Abdulaziz Alshabib, Sam Ridgway

Aramco and Al-Malaz Housing Schemes: The Origins of Modern Housing in Saudi Arabia

Post-oil Residential Architecture; Saudi Housing Projects; In-situ and Prefabricated Housing; Aramco Home Ownership Program; Al-Malaz Housing Project

/Abstract

This paper examines two influential, modern housing schemes outside the oil compounds in Saudi Arabia. The first, Aramco's Home Ownership Program from the early 1950s, built houses for Saudi oil workers and their families. The second, the Al-Malaz Housing Project, sponsored by the Saudi Government in the late 1950s, produced houses for government employees. These two schemes mark the beginning of the dramatic and widespread overturning of vernacular building traditions in Saudi Arabia. In contrast to the prefabricated lightweight buildings inside the oil compounds these houses were constructed using heavy masonry, mainly locally-made concrete blocks and concrete floor slabs, and they were built in situ. Nevertheless, they are strongly linked to the imported architectural design and construction techniques found inside the compounds.

For Aramco, the need to provide better accommodation for Saudi workers was highlighted by the vastly different conditions for expats and local Saudi workers. Inside the camps, expats lived in modern, imported, prefabricated timber buildings laid out in neat suburbs. Local workers lived outside the fence in ramshackle "Coolie Camps" made up of traditional barastis, tents and other structures put together from salvaged materials. While the Aramco program led to the construction of thousands of houses mainly in the eastern oil-rich regions, Al-Malaz, in the capital of Saudi Arabia, signified mainstream acceptance of modern housing design and construction by the Saudi government. Al Malaz was the first of numerous government-sponsored and developer-led housing schemes using modern, non-traditional designs and heavyweight in-situ, and later prefabricated concrete construction.

/Author

Abdulaziz Alshabib
University of Adelaide and King Saud University
abdulaziz.alshabib@adelaide.edu.au

Abdulaziz Alshabib is a Saudi architect and PhD candidate at the School of Architecture and Built Environment, University of Adelaide. He received his master's degree in 2015 from Pratt Institute, United States. His research explores the history and theory of Saudi residential architecture with a focus on mass-produced housing projects and the use of prefabricated construction techniques. Before commencing his PhD study, Abdulaziz worked as a lecturer in the School of Architecture and Planning at King Saud University, Saudi Arabia.

Sam Ridgway
University of Adelaide
sam.ridgway@adelaide.edu.au

Sam Ridgway is an architect and Adjunct Associate Professor in the School of Architecture and Built Environment at the University of Adelaide. He has a Master of Architecture from the University of Adelaide and a PhD from the University of Sydney. His research and publications have focused on a theorisation of factory-made buildings, construction theory, architectural representation, and the texts and buildings of the remarkable architect and academic Marco Frascari. His recent work explores theatre, architecture and imagination.

https://doi.org/10.6092/issn.2611-0075/11738 | ISSN 2611-0075

Introduction

In the early days of oil exploration and extraction in Saudi Arabia, from the mid-1930s to the early 1950s, the Arabian American Oil company (Aramco) established American-style expat residential gated compounds populated with neat rows of imported, prefabricated timber houses. Surrounding the compounds, outside the fence, the Saudi and Arab workforce built themselves ramshackle squatter's camps. American workers used to call these camps the "Coolie camps"[1] and the "slums of Aramco."[2] In every oil field around the eastern side of Saudi Arabia during the 1940s, whether it was in Dhahran, Ras Tanura, or even Abqaiq, two communities could be recognised: the Americans and the Arabs. For example, in 1946, the residential compound of the Dhahran oil field, the first to be established in the Kingdom, was divided into two main communities: the planned, neat, gated, and well-maintained American Camp, home to about 370 Americans, and the unplanned "eyesore"[3] Saudi camp of more than 3,300 Saudi workers.[4] **[Fig. 1]** Hamad A. Juraifani, a former Saudi employee of Aramco, described the two communities located in Ras Tanura's oil field during that time as the Americans "had the community, you know, with the nice houses and so on, on the beach. And they housed the expatriates. The Saudis, they were divided into two levels. Those that are higher grades are put into homes with fans, but no air-conditioners. And the rest are put in tents. And I remember, four people to a tent."[5]

1

Fig. 1

Conditions in the Saudi camps. Left: Saudi camp in Dhahran. Source: Photograph by Fahmi Basrawi included in Munira Khayyat, Yasmine Khayyat, and Rola Khayyat, "Pieces of Us: The Intimate as Imperial Archive," *Journal of Middle East Women's Studies* 14, no. 3 (2018). Right: *Saudi Camp in Abqaiq*. Source: Image from an unknown photographer included in *Abqaiq: Plants and People* (Khobar: Almohtaraf, 2016).

1 Robert Vitalis, "Wallace Stegner's Arabian Discovery: Imperial Blind Spots in a Continental Vision," *Pacific Historical Review* 76, no. 3 (2007): 423.

2 Loring M. Danforth, C*rossing the Kingdom: Portraits of Saudi Arabia* (Oakland, California: University of California Press, 2016), 44.

3 Jon Parssinen and Kaizir Talib, "A Traditional Community and Modernization: Saudi Camp, Dhahran," *JAE* 35, no.3 (1982): 15.

4 Roy Lebkicher, *Aramco and World Oil* (New York: R.F. Moore, 1952); and John B. Philby, *Arabian Jubilee* (London: Robert Hale Ltd., 1952).

5 Scott McMurray, *Energy to the World: The Story of Saudi Aramco* (Houston: Aramco Services Company, 2011), 168.

Most shacks built in the Saudi camps were modelled on traditional, single-roomed *barasti* houses which were made from light wooden members and reeds using a kind of weaving technique. This building type was replicated using scraps and waste or discarded building materials. **[Fig. 2]** The windows, if there were any, were covered by makeshift wood shutters. Dirt floors were covered with mats. While Saudis living in these camps were familiar with the imported, prefabricated houses and an implanted Westernised way of living inside the compounds, they did not have the means or the desire to replicate this in their own camps. Over time, the "Coolie camps" expanded and conditions deteriorated as more locals were drawn to the sites of oil production, either to work directly in the oil industry or to benefit from the economic activity it generated. The huge disparity between the living conditions of the expats and those of the local Saudi workers pushed the Saudi oil workers to start demanding better housing and working conditions. Aramco and the Saudi Government realised they needed to step in after two strikes over working and housing conditions in the early 1950s.[6]

2

It became clear very early on, in the rapid transformation of Saudi Arabia following the discovery of oil, that Saudis were fiercely determined to protect and maintain their national and cultural identity, and their Muslim religion. Before the Dhahran camp became a gated compound, the Saudi workers tried to establish their identity and challenge what they saw as a foreign cultural and religious invasion.[7] At Dhahran, the Saudi government and the local community worked together to build a mosque, now known as Dhahran Mosque, and to set up a school for local kids. Architecturally, the mosque followed Ottoman architectural principles with 73 domes. It was built with mostly raw local materials, such as limestone and mortar, with no imported tools or lightweight construction

Fig. 2

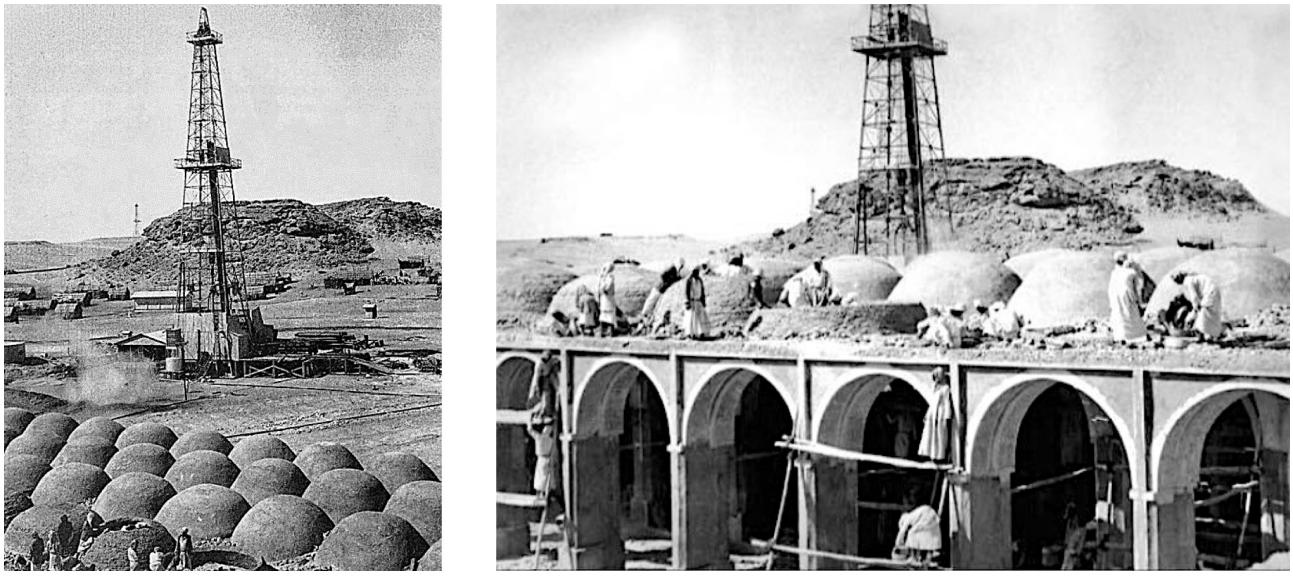
Housing Conditions in the Saudi camps. Left: *A ramshackle house within the Saudi camps.* Source: King Abdulaziz Foundation for Research and Archives (Darah). Right: *Saudi houses during a fire in early 1950s* (this fire was one of the main reasons to ask for better living conditions). Source: Photographer unknown, included in *Abqaiq: Plants and People.*

6 Helen Lackner, *A House Built on Sand, a political economy of Saudi London* (London: Ithaca Press, 1978).

7 This sense of alienation has been voiced by many writers in the field of Muslim cities and Saudi architecture. See Yousef Fadan, "The development of Contemporary Housing in Saudi Arabia (1950–1983): A Study in Cross-Cultural Influence Under Conditions of Rapid Change" (PhD diss., Massachusetts Institute of Technology, 1983).

materials and techniques.[8] **[Fig. 3]** Construction of the mosque allowed the Muslim community working for Aramco to worship and it also attracted other Saudis from the area. While the mosque was built from scratch, the school Aramco opened in the Dhahran camp in the mid-1940s was housed in one of the existed *barastis*. The mosque, the school, the abundance of water within the camps[9] and the availability of work encouraged large numbers of rural migrants, looking for new job opportunities in the oil industry, to settle within the Saudi camp.

3



Seeds of Change

While gradually becoming more open to interaction with foreigners during the late 1940s, Saudi workers continued to be very protective of their families and their traditional cultural and religious practices. Initially, most Saudi workers came to the camps without their families, since there was no proper housing, and also to maintain a separation with the expat community. However, as Frank Jungers, the former president and CEO of Aramco, pointed out, this "posed a tremendous problem", particularly for education and healthcare for women and girls: "they were out in the villages, and they couldn't travel alone."[10] This practice was a way of limiting direct interaction between women and non-relative men without the presence of the *Mahram*.[11] Jungers furthers his explanation about the work-related issues associated with this social practice by stating that "the [Saudi] employee had to go home when he heard about an illness and get the

8 Mohammad Zami and Abdulaziz Bubshait, "Enhancing the importance of conservation of architectural heritage in Saudi Arabia: a case study of Dhahran Mosque" (paper presented at the 3rd International Architecture Conservation Conference and Exhibition, Dubai, 2012).

9 There were many water wells dug by Aramco in the late 1930s in the Saudi eastern region.

10 Frank Jungers, "From Construction Engineer to CEO and Chairman of Aramco, 1948-1978," an oral history conducted in 1992 by Carole Hicke, included in *American Perspectives of Aramco, the Saudi-Arabian Oil-Producing Company, 1930s to 1980s* (Berkeley, California: Regional Oral History Office, The Bancroft Library, University of California, 1995), 54.

11 *Mahram* – un-marriageable kin in Islam – is an Arabic term that describes a man relationship to a woman. A *mahram* to a woman in Islam is any male relative that cannot marry the woman. Parents, grandparents, siblings, siblings of parents are a few examples of women's *mahram*.

Fig. 3

Dhahran Mosque during construction. Source: Saudi Aramco.

family and bring them to the [camp's] hospital, try to get the women taken care of, and take them back home. We lost a lot of employee time doing this."[12]

To address both the issues of the poor conditions in the "Coolie camps" and of the need for workers' families to live close by, the government and Aramco agreed that the best option was to rebuild existing towns and also to establish new towns near to the oil fields. They also agreed to improve conditions in existing oil field camps. Dammam and Al-Khobar were the closest towns to the Dhahran oil wells and were the first towns to be planned using Western urban planning techniques, particularly the layout of housing using orthogonal urban grids and zones.

Over time, Aramco and the Saudi government urged the transformation of the country to become more receptive to industrial changes and modernisation. In their paper, "A Traditional Community and Modernization: Saudi Camp, Dhahran", Jon Parssinen and Kaizir Talib reflect on the importance of the transformation of the Saudi "eyesore" camp in this process.[13] Several years after Aramco established the Dhahran camp, the company began helping local workers to transform the Saudi camp into a more permanent settlement. In 1950, for example, Aramco helped its Saudi oil workers build sixty 22-man dormitories. Locally available construction materials, such as stone and gypsum plaster, were used to build these dormitories. Non-Aramco employees also built several houses around the mosque. The houses they built, although they were not particularly well-made, were unique in terms of their building methods and physical forms. The imported, prefabricated timber construction materials and techniques used within the American camp were eschewed. Interestingly, the houses that the employees built for themselves combined local building design principles with newly-introduced heavyweight building materials. **[Fig. 4]** Internally, the organisation of spaces reflected privacy and climatic concerns. Spaces were divided according to gender roles and functions and were often centred around a courtyard. The courtyard was basically a mixed-use space for cooking, washing, relaxing and playing. These houses were attached and arranged in a more traditional and irregular fashion. There were no regular setbacks from the street, for example. This way of clustering and attaching houses together reduced heat gain through the sides of the houses. Moreover, each housing block was subdivided by small alleys, "which gave the appearance of an old, traditional Arab community"[14] and created shaded sidewalks. Based on this form of growth, the Saudi Dhahran camp "thrived" with its residents having "no barriers in [their] community", as one of the residents explained: "when there is a birth we are happy together, when there is a death we mourn together… there are no secrets, and we share everything."[15] Surprisingly, people who lived and grew up in these camps believed at the time that they would not "have any role

12 Jungers, "From Construction Engineer to CEO and Chairman of Aramco, 1948-1978," 54.

13 Parssinen and Talib, "A Traditional Community and Modernization: Saudi Camp, Dhahran." 15.

14 Parssinen and Talib, "A Traditional Community and Modernization: Saudi Camp, Dhahran." 15.

15 Parssinen and Talib, "A Traditional Community and Modernization: Saudi Camp, Dhahran." 16.

in [the] modernisation"[16] of Saudi Arabia. In reality, however, they were part of pioneering the country's contemporary residential architecture, particularly with their use of industrially produced construction materials.

4 |

In contrast to the lightweight and prefabricated construction materials available within the oil camps, heavyweight building materials, particularly concrete blocks, suited the Saudis culturally and technologically, perhaps due to the analogical relationship with traditional earth-building techniques. In the mid-1940s, the Saudi royal family had already started to use newly imported construction materials to build their palaces and offices. Portland cement and concrete blocks were used in the second phase of building *Al-Murabaa Palace*[17] between 1942 and 1946.[18] *Al-Ahmar Palace*[19] is considered to be the first Saudi palace built using reinforced concrete and *Al-Nasiriyah Complex*,[20] which included royal palaces and more than 70 housing units, was built using similar construction techniques. Mudbricks and earth-based construction materials were largely abandoned from the early days of the newly established kingdom. The emergence of middle-class families in the early fifties also played a major role in changing Saudi society, economy and culture and, consequently, building. Many Saudis became businessmen, contractors, and entrepreneurs. As an example, Saudi businessman Yousef Al-Zuawawi opened his masonry plant in the early 1950s. He toured Europe searching for new machines and equipment that could be imported to Saudi, stating that "on February 22, 1951, I went to Europe on a buying trip…in Germany, I bought cement block-making machines;

16 Parssinen and Talib, "A Traditional Community and Modernization: Saudi Camp, Dhahran." 15.

17 Al-Murabaa, which is King Abdulaziz's first palace outside the Riyadh walls, was initially built in 1938 using mud bricks and wooden materials. In 1942, the palace was expanded using newly introduced materials, represented by factory-made concrete blocks.

18 Abdulrahman Alangari, "The Revival of the Architecture Identity: The City of Arriyadh" (PhD diss., University of Edinburgh, 1996).

19 Al-Ahmar palace is a mansion built by king Abdulaziz for his son King Saud in 1943.

20 Al-Nasiriyah is King Saud's family Palace and was opened in the mid 1950s. The palace complex also included more than 70 large and small villas, which were also built using the same construction materials.

Fig. 4

Permanent houses in Dhahran Saudi camp before and during demolition in the early 1980s. Source: Photograph by Kaizir Talib, included in Jon Parssinen and Kaizir Talib, "A Traditional Community and Modernization: Saudi Camp, Dhahran," JAE 35, no.3 (1982).

they are on their way now."[21] From the government's perspective, the benefits of supporting this transformation from traditional to modern construction were enormous. It allowed the government and Aramco to take advantage of post-World War II industrial and technical achievements within the field of construction. Additionally, it allowed many Saudis to establish new businesses which, in turn, helped the government to hire local contractors instead of relying on international companies, which tended to be more expensive and time-consuming. It also meant more exchange between Saudis and foreign people.

Aramco Home Ownership Program

To show commitment to improving Saudi housing, Aramco, with help from the government, launched its *Saudi Home Ownership Program* in 1951.[22] The company offered to financially help Saudi employees with interest-free loans to secure or build a house near its camps in the recently-established governmental-owned municipalities. The program started slowly, and its impact was not significant, as the unplanned communities surrounding the American camps continued to grow. However, following the strikes in 1953, the Saudi Government, through a government decree, recommended that some improvements to the program should be made by Aramco to alleviate the Saudi worker's housing crisis.[23] The company agreed to pay for 20 percent of each house built under its *Home Ownership Program*. At that time, the program policy made it clear that no loan was to be approved if the house did not meet Aramco's American-based standards.[24] This condition clearly limited Saudi workers' ability to take advantage of the program, since there were not any trained local architects familiar with the American company housing standards. As a result, Saudis employees started, with the company permission, to contact the company's architects, contractors, and engineers with requests to help and assist with design and construction. In fact, to ensure the execution of the program as planned, and to help Saudi workers, Aramco opened three regional offices, located in the company's three main camps: Dhahran, Ras Tanura, and Abqaiq. The offices handled the paperwork, legal concerns, and payments. They also ensured that design and construction were planned according to Aramco's standards. [Fig.5] Yousef Fadan, a Saudi architecture professor, describes the offices main tasks.

> These offices were set up to provide technical advice to employees and to attract their attention to the practical aspects and economics of the building materials they ought to use, as well as to inform them of the most modern house designs and encourage them to install modern

21 In an interview, conducted by C. S. Coon on February 10, 1952, Al-Zuawawi spoke English fluently and almost without accent. See: Carleton S. Coon, "Operation Bultiste: Promoting Industrial Development in Saudi Arabia," in *Hands Across Frontiers*, eds. Howard M. Teaf Jr. and Peter G. Franck (Ithaca, New York: Cornell University Press, 1955), 332.

22 Roy Lebkicher, *Aramco handbook* (Dhahran: Arabian American Oil Company, 1960).

23 Lackner, *A House Built on Sand: A Political Economy of Saudi Arabia.*

24 Fadan, "The development of Contemporary Housing in Saudi Arabia (1950–1983): A Study in Cross-Cultural Influence Under Conditions of Rapid Change."

housing equipment such as electricity, running water, air conditioners and sanitary facilities. The last and most important role of these offices was to implement the obligatory rule of building the houses according to plans designed and drawn by licensed architects…[25]

5 |

Many Americans became involved in the company's homeownership program. Their roles varied based on the project needs. T. Coleman, a Californian building contractor who worked under Aramco's Arab Industrial Development Division (AIDD), played a fundamental role during the first stages of the program. He was assigned to meet with the Saudi workers and translate their ideas into architectural sketches, which was then drawn by a Sudanese draftsman. His role was also extended to negotiate with potential contractors, act as a building inspector during construction, and oversee the whole project. In addition to Coleman, there were many other American architects, engineers, and field representatives who participated in the program during its various stages. For example, Donald M. Bammes, who received a B.Sc. in Architecture from Kansas State College in the late 1930s, worked as head architect in 1951, and as manager in Aramco's Home Ownership Program in 1954.[26] Darrold A. Wagner, John Forbes, George Tweedy, and ED Gelinas worked as field representatives for the same Program in the mid-1950s. Their roles varied from overseeing the construction progress to handing over the units and houses to their new owners. This form of involvement and relationship between the Saudis, as homeowners, and the American architects and engineers indeed strengthened the Saudi worker's trust in their American colleagues.

Eventually, because of the time it took and the cost of designing and building an individual house for every Saudi worker, Aramco decided to offer a small number of designs to choose from. Workers were only allowed to ask

Fig. 5
An Aramco engineer presenting a house model to a housing program beneficiary. Source: Saudi Aramco.

25 Fadan, "The development of Contemporary Housing in Saudi Arabia, 124.

26 Donald M. Bammes," *Al-Ayyam Al-Jamilah* 6, no. 1 (March 1962).

6

for minor changes to these standard house designs.[27] This approach limited the non-oil related workload of the design team. A study conducted in 1974 by Candilis Metra International Consultants, a French planning firm that prepared the plans for several cities in the Saudi Eastern region, states that between 15 to 25 percent of the first houses built under the program were identical and shared the same architectural characteristics.[28] A type of domestic architecture completely new to Saudi Arabia – the standard single-family detached villa – evolved from this project. Carleton S. Coon, a professor of Anthropology at the University of Pennsylvania, who carried out several research trips in the Middle East from 1924, visited Saudi Arabia in February 1952 and described one of the houses: [Fig. 6]

> The house consisted of a wall surrounding the lot of land, rooms for family use facing on the inner court, except for one room, the *mejlis*, or men's sitting room, which was separate. Each bedroom opened separately onto the court; there were no inside doors. In some houses, rooms were built on the roofs as a second story and, in others, one or more rooms on the roof provided maximum air circulation during the hot summer. Throughout the house inside walls were built with horizontal slits to permit air movement without impairing privacy. The toilets were all water closets of the Eastern or squatting type.[29]

While, initially, more than 100 of these standard villas were built, the prototype designs soon changed, abandoning any references to traditional mudbrick houses and embodying a much more modern, Westernised approach. The company's architects had been educated in the United States during the first half of the 20th Century, so it was to be expected that they would disregard local, vernacular buildings and precedents, and set about fulfilling a modern, "functional"

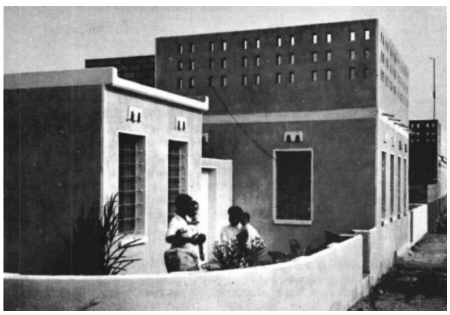
27 Saleh Al-Hathloul, "Tradition, Continuity, and Change in the Physical Environment: The Arab- Muslim City," (PhD diss., Massachusetts Institute of Technology, 1981).

28 Candilis Metra Int., *Eastern Region Plan, Existing Conditions*, (Dammam: June 1974).

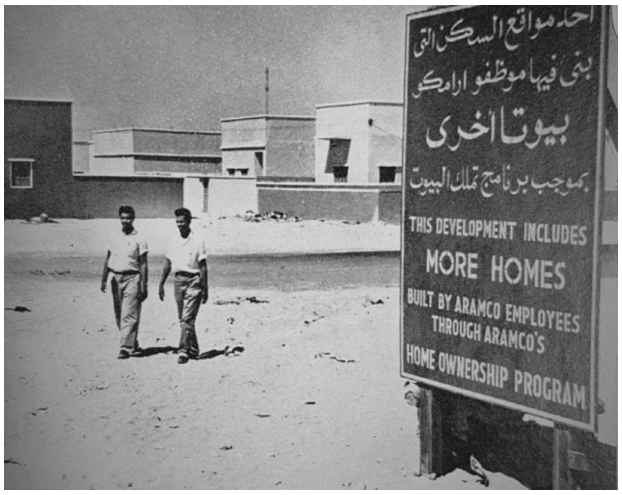
29 Coon, "Operation Bultiste: Promoting Industrial Development in Saudi Arabia," 343.

Fig. 6

Aramco's first houses in the early 1950s. Source: Saudi Aramco.



7 |



8 |

agenda.[30] The new houses were basic cubic forms placed on a gridiron pattern of streets laid out in the Saudi desert. [Fig. 7] In contrast to traditional, inward-facing courtyard houses, in the new house designs, spaces were arranged within an enclosed form, in which all windows opened to the exterior, public space of the street or onto a yard surrounded by a low fence. This was a dramatic change in the understanding of how houses functioned, particularly in relation to traditional concepts of privacy. Modern design principles and space arrangements became the central focus. Once the owners moved in, they often modified their house by increasing the height of the fence surrounding the yard, for example. New spaces, such as a designated dining room, were introduced and other traditional spaces, like the interior courtyards and multi-use rooms, were left out. The newly introduced dining room, in particular, was often not furnished with a dining table and chairs as the act of eating on a table was, according to religious custom, considered a showing-off act.[31] While this shift in prioritising the house spaces and arrangements and introducing new elements reflects international architectural trends, it also indicates Aramco's commitment to the rapid modernisation of housing in the kingdom. During the late 1960s, regional modernism influenced the houses built by the program as cultural and religious factors started to have more impact on the designs. [Fig. 8]

30 American architects, during that time, hoped for full use of modern technology and they often applied scientific approaches in programming, planning, and designing the built environment to sufficiently understand the users' needs and translate them architecturally. See Catherine Bauer Wurster, "The Social Front of Modern Architecture in the 1930s," *Journal of the Society of Architectural Historians* 24, no. 1 (1965): 48-52.

31 Jamel A. Akbar, "Support for Court-yard Houses Riyad, Saudi Arabia," (Master diss., Massachusetts Institute of Technology, 1981).

Fig. 7

Aramco's housing during and after construction in the mid-1950s. Source: Saudi Aramco.

Fig. 8

Aramco's houses in the late 1960s. Source: Saudi Aramco.

In addition to introducing westernised house designs and urban planning through their Home Ownership Program, Aramco adopted and refined the use of heavyweight concrete construction. Concrete blocks had been used in the first wave of owner-built house construction outside the camps, mentioned earlier; however, this was taken to a new level. Factory-made concrete blocks were used in both exterior and interior walls of the houses and concrete slabs for floors and roofs became standard. [Figs. 7 and 8] Externally, the concrete blocks were rendered and, internally, a plaster finish was applied. There was more reliance on the use of imported, industrially manufactured fitting and fixtures, western-style toilets and bidets, taps, and door and window hardware, for example. [Fig. 9] This rapid change effectively sidelined many traditional master-builders and tradesmen who, up until this time, had been largely responsible for the construction of Saudi traditional houses. Despite their high level of hands-on skill and knowledge of traditional building techniques, once professional architects, engineers, and contractors became available, local master-builders were bypassed by both the company officials and house owners.[32]

9

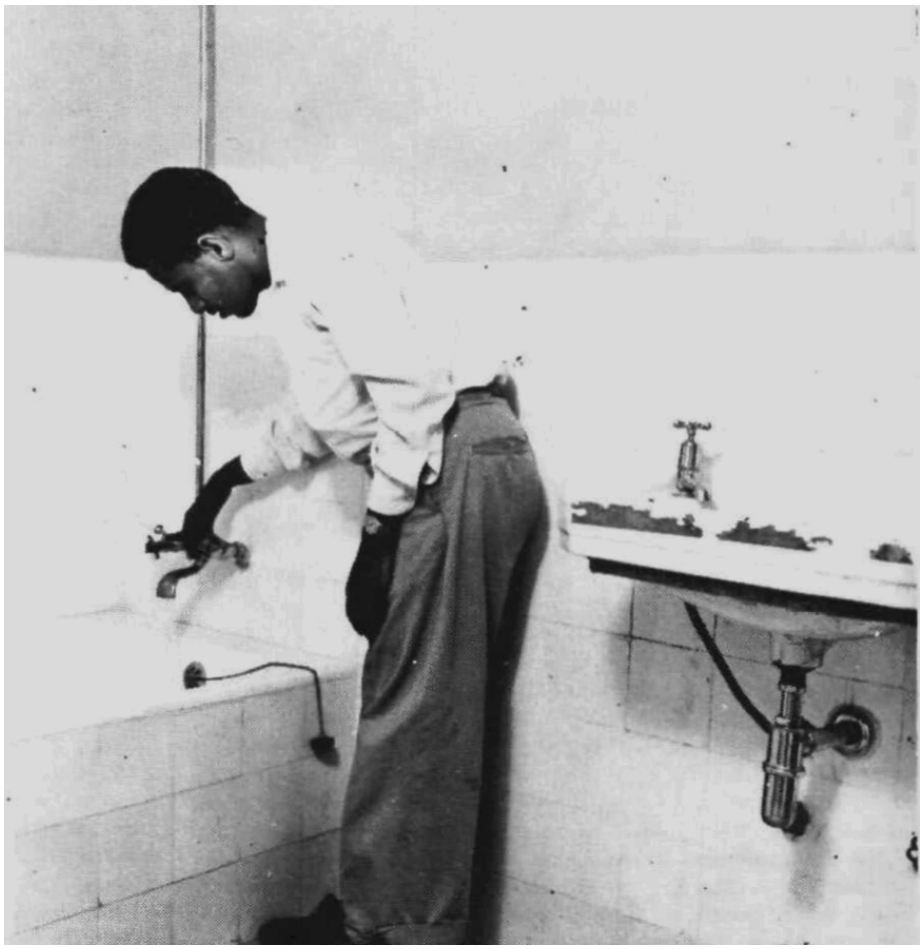


Fig. 9

A resident checking bath fixtures in his new house in 1958. Source: Saudi Aramco.

32 Fadan, "The development of Contemporary Housing in Saudi Arabia (1950–1983): A Study in Cross-Cultural Influence Under Conditions of Rapid Change."

Instead of engaging master-builders to construct their houses, the company aimed at increasing the capacity of the local building industry by training local builders in the knowledge and skills required to build with modern construction materials and methods. In March 1951, the first contract to build eleven identical, houses through *Aramco's Home Ownership Program* was awarded to five local contractors.[33] Distributing this relatively small project in this way allowed Aramco to better understand the local capacity to build new western-style houses. Aramco trained and mentored these local contractors and entrepreneurs, much as it did with its own Saudi oil-industry workforce, providing financial, material and technical support. This method of handling the program benefited and helped the local economy. Less than a year later, in February 1952, Aramco awarded a new contract to build another 300 houses, identical to the eleven already built, to a single local contractor, Abdallah Bin Darwish Fakroo, who used to be called the "Levitt of Arabia."[34] Mr. Fakroo had already secured high-capacity block-making machines and other construction equipment by that time, and this ensured his capacity to complete the project. As Aramco expanded over the years, the program gained more popularity among the company's Saudi workforce. By 1959, more than 2,100 houses, mainly versions of the standard, single-family villa, had been built under this program. [35] Looking back, it is clear that *Aramco's Home Ownership Program* played a leading role in the kingdom's transition from traditional modes of house design and construction to a completely new type of Saudi residential architecture.[36]

Al-Malaz Housing Project

In 1957, the Saudi government administrative offices and ministries were transferred from Makkah and Jeddah, in the western region of Saudi Arabia, to Riyadh City, in central Saudi Arabia.[37] This move created a need to accommodate government employees and the government announced a new housing project in an area called Al-Malaz, outside the main city boundaries and close to the new ministries' buildings. At the time, the project was called the "*Employees City*."[38] Since there was no specialised governmental agency for housing at that time, the Ministry of Finance initiated and administered this housing project. Using the *Aramco Home Ownership Program* as a model of success, the Saudi government sponsored the Al-Malaz housing project using a similar approach.[39] The connection between Al-Malaz housing scheme in the central of Saudi Arabia and developments that were taking a place in the oil-rich eastern region has

33 Coon, "Operation Bultiste: Promoting Industrial Development in Saudi Arabia."

34 Coon, "Operation Bultiste: Promoting Industrial Development in Saudi Arabia."

35 Lebkicher, *Aramco handbook*.

36 Anis-ur-Rahmaan, Bushra A. Rahmaan and A. Al-Shaye, "Innovation Diffusion in Housing: A Conceptual Probe in Saudi Arabia," J. King Saud University: *Architecture and Planning* 2 (1990): 3-21.

37 William Facey, *Riyadh, the Old City: From its Origins Until the 1950s* (London: Immel, 1990).

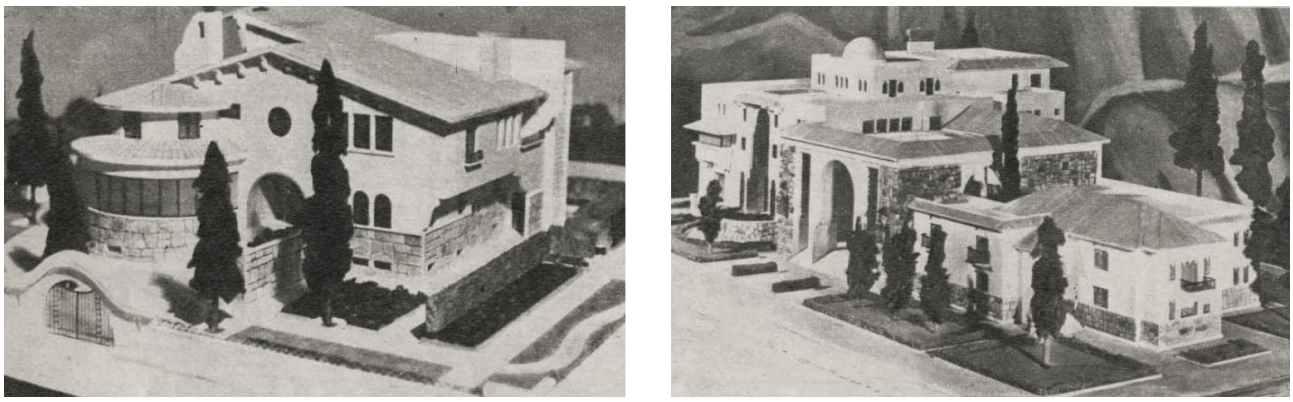
38 Suliman Alhudaithi, "*Madinat Almoadafeen Qabel 65 Aam: Iskan Bltaqseet mn Almoratab*" [Employees City 65 years ago: Housing with free-interest loans], *Aleqtisadiah*, 11 January 2019.

39 Al-Hathloul, "Tradition, Continuity, and Change in the Physical Environment: The Arab- Muslim City."

been explored in Fahad Al-Said's essay "The pattern of structural transformation of the Saudi contemporary neighbourhood: The case of Al-Malaz, Riyadh, Saudi Arabia." He writes that:

> Al-Malaz neighbourhood urban pattern is a reflection of the Saudi contemporary built environment transformation from the traditional process to the contemporary self-conscious process. Prior to its foundation the traditional ownership system and easement rights were in full practice… Consequently, the different neighbourhoods zoning, street layouts, and house expansions are no longer a by-product of its users' needs, but rather a planned one. Al- Khobar city planning, and Dammam city future expansion layouts which were proposed by ARAMCO's engineers in 1937 were the first to introduce the villa type house to the average Saudi through its homeownership plan in 1951. In other words, the message to the future neighbourhoods was clear: municipality controls, grid-iron street layout, and a villa type house.[40]

The Ministry of Finance, being new to this kind of building project, sought professional help, particularly from American architectural and engineering consulting firms, some of whom had previously worked with Aramco.[41] Three local contractors, all with different experiences and histories, were engaged to design and construct their version of the contemporary Saudi house. In total, the project consisted of 754 houses and three apartment buildings. Archival research has identified some of the Western and Arabian engineers and workers who became involved in the project. For example, Professor Ahmed Sidiqi, an Egyptian architect who was commissioned by the Egyptian Government to work in Saudi Arabia, was the main architect for the Arabian Engineering Company, one of the companies appointed by the Saudi government to work on the Al-Malaz project. During that time, Sidiqi also designed a number of royal palaces for Saudi princes and businessmen.[42] [Fig. 10]



10

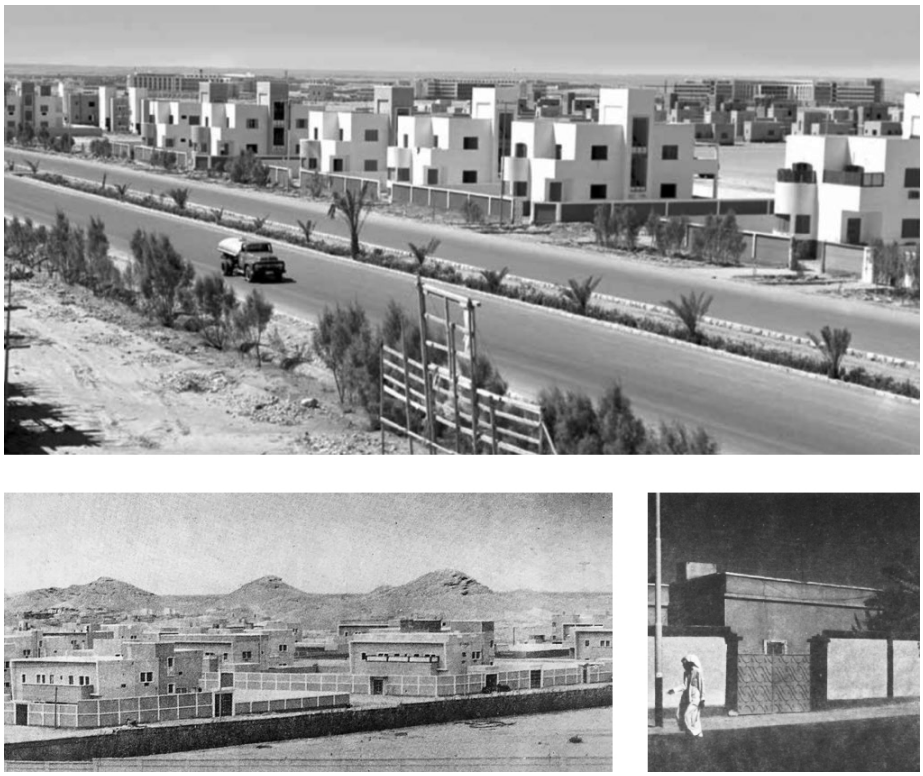
40 Fahad Al-Said, "The pattern of structural transformation of the Saudi contemporary neighbourhood: The case of Al-Malaz, Riyadh, Saudi Arabia" (conference, the 39th ISoCaRP Congress, Cairo, Egypt, October 17-22, 2003).

41 Alangari, "The Revival of the Architecture Identity: The City of Arriyadh."

42 *"Jazerat Al-Arab Tusabiq Alalam fi Alnahdah Alomraniah"* [The Arabian Peninsula is competing the world with its urban development], Almosawar, 1954.

Fig. 10
Two palace models designed by the Arabian Engineering Company, an Egyptian Architecture firm, for the Saudi Royal Family.
Source: Almosawar.

At Al-Malaz, the three contractors designed and constructed three versions of the modern Saudi family house: a double-storey house for the senior leaders and managers and a single-storey house for lower status employees. [Fig. 11] *Using Aramco's Home Ownership Program* as the model, all of Al-Malaz houses were built using concrete blocks and reinforced concrete slabs. In relation to their design, the houses introduced new concepts in interior layout, which were quite unfamiliar and very different from traditional domestic architecture in the central region of Saudi Arabia. The spaces and functions of the house were contained within one closed block form, usually centred around the living room. The houses were set back from their site boundaries as the result of new regulations and windows in the lower floors of the four house facades opened onto a yard enclosed by a high wall. Windows on the upper floors were often positioned at the centre of the room and opened to a balcony. A designated dining room was introduced along with new cooking equipment, a refrigerator, an inside toilet/bidet, and a bathtub. The house was designed to function with Western-style furniture such as sofas and dining chairs and tables. Externally, balconies and terraces overlooking the yard replaced the courtyard and rooftop, which had been used as sleeping space at various times throughout the year.



11

The urban planning of Al-Malaz was without local precedent and followed a Western gridiron pattern with intersecting streets dividing the housing into residential blocks. Once it was completed, Al-Malaz became known as *"Riyadh Al-Jadidah"* (the New Riyadh), an indication of the new modern way of living that the community embodied. While the houses were not the first to be built using new construction materials, architectural styles, and modern urban

Fig. 11

Three different types of housing built by the government in Al-Malaz. Source: Riyadh during king Saud Reign.

planning forms – houses built through *Aramco Home Ownership Program* and Al-Nasiriyah complex were built several years earlier –, it is believed that the Al-Malaz housing project had the most effect on Saudi residential architecture. Saleh Al-Hathloul, a Saudi architecture professor and the former Deputy Minister for Town Planning at the Saudi Ministry of Municipal and Rural Affairs (MOMRA), in his PhD titled *Tradition Continuity and Change in the Physical Environment: The Arab-Muslim City*, explored why Al-Malaz's residential units became the prototype of future residential types in Saudi Arabia. His research concludes that, because the project was sponsored by the government for its employees, it became an authoritative example of a modern neighbourhood. The project reflected the government's vision on how fast-growing cities around the kingdom should be planned and built and it became the model for most Saudi cities from that time.[43]

Once the new gridiron planning form was established at Al-Malaz, it became the model for the future expansion of the city boundaries. In 1968, the government engaged the highly influential Greek architect and planner Constantinos Doxiadis to prepare an Ekistics-style master plan for Riyadh City, now Saudi's Capital city. Doxiadis was also commissioned to provide masterplans for other cities in the central and northern regions of the country.[44] Similarly, in the early 1970s, Robert Matthew's & Partners, planned cities in the western regions, and Candilis Metra and Kenzo Tange did the same for the eastern region.[45] To some, the decision to invite Doxiadis to provide a plan for Riyadh, which was seen as "a traditional, almost sleepy, Arabian small town," was extremely strange.[46] In response, and to emphasise the importance of the old Arabian village, the master plan Doxiadis prepared for Riyadh was based on dividing the growing city into superblocks of 2 x 2 kilometres, in which each block would represent a semi-independent urban area with a set of religious, shopping, educational, and health facilities. Yet, while significant attention was given to traditional urban development, the gridiron approach with its superblocks was considered foreign to the Saudi society culture and tradition, which led many to question what they saw as a "non-traditional approach."[47] In particular, it shifted the urban focus away from mosques and other religious buildings and precincts. Mohammed Eben Saleh, a former architecture professor at King Saud University, suggests that:

> this type of urbanization disrupted the urban fabric and weakened the compactness between neighbours and the security and safety of residents… This necessitates the search for urban solutions and alternatives, which increase the density, reduce the cost of infrastructure, revive the

43 Al-Hathloul, "Tradition, Continuity, and Change in the Physical Environment: The Arab- Muslim City."

44 Initially, it began with Doxiadis new master plan for Riyadh city. See Deborah Middleton, "Growth and Expansion in Post-War Urban Design Strategies: C. A. Doxiadis and the First Strategic Plan for Riyadh Saudi Arabia (1968-1972)" (PhD diss., Georgia Institute of Technology, 2009).

45 Fahad Al-Said, "Territorial Behaviour and the Built Environment: The Case of Arab-Muslim Towns, Saudi Arabia" (PhD diss., University of Glasgow, 1992).

46 Charles L. Choguill, "A Survey of Saudi Arabian Urban Problems," J *King Saud University: Architecture and Planning* 20, (2008): 4.

47 Charles L. Choguill, "A Survey of Saudi Arabian Urban Problems," 5.

social communications in the built environment, and encourage pedestrianization and daily marketing.[48]

Reflecting on this, in 1992, the Saudi Ministry of Municipal and Rural Affairs contracted two local planning consultants to redesign the 2 x 2 kilometre superblocks while taking into consideration vernacular and traditional Arab planning principles and characteristics. The planners developed new hybrid forms that disrupted traffic flow within residential areas and included traditional urban forms with narrow alleys and dead-ends. **[Fig. 12]** Their proposed plans were primarily pedestrian-dominated to reawaken the old town. The mosques for Friday prayers were prioritised and provided with large areas for religious and ceremonial activities. These mosques were within walking distance of the new housing. Housing lots were arranged in groups and each group of housing was clustered around a semi-private area which was often exclusively accessible to the residents and their visitors only. However, as preferences changed after the building of the Al-Malaz Housing Project, even some of MOMRA new proposed plans were challenged by the elite and land speculators, as this group wanted wider streets which increased land value. However, the modified 2 x 2 superblocks remained the model for city expansion in Saudi Arabia from the late 1990s.

12

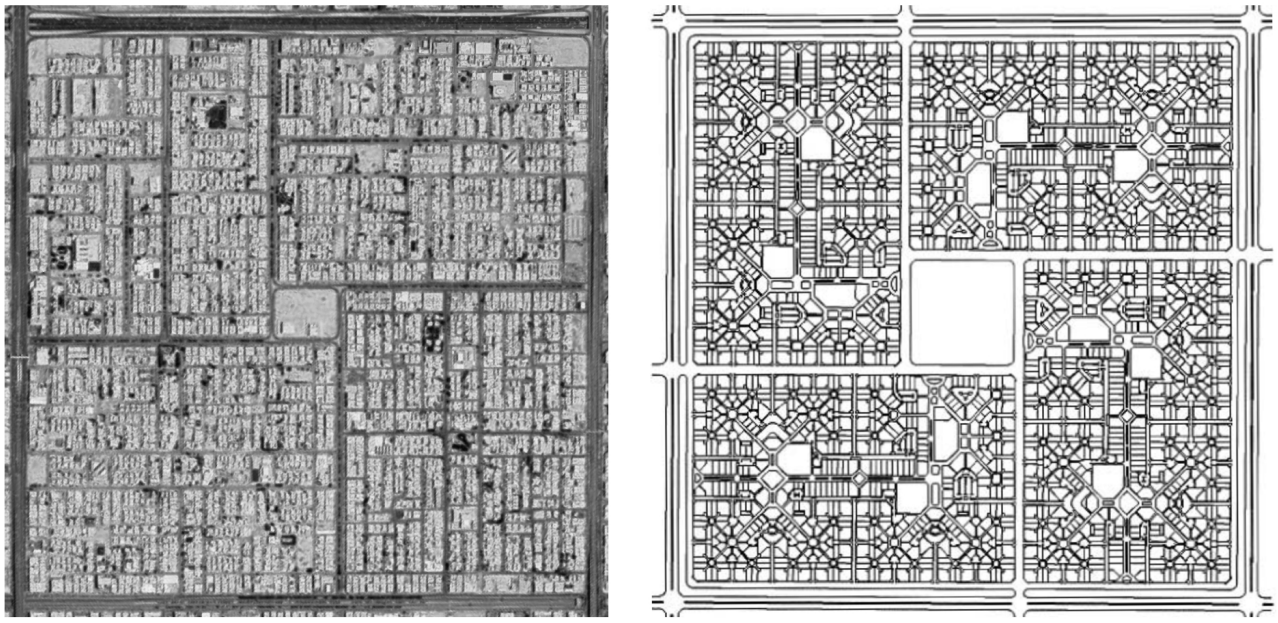


Fig. 12

A Comparison between Doxiadis Superblock and one of MOMRA's proposed new Superblocks. Left: Google Maps screenshot showing one of Doxiadis superblocks in Riyadh city. Source: Google Maps. Right: one of MOMRA's proposed variation of the 2 x 2 superblocks. Source: Mohammed Eben Saleh, "The evolution of planning & urban theory from the perspective of vernacular design: MOMRA initiatives in improving Saudi Arabian neighbourhoods," *Land Use Policy 18,* (2001)

Doxiadis' Riyadh master plan, with its squared and rectangular housing blocks, was soon populated with villa-style houses that had been introduced in the *Aramco Home Ownership Program and Al-Malaz Housing Project*. As this new residential form gained popularity during the 1960s and 1970s, the conflict between the old and the new, traditional versus modern, and regional versus

48 Mohammed Eben Saleh, "The evolution of planning & urban theory from the perspective of vernacular design: MOMRA initiatives in improving Saudi Arabian neighbourhoods," *Land Use Policy* 18 (2001): 186.

international, began in relation to Saudi residential architecture.[49] Scholars, who have studied post-oil Saudi society,[50] point out that the Saudi villa did not evolve from Saudi residential and vernacular architecture. Abdullah Al-Ghathami, a professor of criticism and theory at King Saud University, suggests that the story of modernity in Saudi Arabia is unique, as it occurred when the society was divided into two different groups: conservatives and modernists.[51] He notes how the extreme conservative *Imams*, prayer leaders, used *Khutbat Al-Jum'ah*, which is the talk that precedes Friday's prayer, to warn people about the dangers of modernity and its advocates. However, he argues that the phenomenon is revealed in various social practices and norms. For example, the change manifested itself within the basic construction material, as it changed "from mud with its direct connection to the earth – where human and culture meet – to concrete, the industrialised material with its total separation between the environmental factors and the memory of place."[52] According to Al-Ghathami, because of this, there is now "a monstrous union between the new place and the human..."[53] Eben Saleh highlights that, in contrast to its contemporary, consistently modern form, Saudi traditional architecture "was a result of a complex interaction between multiple variables and took place within difficult circumstances. Such variables include economic, political, religious, cultural and physical constraints."[54]

Conclusion

The Aramco and Al Malaz housing projects were the vanguards of a rapid move from traditional lightweight *barasti* and heavyweight earth houses to modern, western-style houses made predominantly of concrete. The choice of concrete, initially concrete blocks and concrete slab floors, as the preferred construction material is notable, given that most of the houses imported into the oil compounds were lightweight and made of prefabricated timber. It was these prefabricated timber houses that were the first modern buildings most of the local oil workers would have been exposed to. When it came to building their own houses, initially in the squatter camps that spread out from the gated oil compounds, the building material of choice was always concrete, where possible. It is not clear why this was the case but, historically, in Saudi Arabia, earth-made buildings were more highly regarded and prestigious than lightweight structures. There is a direct analogical relationship between concrete and earth building and this may have influenced the choice. Despite some resistance

49 Mashary Al-Naim, "Identity in Transitional Context: Open-Ended Local Architecture in Saudi Arabia," *International Journal of Architecture Research* 2, no.2 (2008).

50 Professor Mohammed Eben Saleh, Yousef Fadan, Saleh Al-Hathloul, Ali Bahammam and Abdullah Al-ghathami, to name some.

51 Abdullah Alghathami, *Hekayat Al Hadaathah fi Al-mamlakah Al-Arabiya Al-Saudia* [*The Story of Modernism in the Saudi Arabia*] (Casablanca: The Arab Cultural Centre, 2004).

52 Abdullah Alghathami, *Hekayat Al Hadaathah fi Al-mamlakah Al-Arabiya Al-Saudia*, 164.

53 Abdullah Alghathami, *Hekayat Al Hadaathah fi Al-mamlakah Al-Arabiya Al-Saudia*, 173.

54 Mohammed Eben Saleh, "The Development of Energy Efficient Building Systems and Technique for Housing the Masses in Hot Dry Climates with Special Emphasis on Saudi Arabia" (PhD Diss., University of Michigan, 1980): 51.

13

from local people, from the early 1960s, the cities and suburbs of Saudi Arabia were rapidly populated with modern, western-style concrete housing and other buildings.

In 2019, research visits to some now uninhabited houses[55] in both the Aramco and Al-Malaz projects revealed a remarkable and widespread phenomenon. Most of the houses were significantly modified by their owners after moving in. This seems to indicate that the new housing was not a particularly good fit with the social, religious and cultural customs of their new owners. It seems that most were, in fact, not given much choice "but to adopt [the] new spatial concepts and organisations."[56] Some of the houses still retain their original architectural features, but most have been significantly altered and remodelled. **[Fig. 13]** Exploring the interior of one of the abandoned houses revealed some of the architectural elements and features that would have been very unusual and unfamiliar at that time. External walls were thin and lacked appropriate insulation, which made the houses gain heat easily in summer. Unlike traditional, loadbearing earth construction, the houses had a structural concrete frame that was visible, since the columns were thicker than the walls. The toilets and bathrooms were located in the centre of the house instead of their traditional

Fig. 13

Photos of the current condition of the Arabian Engineering Company (Aren) prototype house, built for the government employees in Al-Malaz. Photograph by Author.

55 During the research visit, we located several uninhabited houses. The one visited in Al-Malaz is located in Al-Jamiah Street, a busy street located in the centre of Riyadh city.

56 Al-Naim, "Identity in Transitional Context: Open-Ended Local Architecture in Saudi Arabia," 141.

corner locations,[57] which required their doors to be labelled in Arabic. [Fig. 13] The toilets and bidet position and orientation followed religious requirements as the person should not face or turn their back to Makkah, Muslim's holiest city, while using the toilet. Electrical outlets in the houses followed U.S codes. While the use of U.S codes and electrical fittings was very common internationally at that time, their use in Saudi Arabia was only associated with Aramco and government-sponsored housing projects, revealing the level of involvement of U.S companies who supervised both projects. Parapet walls were short, which most residents did not like, as the roof was traditionally used as a sleeping area several times over the year during hot weather. Within a short time after moving in, most increased the parapet wall height using various light and heavy construction materials. Some of the original occupants personalised and modified their houses, while others did not occupy the houses for a long time. Increased wealth, in particular, enabled some to buy large blocks of land and build more prestigious houses within a relatively short time. Interestingly, the houses they built were also "modern", with almost no reference to traditional and regional influences, which seems to indicate an acceptance of the inevitable modernisation of Saudi housing.

57 Akbar, "Support for Courtyard Houses Riyad, Saudi Arabia."

Bibliography

Al-Ghathami, Abdullah. *Hekayat Al Hadaathah fi Al-mamlakah Al-Arabiya Al-Saudia* [The Story of Modernism in the Saudi Arabia]. Casablanca: The Arab Cultural Centre, 2004.

Al-Naim, Mashary. "Identity in Transitional Context: Open-Ended Local Architecture in Saudi Arabia." *International Journal of Architecture Research* 2, no. 2 (2008).

Al-Said, Fahad. "Territorial Behaviour and the Built Environment: The Case of Arab-Muslim Towns, Saudi Arabia." PhD diss., University of Glasgow, 1992.

Al-Said, Fahad. "The pattern of structural transformation of the Saudi contemporary neighbourhood: The case of Al-Malaz, Riyadh, Saudi Arabia." *The 39th ISoCaRP Congress*, 2003.

Anis-ur-Rahmaan, Bushra A. Rahmaan and A. Al-Shaye. "Innovation Diffusion in Housing: A Conceptual Probe in Saudi Arabia." J. King Saud University: *Architecture and Planning* 2 (1990): 3-21.

Bammes, Donald M. *Al-Ayyam Al-Jamilah* 6, no. 1 (March 1962).

Candilis Metra Int. *Eastern Region Plan, Existing Conditions*. Dammam: June 1974.

Choguill, Charles L. "A Survey of Saudi Arabian Urban Problems." J. King Saud University: *Architecture and Planning* 20, (2008).

Coon, Carleton S., and William A. Eltiste. "Operation Bultiste, Promoting Industrial Development in Saudi Arabia." In *Hands Across Frontiers*, edited by Howard M. Teaf Jr. and Peter G. Franck. Ithaca, New York: Cornell University Press, 1955.

Danforth, Loring M. *Crossing the Kingdom: Portraits of Saudi Arabia*. Oakland, California: University of California Press, 2016.

Eben Saleh, Mohammed. "The evolution of planning & urban theory from the perspective of vernacular design: MOMRA initiatives in improving Saudi Arabian neighbourhoods." *Land Use Policy* 18, (2001).

Facey, William. *Riyadh, the Old City: From its Origins Until the 1950s*. London: Immel, 1990.

Fadan, Yousef. "The Development of Contemporary Housing in Saudi Arabia (1950– 1983): A Study in Cross-Cultural Influence Under Conditions of Rapid Change." PhD diss., Massachusetts Institute of Technology, 1983.

Lackner, Helen. *A House Built on Sand: A Political Economy of Saudi Arabia*. London: Ithaca Press, 1978.

Lebkicher, Roy. *Aramco and World Oil*. New York: R.F. Moore, 1952.

Lebkicher, Roy. *Aramco handbook*. Dhahran: Arabian American Oil Company, 1960.

McMurray, Scott. *Energy to the World: The Story of Saudi Aramco*. Houston: Aramco Services Company, 2011.

Middleton, Deborah. "Growth and Expansion in Post-War Urban Design Strategies: C. A. Doxiadis and the First Strategic Plan for Riyadh Saudi Arabia (1968-1972)." PhD diss., Georgia Institute of Technology, 2009.

Parssinen, Jon, and Kaizir Talib. "A Traditional Community and Modernization: Saudi Camp, Dhahran." *JAE 35*, no. 3 (1982): 14–17.

Philby, Harry St John Bridger. *Arabian Jubilee: An Account of the Reign of Ibn Sa'ud, King of Saudi Arabia. With Plates, Including Portraits*. London: Robert Hale, 1952.

Vitalis, Robert. "Wallace Stegner's Arabian Discovery: Imperial Blind Spots in a Continental Vision." *Pacific Historical Review* 76, no. 3 (2007): 405–37.

Wurster, Catherine. "The Social Front of Modern Architecture in the 1930s." *Journal of the Society of Architectural Historians* 24, no. 1 (1965): 48-52.