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How can cultural heritage serve human-centered smart cities in the GCC?

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Smart cities are cities first, so social built environments, advanced technologies provide smart data collection and delivery to offer their inhabitants a better quality of life. Academic and internet literature mainly focuses on technology resources; however, the required characteristics for a smart city as sustainability, resilience, and quality of life are necessary.

Culture is the fourth pillar of sustainable development, and the cultural heritage explicitly recommends by Quito declaration for an inclusive city. Moreover, cultural heritage has been officially recognized by the protocol signed at the WUF 10 in Abu Dhabi (2020) by UN-Habitat and ICOMOS as an important ingredient in the achievement of SDGs. Moreover, culture has also been widely mentioned in the 2030 agendas of the single Gulf Countries to enable a vibrant society. It is a component of the city itself operating as a "Smart & Sustainable City.", fully connecting buildings and infrastructure to ensure easy mobility for all residents and tourists and provides easy access to all economic centers and social services as in the case of Dubai Smart City. However, historical buildings could be considered the opposite urban ingredient to technology, so let us see why and how cultural heritage, including tangible and intangible, can be an invaluable resource to smart cities.

First, built heritage contributes to urban sustainability while re-using and recycling the existing assets, all fully owned by the community, even when private. Being those urban shapes and conglomerations, single buildings, materials, and manufactured handicrafts, significant intangible elements, such as memories, traditions, and collective consciousness.

Moreover, heritage buildings and urbanism create a sense of belonging and rooting on the local identity. GCC cities were vernacular and collectively constructed, rooted into two main cultures, the desertic and the maritime trading traditions, making the Arabian Peninsula and the Middle East the trade connector between three continents: Asia, Europe, and Africa. This trading tradition was explicated into a difficult and extremely hot environment, dry or humid, depending on the different areas and bringing to nomadic roots and unique traditions.

UNESCO World Heritage lists Oman as the Land of Frankincense due to the natural growth of the frankincense tree from which the resin was produced, collected, and traded through the desert and shipped along the 'Silk Road to the Sea". A system of desertic settlements, oasis, and water management dating back to the Neolithic and Bronze Age, and more recent fortified castles and seaports extending the full Arabian peninsula, water infrastructures, ancient trading routes made nomadism the shared cultural heritage among all the Gulf Countries. It includes officially recognized intangible heritage, like poetry (in different forms of songs, dance accompaniment, or war incitation, or oral transmission), the dance of valor (by sticks or swords), the *majlis* as the place of collective decision making, the *Ghawa* (coffee), carpeting and falconry, so as several traits still embedded in the specific tradition of each of the countries: the sense of belonging to tribes, the openness to strangers and visitors (hosted and provided without asking even the name for three days), the need of creating strong blood relationship and families, and the social construct as an extended family, becoming clan and then tribe, responding to the same social rules. These rules manifested urban constructs targeting a significant social cohesion and supporting it by principles of the sustainable built environment and circular economy: environment, economy, and social sphere.

Arab cities are organized in clusters, visible in all the traditional districts, and a complex system of irregular streets stemming from the main mosque, always surrounded by the *souq*, as the social and cultural pole, where the whole community gets reunited. Urban space moves from public to private

through unwritten but well-defined thresholds into the clustered areas. Streets were not traced in grids or axis, as traditionally happened in Europe and later on in the US, but instead generated from juxtaposed buildings and their growing extension of units when the family gets bigger.

The several memorable examples of built heritage in the region are archeology, mainly in desertic areas and far away from urban centers, and walled cities, forts, and fortresses, both on the mountain and the desertic regions, so as on coastal area, mainly from ottoman times not having also the strength to connect to the urban texture. Just a few preserved urban features can potentially serve as catalysts for a smart transformation of the GCC cities through human-scaled design and enhancing into citizens a sense of belonging. Otherwise, built samples of heritage are mainly away from the newly developed cities and considered as "monument" more than a living heritage, able to re-enforce and receive the local roots and awareness deeply in the population. Main conceptual principles of human scale and nature embedded urban settlements have not become the rooting elements for the newly developed cities in the region, bringing to a loss of identity and resilience in the new manufactures. Small scale and systemic approaches are the first steps towards a real and substantive effort towards a meaningful adoption of the New Urban Agenda, resilience, safety, and avoiding greenwashing while moving away from the destructive forces of urban sprawl and reliance on motorized transport. Otherwise, the alternative is a "utopia for the few and a dystopia for the many."

Smart cities might be considered the ideal cities of the past to prefigure new futuristic realities and life scenarios. As ideal cities of the Renaissance remind us, the urbanism is more a social and cultural construct first, and from it depending on the construction itself; an integration of functionality for the new needs of the society, so as the materializing of contemporary ideals of social life as a social and political entity. The further theorizations, in the 60'ies and 70ies all mislead on this social component, bringing to dystopic settlement. There is no technology able to make up for a disconnected society. Arab urbanism traditionally looks at the urban construct, so the single buildings were structured as resilient bodies, expandible and very containing simultaneously, quite homogeneous in the architectural quality and a richness expressed only in the indoor.

The narrow and irregular tissue created a natural shadow and cross ventilation of the public space, thanks to narrowing sections increasing the Venturi's effect. Passive environmental solutions and the best use for local materials were taught from generation to generation based on ancient knowledge of desert and sea. Nowadays, the few heritage projects in the GCC, some of them as revival, other as actual restoration and regeneration of the existing buildings, are very successful and attractor not just for tourism but for the local citizens, as the most livable indoor and outdoor spaces, within cities grown up too fast and urbanized following external traditions. Oman preserved its traditional architecture and urban scale; in Bahrain, the Portuguese castles' areas, rehabilitated as an art hub and fashionable food experience. In Kuwait, the Heritage Village is a popular contemporary construct and probably the best example of vernacular urban regeneration, however too far from what is intended as an incarnation of the heritage spirit. More in this direction is evident in Saudi Arabia with the Salmani Style, starting in the 80ies as an evolved traditional Najdi style, and engaging several major projects in the Kingdom nowadays, as the structured attempt of regenerating the heritage tradition, moving from the concept of heritage into the concept of identity.

Moving heritage areas into smart cities require some extra effort of "modernization" and integration of sensitive data management. Goals are: making the experience smoother and helping in building the sense of belonging of communities, generating the confidence of more contemporary approaches to heritage areas, once deeply understood what Latin used to call the *genius loci*, the spirit of the place. It requires, essentially, a broad and deep understanding of the cultural roots in a framework of deep ecology, enabling the current generation to embrace the tradition and reimagining it in a bold sense of belonging.

Regarding the importance of involving the youth in this process of making heritage smart, the Youth and Heritage, Doha Forum 2014 recommend establishing "Youth Units" to generate more knowledge and skills on tangible and intangible values through youth capacity-building on World Heritage. International and trans-regional platforms could facilitate exchanges among young specialists from different professional environments, via academic seminars, on-site training and other community engagement projects to raise awareness about the need for sustainable management of World Heritage sites as explained by UNESCO. This path is visible in some significant bottom-up approaches to innovating the heritage as the Riyadh Museum Youth Challenge presented in the last World Urban Forum (WUF10). International experiences on storytelling under the concept of multi-stakeholder communication, performed in Italy by Urban Experience to rediscover mountain villages through smart devices and

hands-on experience, could be a useful example in the discovery of human landscapes, the ultimate collectors of intergenerational exchange and community.

Since Arab urbanism has been an exceptionally resilient and sustainable construct within extremely difficult environmental conditions, it has to be trusted as an incredible potential of traditional constructive strategies and implemented through the most modern technologies. Circular economy, integrated natural environment, multi-layered indoor-outdoor exchange, cross ventilation, water management systems, use of natural materials, and building features as double skins, wind towers, solar chimneys, environmental courtyards, thermal mass, and earth pipes are all sustainable solutions first developed in the traditional GCC urbanisms. We are looking forward to seeing those enhanced into computerized management systems in the Gulf Countries' smart-cities-to-be.

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