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Riyadh: The Metamorphosis of a City From Centerless to Polycentric



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Fernando Pérez started his career at Frank Gehry's studio before joining IDOM in 1993 as leader of the external cladding package design for the Guggenheim Museum in Bilbao. He then became project director of IDOM, designing alongside architects such as Frank Gehry and Zaha Hadid. Pérez taught urban design at the University of Navarra (1995–2000) and technical studies at the Architectural Association (London, 2002–2012). He was director of IDOM's permanent studio in the UK (2001–2013). In December 2013, he relocated to Riyadh to lead the design of 20 Riyadh Metro stations.



Abstract

Riyadh, the capital of Saudi Arabia, is a city of six million people, dominated by the automobile and laid out in a pattern of centerless, continuous sprawl. However, the city is undergoing a rather miraculous process of transformation, of a kind that is perhaps only possible in Saudi Arabia. A fully developed transport network, comprising 176 kilometers of metro rail and 1,200 kilometers of bus lines, is being laid out over the uniform carpet. This additional layer should manage to break the uniformity of the current city. The unprecedented urban experiment will be a reality in less than two years. Will it help to convert Riyadh in a more sustainable, more livable and more humane city?

Keywords: Infrastructure, Transportation, Urban Planning, Urban Sprawl

Introduction

Riyadh, the capital of the Kingdom of Saudi Arabia, appears like a mirage in the middle of the vast desert. Situated in the center of the Arabian Peninsula, it currently covers an area of 2,200 square kilometers and provides shelter to more than six million inhabitants. Its growth during the last 70 years has been staggering. Back in the 1950s, Riyadh was a modest city of 110,000 inhabitants. Since then, the population has multiplied 62 times. This extremely accelerated growth helps to underscore not only Riyadh's current morphology, but also explains many of the urban shortcomings that surprise those who visit the city for the first time.

During this period, fueled by the oil boom, the accelerated growth of the city repeatedly exceeded forecasts. The city boundaries envisaged in successive master plans were surpassed decades in advance.

Remarkably, however, these planning instruments succeeded in providing the city with a clear urban structure. The scenario could have been very different, with rapid development occurring in a haphazard and chaotic manner. Instead, the supergrid first envisaged by Constantinos Doxiadis in the late 1960s (Doxiadis 1968) has proved to be an efficient and resilient instrument to provide urban order and organization to the city (Al-Hathloul 2017).

Seen from the air, the apparently infinite square grid disappearing into the dusty desert horizon is nothing short of poetic. (see Figure 1). Back on the ground, however, it becomes apparent that the original master plan and subsequent evolutions failed to set the conditions required to provide an environment that could be defined as "humane." Perhaps the main failing has been the exclusive reliance on the private car as a means of transport. Excessively wide roads – many of them true urban freeways – became hostile environments for pedestrians, particularly during the intense heat of the long summer months. The lack of properly paved streets and public spaces, together with the omnipresence of private vehicles, are constant reminders of a certain disrespectful attitude towards the city, failing to understand it as a human habitat (see Figure 2).

The extreme dominance of the private car is made more apparent by the almost complete

“Riyadh currently lacks virtually any form of mass public transport, leading to perpetually congested streets and an urban culture completely reliant on the use of the private vehicle.”



Figure 1. An aerial night shot demonstrates the regularity of the Riyadh street grid.



Figure 2. A typical Riyadh street view reveals the dominance of cars over the built environment.

absence of public transport, an astounding fact in a metropolis of more than six million people. With the exception of a limited number of old and unregulated minibuses, the only way to navigate Riyadh is by car, whether in a private vehicle or taxi. This greatly hinders the mobility of a considerable percentage of the population – particularly women – while clogging up the city with a relentless flow of vehicles.

This somehow inhumane impression is reinforced by the overwhelming uniformity of a streetscape largely deprived of beauty. The main roads are lined with an endless repetition of rubber-stamped, double-height commercial units that protect the low-density villas behind them. This depressingly homogeneous urban fabric is randomly punctuated by a few landmark buildings or shopping malls devoid of any character. Not one of these streets has been able to generate sufficient density to attract other activities and become something that citizens can recognize as a city center, or a properly designed environment where urban life, both indoors and outdoors, can thrive (see Figure 3).

As a result, most areas in Riyadh lack “urban gravity.” Cars fill the roads and highways uniformly: all day, everywhere, and in all

directions. The usual tidal flows from the center to the periphery, so common in other big capitals, do not exist here. A case in point is the King Abdullah Financial District, a large master-planned high-rise community that has been stalled for three years. Devoid of activity, it is a symbol of Riyadh’s aversion to anything centralized.

However, amid this bleak scenario, there are exceptions that disprove those who argue that the main reason for the dominance of the private car and the absence of street life is Riyadh’s harsh climate. In fact, for at least seven months of the year, weather conditions are perfectly conducive to street life. A visit to one of the successful public spaces, such as the National Library plaza in the Olaya district would confirm this (see Figure 4). Therefore, rather than the climate, the issue seems to be the fact that not enough of these properly designed urban spaces exist.

Local authorities have not been oblivious to these problems. In fact, extraordinary endeavors are being undertaken on an unprecedented scale by both the Riyadh Municipality and the Arriyadh Development Authority (ADA) to respond to the city’s apparently unstoppable tendency to grow in an endless, uniform manner without a

recognizable center. Before discovering the initiatives that are currently being implemented, it is worth examining the milestones of the urban evolution of Riyadh over the last 70 years.

Riyadh’s Urban Evolution

Riyadh’s history can be traced back several centuries and is inextricably linked to Wadi Hanifah, a 120 kilometer-long oasis crossing the arid Nedj plateau that provided water and resources to the communities along its length (Atkins 2012). The city was established in the Yamāmah region on the ruins of the old city of Hajr, which long served as a center for the trading caravans that traversed the Arabian Peninsula. By the end of the 18th century Riyadh was part of the First Saudi State, with the capital located in nearby Dir’iyah, destroyed in 1818 by the Turks (Kim 1998). In 1902 Abdulaziz Al-Saud seized Riyadh, until then a modest town, and began a campaign to consolidate modern Saudi Arabia, with Riyadh as capital city.

By the 1930s, the now-King Abdulaziz built his palace and administrative complex in the city, starting a process of transformation. The chosen location, two kilometers north of the existing walled city, marked the direction of



Figure 3. Riyadh’s homogeneous urban fabric as seen from the air.



Figure 4. King Fahad National Library Plaza, Riyadh. © ADA

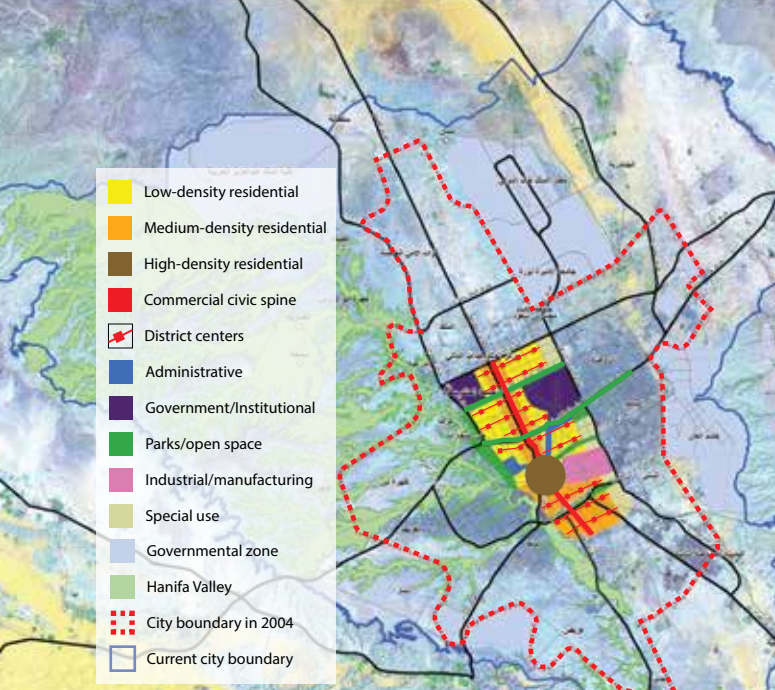


Figure 5. Master plan for Riyadh supergrid by Constantinos Doxiadis (1968). © ADA

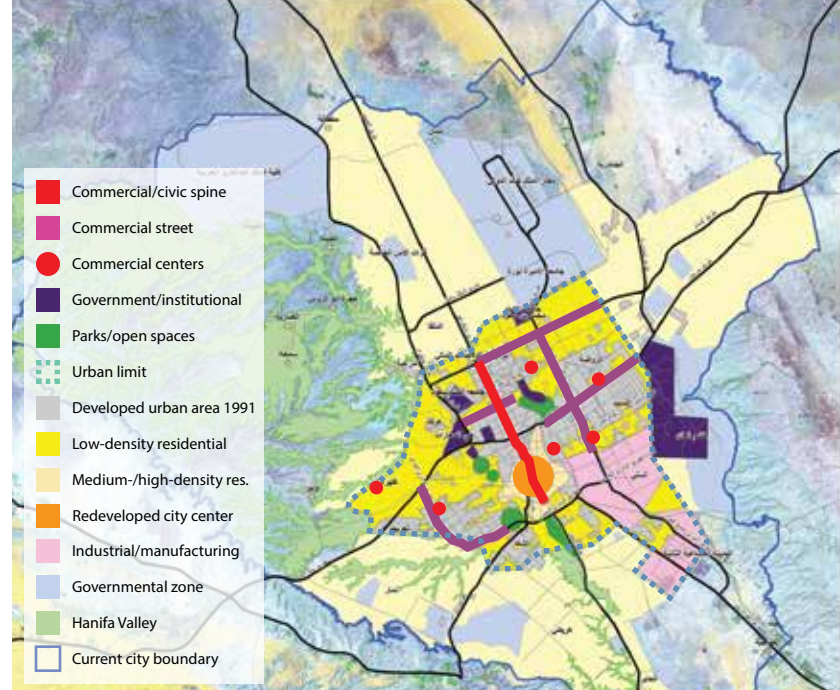


Figure 6. The SCET International plan of 1979. © ADA

future growth. During the period 1932–50, the city witnessed increasing internal migration, which led to new construction projects. The new project used for the first time modern materials, and, ultimately, led to the destruction of the city walls.

The first significant extension of the city took place in the 1950s in Malaz, an area situated four kilometers northeast of the historic center. This government-led development aimed to provide accommodation and services for the civil servants working in the government agencies recently transferred from Mecca. Despite its relatively modest size when compared to the current dimensions of the city, Malaz proved to be crucial for the future development of Riyadh: its regular grid, generously dimensioned streets and setbacks, together with the dominant dwelling model – the villa – were seen by Riyadh citizens as the type of city that everyone had the right to aspire to (Al-Hathloul 2017).

It was soon evident that further growth was required to accommodate the increasing population attracted by Riyadh's central administrative and institutional role within the Kingdom. The city needed not only more residential accommodation, but also new services, such as higher educational institutions, health centers, and municipal offices.

When Constantinos Doxiadis was appointed to design the next master plan of Riyadh in 1968, he took the ideas previously tested in

Malaz and applied them on a much larger scale. The supergrid was based on a two-by-two-kilometer superblock and was organized along a linear spine, running north of the historical center (Doxiadis 1968). The large dimensions of the new city and lack of provision for any type of public transport consolidated the role of the private car as the sole means of transport (see Figure 5).

A direct consequence of the oil boom of the 1970s was unprecedented urban growth. At the time, Riyadh was said to be the biggest construction site in human history. The city boundaries envisaged in the Doxiadis plan quickly became obsolete, and, in 1979, new studies were commissioned to SCET International/SEDES of Paris. As a basic element, the new plan kept the two-by-two-kilometer grid, expanding it in all directions (SCET International 1979). One of the main contributions of the SCET plan was the introduction of a ring road, a departure from the linear Doxiadis plan. This prompted the creation of big commercial developments outside the central spine (see Figure 6).

Despite an attempt by the Saudi authorities to control the growth of the major cities within the Kingdom – the Urban Growth Boundaries (UGB) national program – Riyadh's urban sprawl continued during the 1980s. In fact, by 1987, the size and population forecasts set in the Doxiadis plan for the year 2000 had already been exceeded (Al-Hathloul 2017). The Arriyadh Development Authority (ADA) had been set up in 1974 as the body responsible for the

orchestration, supervision and planning of the metropolitan development strategy according to the latest standards being adopted worldwide at the time. One of its most important tasks was to control the seemingly unstoppable growth of the city. In 1996, ADA commissioned Dar ar-Riyadh and Parsons to develop what has been one of its most important initiatives, the Metropolitan Development Strategy for Arriyadh (MEDSTAR) project. MEDSTAR was an ambitious and comprehensive initiative, which set out the strategic vision for the growth of the city during the following 50 years.

Aware of the fundamental shortcomings of the homogeneous and limitless supergrid of the Doxiadis and SCET plans, MEDSTAR proposed a radical conceptual departure: it proposed a gradual shift to a different urban structure based on a polycentric system (see Figure 7). MEDSTAR was founded around the following key principles:

- Consolidation of the historical area as the city center, containing the most relevant public buildings, including the Central Mosque, the Municipality, the Seat of the Governor, the Court of Justice and the headquarters of the main companies.
- The generation of a triangular, three-node-zone in the heart of Riyadh, to be known as the National Capital Area, encompassing the historical area, the Diplomatic Quarter, and the future metropolitan public garden on the grounds of the old airport.

- Creation of five new metropolitan sub-centers, aimed at providing services to citizens living in the outer residential areas and catering to new public and private functions. These sub-centers were to be situated in different directions, approximately 20 kilometers away from the city center, to which there would be links by activity spines.
- New suburban cities, with capacity for one million inhabitants each.
- A new, state-of-the-art public transportation system, linking all the proposed centers.

MEDSTAR came hand-in-hand with a municipal strategy of decentralization, aimed at facilitating the provision of public services for the citizens, always with the objective of making Riyadh a more livable and humane city. Jobs and commercial activities would be created in the sub-centers, which would also house recreational facilities. Combined with the new transportation system, these initiatives were expected to significantly reduce the volume of traffic within the city.

More than 20 years since MEDSTAR was drafted, its beneficial effects are still to be perceived, mainly because most of its initiatives have not been realized yet. Two of the most visible, the King Abdullah Financial District – meant to become the first of the sub-centers – and the public transportation system, are well off the ground and in an advanced stage of

construction. Both are multibillion-dollar mega-projects at a scale rarely seen in market-driven Western economies.

King Abdullah Financial District (KAFD)

Everything in KAFD is superlative. Its dense concentration of quirkily-shaped high-rise towers rises above Riyadh's urban sprawl, like a vision in a dream. Its car-free pedestrian environment is in sharp contrast to the constant buzz of the city outside its boundaries. A monorail meanders among the buildings. A total of 59 towers, topped at 385 meters by the Capital Market Authority Tower, provide more than three million square meters of space for various uses, 62,000 parking spaces and accommodation for 50,000 residents (see Figure 8). In 2011, it was the largest construction project in the world to be seeking green building accreditation. The total estimated cost is US\$10 billion. The most striking statistic, however, is that despite having been virtually complete for more than two years, KAFD still remains unoccupied.

Conceived back in 2006 to provide Saudi Arabia with a world-class financial center, and in particular, one that would be able to compete with those in the Middle East region, KAFD was built entirely from scratch on an empty plot situated in the north of Riyadh. Linked to the historical area by the central spine, it was the first of the sub-

centers envisaged in the MEDSTAR strategy, and a key milestone in the process of the diversification of the country's oil-reliant economy.

From the outset, a specific regulatory framework was envisaged for KAFD, with a different set of rules from those in place in the rest of the country. This was seen as crucial to attracting the international community in sufficient numbers. However, the project has been impacted on by construction delays, cost overruns and problems with finding a sufficient number of tenants to fill in the sheer number of square meters dropped into the real estate market all at once. Doubts about whether the zone will be free of corporation tax, and under which jurisdiction it will operate, brought the project to a halt when it was nearing completion. The ownership of the project, initially by the Public Pension Agency, has also been put into question. At one point, it was thought that the Public Investment Fund would be the new owner; however, this idea has since been discarded. All these uncertainties have clearly not been beneficial when it comes to attracting big international financial players to KAFD (Reuters 2017).

Riyadh's role in hosting the G20 summit in 2020 may provide a much-needed push to the project. Whether it will become a success story and a vibrant urban center remains to be seen. The mightily ambitious, all-in-one-



Figure 7. The MEDSTAR Plan of 1996. © ADA



Figure 8. King Abdullah Financial District, Riyadh.



Figure 9. Map of Riyadh Public Transport System. Six metro lines are planned to open at once. © ADA



Figure 10. Rendering of the King Abdullah Financial District metro station, now under construction. © Zaha Hadid Architects

go approach has clearly put the brakes on a swift start for the project. Perhaps there are lessons to be learned from the West, such as the gradual construction process of London's Canary Wharf, and its hard-earned success. However, as demonstrated by Riyadh's next big urban project, the public transport system, Saudi Arabia is not a country accustomed to doing things gradually.

King Abdulaziz Project for Riyadh Public Transport

Identified as one of the key principles of the MEDSTAR strategy, the creation of a

comprehensive public transport network was given the green light by the authorities in December 2011. As stated above, one of the most striking facts about today's Riyadh is the lack of virtually any form of mass public transport, leading to perpetually congested streets and an urban culture completely reliant on the use of the private vehicle. Given this scenario of unfamiliarity with public transport, the authorities could have chosen to test the waters with an initial scheme, perhaps limited to one metro line running along the central spine and a few perpendicular feeding bus lines.

Instead, the authorities tackled the problem head on, and, in an unprecedented and bold move, decided to build the entire transport network all at once, making it the world's largest such project, with an estimated cost of US\$22.5 billion. The figures are extraordinary: six metro lines with driverless trains to cover the entire city, with a total length of 176 kilometers served by 85 air-conditioned stations. The bus network will cover a total of 1,200 kilometers, with more than 6,700 bus stops, including three Bus Rapid Transit (BRT) lines with 154 kilometers of dedicated lanes. Initial ridership figures are expected to be 1.1 million passengers per day, growing to 3.6 million after 10 years (see Figure 9).

The simultaneous execution of the metro and bus networks is well underway, thanks to a construction effort of enormous proportions that has turned Riyadh into a gigantic building site. A carefully planned traffic diversion program has miraculously managed to keep the city running, despite practically all the major arteries being affected by construction works. It is an unprecedented demonstration of leadership and optimism that is difficult to imagine in many other countries.

A remarkable communications task is being undertaken by ADA to convey the benefits that the project will bring to the city, ahead of the soft opening of the service, scheduled for 2019. Converting car-dependent citizens into habitual public transport users is an idea that has been met with skepticism. However, a vast majority has already embraced the prospect of being able to move around the city without having to rely on the private car or a driver. The support is overwhelming amongst the young, and women in particular, who, in addition to the recently revised driving policy, will have an entire new host of opportunities resulting from the mobility freedom that the transport system will bring. It is without doubt a large-scale social endeavor, the profound benefits of which will extend far beyond those of more typical transport projects.

From an urban point of view, the public transport network will hopefully work as the much-needed catalyst that will put a limit to the endless and unsustainable horizontal

growth of Riyadh. It will no doubt make the idea of the polycentric city first envisaged by MEDSTAR more than 20 years ago a much closer prospect. It should also provide a much-needed push for the King Abdullah Financial District, where one of the iconic metro stations will be located (see Figure 10).

The Riyadh Metro project may help to stimulate the growth of the other subcenters envisaged by MEDSTAR, along with smaller centers coinciding with the main transport network nodes. In fact, a study commissioned by ADA for future transit-oriented developments (TOD) has already been completed.

Riyadh's TOD Strategy

The TOD initiative aims to break the uniform, low-density, and car-oriented urban fabric of Riyadh, by delivering high density and exemplar mixed-use, walkable developments within the catchment area of the public transport network (ADA 2017) (see Figures 11 and 12). Urban planning and design guidelines have been produced, taking international TOD experience as a reference. They are aimed at identifying the elements

required to create a walkable, compact and mixed-use community which encourages the use of public transport and increases activity around the stations. Each TOD area has been assigned to a specific category, depending on its location and characteristics. While development of some TOD areas may be compromised by existing buildings, the guidelines will provide tools to ensure that the main desired urban characteristics are achieved, with a strong emphasis on the amount of public space and the quality of its design.

Conclusion

Perhaps little known to the outside world, there is no doubt that the extraordinary endeavors being undertaken by the Saudi authorities will bring about a profound transformation of Riyadh from what we know today. They deserve praise for this. Few cities, if any, have embarked on such an ambitious and comprehensive plan of physical transformation, changing the urban structure of an entire metropolis, with the ultimate goal of providing its citizens with a better place to live: more sustainable, more humane and, quite possibly more beautiful. ■

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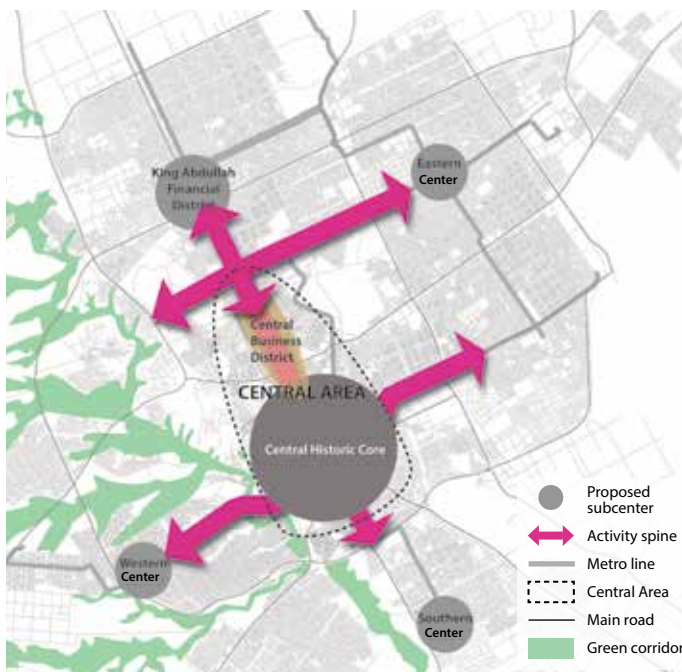


Figure 13. A map of Riyadh Sub-Centers, establishing a growth pattern for a newly transit-oriented polycentric city. © ADA



Figure 14. Potential locations of transit-oriented development (TOD) within 800 meters of metro stations. © ADA