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Build on the margin

Contemporary Vernacular Architecture in Gaza

Alessio Battistella

Politecnico di Milano | DASTU – Dipartimento di Architettura e Studi Urbani.



Vernacular Architecture
Conflict
Gaza
Raw Earth
Innovation



Entering Gaza

The first thing you encounter entering Gaza from Israel is the Erez Crossing, an enormous, energy-intensive building. Here, people fortunate enough to get a *coordination*, which is essentially a pass to enter locations within the Gaza Strip, begin their interminable wait. The voyage continues through a buffer area made up of landmines and remote checkpoints, and staffed by Israeli soldiers who, they tell us, shoot everything that moves outside of a narrow corridor. This corridor, enclosed on four sides, is the only *secure* way in. There is a strong feeling of apnea, of being immersed in a solitary Acheron without even the company of the Dantean demon whose «hair was white with years» (Alighieri, Translation Mandelbaum).

Once you reach the other side, there are two more surreal checkpoints: the more informal one by Al Fatah, and another by Hamás, which involves a careful search for alcohol and condoms. Inside, Qur'anic law applies without exception.

Once you enter, you immediately feel that you are part of something that cannot be real. It resembles one of those John Carpenter films from the 1980s, like *Escape from New York*, where Manhattan: «becomes the one maximum security prison for the entire country. A 50-foot containment wall is erected along the New Jersey shoreline across the Harlem River, and down along the Brooklyn shoreline. It completely surrounds Manhattan Island. All bridges and waterways are mined. The United States police force, like an army, is encamped around the island. There are no guards inside the prison, only prisoners and the worlds they have made» (Carpenter, 1981).

There are no adequate words to describe the Gaza Strip today. Up until 2007, armed squads circulated uncontrolled in the



Fig. 1 | Corridor, enclosed on four sides, the only secure way in. Source: Alessio Battistella.

streets. The situation shifted only in June of that year, when Hamás took control of the Strip, defeating the rival Al Fatah party. Since then, strict rules, applied with force, guarantee an apparent stability. But reality is not that simple: in Gaza's 360 square kilometers, a huge number of armed militias operate. They returned to action after the conflicts with Israel in 2009. The most powerful is the Ezzedeen Al-Qassam Brigade, essentially the military arm of Hamás, which has men trained in Lebanon and Iran who escaped Gaza via the Rafah Tunnel. Then we find the Al-Quds Brigade, the armed branch of the Islamic Jihadists, who are active in making and launching missiles, and who often cause more damage inside the Strip than outside. They are more radical than Hamás –insofar as that is possible– and are behind many attempted suicide bombings.

Continuing down our list, we find the Committees for Popular Resistance, a group composed of people disappointed with Al Fatah and Hamás, without political ambitions. Through their armed branch, the An Nasser Brigade, they plant improvised explosive devices on roadsides and set up car bombs. The Popular Front for the Liberation of Palestine asserts its role with missile launches, but its militia doesn't have the power of those described above.

To these groups, we should add at least a half dozen Salafist groups who live following 500 year old rules: the Al-Aqsa Martyrs' Brigade, the armed branch of Al Fatah (almost dismantled in the Strip), and a series of other small militias that are quiet for the moment.

The portrait I have traced so far allows us to affirm with near certainty that John Carpenter must have seen the Gaza Strip. As architects, we moved through these places in the most unobtrusive way possible. Every neighborhood is controlled by a different group; these are indicated by the colors of the many flags in the windows, which signal belonging to a militia. Then there is the constant hum of Israeli drones, which occasionally cause the car of a militia chief to explode.

A possible approach for sustainable building

In this context, the Mediterranean is a protagonist: an uncrossable limit to the west of the Strip, but one that represents an important source of food supplies. Salt is everywhere, even in fresh water reserves, which requires anyone living or working in Gaza to take strange salty showers. As is common in the Mediterranean, fresh water is rare and precious, and needs to be carefully managed, respected, and cared for. It is something anyone planning and building in Gaza needs to take into account. The choice of building techniques and materials cannot be based on formal choices alone. The planning process has to be guided by attention to available materials, simple

construction methods, and careful use of water. During the planning process, it is thus important to develop knowledge of the place and to evaluate the material and human resources that can be used in the building phase. Such an approach considers adaptability and flexibility to be key concepts, and finds answers to questions of how to interpret the cultural, physical, and climatic contexts in vernacular architecture. In this sense, vernacular architecture is an effective abacus of successful solutions, which can then be innovated to respond to complexity that increases over time. As Richard Ingersoll affirms, «Vernacular buildings respond to the local knowledge of materials, design, and construction. Thus vernacular architects follow conservative building traditions but incorporate constant innovations meant to resolve the day-to-day problems of making shelter» (Ingersoll, 2019: 12).

When planning in extreme contexts like the Gaza Strip, innovation is not tied to technology applied as if it were a separate layer from the architectural project. On the contrary, innovation resides in planning solutions that originate in the constraints of a particular place. Such solutions include technology, which is suggested by the potentials of a place. The place in which one works determines the choice of technology, which in turn helps define the language from the first phases of planning. Such a language is the direct consequence of the building system and the materials used, which can interpret contemporary architecture. «Vernacular structures may be classified in terms appropriate to modern forms; the tensile structures of reed huts, the mass walling of mud adobe houses, the reinforcement of mud walls with palm branches, the frame structure of timber house – these affirm the integrity of modern structural aesthetic which



Fig. 2 | Walls made with the Earthbag technique. Source: ARCò.

makes a clear statement of the principles of structures» (Oliver, 1969: 22)

We are not alone

Important previous research supports and provides continuity for a practice that finds innovation in the human capacity to understand places and build relationships with a context. It is a kind of unconscious planning, which comes from resolving contingent problems, from living and producing in a specific place. Regarding their work for the sixth Triennale in Milan in 1936, Giuseppe Pagano and Guarniero Daniel write: «The following study takes the rural house as its subject: not today's house, but the evolution of the house from its origins. From this analysis, our study deducts the logical way to define the form of farmhouse suited for our times, for modern needs, for the historic culture of our country. The goal of this work is to find the eternal law that left marvelous documents in the evolution of human history: the Mediterranean house, in its absolute honesty, not stylistically faked, which corresponds to the needs of agricultural life in every detail» (Pagano, Daniel, 1936: 22-23)

Twenty-eight years later, in continuity with this reading of architecture, we find the show curated by Bernard Rudofsky, *Architecture without Architects: A Short Introduction to Non-Pedigreed Architecture* at the MOMA in New York. «In short, Architecture Without Architects, introduces the reader to communal architecture – architecture produced not by specialists but by the spontaneous and continuing activity of a whole people with a common heritage, acting within a community of experience. The beauty of this 'primitive' architecture has often been dismissed as accidental, but today we recognized in it an art form that has resulted from human intelligence applied to uniquely human modes of life» (The Museum of Modern Art, 1964).

It is research based on the relationship between anthropology and architecture, and it takes into consideration the foundations of sustainable architecture. Architecture Without Architects arises from a mutual understanding between man and nature.

The research starts from the concept of «Primitive Architecture» (Guidoni, 1975: 14-15) which emphasizes spatial activities based on the economic-political independence of the communities that produce them, to understand their great innovative potential. Primitive cultures have always shown great resilience and adaptability in finding low-tech solutions with low environmental impacts.

Primitive architecture as an independent practice is capable, in turn, of generating independent and innovative systems. It is a research area that is gaining traction. Julia Watson

considers this legacy in her book, LO-TEK, where «Continuing the conversation on vernacular architecture as popularized in Bernard Rudofsky's Architecture Without Architects exhibition at MoMA in 1967, LO-TEK explores the intersection of design and radical indigenism» (Watson, 2020: 18). Watson's thesis is that traditional ecological knowledge is a cumulative body of multi-generational knowledge, practices, and beliefs. Indigenous innovation is sophisticated and designed to work sustainably within complex ecosystems.

The innovation that we find to be innate in vernacular architecture, which here we have also called primitive architecture, is always sustainable, because it contains within itself – in the very way it was conceived and implemented – the concept of the limit. This is the limit described in important works like *The Limits to Growth*: the limit that maintains the balance between the economy, the population, and natural resources, and that produces site-specific projects. «...it is not possible to foretell exactly which limitation will occur first or what the consequences will be, because there are many conceivable, unpredictable human responses to such a situation. It is possible, however, to investigate what conditions and what changes in the world system might lead society to collision with or accommodation to the limits to growth in a finite world» (Meadows, et al, 1972: 87)

Children's land

For this reason, the study of vernacular architecture must be the starting point for every project, especially in a place like Gaza in which finding building materials and a specialized workforce and confronting extreme climate conditions all constitute serious constraints.

This approach guided the planning process and the construction of two kindergartens designed by ARCò in Um al Nasser, a Bedouin village north of the Gaza Strip. Both were conceived by starting from available resources, local traditions, and observation of climate data.

In the case of the kindergarten built in 2011, which was co-designed with MC Architect, the choice of materials was a major problem because of Israel's tightening of embargos on the Strip. The scarcity of building materials and our desire to build a beautiful, comfortable, sustainable building made the process particularly difficult.

After assessing possible options, we decided to adopt the Earthbag technique, which had been implemented by the Iranian architect Nader Khalili who called it "Superadobe." To the existing technique, Khalili introduced the use of barbed wire between layers, and also the use of long sacks, ensuring better mechanical durability. The technique involves overlapping bags full of dirt to form a wall of the desired height.



Fig. 3 | Kindergarten playground.
Source: ARCò.



Fig. 4 | Detail of the façade.
Source: ARCò.



Fig. 5 | Kindergarten seen from the surrounding landscape. Source: ARCò.

We focused our attention on this technique for various reasons: the availability of bags in Gaza, the ease of building without a specialized workforce, the type of dirt (since the proportion of sand and clay makes it quite versatile), and the symbolic value of the technique. Before Khalili implemented this method, Earthbags were in fact used by soldiers in military contexts to build river embankments, temporary buildings, and trenches. The idea of using a technique related to war, used by soldiers, to build a public building used by children, seemed to us a powerful positive symbol of rebirth. The solidity expressed by walls constructed in this way creates a safe environment where children can play and learn. The building is partially underground, and the dirt that was extracted was used to fill the sacks for the walls. All of the classrooms benefit from the effects of thermal inertia of the dirt and the walls, guaranteeing lower temperatures in the summer and milder ones in winter. A natural ventilation system provides ideal thermal-hyrometric conditions. We planned for a system of water collection from the roof, stored in a buried cistern. A photovoltaic system provides electric power. All of our efforts to create a beautiful, comfortable, sustainable building turned out to be in vain when, after just three years, the kindergarten was destroyed by the Israeli army during operation “Protective Edge.” Unfortunately, this happens often in these areas of the Mediterranean.

Fig. 6 | Nubian vaults made with Compressed Stabilized Earth Blocks.
Source: ARCò.



Fig. 7 | Interior of the classrooms during the construction site.
Source: ARCò.





We thus needed to give the village of Um al Nasser a new kindergarten. This happened in 2016. This time, we decided to change materials and techniques in order to offer local communities new tools and new knowledge. After evaluating the resources available at the time, we decided to use Compressed Stabilized Earth Blocks, bricks in raw earth that are stabilized with 8% cement. We also adopted the Nubian Vault as a technique that reflected local culture and solved construction problems. The choice of the Nubian Vault was a tribute of sorts to the Egyptian architect Hassah Fathy, who often used this technique with excellent formal results. The Nubian Vault is distinctive because it does not require form work in the building phase, and because of the advantages it offers in procuring materials for the construction site. The project seeks to showcase local identity and to adopt construction materials and techniques tied to the region and its traditions. The vault is an evocative cultural element, recalling the cupolas of the existing Women's Centre.

Fig. 8 | Facade from the inner courtyard. Source: ARCo.

Conclusions

The new kindergarten is still operational and has become a visual, social, and cultural landmark in the village. It is the temporary point of arrival of our Mediterranean pathway. Temporary, because here nothing lasts forever. Everything is unstable, precarious, at the mercy of the insanity we call war. The war that does not spare even places destined for the most fragile members of society, the children. The war that seems unending, and that accompanies the children as they grow up. This, too, is the meaning of 'Mediterranean': contrasts, conflicts, misunderstandings, the inability to live together. These things do not pertain to civil society, however. The people we encountered daily never forgot the importance



Fig. 9 | Facade from the inner courtyard. Source: ARCO.

of hospitality, of welcoming others. They are people we cannot abandon, and with whom we must build the future. They are people who recognize that the Mediterranean is a place of values that have been shared for centuries. With them, we must build symbols that can revive the identity of the Mediterranean. As architects, we consider research on materials and technology to be important tools for creating such symbols. So, the concept of vernacular architecture can be broadened to contain the theme of appropriate technologies that is to say technologies that respond effectively in terms of implementation and maintenance to the cultural, social, economic and technological context in which they are applied. The best answer to a technical problem is not necessarily the most developed from a technological point of view, but the most adaptable to the context, capable of increasing the autonomy of the context itself. This has been clearly explained by the German philosopher and economist E.F. Schumacher who through the concept of intermediate technologies finds the answer to a correct practice in the mediation between the primitive technology of developing countries and the advanced technology of the so-called developed countries. This is an approach that fits perfectly with the Circular Economy model that can be described using a quote from the Ellen MacArthur Foundation. «The model distinguishes between technical and biological cycles. Consumption happens only in biological cycles, where food and biologically-based materials (such as cotton or wood) are designed to feed back into the system through processes like composting and anaerobic digestion. These cycles regenerate living systems, such as soil, which provide renewable resources for the economy. Technical cycles recover and restore products, components, and materials through strategies like reuse, repair,

re-manufacture or (in the last resort) recycling». A perfectly consistent model with the traditional ecological knowledge that we can find in primitive architecture!

So, we can say that vernacular architecture, in its primitive forms of expression, provides a possible way to achieve sustainability. The level of technology that we can introduce into the architectural system depends on the place where we operate but the degree of innovation does not change. Vernacular architecture is the result of a common thought that has been able to refine extremely innovative construction techniques over the years. These techniques are the direct consequence of climatic factors that we can find similar in many parts of the world and of cultural factors that define the specificity of each solution.

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