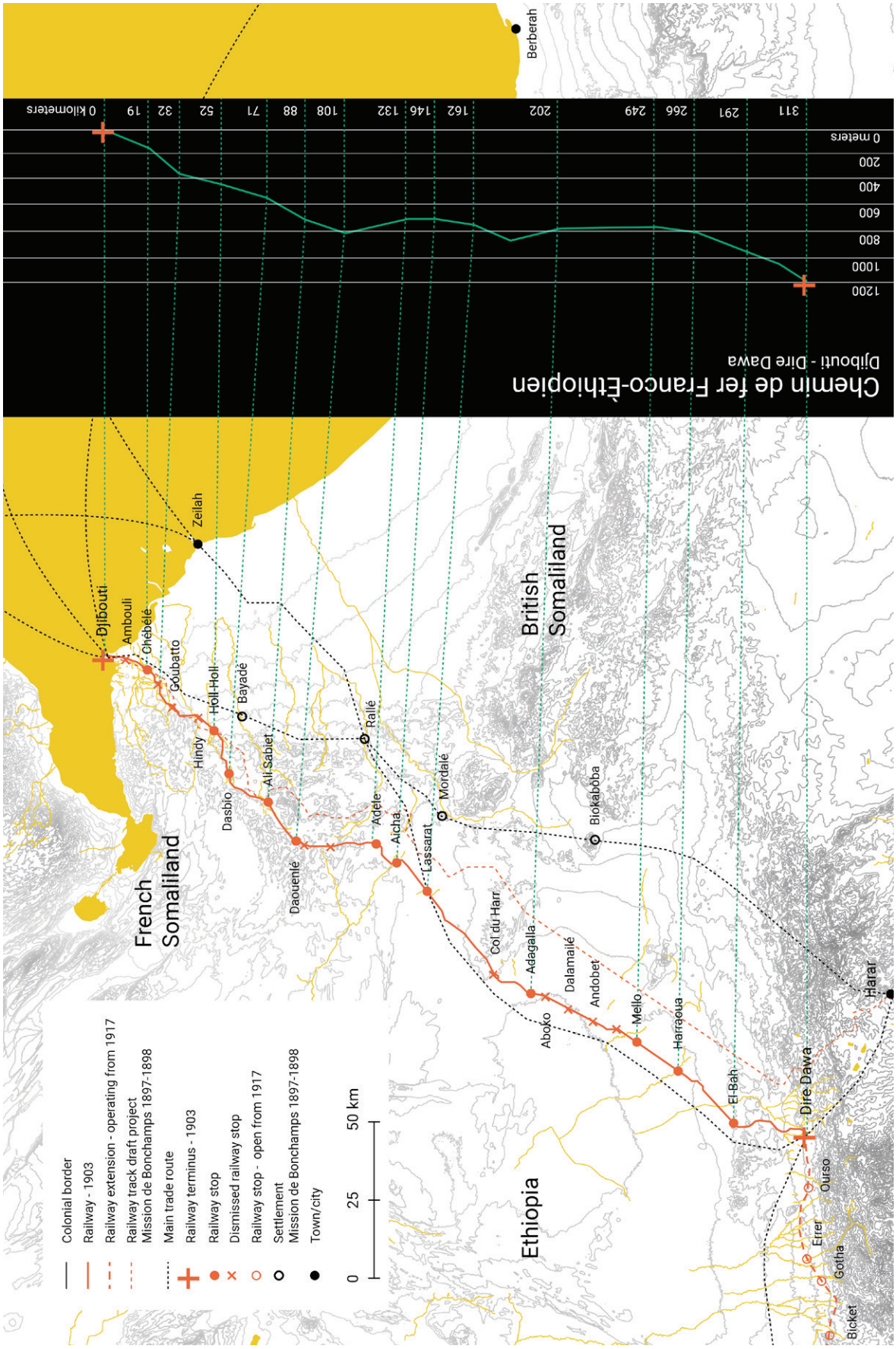


fig. 2.1 - The first section (Djibouti-Dire Dawa) of the historical Ethio-Djibouti railway, map based on the traces collected at the ANOM.
Lack of data didn't allow me to spatialise the second section (Dire Dawa-Addis Ababa).

fig. 2.2 - Chébélé viaduct, postcard, ca. 1905.

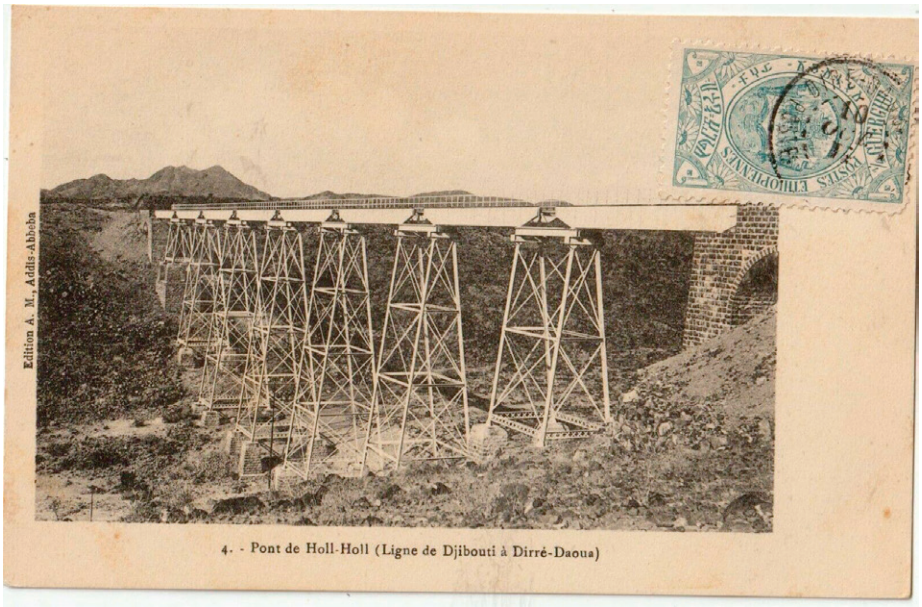


fig. 2.3 - Holl-Holl bridge, postcard, ca. 1915.

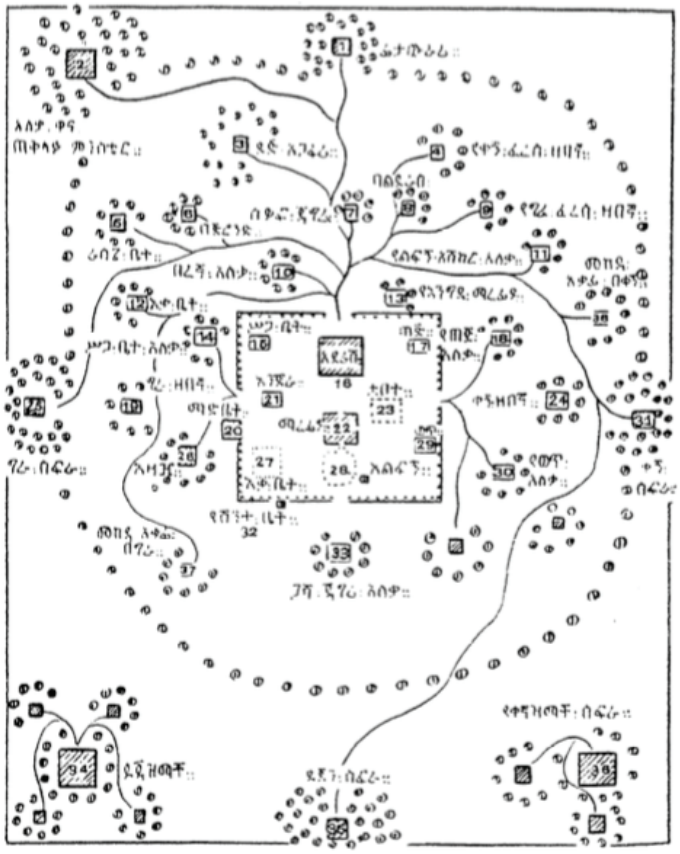


fig. 2.4 - A traditional Ethiopian urban settlement, map.

fig. 2.5 - Market along the railway at Ourso station, photograph, ca. 1950.

fig. 2.6 - Market along the railway at Gotha station, photograph, 1932.

fig. 2.7 - A *ville ferroviaire*, aerial photograph, 1949.

fig. 2.8 - The first Dire Dawa station, postcard, 1911.

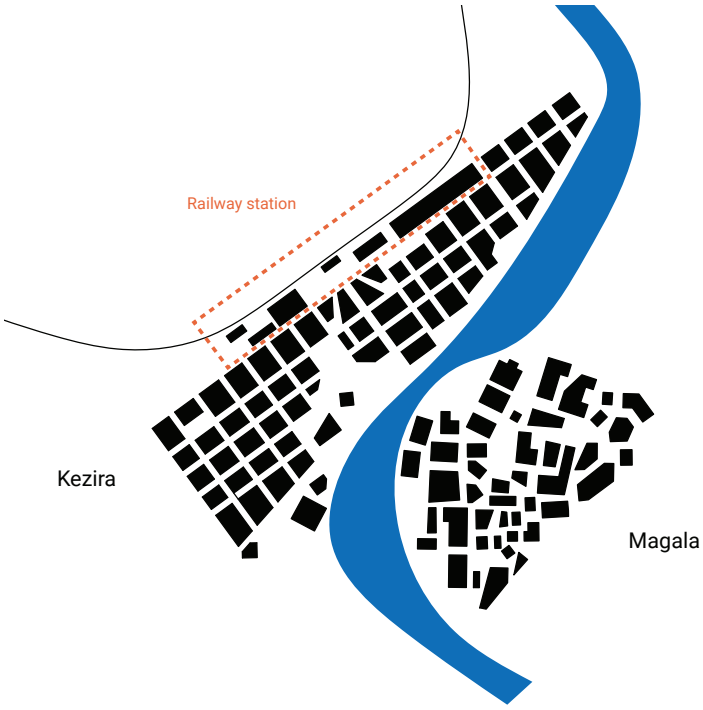


fig. 2.9 - The two districts of Dire Dawa, map.

fig. 2.10 - Kezira, the “European” district, photograph, 1958.

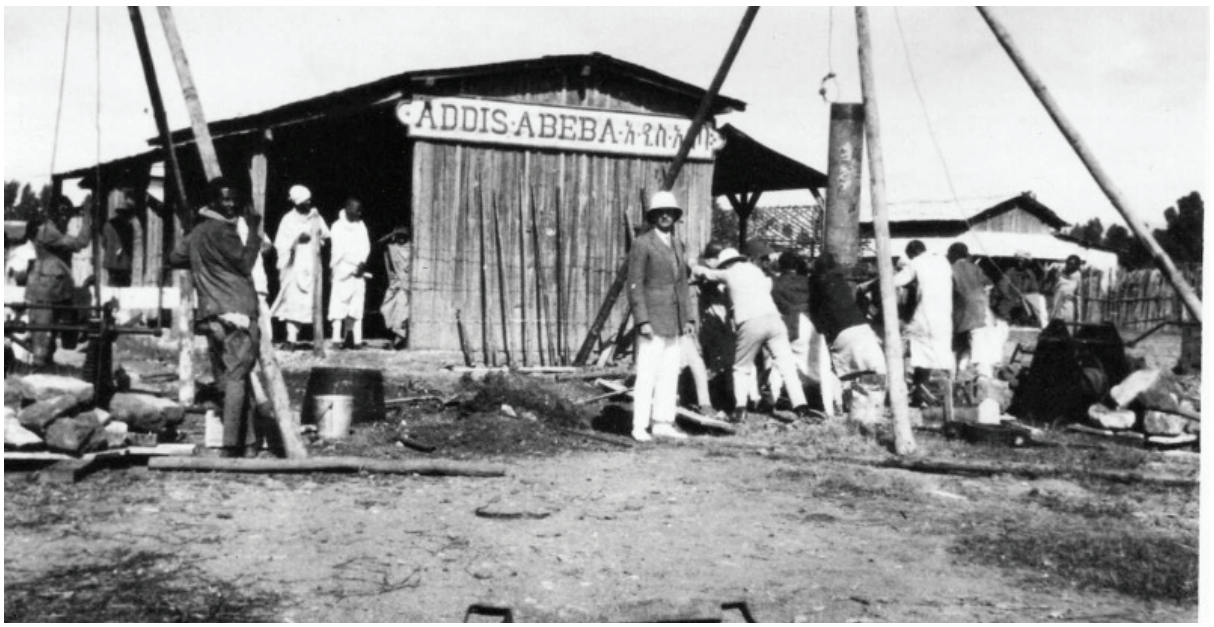


fig. 2.11 - The provisional station of Addis Ababa, photograph, 1921.

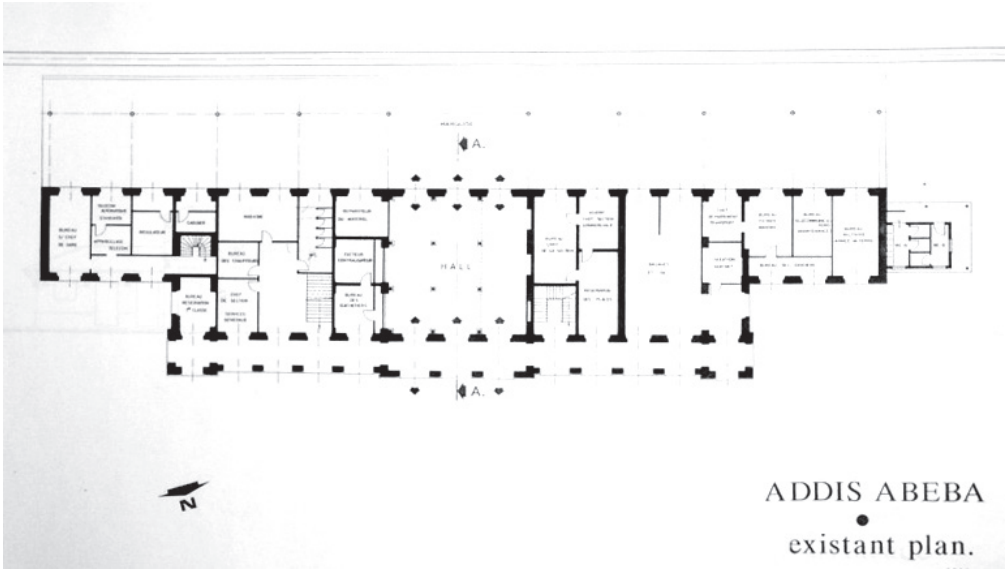


fig. 2.12 - The double layout of the Addis Ababa station, drawing.

fig. 2.13 - The main facade of the Addis Ababa station, photograph, 1972.

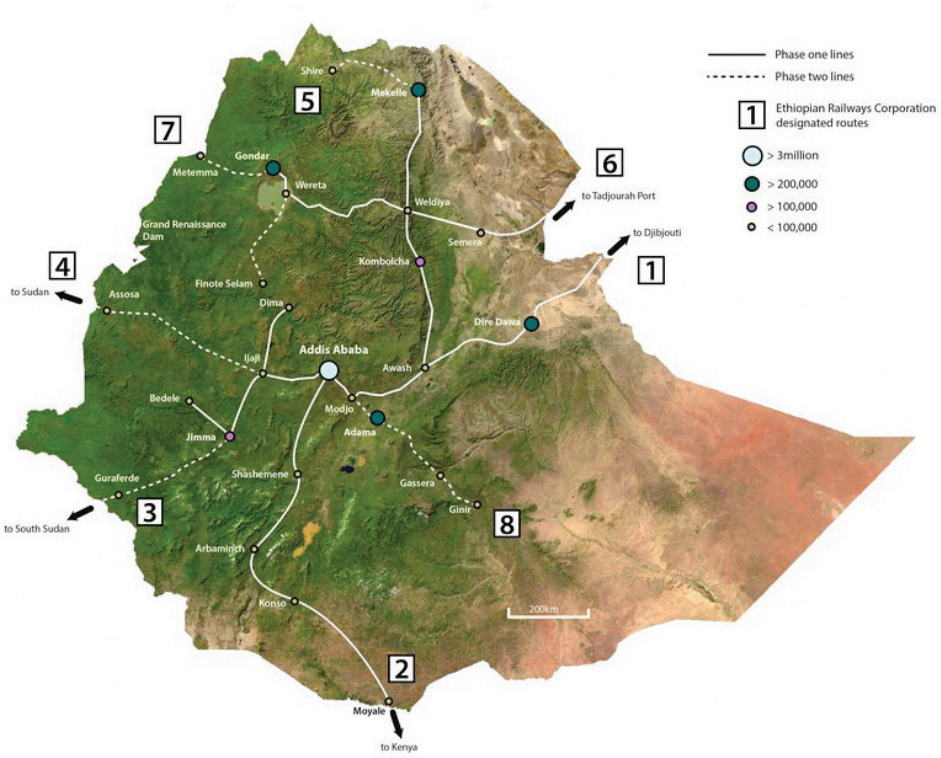
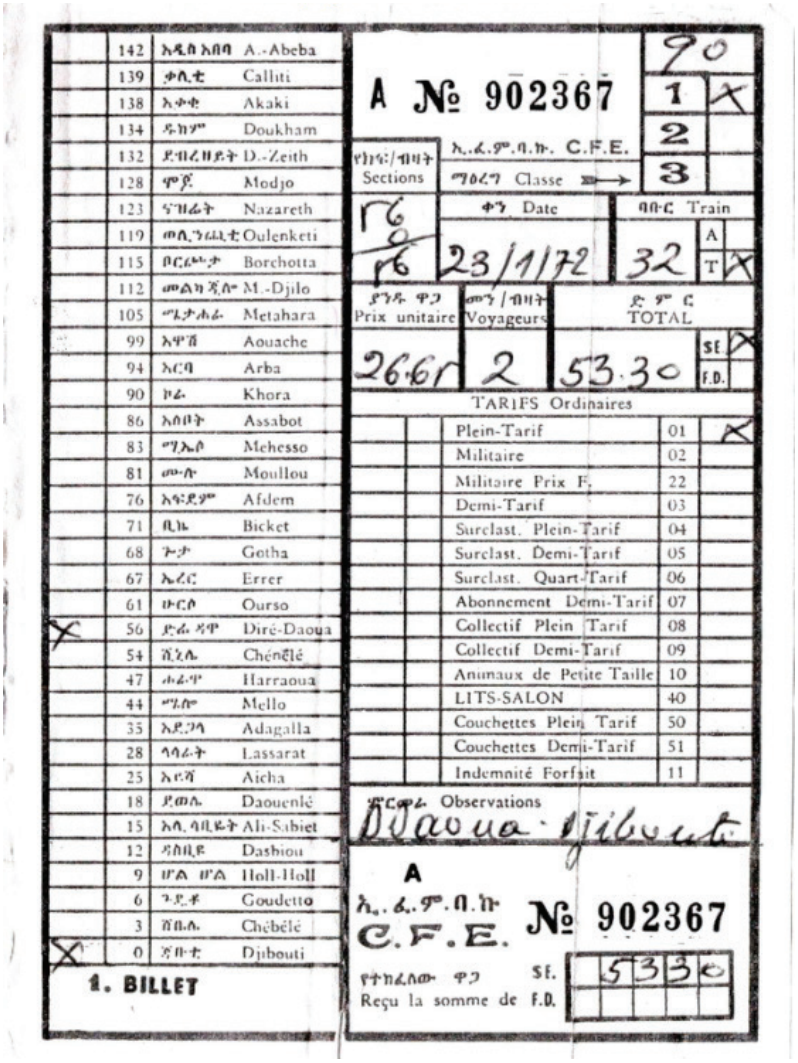


fig. 2.14 - Ethiopia's planned rail network extension, map.

fig. 2.15 - The railway crossing teff fields near Adama, photograph, 2019.
fig. 2.16 - The old railway tracks in the arid landscape of the Harari region, photograph, 2019.



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	139	ቃሊቲ	Calliti
	138	አቃቂ	Akaki
	134	ዱከም	Doukham
	132	ደብረዘይት	D.-Zeith
	128	ሞጆ	Modjo
	123	ናዝሬት	Nazareth
	119	ወሊንፈቲ	Oulenketi
	115	ቦርቾታ	Borchotta
	112	መልካጀሎ	M.-Djilo
	105	ሜታሐራ	Metahara
	99	አዋሽ	Aouache
	94	አርባ	Arba
	90	ኮራ	Khora
	86	አሰበት	Assabot
	83	ሜሄሶ	Mehesso
	81	ሙሉ	Moullou
	76	አፍዴም	Afdem
	71	ቢኬ	Bicket
	68	ጐታ	Gotha
	67	ኤረር	Errer
	61	ውርሶ	Ourso
X	56	ድሬ ዳዋ	Diré-Daoua
	54	ሸንሌ	Chénélé
	47	ሐራዋ	Harraoua
	44	ሜሎ	Mello
	35	አዳጋላ	Adagalla
	28	ላሳራት	Lassarat
	25	አይሻ	Aicha
	18	ደወሌ	Daouenlé
	15	አሊ ሳቢዬት	Ali-Sabiet
	12	ዳሰቢዩ	Dashiou
	9	ሆል ሆል	Holl-Holl
	6	ጉዲቶ	Goudetto
	3	ሸበሌ	Chébélé
X	0	ጅቡቲ	Djibouti

1. BILLET

A № 902367

90

1 X

2

3

የክፍና/ብዛት Sections

ኢ.ፈ.ም.ባ.ኩ. C.F.E.

ማዕረግ Classe →

ቀን Date 23/1/72

ባቡር Train 32 A T X

ያንዱ ዋጋ Prix unitaire 26.60

መን/ብዛት Voyageurs 2

ድ ም ር TOTAL 53.30

SF X

F.D.

TARIFS Ordinaires

		Plein-Tarif	01 X
		Militaire	02
		Militaire Prix F.	22
		Demi-Tarif	03
		Surclast. Plein-Tarif	04
		Surclast. Demi-Tarif	05
		Surclast. Quart-Tarif	06
		Abonnement Demi-Tarif	07
		Collectif Plein Tarif	08
		Collectif Demi-Tarif	09
		Animaux de Petite Taille	10
		LITS-SALON	40
		Couchettes Plein Tarif	50
		Couchettes Demi-Tarif	51
		Indemnité Forfait	11

ምርምራ Observations

Dlaoua - Djibouti

A

ኢ.ፈ.ም.ባ.ኩ C.F.E. № 902367

የተከፈለው ዋጋ Reçu la somme de SF. 53.30 F.D.

fig. 2.17 - Stations list on the old train ticket, picture.

April 1993
Declaration of independence in Eritrea

May 1995
First democratic elections in Ethiopia

2007
Formation of Technical Advisory Group (TAG) (under Ethiopia's Ministry of Transport) to indicate framework for the railway network in Ethiopia

November 2007
Creation of the national railway operator Ethiopian Railways Corporation

2010
Agreement for the modernisation of the Addis Ababa-Djibouti Railway between Ethiopia and China as part of the Belt and Road initiative

June 2010
MoU for The Development and Operation of Standard Gauge Railway Line between Ethiopia and Djibouti

September 2010
Issue of the national five-year "Growth and Transformation Plan" by the Ethiopian Government

2011
Contract awards from ERC for the two state-owned companies the China Railway Group (CREC) and the China Civil Engineering Construction Corporation (CRCC)

2011
Start of construction Addis Ababa-Djibouti Railways

2013
Regional Integration Agreement on railway infrastructure integration between Ethiopia and Djibouti

October 2016
Officially opened railway service (Ethiopia)

January 2017
Officially opened railway service (Djibouti)

January 2018
Officially inaugurated commercial railway service

fig. 2.18 - Project timetable, diagram.

fig. 2.19 - Elevated section of the railway, photograph, 2019.

fig. 2.20 - Camels crossing the railway tracks, photograph, 2019.

fig. 2.21 - The new Dire Dawa train station, photograph, 2019.

fig. 2.22 - The new Adama train station, photograph, 2017.

fig. 2.23 - The new Addis Ababa Lebu train station, photograph, 2017.

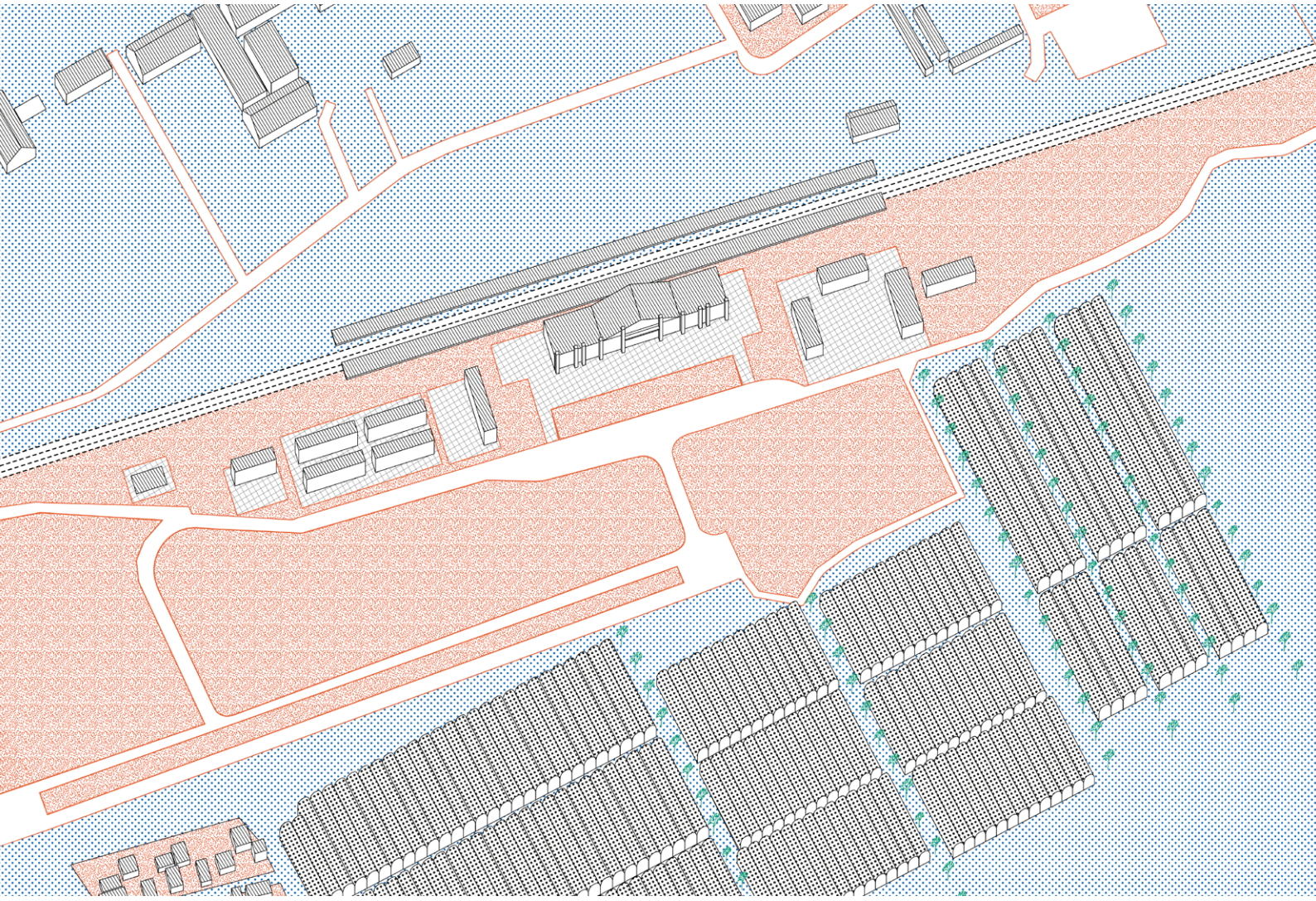

fig. 2.24 - Axonometric view of the new Addis Ababa Lebu train station area, drawing.

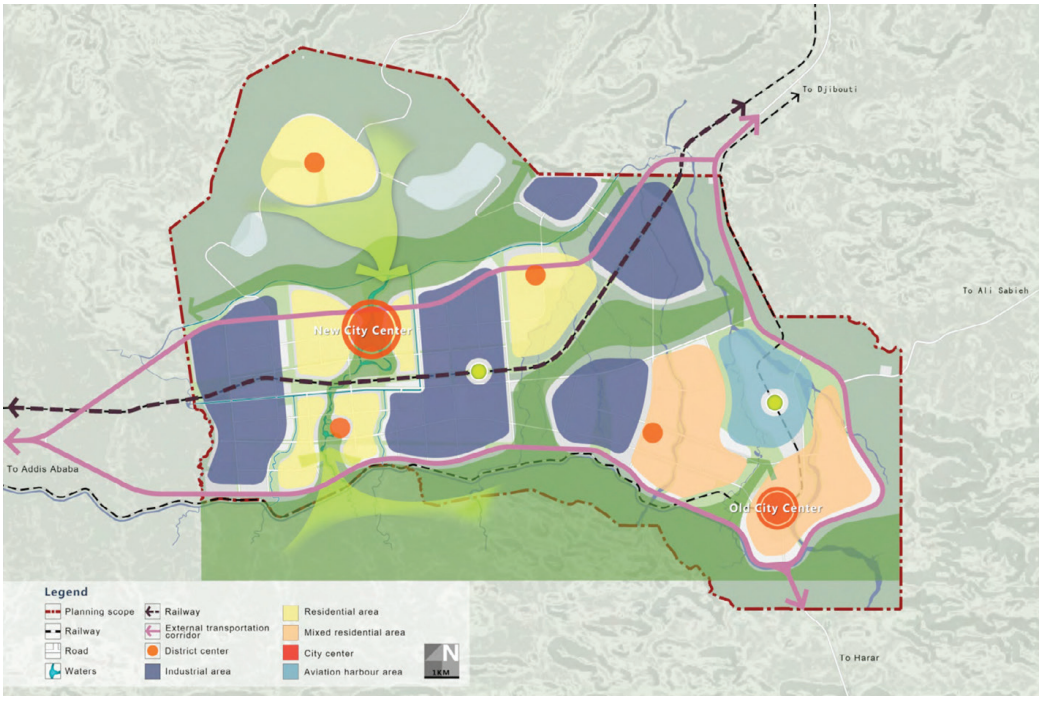

fig. 2.25 - The new Dire Dawa Masterplan, map, 2015.

fig. 2.26 - The Eastern Industry Zone, photograph, 2019.

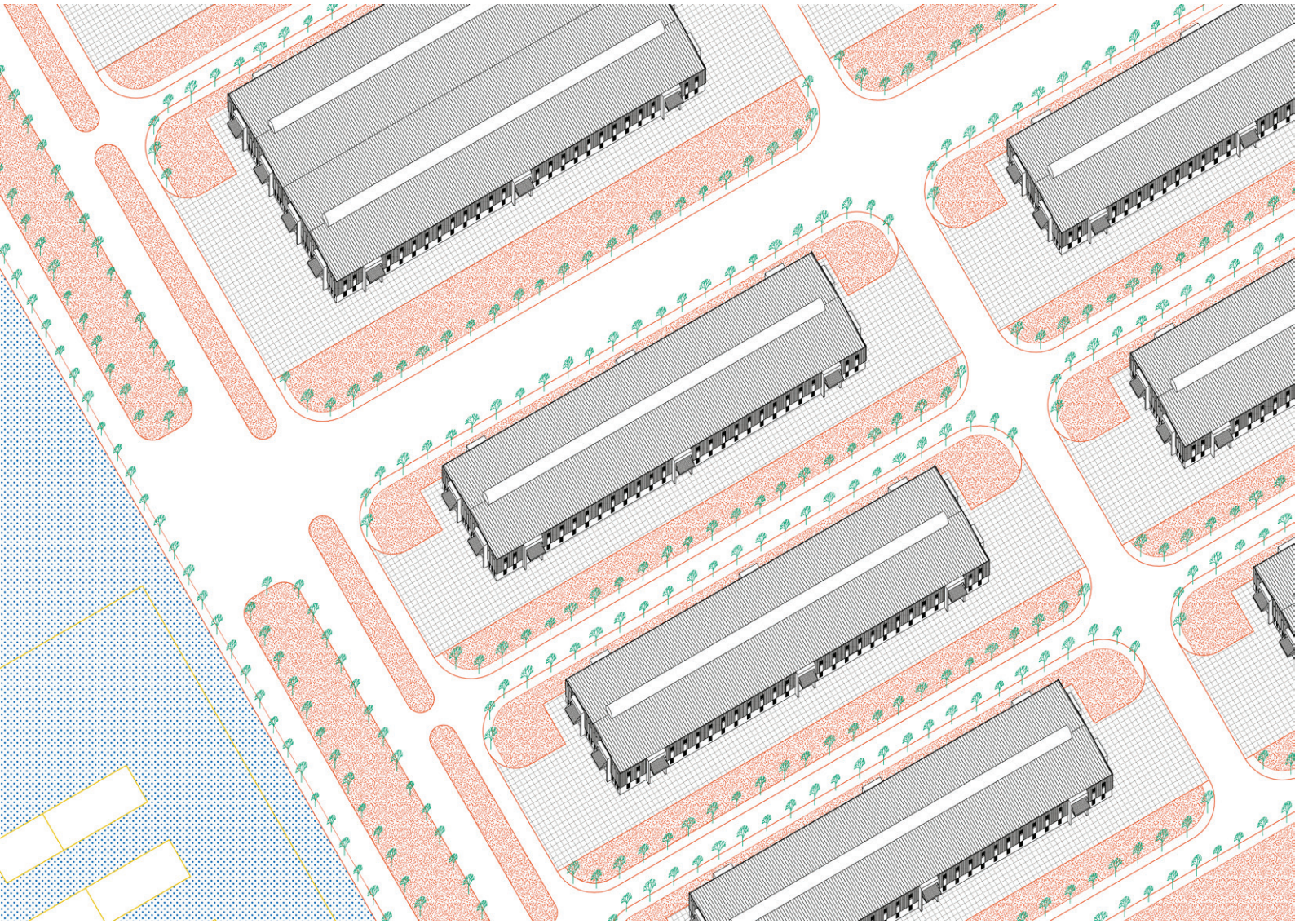

fig. 2.27 - Axonometric view of the Dire Dawa Industrial Park, drawing.

fig. 2.28 - The new road linking the dry port and the new train station in Modjo, photograph, 2019.

fig. 2.29 - Spatial transformation of the dry port area in Modjo, aerial images, 2011-2016-2021.

fig. 2.30, 2.31 - The strip of facilities in front of the Modjo dry port, photographs, 2019.

3 Infrastructural imaginaries between Italian Fascism and the EPRDF

This chapter discusses the role played by infrastructure in imagining and constructing future territorial configurations of the Ethiopian state. The chapter is divided into two parts which refer to different historical moments: the Italian colonial occupation and the ongoing EPRDF administration — from the fall of the Derg regime in 1991 to the present day. In both cases, despite the different social and cultural context, infrastructure can be identified as a key element of the policies promoted by the two governments. As an architectural system, infrastructure intercepts the relations between politics, society and multiple conceptions of space.

The traces that I use in this chapter are official documents, media stories collected from magazines and newspapers, complemented by my ethnographic work and iconographic material, in the form of historical photos, illustrations, and images of the contemporary landscape. Within these different visual materials, infrastructures often emerge as objects under construction or in a hypothetical final state, in three-dimensional artist's impressions and photomontages. These visual traces reveal that if, on the one hand, the infrastructural work of the fascist regime was meant to perpetuate the idea of a glorious colonial foreign policy, on the other hand, the more recent infrastructures have combined the objectives of economic development with a strategy of national unification to overcome ethnic problems. Representations of railways, fascist roads, dams and hydroelectric power stations, I argue in this chapter, are the images in which political ambitions, propaganda and popular expectations converge in a complex interplay of technopolitical meanings.

3.1 Envisioning the AOI empire[98]

3.1.1 The colonization of the "other"

According to Sarr, "the propensity of others to project their fantasies onto the African continent is rather old" (2019, p.11) and can be dated back to ancient times. In his *Naturalis Historia,* Pliny the Elder, for instance, populated the continent with ferocious animals and strange species, linking the African space with the idea of mystery and barbarism. Since then, this imagery has become an inventive device that has nourished the way Europeans looked at Africa.

Under imperialism, the space of the colonies underwent a significant process of invention aimed at supporting and building a shared background to the ideas of dominion and European supremacy over colonized lands. The "others" — the Africans — were denied any possibility of a free self-representation and their identity was bent to the advantage of the colonisers in the name of progress, technological advancement and racial superiority (Fanon, 1963). The colonies thus became a functional space for promoting, through an oppositional logic, good imperialist ethics. By adopting this intellectual mechanism based on contrast, the actions of European states were emphasised as a civilizing mission, resulting even more radiant against the backdrop of a Dark Continent inhabited by lesser people.

At the same time, the construction of a colonial elsewhere was decisive in defining the identities of the young European states, which seemed not to know how to define themselves except in the negative sense of their own achievements. In this way they made use of the "other" to avoid the impossibility of really defining that "self" (Stoler & Cooper, 1997; De Certeau, 2005).

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[98] AOI stands for Africa Orientale Italiana, literally Italian East Africa. It was the official name of the Italian colonial possessions in the Horn of Africa, proclaimed by Benito Mussolini on 9 May 1936 after the Italian occupation of Ethiopia.

Following this line of reasoning, it can be argued that the purpose of constructing and disseminating a colonial imaginary was not directly linked to enriching the knowledge of those places, but rather it was to define, catalogue and represent according to pre-constituted schemes a land that was regarded as a *tabula rasa*, where as stated in a publication of the time "everything had to be created from scratch, everything had to be imported from Italy, from the contractors to the equipment, from the workers to the necessities for the everyday living" (Gli Annali dell'Africa Italiana, 1939, p. 324). The empty spaces of the African continent were seen by European nations as blank pages ready to be written according to the rules of a modern grammar. This can be observed on some initial issues of the *Rivista Coloniale*[99], where white background pages titled *Spazio disponibile* **[fig. 3.1]** — Space Available — interspersed the various articles. The title referred to the possibility for companies and institutions to occupy that paper space with promotional campaigns and advertisements. During the first years of its publication, few were interested in publishing in magazines about colonial issues. Colonies, in fact, were a relatively new space within Italian society, still in need of being conceived and shaped both as a cultural and physical space, and therefore unfamiliar to the majority of people.

Under Fascism, things changed. As a political force, Fascism played a significant role in defining and incorporating the colonial space into matters of public concern (Genduso, 2017). The colonies became more and more closer to the masses, a space that was going to be inhabited with fascist projects, enterprises and ideals; they were a central matter of fascist nation building. To this end, extensive and ingenious propaganda was used in newspapers, magazines and other media with the specific target of reaching a bigger number of people. From cinema to billboards, the whole imaginative world of the Regime was invested by the "African fever" (Gibelli, 2005, p.297). Throughout the 1930s, education authorities urged schools to provide their students with a map of Italy and the Ethiopian regions, in order to help them identify names that until then had belonged to the fantasy world of their games (Gibelli, 2005). Furthermore, there was an extensive visual production regarding colonies: "creators of colonial images were operating everywhere" (Labanca, 1992, p.3) resulting in the

[99] The official magazine of the *Istituto Coloniale Italiano* — the Italian Colonial Institute — founded in 1906 with the scope of increasing awareness of both State and private colonial action, developing the economy of the colonies and promoting the spread of colonial culture.

establishment of a distinct aesthetic in which infrastructure and architecture emerged as relevant propaganda elements both as artefacts in their own and as main subjects that went side by side with the celebration of military campaigns. For this purpose, the regime recruited photographers and filmmakers to document the accomplishments and provide backgrounds for illustrations and architectural drawings. When the Ethiopian campaign was over, more than 70,000 metres of motion picture film and 7,000 photographs[100] had been shot by the various photographic units on the ground, an enormous amount of iconographic material that was used in the fascist propaganda campaigns.

The overseas territories were seen by the fascist regime as an opportunity to trigger economic development and implement the Italian autarchic policy — an economic concept which, by exploiting a state's own resources, tends to make it self-sufficient and thus economically independent from foreign countries. Colonies were regarded as an integral part of Italy and, as such, had a potential that went beyond a profit-oriented exploitation: they were an ulterior space useful for solving social and political challenges that were affecting the country. One of the policies promoted was the so-called *colonizzazione demografica* — literally: demographic colonization, in practice: settler colonialism — a massive relocation of the Italian population initially to Libya, then to Eritrea, Somalia and Ethiopia.
In the eyes of Italian fascists, those were virgin places — *terra nullius* — where the action of discovery was supplanted by the possibility of inventing a second homeland for peasant families and entrepreneurs in search of fortune. This was the regime's intended recipe for solving the problem of unemployment, especially in agriculture, and absorbing the natural growth of the population. The aim of this type of colonialism was to divert to overseas possessions the highest possible percentage of migratory flows, previously directed abroad, in order to end, once and for all, the long history of Italians as a population of migrants (Labanca, 2002, p. 194). The occupation of Ethiopia, according to the theorists of colonialism, could fulfil the project, which failed in Libya, of a distinctly "popular" colonialism, and give life to an empire based on labour (Fossa, 1938).

It is worth noting how the regime made use of the same dialectic that had characterised Italian internal migratory phenomena. Racial stereotypes towards

[100] From a letter written by Paulucci di Calboli — an Italian diplomat — to Mussolini. Stored in the ACS (Archivio Centrale di Stato), PCM, f. 17-1, 3422, sf. 34, Rome.

the people of the southern regions and the resulting social and economic inequalities were now being reversed towards the overseas communities. The dialectic was similar to the one between the city and the countryside: technologically advanced the former, economically backward the latter (Gramsci, 1975). In this way, as Dal Lago (2010, p.2) observes, the colonial occupation turned the victims into executioners, transforming the homeland's oppressed proletarians into oppressors just settled in a second Italy yet to be built.

3.1.2 Connecting the empire, segregating people

The annexation of Ethiopia (May 1936) to the Italian colonies in the Horn of Africa marks the peak of AOI expansion and the beginning of a period of territorial restructuring of the Italian possessions. At that time Ethiopia was poorly equipped with roads. The few existing were poorly maintained caravan trails or centuries-old paths, unsuitable for vehicular traffic and continuously exposed to deterioration during the rainy seasons (Cobolli Gigli, 1938, pp. 38-39). Even some of the pictures taken during the photographic campaign, arranged to celebrate the progress of colonisation, witness the critical condition of the roads in the initial stages of the occupation **[fig. 3.2, fig. 3.3]**. The existing infrastructures were inadequate to move goods, soldiers and information quickly from one city to another and were not those that mirrored the fascist ideals of a modern state. The road issue was therefore prioritised above all other problems.

Immediately after the occupation of Addis Ababa, Mussolini's planners laid out a blueprint for the construction of an extensive road infrastructure network which would reshape the East African landscape. The first planned infrastructure works were the 9 "fundamental" roads[101] (Gli Annali dell'Africa Italiana, 1939, p.324), including the so-called *Strada della Vittoria* — in honour of the successes of the

[101] The 9 fundamental roads were: Road n. 1 "Dogali" (Massaua-Nefasit-Asmara) 116 Km; Road n. 2 "Road of Victory" (Asmara-Dessiè-Addis Ababa) 1077 Km; Road n. 3 "Decamerè" (Nefasit-Decamerè) 40 Km; Road n. 4 "Dancalia" (Assab-Dessiè) 485 Km; Road n. 5 "Western Eritrea" (Asmara-Tessenei-Sabderat) 379 Km; Road n. 6 "Lake Tana" (Asmara-Gondar-Debra Marcos-Addis Ababa) 1262 Km; Road n. 7 "Gimma" (Addis Ababa-Gimma) 340 Km; Road n. 8 "Lechemti" (Addis Ababa-Lechemti) 330 Km; Road n. 9 "Debra Tabor" (Gondar-Debra Tabor-Dessiè) 360 Km. The total cumulative length was 4389 km.

Italian army that had fought in those lands advancing from Italian Eritrea — from Asmara to Addis Ababa, the newly established capital of the AOI. Not only did roads have the political-military function of speeding up the movement of troops and facilitating the administration of the territory, but they were an essential ingredient of the policies of development and economic valorisation.

The networks linked the capital to the various administrative centres scattered throughout the different Abyssinian regions and were conceived following specific spatial directions "in relation to the potential development of the individual regions" (La rete stradale dell' A.O.I., 1939, p.107). The general scheme **[fig. 3.4]** envisaged Addis Ababa as the main transport hub: all major traffic routes converged on the city, establishing a clear territorial hierarchy that reinforced Addis' newly acquired role. Together with the large-scale planning projects, the regime also promoted an impressive urban renewal program that aimed to transform Addis Ababa into the Rome of Africa. Guidi and Valle were the two architects who designed the 1938 plan for the city. A strict functionalist approach, based on a grid layout, clearly structured the different neighbourhoods following the morphological conformation of the ground **[fig. 3.5]**. The urban form reflected in the planning documents had little to do with the previous urban fabric compared to a "disorganised and confused"[102] city and associated by Giorgio Rigotti with medieval settlements in which houses were arranged in concentric circles around the lord's house (Rigotti, 1939, p.120).

The strategy employed was based on the principle of "separation" that was translated in functional zoning and racial segregation **[fig. 3.6]**. Wide, spacious streets[103] separated residential neighbourhoods from manufacturing or governmental functions, introducing modernist zoning into a city with a strong integration and diversification of functions — another reason it was considered messy. The new streets also served to connect new native neighbourhoods to other parts of the city. The plan was to force the current inhabitants to move away from the center towards a peripheral area, where urban clusters for the different ethnic groups (Copts, Muslims, Somalis) would have been built around local markets or open spaces **[fig. 3.7]**. The Italians would occupy the city centre and eastern

[102] From the report attached to the official urban plan (document accessed in July 2019 , ACS - Rome).

[103] Via Imperiale was among the widest streets in Addis. In some sections it reached a width of 120 metres, running north-south through the new political quarter of the capital.

districts, minimising the possibility of encounters with the natives. The parallelism with Roman history, where the empire used infrastructure as a means for civilization and transforming barbarians into citizens, is quite clear and is in line with the measures taken in all Italian territories.

The conception of commercial infrastructure reflected the same idea: a central market was planned for the exclusive use of the Italians; the one for the natives was located in a more peripheral area, in a position where caravans and goods could reach it without passing through the city centre. The main concept was to give the Italians full access to all the different areas of the city while limiting the movement of black people (Fuller, 2007, p. 206).

Beyond their use as for facist policies, roads were a tangible sign of the white settler's superiority over the Ethiopians. In the press of that time, in posters and illustrations published in newspapers, the road became "an unmistakable sign of Italian civilisation, of which in all parts of the vast Roman Empire we still find indelible traces" (Mastrigli, 1939, p. 341). This belief was also supported by Giuseppe Pini — the engineer who supervised most of the construction sites in Ethiopia — for whom roads were an essential tool of civilisation (Pini, 1938), and also by the Viceroy Graziani who considered them "the first great monument of Fascist civilisation within the Empire" (cited by Pankhurst, 1976, p.40).

The images always referred to an idea of *romanità*[104] in which the street was the protagonist. For example, the advertisement for the 1940 *Overseas Triennial* **[fig. 3.8]** depicts a Roman soldier in the act of trampling a typical cobblestone road across the sea. Again, the same stone pattern was the background of a map about the road network within the AOI **[fig. 3.9]** and was in the picture of a promotional booklet about the fascist industries **[fig. 3.10]**: a road heading toward the horizon crosses a narrow gorge between two high rock walls that only dynamite and a lot of hard work were able to shatter. The author carefully chose the objects that populate the image: on the right a typical East African cactus to recall the context, on the left a victory column reminiscent of the ancient Roman ones and in the background two concrete arch bridges to symbolise the technical superiority of

[104] The idea of considering the Roman tradition as the creator and preserver of universal values of civilisation. *Romanità* was of great importance for the propaganda of Fascist political doctrine, providing "the regime with *universal* and historical justifications for everything Mussolini and the hierarchs decided to pursue" (Visser, 1992, p.8).

Italian engineering. The past fades into the present as the cobblestones in this picture give way to a smooth strip of asphalt ready to colonise the new lands.

The iconographic production also accompanied specific publications on infrastructure, such as *Strade Imperiali* written by Cobolli Gigli (1938), Minister of Public Works from 1935 to 1939, *La Camionale Mar Rosso-Altopiano Eritreo* by engineer Arcangeli (1936) or the section about road works included in the fourth volume of *Gli Annali dell'Africa Italiana* (1939). The fascist interest for roads combined the historical Roman tradition with the notion of technology as an instrument of civilisation. This duality transformed the road into an artefact of synthesis that suited Fascist legitimisation and propaganda strategies. History and technology became functional to politics and converged in the design and construction of road infrastructure. In assuming material consistency they provide tangible evidence of power and a clear example of how politics and artefacts are entangled with one another.

In Italy, the Fascist road was inspired by the futurist ideals of speed and dynamism, which were embodied in the highways promoted by the party and entrepreneurs such as Piero Puricelli[105] (Cobolli Gigli, 1938, p.15), the "inventor" and builder of the Italian highways during the 1920s. In the colonies, the road was instead conceived as an essential element for the development of the regime's autarkic project. "In the road is the life", was the motto of the campaign for the newly conquered territories (Leggende e realtà in A.O.I.: i ponti, 1938, p.6). Like arteries of the human body, roads had the task of nourishing and supporting the different regions by establishing a hierarchical infrastructural system.

Following the 1936 plan, a new one was approved in 1937: a further 6,200 km of roads, mostly expected to be built over a period of six years (Pini, 1938, p.334). Roads were divided into fundamental, complementary and secondary[106]. While the

[105] The Puricelli company was among the first to work on road construction in AOI. Other companies involved were: SICELP (Società Italiana Costruzioni e Lavori Pubblici), SAMICEN (Società Anonima Mantovana Imprese di Costruzione e Navigazione), SCALA (Società coloniale Anonima Lavori in Africa), CIBI (Costruzioni Idrauliche e Bonifiche Integrali), Astaldi S.A., Vaselli, Saverio Parisi, Anonima Strade AO, F.lli Gondrand, Elio Gola SA, Ing. Ciardi and Ceratto (Gli Annali dell'Africa Italiana, 1939, p. 324).

[106] Different road sections corresponded to the different types: roads with a high volume of traffic were 7 metres wide, while the others were 6 metres (Cobolli Gigli, 1938, pp. 36-37).

former were essential to ensure the supply of materials, goods and establish military control of the colonial territory, the latter had the task of reaching secondary towns and rural areas. Priority was given to fundamental and complementary roads while the construction of secondary roads was planned to start at a later stage, as soon as the strategic locations and the real development opportunities were known more precisely (Le strade Imperiali d'Etiopia, 1936, p.38). The secondary road network was designed primarily to promote rural development, but its task was also to ensure an extensive political and military presence in the colonies.

The overall project was only partially completed. As the work progressed, the colonial administration faced financial difficulties: building costs were exorbitant — up to three times higher than the usual prices in the metropolitan space (Pankhurst, 1976, p. 42) — and less and less money was channeled to fund colonial infrastructure since the beginning of the Second World War.

3.1.3 A matter of technique: roads vs railways

In an earlier phase of colonialism, the Italian state had promoted the construction of railways in Eritrea and Libya, such as those connecting the port of Massawa to Asmara, and the cities of Tripoli and Benghazi to a few inland agricultural settlements. However, following the annexation of Haile Selassie's empire, railway infrastructure was almost ignored by colonial transport policies. Given that most colonial penetrations had been rail-based so far, this political decision was quite unusual.

The Ministry of Italian Africa, which had been exploring the possibility of creating a rail link between Addis Ababa and the Eritrean port of Assab, considered the investment too costly due to the lack of guarantees for commercial traffic flows (Cobolli Gigli, 1938, pp. 27-28). Geographical reasons — relating to the topography of the Ethiopian highlands — as well as time and cost constraints suggested opting instead for road infrastructures, more suitable because of “their great flexible [technical] features (curvature and slope)” (Le strade Imperiali d'Etiopia, 1936, p.37).

Despite the ministry's official decision, a few speculative articles appeared in the pages of the Touring Club magazine *Le Strade*[107] **[fig. 3.11]** or in the *Rassegna Economica dell'Africa Italiana*[108] about hypothetical railway lines that might have been beneficial for the regime. The divergent factions clashed over the need to guarantee, at least between the Italian ports and the capital, a direct connection by train, with the aim of finally excluding the *Compagnie du Chemin de Fer Franco-Ethiopien* from Italian colonial traffic. Various scenarios were also explored, including the development of a river transport network — the *liquid route* (Poggiali, 1938, p. 179) — to bypass the Suez Canal. All the different hypotheses shared the intention of seeking greater autonomy and a more direct — and untaxed — connection with the metropole. A few years after the occupation, a possible development of rail transport in the Empire was back on the agenda with a revised role; railways were no longer seen as the primary colonial infrastructure but rather as a supplementary network along the busiest roads. However, none of these railway projects were developed beyond the planning stage.

As already mentioned, the road was the infrastructure that perfectly fit within the fascist image of modernity and the car was chosen as the vehicle for spreading civilization in the African territories, still populated by natives and barbarians (Bravo, 1992). The cult for the road and the car stemmed from the regime's encapsulation of industrial technology in the politics of the fascist state, as the elective medium to rely on to transform society and its values. Fascists saw technology not as ethically neutral but imbued with certain values — since speed, destruction and violence were inherent to its essence — consistent with the regime. The fascination with machines, specifically those related to movement and speed, was already part of the Italian cultural environment: it is evident, for instance, in 1909 Tommaso Marinetti's *Manifesto of Futurism* where we can read about “the beauty of speed”, of a “roaring motor car... which is more beautiful than the Victory of Samothrace” and “great-breasted locomotives, puffing on the rails like enormous steel horses with long tubes for bridle”. Nevertheless, it was only some years later, with the assimilation of the Futurists’ values within the early fascist political credo, that a mere fascination evolved into a political

[107] See: Le strade imperiali dell’Etiopia (July 1936, pp. 326-328), Problemi dell'Impero. Le vie di comunicazione (August 1936, pp. 377-384), Anno XV EF (November 1936, pp. 541-542).

[108] See: Architto, N. M. (1940). Prospettive ferroviarie dell’Impero. *Rassegna Economica dell’Africa Italiana, 2*, 77-86.

ideology centred on the aesthetics of technical disruption and violence[109]. In some respects, it is possible to recognise an overlap between the subjects that populate Futurist artworks and those promoted by some fascist spatial policies which integrated the diffusion of industrial technology as a tool to shape their ideal space. From the futurist avant-garde[110], Fascism did not only draw intellectual content but also new forms of political communication, transforming art performances and theatre shows in crowd gatherings, parades and provocations (Bowler, 1991, p.785).

Shifting the gaze more closely to space, the consequences of Fascist attachment to technology transformed the environment in what Kostof condensed into the expression "traffic and glory"[111]. The promotion of large infrastructure projects, — such as the Italian highway network — and air transport, were part of a plan to "strengthen a vision of modernity within fascist self-representations" (Moraglio, 2017, p.2) that contributed to the rise of a *technological nationalism*. This political strategy went hand in hand with a more profound transformation of the society and its relationship with mobility. From the 1920s onwards, the car began to be accessible to the general public and the number of vehicles on the road increased. It was therefore necessary to reform the road network, to design wider, smoother and more comfortable roads for the new vehicles: different spatial configurations were needed. The plans developed for the national territory — consisting of a substantial upgrading for the existing roads and the construction of

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[109] The relationship between Futurism and Fascism is a controversial and debated issue (see for example: Bowler, A. (1991). Politics as art. *Theory and Society*, *20*(6); Golsan, R. J. (1992). *Fascism, Aesthetics, and Culture*; Hewitt, A. (1993). *Fascist modernism: Aesthetics, politics, and the avant-garde*; Ben-Ghiat, R. (2001). *Fascist Modernities: Italy, 1922-1945;* Cioli, M. (2011). *Il fascismo e la" sua" arte: dottrina e istituzioni tra futurismo e Novecento*). Scholars emphasise the ideological affinity of the two movements in an early phase of Fascism, only to be lost as the regime's politics evolved towards "routinization and compromise" (Bowler, 1991, p.764). Futurism would have never accepted the institutionalisation of politics with the creation of a new class that would only seemingly be different from the bourgeoisie that it wanted to subvert. The same would have occurred with the recovery and glorification of the ancient *romanità* which they replaced with the exaltation of modern times and the transformative potential of technology.

[110] There are different positions in considering Futurism throughout its duration as an avant-garde. Adamson (2010), for example, argues that futurism, by reducing its innovative character, running into contradictions and losing its independence as an autonomous movement, lost its identity as an avant-garde since the mid-1920s.

[111] "The third Rome, 1870-1950: traffic and glory" was the title of the exhibition on the urban transformation of Rome held at the University Art Museum of Berkeley in 1973.

a highway network — were ambitious in their scale and collided with the rural nature of the majority of Italy's territory. Driven by an inexhaustible faith in technology, Fascist helped make the landscape of machines and infrastructure part of everyday life both in Italy and in the overseas colonies.

Although contexts and issues were very different, the solutions somehow involved technology in its various forms. This clearly emerges from the words that appeared in *L'Oltremare* magazine : "when we think that the whole development is identified with technology also in the colonies; when we take into account that at the basis of the economy... there is production and that has been made possible by overcoming many technical problems, we will then see that the vast complex of activities, referred to as technology, assumes a very special importance in the colony" (Pellegrineschi, 1932, p.160). In particular, for the newly acquired territories, technology was synonymous with infrastructure: from water and road networks to drainage works, from the telecommunications network — radio and telegraph — to power plants, the rooting of technology in space was evident in these engineering artefacts.

The regime was aware that technology — due to differences in climate, availability of means and materials, and worker skills — could not be advanced as in the metropole. To this end, professional and academic courses were introduced to train colonial experts and technicians (Giorgi, 2008). The use of technology in the Duce's policies was not just about building infrastructure, but also about supporting and defining a technocratic machinery, consisting of public institutions and offices with the aim of educating individuals who could implement and manage these infrastructural visions.

3.1.4 Settlements along the network

The construction of such an extensive road network required the involvement of workers and technicians. To this end, thirty thousand Italians were sent to Ethiopia in the aftermath of the victory to immediately undertake construction work. Gradually, more and more Ethiopians and Sudaneses were hired to replace the Italian labour force and help with the implementation of the infrastructure network. Most of them were unskilled workers and were exploited for the hardest

and most strenuous tasks — moving rocks, smashing stones, asphalting **[fig. 3.12]** — "with a salary ten times lower than the Italians" (Fossa, 1938, p.354).

The large number of people involved implied an overall spatial and logistical plan: a system that ran parallel to the official one advertised by the propaganda, including the construction of workers' camps and the constant supply of food and other essential goods. The camps — named "cantieri"— were real settlements built 5/6 kilometres apart from each other. Although they were initially made of tents **[fig. 3.13]** — "cooking was done in the open air and the butcher's shop was under the nearest tree"— they were gradually updated with more comfortable buildings **[fig. 3.14]** in a wide variety of shapes that became almost a "sample of rational and good use of what was available" (Cobolli Gigli, 1938, p. 76). The buildings varied according to altitude and climate. On the high plateaus, they were made of dry stone walls or mud covered with a metal sheet, or entirely built of zinc-coated sheets or wood, when available. In Dancalia and in the lowlands, local rural architecture elements inspired the design: walls were made of tree-branch structures wrapped with straw and vegetable mats. In addition to sleeping barracks for 400 or 500 workers, each building site was equipped with a communal kitchen, a little shop, a bakery, an infirmary, a post office, some workshops and warehouses. In the surrounding areas, there were vegetable gardens and some improvised spaces for recreation and leisure. Space and architecture were a combination of more "regular" materials and scraps: bottles and tin cans enclosed the flowerbeds, petrol barrels and used tyres were combined to make fences and gates. Recurring elements in every construction site were the fascist mottos written on the walls and the central square's ground, where the Italian flag flew.

The camps were not the result of a unitary project; instead, they were established by the construction companies and managed directly by the workers. They used to be provisional settlements with a time lifespan dependent on the progress of the construction sites. However, not all settlements disappeared, some of them survived and still exist in the present day. The attractiveness of the facilities that had been set up in the camps may be one possible explanation. The markets, the workshops, and the related job opportunities that arose in that short period encouraged some Italians to stay and a few locals to move, gradually transforming the settlements and determining their survival. This process led to the redefinition of urbanisation models, no longer guided exclusively by military strategies and urban plans, but also by colonial roads, which became structuring elements of a

new spontaneous urbanity.

The road network was also functional, and necessary, to support a widespread urbanisation model in the rural environment with a more productive, rather than military or administrative, function. In the Fascist vision, the fertile Ethiopian lands would have been colonised over time through the proliferation of small agricultural settlements promoting rational and advanced farming methods. Agriculture seemed to be the essential premise of Italian colonisation (Morgan, 2003; Mohanty, & Andemichael, 2010). It was considered the leading employment activity for future Italian settlers, yet it was likewise a sector considered strategic for scaling up colonialism into a mass phenomenon. This is how, in Mussolini's mind, it was possible to reduce the flow of migrants to other countries and proceed with the autarkic project.

The scientific support for the operation was entrusted to the Istituto Agronomico per l'Africa Italiana in Florence[112], in charge of coordinating and disseminating knowledge through a network of experimental centres scattered throughout Ethiopia, where cultivation techniques were refined and new cultivars were tested. The scientific approach to agriculture was evident since the initial implementation of an extensive weather station network to collect temperature and rainfall data necessary to select the most productive varieties for each climatic zone. Two subsequent phases would transform the settlement into an agricultural community: a first *settling-in* phase, in which Italian immigrants would harvest cereals and vegetables mainly for their livelihood, and a second *regulatory* phase addressed to increase agricultural production through corrective labour policies that underpinned a clear separation of roles on a racial basis. Each phase targeted a specific rural space. The most fertile and least populated territories were the concern of the initial phase — in order to ensure a high productivity from the very first harvest and to avoid conflicts with locals; the following phase would have been directed to the regions with a consolidated human presence, where local production needed to be intensified and improved, and natives integrated into the fascist social system (Massaretti, 1993).

With the three Royal Decrees n. 2300, 2314 and 2325 dated 6 December 1937, the *Enti Romagna d'Etiopia, Veneto d'Etiopia* and *Puglia d'Etiopia* were formed and

[112] According to the Royal Decree, 29 July 1938.

charged with the task of establishing the first rural settlements in Ethiopia, respectively in the regions of Uogherà, Gimma and Harar. Timing and modalities were established on a case-by-case basis; for each site, the founding community consisted of around 50 families coming from the three Italian regions. This number of settlers guaranteed the management of cultural, religious and health activities directly within the villages (Massi, 1940, p. 452). Besides the regional agencies, the *Opera Nazionale Combattenti* (ONC) — which had already been entrusted with the management of the reclaimed plains in the Agro Pontino — was involved in the preliminary operations for the agricultural settlements. The first two settlements were Biscioftu **[fig 3.15, fig 3.16]** and Olettà, chosen for their strategic location within a reasonable distance from Addis Ababa. The planning strategy consider of starting with two small centres and progressively increasing the amount of cultivated land — the final size was supposed to be around 15,000 hectares for Biscioftu and 12,000 for Olettà — eventually with some agreements on land rights with the locals (Gli Annali dell'Africa Italiana, 1939). The relationship between Italian settlers and Ethiopians was mirrored in the structure of the villages, which epitomized some of the ideas of hierarchy and separation of fascist thought. It was considered inappropriate, for example, to have isolated families scattered across a new territory away from the motherland. Therefore, the project envisaged having agglomerations of farmhouses in order to facilitate defense and assistance in case of need. The settlement plans were based on the ancient models of *Roman centuriation*, altered according to a panopticon rational logic:8 axes started from the centre of each agricultural settlement, dividing the space into triangular plots; in the centre were grouped the houses for the Italians while on the opposite side were those for the natives working on the farm **[fig 3.17]**. Each farm had to be about 50/60 hectares in size. One hectare of land near the Italian residential area was used for vegetable gardens and planting vines, while 20 hectares near the *tukuls* were for grazing. Individual plots were grouped into bigger farm estates where a community centre in which collective services — such as the church, schools, the *Casa del Fascio*, the cinema and some warehouses — would be concentrated. As well as giving the Fascists better control over Ethiopians, this scheme had advantages in optimising the rollout of facilities and infrastructures.

The aesthetic references for such agricultural settlements were the Italian rural villages — albeit reinterpreted according to more rational and modern criteria. The proposals examined to codify a standard residential model were many —

from those inspired by Apulien *trulli* to prefabricated houses with metal structures — and reflected the ambivalence of Fascist ideals in their attempt to combine a traditional family dimension with an advanced and technological way of life. Unity was thus ensured not through the application of a uniform building aesthetic, but rather through the design of urban space where some traces of *Italianness* emerged: in the urban hierarchy defined by the central square, in the public spaces around the church, and in the main streets structuring the general layout **[fig. 3.18]**.

The Fascist project never worked successfully. At the peak of the empire, about 400 Italian civilians resided in the agricultural colonies, 150 of whom were joined by their families (Larebo, 1994). Similarly, the figures for the Italian population emigrated to Ethiopia highlight the failure of the resettlement policy — estimates speak of 80,000 Italians living in Ethiopia at the end of 1938, a figure far from the original expectations (Ertola, 2019, p.19). In 1943, three years after the beginning of the Second World War, the Italian empire had ceased to exist, leaving behind on Ethiopian territory only some traces of the fascist colonial dream.

3.2 Techno-political images of infrastructure

3.2.1 Ethiopian Renaissance narratives

"They don't want to see a developed Africa. They want us to remain backward to serve their tourists as a museum" - Meles Zenawi[113]

Since the early 2000s, Ethiopia has identified investments in large-scale infrastructure as a core component of its economic strategy to enter the status of

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https://www.theguardian.com/global-development/poverty-matters/2011/mar/07/ethiopia-controversial-dam-criticism-communities - last visited on 20 Apr 2021.

middle-income country by 2025. The rate of expenditure for the infrastructure sector is among the highest in the African continent and the term "infrastructure" appears more than 190 times in the 236 pages *Growth and Transformation Plan II* (GTP II) — the political document that outlines the development strategy for the country. The economic success of the plan has been recorded by the GDP rates, which have grown by an average of 9.4% since 2010[114]. However, the increase of political turmoil and ethnic clashes in several regions of the country suggests a decline in political consensus and a threat to the implementation of the economic reforms.

Protests that have been occurring in Ethiopia have an ethnic root and are often linked to issues of political representation. In November 2015[115] violent clashes were recorded in areas surrounding Addis Ababa, where Oromo people protested against the government's decision to expand the territorial borders of the capital into the fertile countryside of the region, compromising the future of many families who based their livelihood on land. The protest resumed in June 2016[116] and expanded to a larger population dissatisfied with socio-economic conditions and political marginalisation. Recent riots (July 2019)[117] affected the city of Hawassa, where the Sidama minority — the largest ethnic group in the southern regions — demanded the establishment of an autonomous region.

The perception is that an ongoing process of social and political disintegration is threatening the compelling narrative of the *Ethiopian Renaissance.* This kind of narrative is most evident in the extensive infrastructure projects that stand at the heart of the EPRDF[118] state-building in both emblematic and practical terms,

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114 https://www.worldbank.org/en/country/ethiopia/overview - last visited on 30 Mar 2021.

115 https://www.theguardian.com/world/2015/dec/11/ethiopia-protests-master-plan-addis-ababa-students - last visited on 15 Apr 2021.

116 https://www.hrw.org/report/2016/06/15/such-brutal-crackdown/killings-and-arrests-response-ethiopias-oromo-protests - last visited on 15 Apr 2021.

117 https://www.aljazeera.com/news/2019/7/19/three-dead-as-unrest-rumbles-in-ethiopias-southern-hawassa-city - last visited on 15 Apr 2021.

118 The former ruling party dissolved in November 2019. The prime minister Ahmed merged most of the constituent parties in a new coalition: The Prosperity Party. Most of the infrastructure policies promoted by the EPRDF find continuity in the new party, which

which has become the focus of an authoritarian developmentalism (Gascon, 2008; Fantini and Puddu, 2016, p.108). The allusive power of the Ethiopian Renaissance narrative pervades multiple levels of the political spectrum from official speeches and government billboards **[fig. 3.18]** to the biggest hydropower project in the country — itself named the *Great Ethiopian Renaissance Dam*.

Within the *Ethiopian Renaissance,* infrastructure is central to the economic development rhetoric as a key component for boosting the industrial sector. In addition to this, infrastructure has also become a strategic element in overcoming ethnic differences. The dams, the railways and the other undergoing projects constitute the material form of a political intention to embrace *unity in diversity*. This motto seals the political strategy embodied in the federal constitution approved in 1995 and represents a shift in the ethnic country's politics of "differences". The transformation of Ethiopia into a federal republic was designed with the aim of reducing conflict among different ethnic groups by recognising their rights and creating an institutional framework to favour the cooperation among them (Van der Beken, 2012).

The EPRDF has turned infrastructures into a powerful political platform on which to develop a convincing narrative following the direction suggested by the constitution. The choice of infrastructure as a strategic object for politics may be related to their capacity in capturing the idea of progress and making it easily perceptible. Their monumentality and the visual impact they create in Ethiopian space inspire people with a sense of wonder that transcends regional boundaries and ethnic differences. The reference to their monumentality recalls what Harvey and Knox (2012) define as the *enchantment of infrastructure*, meaning the imaginative power related to large infrastructural projects. It has to do with their capacity of exerting in people's mind an idea of modernity that relies on their aesthetics. If we imagine that some of the ongoing projects involve very remote regions that, for their first time in years, saw such a disruptive spatial transformation, it is even more straightforward to comprehend the sense of monumentality they have induced among people.

Although infrastructures are built in specific locations, they bring benefits to the

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has confirmed major infrastructure renewal projects even with a decrease in investment - https://www.crisisgroup.org/africa/horn-africa/ethiopia/283-keeping-ethiopias-transition-rails - last visited on 24 Apr 2020.

entire nation. The *Renaissance Dam*, for example, is located in the Omo Valley, on the border with Sudan, but its electricity output will be shared throughout the country. Similar is the case of the *Ethio-Djibouti railway*: it only crosses a few regions, but the opportunities it will produce, in terms of jobs and growth, will affect the entire national economy. In these terms, infrastructures prove to be pervasive spatial objects that transfer their effects into a space with extensive boundaries that fit perfectly within political discourses. Moreover, the construction of the narrative has also been based on the essential role played by infrastructure in everyday life, making it a ubiquitous object in people's daily lives, regardless of their rural or urban origin (Mains, 2019).

The government has grasped the potential of infrastructures in their ability of being inclusive artefacts, both in terms of space — they are either built or have effects on a large scale — and society — they involve directly or indirectly the majority of people. The instrumental way in which they have been used aimed to overcome the ideological position that traditionally related the EPRDF party with an ethnic minority and a former guerrilla movement[119].

The idea of rebirth — of the *Renaissance* — has been carried forward using infrastructure as a symbol to promote a different image of the EPRDF and, consequently, of the entire nation. Behind this strategy is the desire to reinforce the image of a more united and optimistic Ethiopia, politically stable and technologically advanced, all essential requirements to attract international investment and development assistance. The choice of the word *Renaissance* manifests a clear intention to reconnect with the past and bring back the ancient glories of the Ethiopian kingdoms and the Battle of Adwa. The contrast between these images and the ones of famine and poverty, through which the media used to portray Ethiopia from the 80s until the mid 90s, is striking. The *Renaissance* has somehow managed to obscure these negative perceptions, restoring a more encouraging and positive vision referring to memories of the pre-Derg era. This narrative is effective in representing the process the country is undergoing to foster progress and modernity, “it is the rise of Ethiopia to the height of the

[119] The EPRDF was founded as a coalition of parties associated with the different ethnic groups that fought the Derg regime. The Tigray Party (TPLF) was among the early founders and has always played a decisive role in the coalition, thus leading to the identification of the EPRDF as a Tigrayan-oriented party.

ancient civilization of our forefathers"[120], while technology — and by extension infrastructure — represents the mean to achieve the final status of development. To this end, "development" is "rendered technical" (Li, 2007), it moves from being a political concept into a concrete practice through engineering and construction.

Since the fall of the Derg in 1991 and the election of Meles Zenawi as Prime Minister of the Federal Democratic Republic of Ethiopia, the government has promoted policies of technological upgrading and large-scale infrastructure development (Gagliardone, 2016). Zenawi was a firm supporter of the *Ethiopian Renaissance* and, on the contrary, was critical of the neoliberal policies of the World Bank and IMF, soaked with a radical *laissez-faire* ideology in which the state, through structural adjustment loans, was forced to privatize and liberalize key economic sectors. He acknowledged that technology was an essential ingredient for increasing people's income. However, he challenged the widespread conception of technology in its economic foundation. Meles, contrasting with neoliberal mainstream positions, conceived technology as an intrinsically public good. Due to its constitutive public dimension, the diffusion would have occured in a more democratic and egalitarian manner, giving the state the possibility to act when the market alone would not have been able to promote technologies of public interest without a reasonable profit (Zenawi, 2011, pp. 149-151). In Meles' thought, it is possible to identify the roots of the deep connection between Ethiopian politics, development, and technology, still detectable in the current development trajectories.

In his book *Under Construction: Technologies of Development in Urban Ethiopia*, Daniel Mains adds a further piece. He highlights the significant role played by Ethiopian administration officials in pushing the reforms ahead. He compares them to technicians with unquestionable faith in technology by which they exploit and manipulate the resources that the territory offers. According to Mains (2019, p. 33), "Ethiopia is increasingly a nation led by engineers who are confident in their ability to transform the environment in ways that support development". In

[120] A phrase pronounced in 2007 by former PM Meles Zenawi during a speech for the celebration of the Derg regime fall, from: Habtamu Alebachew, "Ethiopia's Renaissance: Quest for conceptual and definitional parcels" - http://www.meleszenawi.com/ethiopias-renaissance-quest-for-conceptual-and-definitional-parcels/ (last visited on 15 Jul 2020)

his words, the overlap between technology and a sense of modernity is quite evident. Mains refers, however, to a modernity that does not lie in high-speed connections or in widespread on-demand services, but in the engineering and alteration of the physical space. It is arguable that the Ethiopian[121] modernity brings space back as a discourse in which to insert the logics of developmentalism in a way that might recall an updated version of what Scott (2008, p.89) defined as *high-modernism*: "a strong [...] version of the beliefs in scientific and technical progress that were associated with industrialization in Western Europe and in North America from roughly 1830 until World War I". High-modernist developmentalism positions the state along a path driven by continuous progress, scientific and engineering knowledge and a spatial configuration that needs to follow a rational and controllable approach.

Among the first steps envisaged by the Ethiopian government is the upgrading of infrastructure networks. It is the essential action needed to structure the subsequent phases of the *Renaissance* and the substratum of more complex projects that will expand *urban transitions* throughout the country. The path followed so far appears to shift towards trajectories that reflect the image of a state ready to embrace the logic of neoliberalism and its institutions, somehow contrasting Meles' original philosophy. In implementing the reforms, a top-down approach was adopted, with a strong imposition of state authority to guide and ensure faster and smoother achievement of the planned objectives (Hagmann and Abbink, 2011; Fantini, 2013). This is in line with the expectations of foreign investors and international institutions who look positively upon a country with a stable government able to implement its political agenda and bring forward the changes necessary to conform with the global economic system requirements.

The formulation of the *Ethiopian Renaissance* narrative has brought into play a complex system of references and relationships between past and future, politics and citizenship, in a fashion that is typical of the state-led developmentalism that is rising in East Africa (Mosley and Watson, 2016). Infrastructure is the most outstanding symbol of this vision, operating on an insidious terrain. On the one hand, infrastructure embodies the positive image of a nation moving towards modernity, and in doing so, has the capacity to unify the visions of the state and

[121] Some scholars have claimed that the return of high-modernism is a general tendency undergoing in several other African countries. See for instance Bähre & Lecocq (2007), Dye (2016), and Huggins (2017).

the people and overcome ethnic differences; on the other hand, the operating modalities and impacts of infrastructure delivery are likely to produce opposite effects. Authoritarianism and the detachment of many projects from local realities lead to a loss of that mutual feeling of trust between government and people that underpins the legitimacy of public policies (Cole and Thomas, 2009). As a result, protests and distrust of the ruling class have escalated over the last few years.

3.2.2 Infrastructural propaganda

The feeling of awe and wonder associated with people's descriptions of their experience of travelling on the new Ethio-Djibouti train[122], as well as the excitement and the spontaneous public gathering for the inauguration of the *Great Ethiopian Renaissance Dam* **[fig 3.20]**, are illustrative of the ability of infrastructures in materializing and giving shape to technocratic development imaginaries. However, as argued by Müller-Mahn (2019, p. 157), "making the future an object of collective imagination and community-building [...] needs more than just vision and aspiration. It requires performative action that creates greater visibility for some future imaginations while silencing others".

In the case of Ethiopia, the union between politics, technology and space condenses in the infrastructural development that is happening throughout the nation assuming the form of networked spaces — either real and fictional — of steel and concrete. Infrastructure becomes, indeed, one of the artefacts through which technology manifests itself within society following multiple paths simultaneously. The most direct way is through their use. Others concern their ability to connect to non-material experiences, induced by its presence in the urban environment in the form of situation, image or word. As I noticed in my everyday commuting during fieldwork, it was common to divert from the planned route due to infrastructure works. I vividly remember the dust, the messy arrangement of construction materials and debris that invaded part of the nearby roads. In Addis Ababa, in particular, the confusion and disordered mix of buildings — high-rise, demolished, coloured, low-rise, tiled, transparent, unfinished — combined with road construction works, has contributed to a feeling

[122] See the ethnographic vignette in chapter 2.2.1.

of precariousness and optimism.

The city is being fragmentedly transformed, without an intelligible overall logic but by circumscribed events and episodes. Planning rules have no correspondence with the reality of the built environment, that is more dense, packed and segregated than allowed by official documents. The result is a city built in parts, according to personal opportunities and interests, from time to time being those of real-estate developers, politicians or foreign investors. In this context, infrastructure recomposes and reconnects the various fragments, at times extending some benefit to the majority of the population. Through their deployment, seeds of hope and progress — that have recently taken the form of a new light rail, a ring road, a BRT system and an upgraded electricity grid — are scattered across the urban space. Nonetheless, their effectiveness is still unclear, oscillating between being an instrument to increase the value of the land and extending the possibilities for a more democratic/extensive development (Goodfellow, 2020).

Both the functions and the aesthetics of infrastructure are a prerequisite for the development of urban projects, industrial precincts and new residential estates. Ethiopia is currently undergoing this transformation: it equips its territory with infrastructure in the hope of economic returns and improved living conditions. The expansion of infrastructure is echoed both in construction sites and in the images printed on propaganda posters. At the same time, references to ህዳሴ (*hidase*, the Ahmaric word for *Renaissance*) and large-scale infrastructure projects are visible in company signs, hotels, and advertisements scattered throughout the city's busiest places. They have now become distinctive features of the urban environment and continually remind people of the development journey Ethiopia has embarked. In this sense, the *hidase* has bypassed the political realm and migrated into mainstream culture.

Focusing on the iconography of political propaganda, a new aesthetic with clear references to architectural objects emerges. Buildings and infrastructural works are the main subjects in posters advertising national festivities or political anniversaries. There is a specific recurrence in the subjects depicted. In particular, dams appear several times associated with transmission towers, as well as with skyscrapers and other infrastructure such as the Ethio-Djibouti train and the Addis Ababa light rail **[fig. 3.21, fig. 3.22, fig. 3.23, fig. 3.24]**. These elements are freely

combined in a space where political mottos and references to the recent constitution are included. They convey a message of optimism that echoes the *Ethiopian Renaissance*, displaying it visually. The nine regional flags on the various posters recall the principle of the democratic union among ethnic groups while the sun and the rainbow with the national colours suggest the idea of a bright future based on the coexistence of agricultural and industrial development, as evoked by the wheat ear and the cogwheel. Among these references, it is possible to recognise some elements that recall the colonial period — reinterpreted, however, in an unusual and positive way that does not glorify Ethiopian war enterprises but instead celebrates pasta, raised towards the sky in the hands of a farmer. Pasta was introduced by the Italians and is now part of the national heritage, albeit, in this case, it has been integrated into the rhetoric about the modernity of a prosperous Ethiopian future with no more famines.

The sites represented in the posters do not refer to specific places. The images evoke undefined urban and rural landscapes, without incorporating any landmarks that would allow any association with real cities, although one can detect the traits of a diffuse *Ethiopianness*: in the facades of some buildings recalling social condominiums and in the mountain slopes that surround the lush highlands. What can be spoken of is a generic space that, through abstraction, becomes strategic in pursuing political objectives. To have chosen an identifiable site or monument could have led to a contradictory interpretation of the constitutional motto, in favour of one ethnic group or another.

A similar observation applies more closely to architecture. Among the buildings depicted, many do not exist. They are drawings and artist's impressions. Within the African continent, "technologies involving CGIs (computer generated images) of new urban visions are playing a growing role in what are largely private-sector and profit driven proposals for new urban development" (Watson, 2020, p. 36). In Ethiopia, the use of digital imagery has spread beyond the private sector. The state has embraced the aesthetic values of modernity conveyed by CGIs and has used them to support the crafting of a developmental narrative. Computer-aided visuals are at once a marketing instrument for real estate developers and a political tool.

If pictures of condominiums bring back to a level of reality, artist's impressions suggest an idea of future in which formal and aesthetic references take inspiration from *high modernist* architecture (Watson, 2014). Technology appears in the form

of trains, planes, wind turbines and industries loosely juxtaposed against abstract backgrounds. The different images work as fragments. The metaphor returns and reverses the meaning of things: infrastructure no longer performs a connective function as in the city but represents a way of operating per parts. Doueihi (2010, p.24) has defined this operative process *anthological.* It consists of "assembling various pieces of material under a unifying cover, and for the use of an individual or a group brought together by common interest". In this case, the unifying cover is the sociotechnical imaginary[123] (Jasanoff, 2015) of the *Renaissance*, which aims to convince people that a particular vision of national future will materialize[124].

3.2.3 The *Renaissance* train

"It's not the iron and what you physically see. Its impact is beyond your imagination. It merges the country; this so-called ethnic politics has fragmented the country; the railway will make it cohesive." - Dr. Getachew Bertu (Former CEO of the Ethiopian Railway Corporation)[125]

The Addis-Djibouti railway has been a central node in the EPRDF's infrastructure policy agenda, along with GERD and the implementation of the Addis Ababa Masterplan. The railway perfectly fits into the values embedded in the constitution and the Renaissance: it represents the efforts to enforce ethnic federalism and strengthen the role of the developmental state[126]. As Mohamud and Verhoeven

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123 *"Products and instruments of the coproduction of science, technology, and society in modernity"* according to the author's description (p.19).

124 Some of the infrastructure projects under construction were financed through crowdfunding campaigns and the institution of investment bonds, explicitly targeting Ethiopians in the diaspora. Therefore, images have also been instrumental in building credibility for the projects and encouraging fundraising - https://www.namibian.com.na/154144/archive-read/Learning-from-Ethiopias-Crowd-Funding - last visited 28 Apr 2021.

125 https://www.railway-technology.com/features/featureopening-the-ethio-djibouti-line-4116768/ - last visited 4 Mar 2021.

126 "The term was initially used to describe post-1945 Japan and its rapid modernisation and growth. A simple definition would be that: a Developmental State is a state where the government is intimately involved in the macro and micro economic planning in order to

(2016) argue, the train has the power to reveal "valuable insights into how the regime [...] tried to remake both the [Ethiopian] state and the [Ethiopian] nation" (p. 183).

Specifically, the Ethiopian government has used the Addis-Djibouti infrastructure project as a tool to guide public opinion and limit discourse that would have questioned its performance as a developmental state. The majority party seemed to have a clear understanding that the success of the political agenda lies both in the actual completion of the promoted projects and the ability to present these projects using convincing narratives. Within the public arena, success is also built through effective communication on how intentions and benefits are delivered. Ethiopia's ethnic fragmentation has led politicians to shape discourses that transcend linguistic and cultural differences while speaking to the majority of people with one common voice.

The quote that opens the section is illustrative of the position of many government officials and technicians about the railway. The railway infrastructure is seen as the fuse that could potentially ignite the industrial revolution in Ethiopia. There are allusions to the industrial development that occurred in the United States and England, particularly in associating the fortunes of the two nations with the construction of railroads. Nevertheless, the links with the more recent history of Chinese modernisation are more straightforward. Chinese industrialisation policies are indeed taken as an experience to emulate. In conversations I had during the fieldwork, the Chinese state's ability to reduce poverty at unprecedented speed often emerged as a narrative. It was precisely the pace of this transformation that impressed my informants. On a broader level, some of Ethiopia's economic approaches are close to Asian developmental states (Cabestan, 2012; Fourie, 2015).

Speed is not just that of China's modernisation. Speed is also the one of the new electric trains that has reduced travel time to Djibouti. In the article "Ethiopia-Djibouti Railway brings people close"[127], appeared in the state-run Ethiopian Herald newspaper, speed is linked to a love story between two translators — a Chinese man and an Ethiopian woman — who met during the

grow the economy" - https://www.unescwa.org/developmental-state-model - last visited 29 Apr 2021.

[127] https://www.press.et/english/?p=5527# -8 May 2019 - last visited 30 Apr 2021.

railway's construction, envisioning the opportunity for new connections with the world.

In general, the storytelling behind the railway is constructed by a multiplicity of sociotechnical imageries — speed, integration, development — which adapt and recombine depending on the audience. As in the case of the article above mentioned, the elements can then be set against different narrative backgrounds that reframe the message for various purposes. Sometimes the atmosphere is similar to that of a novel, other times it is more institutional or commercial as in the case of the poster outside the airport terminal. The image depicts a locomotive of the new train moving forward against an abstract background of a blue sky with a few clouds. The Chinese and English texts accompanying the train say: "*New Life for Railway, New Life for Ethiopia*" **[fig. 3.25]**. The poster conveys an idea of prosperity about the future development that the new railway will bring to Ethiopia and is intended to encourage new foreign investment as the new transport system becomes operational.

The references and metaphors accompanying speeches about the railway have also made use of the human body. On the occasion of a press conference in Tigray, the former Prime Minister Hailemariam claimed: "First, the capital Addis Ababa needs to be connected to the port, because all of our throats will be strangled if [the access] to port is strangled"[128]. The statement highlighted Ethiopia's fragile condition to reiterate the central role of the railway infrastructure and seek the support of local communities.

The developmentalist vision has depended on the construction of infrastructure but, at the same time, on the resolution of ethnic conflicts, not through their suppression, but through the establishment of an intra-ethnic collaborative spirit that contributes to the construction of a common economic space. The promise of a prosperous future, encapsulated in images and conveyed by political propaganda, has the effect of raising the level of people's expectations. However, these cannot be met immediately: infrastructure megaprojects need time to settle and mature, in other words, to translate into higher incomes and better material living conditions. The risk, therefore, is that in the short term, it will engulf

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https://hornaffairs.com/am/2017/04/26/pm-hailemariam-desalegn-speech-adwa-about-railway/ - last visited 30 Apr 2021.

conflicts and protests that could call into question the work of the party and feed a new situation of instability[129], thus producing the opposite effect to the one imagined.

3.3 Coda

The chapter has explored the symbolic role of infrastructures within the fascist imperial project, and within the EPRDF state ideologies. Fascist policies of "demographic colonization" foresaw the creation of permanent Italian settlements in order to solve Italy's land hunger problem and at the same time "bring civilization to backward lands"[130]. The planning of an extensive road network was among the first material acts of colonization, thus marginalising the French railway and the trade routes towards Djibouti. Mapping some of the urban spaces and the architectures of this alternative territorial project, my thesis has shed light on the segregative policies of the infrastructural scripts behind the fascist attempt at colonisation.

The second part of the chapter has dealt with post-Derg political ideologies. Infrastructures have emerged as a key tool of propaganda for promoting economic development and the ethnic federalism embraced by the 1994 Constitution. Their ability to convey ideals of technological modernisation and an optimistic vision of the future made infrastructures a foundational pillar of the Ethiopian Renaissance narrative pursued by the EPRDF.

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[129] A current example are the conflict caused with the construction of the GERD in the Omo Valley - https://www.business-humanrights.org/en/latest-news/gibe-iii-dam-on-ethiopias-omo-river-causing-hunger-conflict-says-columnist/ - last visited 22 June 2021.
[130] Mussolini's speech at the Parliament on 7 Dec 1935 - retrieved from http://www.adamoli.org/benito-mussolini/pag0594-01.htm - last visited 19 October 2021.

SOMMARIO:

Ai nostri lettori (La Direzione). — Dopo la spedizione. Obbiezioni sfatate - vantaggi evidenti (Vittorio Cottafavi). — La strage industriale (Amy A. Bernardy). — Le ferrovie trans-africane (con carta) (P. V.). — Dall'Affrica italiana. — Esposizioni, Congressi, Concorsi. — Notizie varie. — Tra libri, riviste e giornali.

Spazio disponibile

fig. 3.1 - *Spazio disponibile (Space available)*, advertisement, 1912.

fig. 3.2 - Disruptions along an Ethiopian road during the rainy season at the arrival of the Italians, photograph, 1936.

fig. 3.3 - Italian trucks on the so called *Strada della Vittoria* during the early phase of colonisation, photograph, 1936.

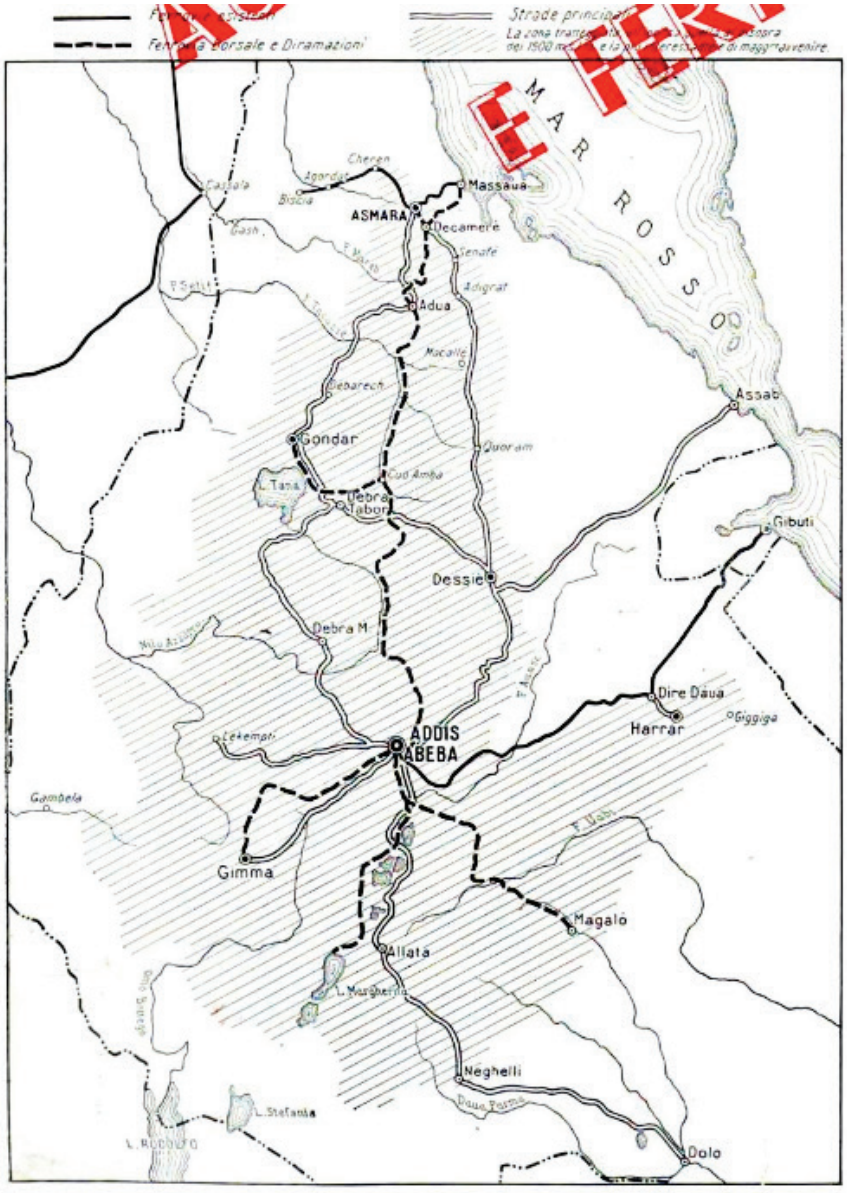


fig. 3.4 - The AOI transport network plan, map, 1938.

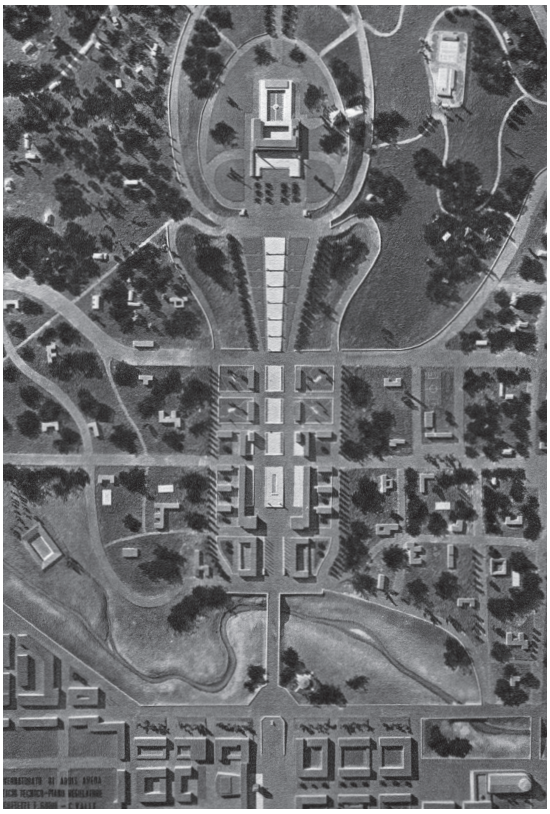


fig. 3.5 - Guidi and Valle's Addis Ababa urban plan model, photograph, 1938.

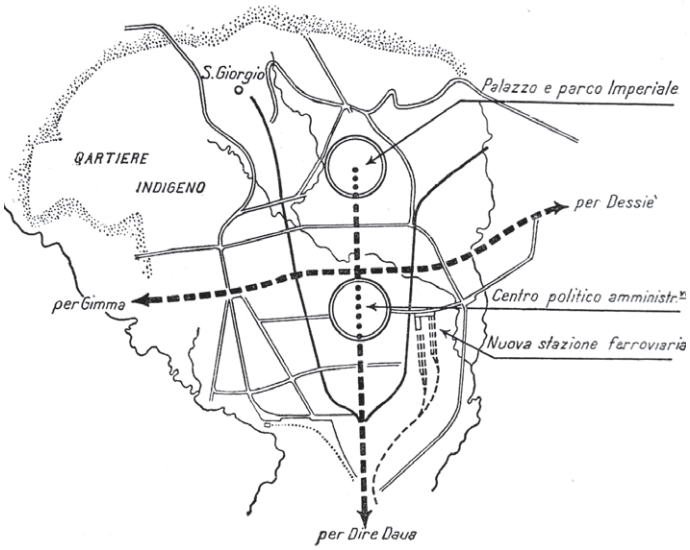


fig. 3.6 - Guidi and Valle's Addis Ababa urban plan scheme, drawing, 1938.

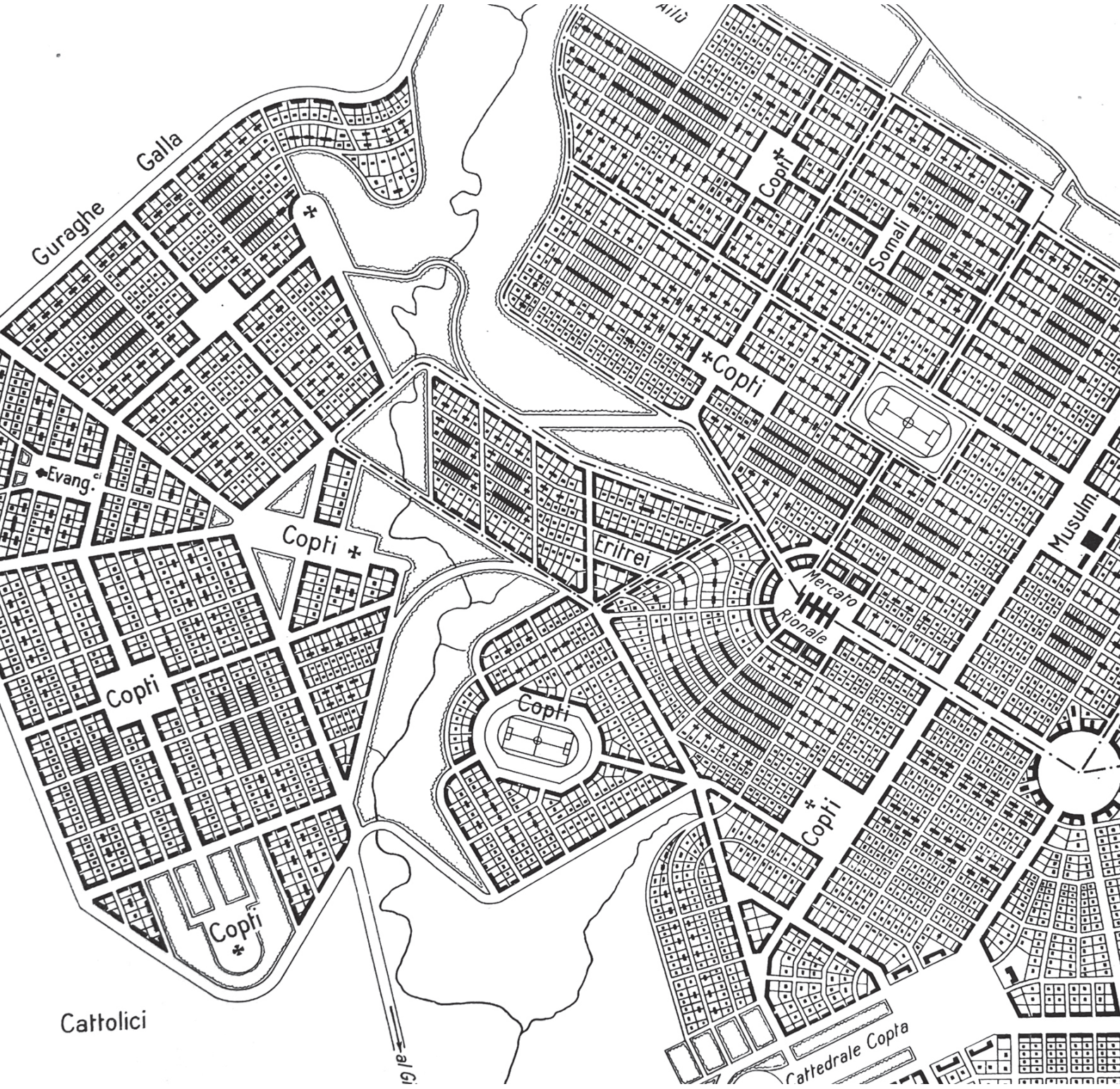


fig. 3.7 - Guidi and Valle's Addis Ababa proposal for *Quartiere Indigeno*, drawing, 1938.

fig. 3.8 - Poster for the Naples Triennale d'Oltremare, Giammusso Mancioli, illustration, 1940.

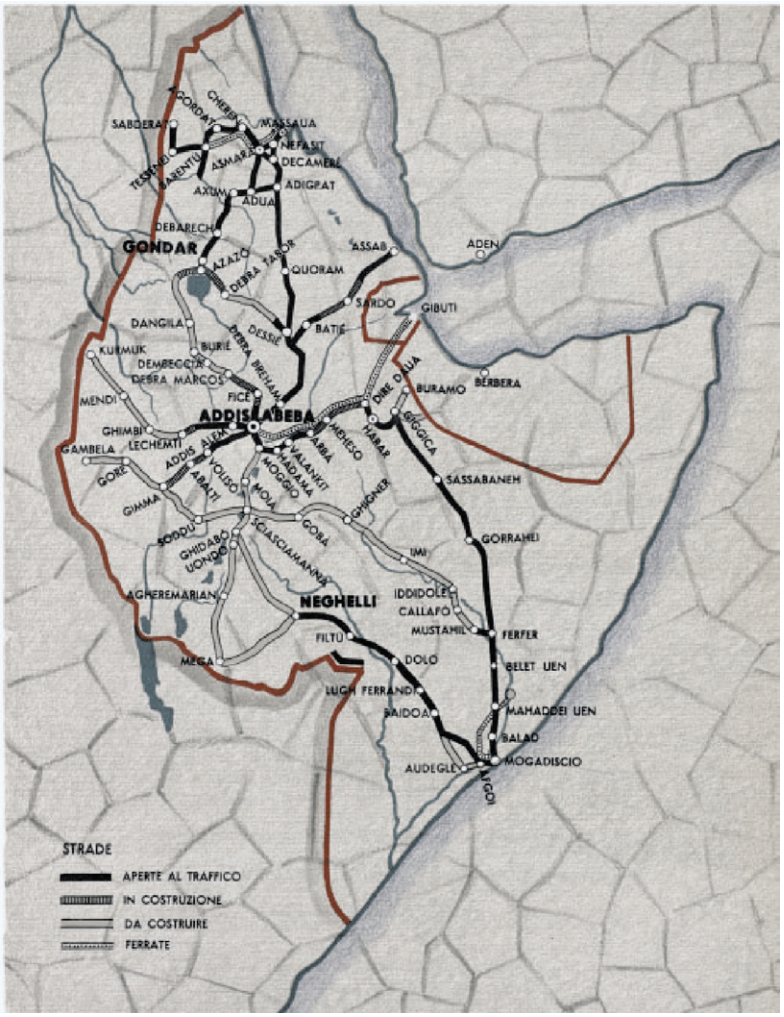


fig. 3.9 - Map of the AOI road network, illustration, 1939.

fig. 3.10 - Illustration depicting the civilising mission of fascist roads reinterpreted through the ideal of Romanity, illustration, 1939.

fig. 3.11 - Hypothesis of railway network extension in AOI, map, 1936.

fig. 3.12 - Sudanese workers engaged in road construction in Ethiopia during Fascist colonialism, photograph, 1937.

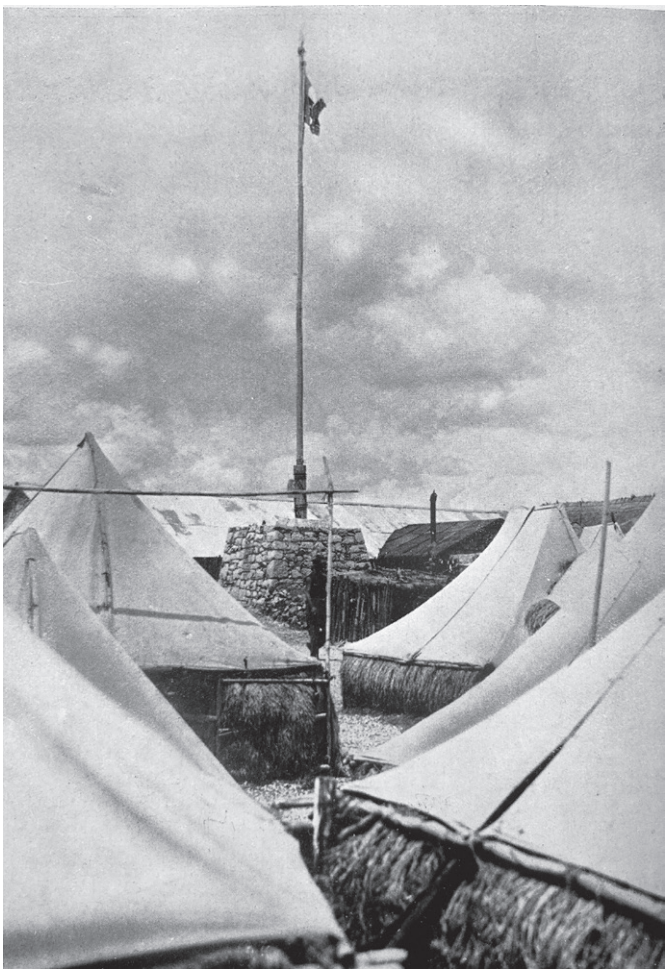


fig. 3.13 - A typical “cantiere” of the initial period, photograph, 1936.

fig. 3.14 - An updated version of a “cantiere”, with more comfortable buildings and a first trace of what may be intended as a tree-lined street, photograph, 1937.

fig. 3.15 - Early construction stage of Bishoftu ONC rural settlement, photograph, 1938.

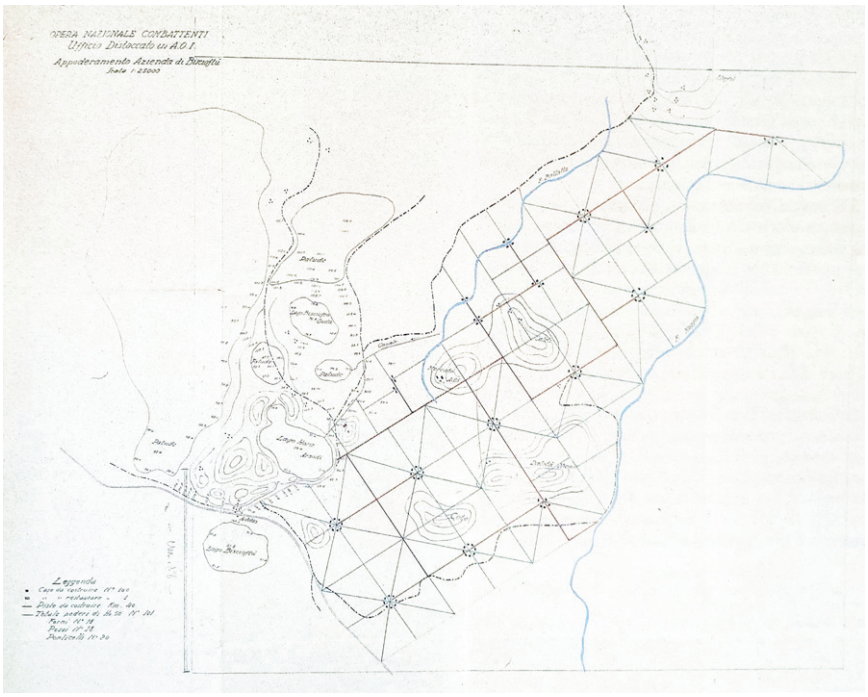


fig. 3.16 - Biscioftu ONC rural settlement planning scheme, map, 1939.

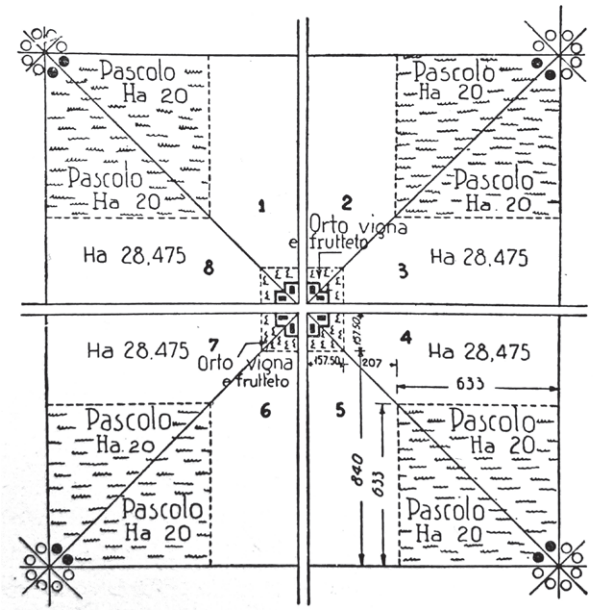


fig. 3.17 - Development scheme for the ONC rural settlements, drawing.

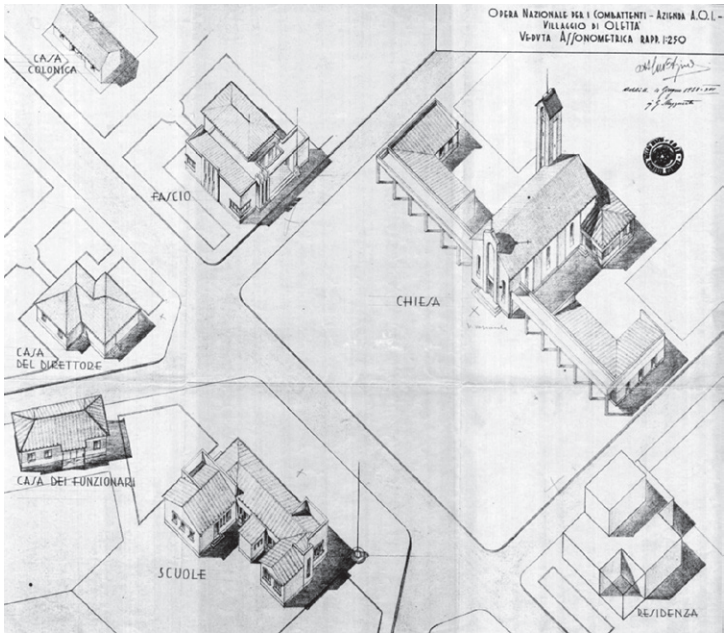
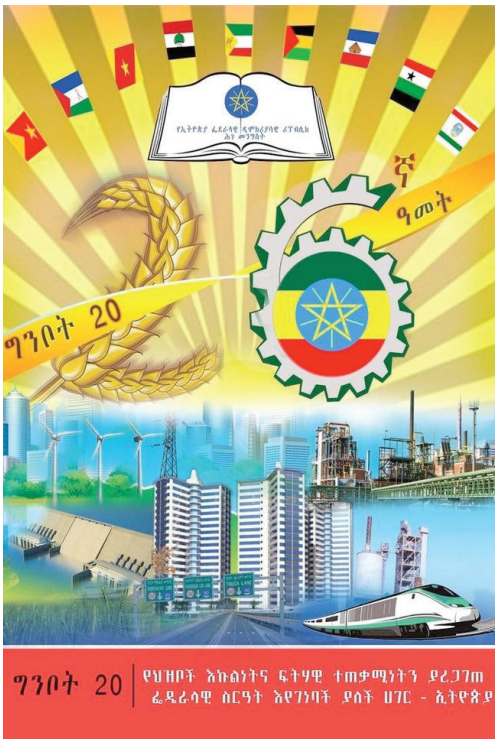


fig. 3.18 - Axonometric view of the central square in Olettà, drawing, 1937.

fig. 3.19 - Posters of ongoing infrastructure projects across the country have popped up in the urban environment, photograph, 2019.

fig. 3.20 - People celebrating progress in the construction of the GERD, photograph, 2020.



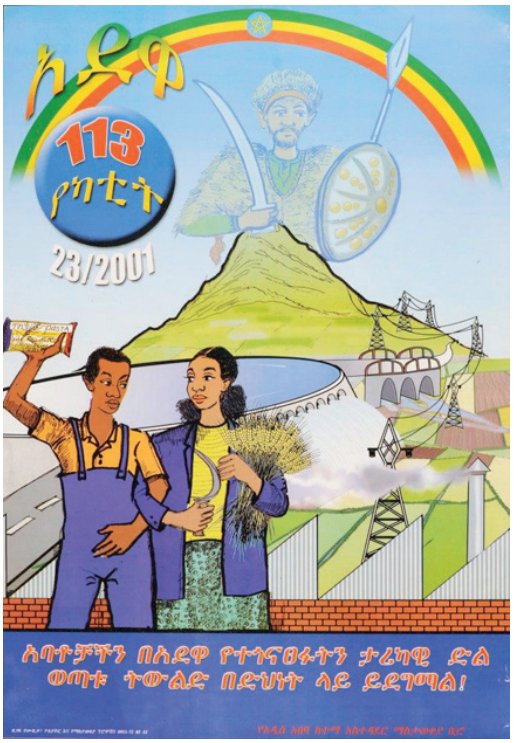


fig. 3.21, fig. 3.22, fig. 3.23, fig. 3.24 - Ethiopian political posters that celebrate and envision progress and development, illustrations.

fig. 3.25 - Billboard outside the Addis Ababa international airport, photograph , 2018.

Concluding remarks

When we experience infrastructures, we often do so through their architectural traces. Once something exists — a highway, a railway or a water pipeline — its material components become the interface that makes technology palpable in space. It is thus possible to consider architectural traces as one of the media that give a tangible, readable form to social structures (Larkin, 2018). In my dissertation, I have focused on these architectural traces to explore some of what I called "infrastructural scripts" of a railway corridor in Ethiopia, the multiple technopolitical rationalities through which this train line shaped its territories.

As we have seen in Chapter 1, infrastructures in Africa have long been connected to exploitative logistics (Scotto, 2018). Railways and naval routes supported the expansionist aims of imperial capitalism, spreading from the coasts into the heart of the continent. Infrastructures were the means that integrated Africa into global markets (Davis, Wilburn & Robinson, 1991) and transformed its spaces into colonial territories during the scramble for Africa, until the formal end of colonialism. In a similar way, the ideology of development promoted by international agencies after WWII, and rooted in an idea of economic growth based on technological advancement, also considered infrastructuring Africa as an instrumental step for integrating the continent into global economic flows. Infrastructures were the physical assets used by both the Western and the Eastern Bloc to replicate over African countries their diverse ideologies of economic statecraft. In this regard, the Volta River project and the Tanzania-Zambia transport corridor are cases in point of how infrastructures are malleable artefacts: economic concerns coexisted with foreign geopolitical interests as well as African notions of postcolonial nation building and Pan-Africanist ideals.

While the ideology of infrastructure-led development went into a decline in the last decades of the XX century, the "infrastructure turn" of the new century has revived the idea that infrastructures in Africa are key to lifting the continent out of structural poverty (Dodson 2017; Nugent 2018). Large-scale infrastructures are again a currency of developmental projects. Yet, new actors have entered the financial landscape. Following the liberalisation of the infrastructure sector in many countries, private investors and contractors are more and more involved in the delivery of these projects. And China, once a small player engaged in small turnkey projects, has become one of the largest bilateral investor in transport infrastructure[131], shaping corridors that through the BRI seek to multiply trade and industrial opportunities. The territories crossed by these corridors are the first outposts for the landing of global capital in the form of SEZs, new urban settlements, but they are also the space in which the contradictions of the global and local dimensions of development materialize.

In Chapter 2, I explored, using my methodology based on architectural traces, the two Ethiopian railways — the French and the current Chinese-funded SGR — which, although at different times, were both conceived to provide a direct link between Addis Ababa and Djibouti. While the French railways was a commercial enterprise linked to imperialist ideals, one of the most conspicuous technopolitical rationalities of the current corridor is again that of economic development. The modern Ethiopian state is engaged in a vast-scale industrialization process which requires infrastructure as its first necessary step. This top-down strategy set up by the developmental state translates into a political rationality that prioritises certain economic paths over others. In this context, the new Chinese-funded and -built railway has been driven by the needs of global capital rather than by the material realities of the people who live in and cross the Ethiopian Rift Valley. Stations are either located in peripheral sites, mostly inaccessible because of the lack of integration with urban transport systems, where they exist at all. What the Chinese loan funded was just the construction of the main trunk of the railway, but not the minor roads and capillary network of connectivity needed to link global trade with local economic systems in which the majority of people operates.

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[131] In 2015 China was the largest investor, accounting for 25% of all transport infrastructure financing (ICA, 2016, p.15). It reconfirmed its leading role again in 2017 and 2018 (https://www.icafrica.org/en/topics-programmes/transport/transport-financing-trends/ - last visited 22 September 2021).

However, if on the one hand the railway is a tangible object of political ideologies, in the nexus of global capital and a centralized developmental state, on the other its traces also reveal the frailty — or the absence — of global capital and of the state in supporting the reproduction of everyday practices of survival. The railway project reflects the mismatch of interests and priorities that is central to the question of economic development in Africa: at once, the railway is a "pillar" for economic growth and an "obstacle" (Braudel, 2009, p.178) for equitable inclusion. It generates forms of exploitation and territorial splintering that are most visible in the fenced border of the industrial parks separating the space of manufacturing and its outside. An outside from which global capital extracts resources and labour. The traces along the railway, therefore, bear witness to the historical continuity of infrastructure in the evolution of capitalist development as a political rationality of modern Ethiopia. These traces, as I have shown in Chapter 2, offer us a glimpse of the "duress" (Stoler, 2016, p.7) of coloniality in the project of developmental statecraft. Ideologies of the past are protracted in extended temporalities — driven by the notion that well-connected economies are a quick fix to underdevelopment — and made visible in the architectures of the railway.

Most ostensibly, the presence of the past is the fact that new infrastructures follow older colonial traces. This often translates into the partial upgrading of decaying railways and roads, in order to "speed up circulation and diminish distance, cheapening the movement of commodities and accelerating production" (Enns & Bersaglio, 2020, p.115). The Ethio-Djibouti railway, for example, has involved the resumption of the pre-existing *Chemin de Fer,* rather than venturing into territories completely devoid of infrastructure. The same has happened in other African countries — such as Kenya or Tanzania — where previous colonial logistics assets have been spatially retraced and revamped. The recursiveness of these scripts, however, implies some readjustments of hardware components, to make them fit into existing territorial relations (Schindler & Kanai, 2021) and compliant to changing rules of the global economy. Such adjustments, as we have seen, sometimes take advantage of, and sometimes subvert, previous lines and nodes of connectivity.

These historical returns and readjustments, however, are not just spatial, but they also involve the political rationalities that, through infrastructure, are given a

tangible and instrumental form. In Chapter 3, in particular, I have observed how diverse technopolitical imaginations of statecraft followed their own infrastructural strategies to exert control over the Ethiopian territory. During the short-lived Italian occupation, the Fascist government envisioned an infrastructural system centred on roads, with the railways only playing a secondary role. Addis Ababa was the centre of this network, which no longer prioritised the trade axis with Djibouti but instead opted for the construction of new routes between the AOI capital and the Eritrean ports. The political project of the regime relied on cars and asphalt as symbols of Italian modernity and supremacy over African technological deficiencies. The Fascist alternative spatial vision implied a different technical approach in the construction and management of infrastructures. And yet, some of the imperial logics of the French infrastructure were replicated in the Italian plan, especially if we look at its architectural traces: most importantly, the racial idea of white superiority and the consequent need to segregate African natives from Europeans are visible in both the stations and the spaces of the *Compagnie* and in the territorial layout of the Fascist highway. While spatial logics changed, imperial rationalities remained.

Yet infrastructures are artefacts in which "multivalent political trajectories" (Anand, Gupta, & Appel, 2018, p.3) coexist, overlapping in the traces of the past, in the materiality of the present and in the futures that they promise. As I have shown in the second part of Chapter 3, what once was an infrastructure of empire is now the ambitious project of a socialist developmental state. A project that is not just about the needs of the Ethiopian nation, but about the very making of the Ethiopian modern state (Clapham, 2018; Ziso, 2020). While these megaprojects might not address the needs of the poor, they still craft visions about a community stepping into an era of progress and collective wellbeing. The images of dams and railways displayed on the EPRDF propaganda posters are cases in point of the role that infrastructure plays in legitimising the political actions of the current government and its vision of ethnic federalism, now entrenched in the new Ethiopian constitution. Infrastructures are not just instrumental to this future of shared economic development, but also the symbols of this Renaissance.

My contribution in this dissertation has been to sustain these arguments focusing on the role of architecture as one of the tangible — even though blueprints and megaprojects often remain on paper — entry points into the technopolitics of infrastructure. My approach based on traces was in part due to the difficult

circumstances of my research, with a global pandemic and a civil war foreclosing many of the alternative options that I could have pursued to trace the architectural politics of the Ethiopian railway. However partial, architectural traces have revealed the recursiveness and the discontinuities of infrastructure in the making of the modern Ethiopian state. At the same time, the incompleteness of the infrastructural scripts that I followed means that this work is just the first step towards further research into the railway's role in shaping Ethiopia's territorial pasts and futures. A number of questions remain open. A number of places remain unexplored. For example, mapping the redevelopment of the area around the former Addis Ababa station, the urbanization generated by the new infrastructures in the surrounding of the new stations, and the transformation of the old decommissioned stations, would perhaps reveal other modalities through which infrastructures give form to ideologies of the state and of capitalist development. Whichever the case, I believe that architectural traces will offer an extremely powerful lens for grasping the temporalities, the aesthetics and the technopolitics of these infrastructural scripts.

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Introduction

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