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Ecological Systems of Care: The Nubian Homes of Gharb Aswan

Sistemas sostenibles de cuidados: Las viviendas nubias de Gharb Asuán

Sistemas sustentáveis de cuidados: As casas nubianas de Gharb Aswan

Abstract | Resumen | Resumo

With the rise of sustainable building and the growing desire to “build green” comes a need to understand the centuries-old practice of building with earth. For generations, earthen buildings have been integral to communities around the world, and it is these building practices that show the way for the innovative sustainable technologies we use today. During my travels in Egypt, while studying mud-brick Nubian homes in Gharb Aswan I encountered a unique way of combining ecological building with systems of care and resilience rooted in tradition and generations of craft. As building with earth is becoming popular within the discipline of architecture, can we learn to better understand and integrate care into our built environment in ways that are efficient, resourceful, and ecological?

Con el auge de la construcción sostenible y el creciente deseo de “construir verde”, surge la necesidad de conocer la práctica centenaria de construir con tierra. Durante generaciones, los edificios de tierra han sido un elemento básico de las comunidades de todo el mundo, y son estas prácticas constructivas las que muestran el camino para las tecnologías innovadoras y sostenibles que utilizamos en la actualidad. Durante mis viajes por Egipto, al estudiar las casas de adobe nubias de Gharb Asuán, me encontré con una forma única de combinar la construcción sostenible con sistemas de cuidados y adaptación arraigados en la tradición y en un oficio ejercido durante generaciones. A medida que la construcción con tierra adquiere popularidad en la disciplina de la arquitectura, ¿podemos aprender a comprender e integrar mejor los cuidados en el entorno construido de manera eficiente, ingeniosa y ecológica?

Com o crescimento da construção sustentável e o desejo crescente de “construir verde”, surge a necessidade de compreender a prática secular de construir com terra. Durante gerações, os edifícios de terra têm sido um elemento básico das comunidades em todo o mundo e são estas práticas de construção que mostram o caminho para as tecnologias sustentáveis inovadoras que utilizamos atualmente. Durante as minhas viagens ao Egito, ao estudar as casas núbias de tijolo de barro em Gharb Aswan, deparei-me com uma forma única de combinar a construção sustentável com sistemas de assistência e resiliência enraizados na tradição e em várias gerações de artesanato. Como a construção com terra está a tornar-se popular na disciplina da arquitetura, será que podemos aprender a compreender melhor e a integrar os sistemas de assistência no nosso ambiente construído de formas eficientes, engenhosas e ecológicas?

Building with Earth

The emerging interest in “earthen architecture” – architecture made of raw earth sourced directly from the landscape – reflects a need in the architectural profession to build more sustainably and economically. Earthen construction is by no means a new practice; its earliest uses date back to 10,000–8,000 BCE in Mesopotamia, where mud bricks (sun-dried bricks of mud, straw, and sand) were used in civic and domestic structures (Campbell 2003: 13). Mud bricks are still seen in many parts of the world, primarily in vernacular structures rooted in tradition and cultural practice. Although this material has been rather left behind in an era of rapid urbanization and industrialization, mud-brick homes are still built, especially in rural contexts.

While traveling in Egypt’s Nile valley (through the Robert A.M. Stern 2023 Travel Fellowship), I encountered a multiplicity of mud-brick structures ranging from farmhouses, desert mountain dwellings, and agrarian dovecotes to the more widely recognized projects of Hassan Fathy and Ramses Wissa Wassef. These structures, varying in program and scale, showcase the rich history and subversive potential of building with earth, beyond materiality. These structures involve acts of ritualized maintenance, customary practices, placemaking, familial narratives, and more.

Within Egypt, Aswan was particularly memorable for the innovative variety of domestic spaces built by hand and cared for over generations. On visiting Aswan, the last leg of my journey up the Nile, I was struck by the importance placed on family and community, suggested both physically and immaterially. Spaces were customized to accommodate multiple generations of families and continuously maintained through modifications, replastering, and redecoration. The Nubian homes in Gharb Aswan show the architectural potential of mud bricks and also reflect the importance of tradition and craftsmanship in innovative building and sustainable living.

1: Mud bricks laid out to dry at a production site in Luxor, Egypt

2: Mud bricks stacked for transportation



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Map of Aswan, 1913 (David Rumsey Map Center, Stanford Libraries)

Histories of Nubia

Nubia is the region between the first cataract of the Nile near Aswan (Egypt) and Khartoum (Sudan), where the Blue Nile joins the White Nile. The name *Nubia* is of contested origin but is widely thought to derive from the Nubian *nubere*, meaning gold (Agha 2019: 1). Ancient Nubia, or “the Land of Gold”, was a civilization with dynastic rule likely dating back longer than ancient Egypt. While many scholarly institutions have long focused on Egypt, Nubia’s monuments gained global attention in 1959, through the International Campaign to Save the Monuments of Nubia. Led by UNESCO, the campaign was a response to the construction of the Aswan High Dam in the 1960s. Built to provide regular irrigation and water supply to cities in northern Egypt, the dam also submerged many ancient Nubian monuments under the 5,000 km² reservoir known as Lake

Satellite imagery of Lake Nasser, 1960-2023 (Google Earth)





Satellite imagery of Nagel-Gulab, 2023 (Google Earth)

Nasser. The campaign succeeded in saving some historic edifices, most notably Abu Simbel, which was reconstructed piece by piece on higher ground, but many others were submerged. A lesser-known story is the loss of ancestral land of the Nubian people who once resided on the river banks. An estimated 50,000 Egyptian Nubians and even more in Sudan were displaced as a result of the nationalist dam project and forced to relocate near Kom Ombo and Esna or to rebuild their villages elsewhere (El-Hakim 2008: 1).

The history of industrial flooding in Nubia precedes the 1960s; the Aswan Low Dam, built by British colonists in 1902 and subsequently raised in 1912 and 1933, also flooded many *feddans* (acres) of Nubian land. Families were forced to seek higher ground on various islands or on the west bank of the Nile at Gharb Aswan.

Gharb Aswan: Nagel-Gulab

Upon arriving in Gharb Aswan, my first stop was a home in the village of Nagel-Gulab, separated from the river by a stretch of fertile cropland. Nagel-Gulab receives less foot traffic than other parts

1: Street view of Nagel-Gulab

2: Main entrance plastered in mud



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1: Urban plan of Nagel-Gulab, by the Nile



2: Example of layouts in Nagel-Gulab

of Aswan, although some tourists come here to enjoy the cuisine and culture in guesthouses. I was fortunate to be shown around the village by my colleague Moataz, who has family friends here.

Nagel-Gulab likely dates back to the second or third raising of the Aswan Low Dam in the early 1900s and is currently home to some 10,000 people. The village's urban fabric is rooted in Nubian architectural and planning tradition, with houses of various sizes arranged in a grid-like pattern perpendicular to the Nile. Most often, the main entrances face the river to the east. The exterior mud-brick walls are grand and ornate, often with colorful murals and patterns or molded ornamentation. Openings in exterior walls are rare and scale is suggested by dispersed doorways between abutting structures. A *mastaba*, or molded mud bench, is often found along exterior walls to provide seating for communal or public gatherings in the street. The houses' elevations are colorful, painted light blue, yellow, purple, or white with motifs of nature or hajj paintings depicting pilgrimage to Mecca. Traditionally, once houses are built, women and children start the process of plastering a layer of mud on the walls and painting decorative patterns and motifs on both exteriors and interiors.



View from the *huash* to private domestic spaces

Inside the Home

The first home I visited belonged to Moataz's friend, and in a typical manner, we entered through a large courtyard or *haush*. The *huash* is sandy and has a tiled walkway at the perimeter. Once inside, one is struck by the scale of these traditional homes. While only a decorated perimeter wall with sparse openings can be seen from the exterior, the interior contains various rooms with different programs all facing the *haush*. Traditionally the courtyard serves many utilitarian purposes, such as raising cattle or chickens and growing vegetables. It is also a space for public gatherings and family events, such as weddings or other celebrations. The *haush* gives each family "a private piece of the sky", while also naturally ventilating the house from the interior, allowing cool air to circulate in the adjacent living spaces. It remains a vital part of many Nubian homes, blurring the threshold between more conventionally perceived interior and exterior space.

A *mandara*, or guestroom, is usually one of the first spaces in a home, open to the elements through a large arched doorway. *Mandaras* may also have a separate entrance so that guests may come and go without intruding on their hosts' privacy. Hospitality is an important, integral aspect of Nubian homes, and the construction of a spacious, decorated *mandara* open to the *haush* spatializes this.

Mandaras, like other bedrooms and living rooms in a Nubian home, often have vaulted roofs. The Nubian vault, a term widely used to describe the vaulting in traditional homes, is made of self-supported mud bricks, with no need for timber structure. The bricks are laid in a catenary curve at a slight angle, leaning against the gable wall. As each course is laid and mortared with mud, the vault becomes more structurally sound. Once finished, it is plastered with a layer of mud that can be combined with sand and lime to improve water resistance in the rare rainstorms. The ancient Nubian vaulting technique allows a structure to be built uniformly of mud brick and 'contributes to passive

1: View into the vaulted *mandara* room

2: View of the *mandara* from the *huash*



1



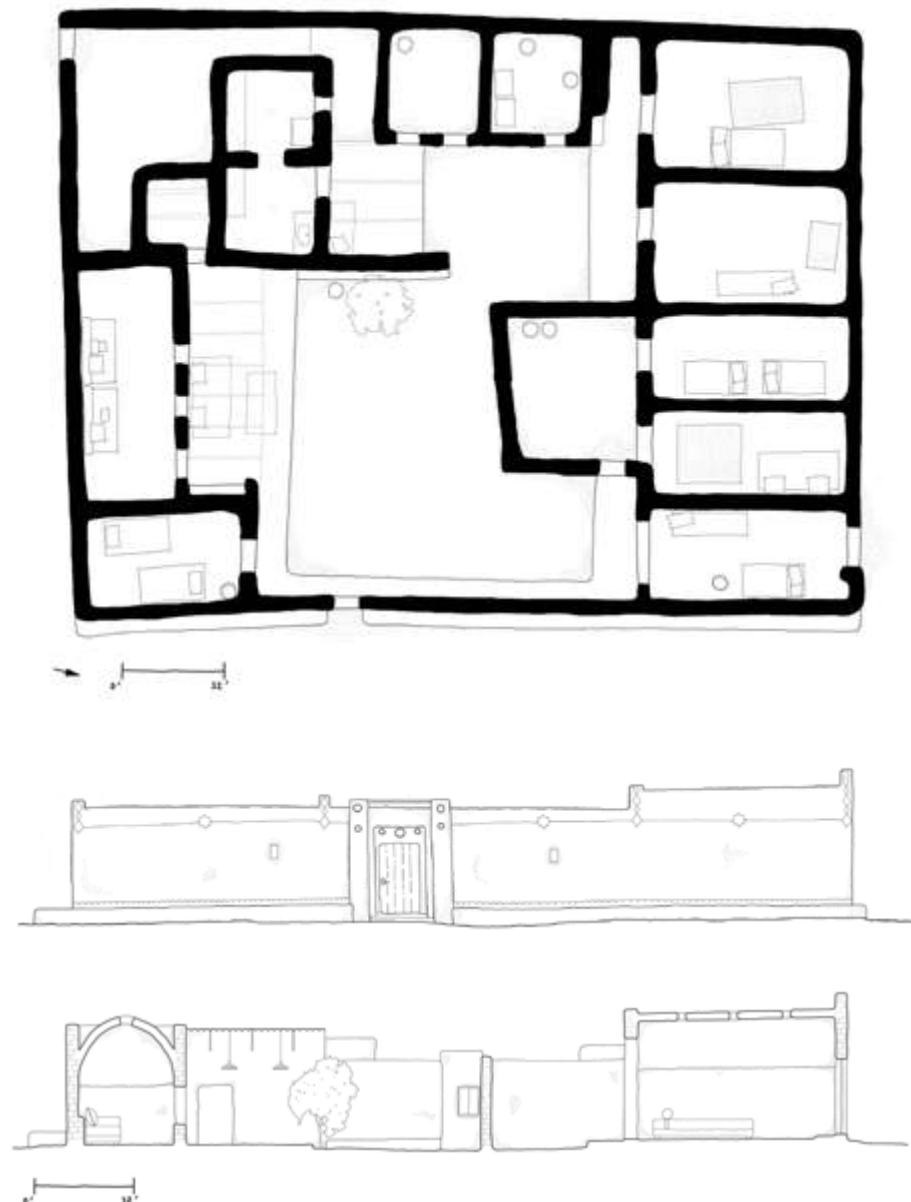
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cooling strategies against the harsh heat. As hot air enters the space, it rises and escapes through small openings at the top of the vault that also naturally light the interior. Additionally, vaults can be built quickly, by two skilled masons in a few days. One of the first architects to adopt Nubian vaulting principles in contemporary projects was Hassan Fathy, most notably at New Gournia Village in Luxor. The neo-vernacular principles he applied were learned during visits to Nubian villages in Egypt and Sudan, where he and other practitioners documented, sketched, and studied the local techniques.

The kitchen in this home included two smaller rooms, around 2 m² in size, with domed roofs that allow smoke to escape through openings. Adjacent to the kitchen there is usually a space for a pantry or an animal enclosure. Vegetables or meat needing drying may be hung in the pantry until ready for preparation.

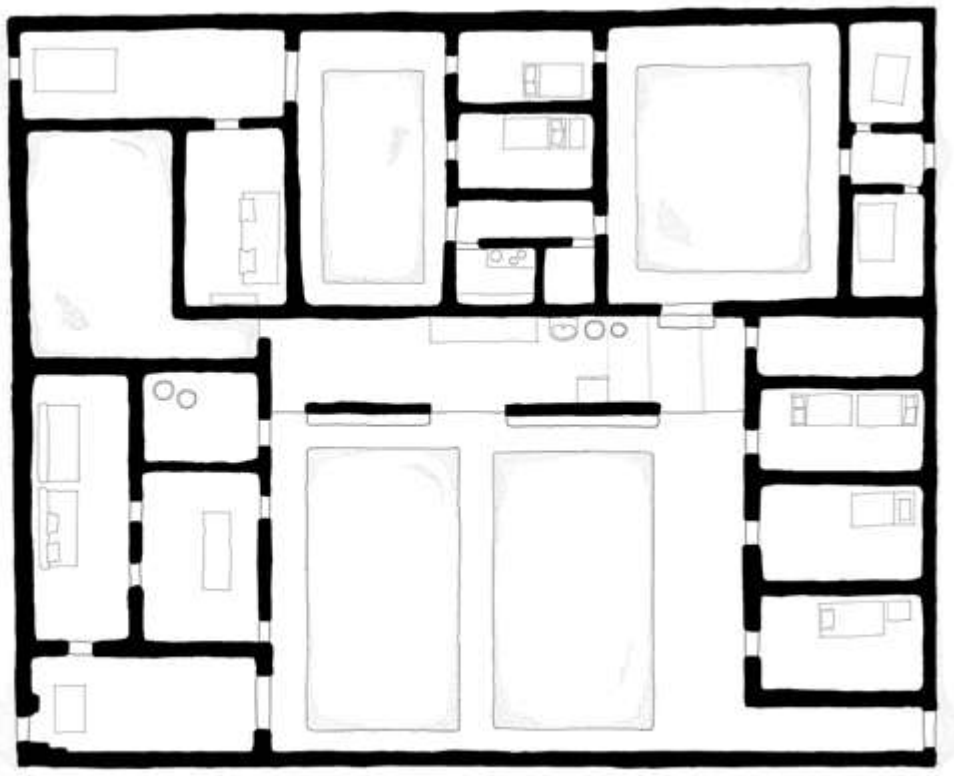
Moataz's friend told me the history of her house as we sat in the tin-covered loggia facing the courtyard, the only space where metal was used for building. Her father-in-law built the house following the 1933 raising of the Low Dam, when many others were also built. The village had a much larger population in the early-to-mid twentieth century but was collectively built in just a year,

Plan, elevation and section through a living room, loggia, *huash*, and *mandara* of a multi-generational Nubian dwelling



The main *huash*

through communal effort and participation. Her husband grew up in the house, and now they share the home with her two daughters and mother-in-law. The house also contains a smaller courtyard built around two bedrooms next to the *mandara*, as an addition intended to serve as a transitional home for her sister-in-law after she married, until her husband saved enough to build a house of his own. The importance placed on family and family history in Nubian homes is unmistakable, from



Plan of a multi-generational Nubian home with three courtyards



Mural of everyday activities
at Nagel-Gulab

the stories intertwined in the crafting of the home to the spaces they contain for public or private family occasions.

Ritualized maintenance takes place at least once a year, and entails replastering of the walls and vaults with a mud mixture by hand. The act of replastering, repainting, and decorating is necessary to prevent water damage from the occasional rainstorm. Life in earthen homes is by no means static; annual maintenance and modifications as family sizes grow or shrink, as well as preparation for adverse weather, is part of a wider system of upkeep and knowledge. Friends and family, including women and children, hold special responsibility for the resiliency and longevity of these structures. Such homes reflect family changes and climatic events and challenge traditional notions of buildings designed as static entities. Rather, through ritualized maintenance and care, the home is ever-changing.

I visited many dwellings in Gharb Aswan, some still occupied and others abandoned over the years through migration to cities such as Cairo or Alexandria. Nubian homes told stories of families and changes over the years, through the construction of a second or third courtyard or the addition of new bedrooms along the perimeter wall. One home even had three courtyards, two kitchens, and a cattle pen. Although only the mother and daughter currently lived in this expansive dwelling, as the sons had moved to Aswan for work, the whole home was beautifully maintained and cared for. Some homes in Nagel-Gulab had been left unfinished, with vast sandy courtyards and incomplete domestic spaces along the perimeter walls. A few homes had even been demolished and, in their place, four- or five-story red-brick apartment blocks rose, signaling a shift away from vernacular mud-brick homebuilding.

Systems of Care

Nubian homes can contribute significantly to the discipline of sustainable architecture and construction, in ways that exceed the material properties of mud brick. Nubian homes built communally and with care on a foundation of generational knowledge show a perfected art of building resourcefully, sustainably, and efficiently. The process of collective construction with the assistance of extended family and friends exemplify a humane, participatory approach that is often excluded from architectural discourse.

The homes I visited exhibited resilience through their regionally sensitive, nurturing design. As mud-brick and earthen architecture is becoming fashionable in the field, it is important to consider what we can learn from former methods. Learning from sustainable practices can greatly expand our knowledge repertoire. How might we integrate systems of care into systems of sustainability? After my travels, I returned with a better understanding of mud bricks, beyond their material and sustainable properties, but rather in terms of the social dimension of building with mud. Mud that is collected, molded, laid, and then decorated by hand is an example of combining efficient building practices with systems of care and craft. In some cases, when a house must be dismantled, the mud bricks are used as fertilizer, creating a beautiful cycle of returning to the earth after their use for shelter. The homes of Gharb Aswan illustrate how building resourcefully and intelligently can sustain multiple family generations, and the generations of knowledge embedded in these homes may be able to inform better building practices today.



Nubian village past and present

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Biography | Biografia | Biografia

Neha Garg

Neha Garg graduated from Cornell University's Master of Architecture program in 2023. She had previously worked at In:Studio, Mayor+Kennedy Architects, and Marvel Architects as well as for other cultural institutions such as the Museum of Modern Art or the Van Alen Institute. In 2023 she was awarded the RAMSA Travel Fellowship to pursue research on mud-brick architecture in Egypt's Nile valley. Neha's research has focused on documenting structures through photography, drawing, and oral histories, while looking at the social dimensions of mud beyond its materiality and potential for building.