

# A Critical Regionalism in the Golf Architecture: A Masdar's 'Eco-city Project'

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**Abstract:** This article echoes Kenneth Frampton's critical regionalism to address maintaining the values of the past into the present. For Frampton, architecture design is regionally infused due to essentially dealing with "specificity and locality", however, remains reluctant to adopt a "universal technology". A Masdar City's design represents a valuable case due to casting light on the complexity embedded in intertwining the modernist technologies and a regional architecture. The case study's analyses cited here suggest that the design of the present evolves from this complexity witnessing a deviation from a "universal technology" and a local architecture. A vernacular style of architecture has been blamed because it stitches together the "globe" and the "local". A universal technology has been also witnessed here which yields support for the vernacular approaches embedded in a traditional architecture. What Frampton's critical regionalism appears to overlook are the vernacular approaches that in the analysis of this article embrace a model of the design principles for the "tectonics" to be realised. The key argument brought forward in this article concerns Frampton's critical regionalism that yet lacks a realistic approach to produce a sense within a local context, thereby needing in its theory to neatly twist the vernacular approaches with a critical regionalism's synthesis.

**Keywords:** Cultural construct; Cultural legacy; Place's "unique identity; Local context; Precedents; Masdar City's design

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## 1 Introduction

The question at stake for addressing concerns how architecture design of the present adopts a traditional architecture. In an attempt to address this question, we use Kenneth Frampton's regionalism to arguably help interpreting this article's case study and in turn addressing how this regionalism's theoretical basis might be sharpened. Frampton's notion has addressed how technology, under the patronage of capitalism, alter the "one-dimensionally" perspective of cities<sup>[1]</sup>. Frampton has accordingly charted his notion of regionalism with the "phenomenological" objective of the dichotomy existed between "national culture and civilisation" by analysing, for example, Alvaro Siza's work, in Porto, and Tadao Ando's work, in Osaka, to suggest that the design of the present does not hold on the already known knowledge, or belief. Rather, it grapples with "the creation of new values in and through art"<sup>[1]</sup>. As a result, while Frampton distances his discourse from a vernacular style of architecture, it seeks to vernacularize the "referential elements"<sup>[2]</sup>. Furthermore, Frampton has twisted being "critical" with a regional architecture in the light of his theoretical affiliation with a Marxist approach to the history of a modernist architecture. Here, it is worth pausing shedding light on the meaning that underpins a "critical" perspective. The latter necessitates a thorough insight into how the history relates to the present<sup>[3]</sup>. Frampton in this respect reframes "destruction" and "conflict" observed in Ricoeur's opposition of cultures and civilisation to suggest that an architecture design of the present is "regionally inflected", however, embodies a "critical and revisionist form of modern architecture"<sup>[4]</sup>.

Frampton goes further and has developed his theoretical discourse “in more systematic terms”<sup>[1]</sup> grounded in the *Prospects for a Critical Regionalism*, published in 1983, to reveal a *Critical Regionalism*, also published in 1983. Six design guidelines in architecture follow to essentially address two broad categories: history and contemporary<sup>[4]</sup>. A dualistic stance in these guidelines therefore remains. Indeed, the first three guides discuss a “positivistic readings of the Enlightenment”. The remainder shed light on a local architecture. Altogether, the guidelines highlight themes that literally stand in opposition: *culture and civilisation, the rise and fall of the Avant-gard, and regionalism and world cultures*<sup>[1]</sup>. The opposites also embody a particular notion of resistance while suggesting that a “culture became a global concept”<sup>[4]</sup>.<sup>5</sup> Or, the guidelines, anchored “within globalising trends”, strive for “a form of cultural, economic, and political interdependence”.

Central to a Frampton’s theoretical discourse lies the distinction between “local and global developments” flagged by “a certain resistance”, however, “without being regressive”<sup>[5]</sup>. The volume published in OASE, the *Journal of Architecture*, in 2019, and is termed *Revising Critical Regionalism*, has set a number of issues at stake in architecture theory which has been brought forward by Frampton’s regionalism. One concerns the intersection between “specificity and abstraction”. Here, whilst Frampton’s proposition of architectural culture, instead of “historicising one”, questions the need to abstract the architectural features, it endorses a critical discourse that heightens cross cultures. Another issue addresses the peripheries – that stem from the European history marked by a modernist-postmodern architecture – and is associated with “universalisation and local practice”. A further issue is paradoxically embedded in a multiplicity of the postmodernist style<sup>[6]</sup>. Paradoxically, while Frampton’s regionalism firmly distances its discourse from the latter’s style, his regionalism has been in practice born into this style’s era by following this style’s synthesis concerned with referring to history and context. A final issue concerns resisting “universalisation and universality” as well as advocating “specificity and locality”. Frampton’s regionalism in this vein addresses the tension occurred between the “globe” and the local architecture and, in turn, helps other scholars to investigate the relation existed between architecture history and contemporary culture.

Analysis of this article follows this path. The intention, here, is not concerned with suggesting utopian solutions, rather, with provoking further exploration and/or investigation. The theoretical roots to Frampton’s regionalism did not repudiate that a modernist architecture yet remains problematic, nevertheless, has faith in such architecture because it would “eventually foster a critical understanding of the historical predicament of the profession”<sup>[7]</sup>. Frampton draws on the Heideggerian’s ideas of a place and also on the political stance of Hannah Arendt to suggest his *critical theory of building*. The theory not only addresses a “creation of place”<sup>[7]</sup>, or “placeness”<sup>[8]</sup>, but also considers “scenery, historical references and light” without stepping into a fake architecture design, or conventionalism. Frampton thus develops his “own regionalist alternative” that moves away from the Venetian postmodernist perspective and, instead, suggests four thematic issues; 1) neo-productivism (a technology that is marked by autonomy from its context), 2) neo-rationalism (morphology), 3) structuralism (anthropology), and 4) populism (contextualism)<sup>[7]</sup>. Frampton in this perspective associates his alternative with *realism* and *neo-constructivism* to draw on the cultural and socio-political aspects, respectively, in addition to the “aesthetic sensibility” of a modernist position<sup>[7]</sup>. Collectively, Frampton’s discourse embodies a “syntax” flagged by the “tactile: [that] exists side by side with the visual”<sup>[7]</sup>. Individual architects are key in this “syntax” due to their “capacity to condense the artistic potential of the region while reinterpreting cultural influences coming from outside”<sup>[9]</sup>. Fused by Paul Ricoeur, the “syntax” calls for a crossbreed “world culture” to merge those puzzles anchored in a “rooted culture” with the burdens of the “universal civilisation”<sup>[10]</sup>. In this light, Frampton’s regionalism has challenged a “cultural transformation”, or a “one-way dissemination”, which occurs between the prevailing centre and the reliant peripheries<sup>[7]</sup>.

To what extent a Masdar City’s design overlaps, and/or contradicts, with Frampton’s discourse, and in particular with the latter’s “opening to modern architecture”<sup>[7]</sup>, or with Frampton’s aim to address the misuse of universal technology through the “regionally infected” architecture. This is precisely what this article aims to investigate, and it shall be demonstrated in what follow by addressing the question set at the outset of this section and which could be rephrased as

follow: how a modernist architecture (with its universal technology) intersects with the local architecture through the lens of Frampton's hybrid "world culture".

## 2 A Critical Regionalism in the UAE: the Masdar City's Design

Before proceeding into the discussion centred on the case study, the question that begs itself concerns adopting a framework that could help interpreting this article's case. The previous section shows that Frampton's discourse integrates the global architecture into a local context embedded in a place. Frampton's discourse underpins both the aesthetic and the technical elements of the "globe" with the peculiarities of the regions. Frampton, in his article labelled *Towards a Critical Regionalism*, does so by outlining six design guidelines<sup>[11]</sup>. In a latter publication, *Ten Points on Architecture of Regionalism: A provisional Polemic*, Frampton further develops the six ones into ten guidelines<sup>[12]</sup>. It is argued here that the guides overlap and, thus, could be incorporated into three, namely a place, a cultural identity and an architectonic aesthetic (see also,<sup>[6]</sup>). These three guides constitute the framework discussed in the next subsection necessary to narrate this case study's discussion.

### 2.1 A theoretical framework

#### 2.1.1 A place

At this guide's core is not only the living and/or the social spaces of the buildings but importantly how public spaces associate with their contexts. This is because:

"the existential purpose of buildings is [...] to make a site become a place [...] to uncover the meanings potentially present in the given environment"<sup>[13]</sup>.

Accordingly, a spatial relation configures the buildings on site. Frampton in this relation distinguishes between a place's physical design and a place's design. The latter for Frampton shows a design concerned with addressing how a society interacts in its daily activities. Architecture does not accordingly minimise its potential to the physical aspects of a space but extends its scope to namely evoke this place's identity. For Frampton, while architecture may well enclose the space by its building structure, the latter's boundaries do not represent in their design the space's end, on the contrary, its start. Frampton's regionalism, therefore, heightens the regional values by holding on a "dynamic flow" that slides in the spectrum existed between the

space and the place to associate architecture design with its place's identity.

Frampton – in seeking to evoke a place's identity – holds on a "dynamic flow" interpreted through a "place-frame" flagged by the "imagable":

"what, then, do we mean with the word "place"? Obviously, we mean something more than abstract location. We mean a totality made up of concrete things having material substance, shape, texture and colour. Together these things determine an environmental character, which is the essence of place"<sup>[13]</sup>.

In essence, a "place-frame" denotes a material existence explained through a site design that shows how humans shape their place. For Frampton, this occurs when:

'architecture is bound to situation, unlike music, sculpture, film, and literature, a construction is intertwined with the experience of a place. The site of a building is more than a mere ingredient in its conception. It is its physical and metaphysical foundation'<sup>[14]</sup>.

Hence, a "place-frame" underpins two concepts deemed essential to extract a place's value and these are: material existence and site design. Both concepts establish a place's spatial design anchored in the socially and the physically.

#### 2.1.2 A cultural identity

A further concept that Frampton identifies in a place's spatial design concerns a region's peculiarity. Frampton views the region from the perspective of "institution" conceptualised through the lens of a "school of thought"; that is, a "typology of architecture", or a "typical architecture". A region conceptualised as an "institution" draws, on the one hand, on a "school", or a "cultural construct", which intertwines the regions with their local cultures, while the "clients" are at the centre. On the other, a "school" represents the "cultural institutions" from the perspective of a "myth". Notably, the latter is not understood as a fake novel, but rather as the "precedents" of the history (or, the "grandeur" of the place) which inspire the architecture design of the present. A "myth", therefore, addresses how a place's cultural identity merges to accentuate this place's glorified qualities. A critical regionalism, therefore, conceptualises a local culture from the perspective of a "cultural construct" that holds upon the past to realise a purely functional reasoning, however, without a philosophical aspiration<sup>[12]</sup>. Frampton applies a "cultural construct" using the regional materials and the

construction techniques of this region. Architects' skills are key in this respect to read, interpret or redefine a region's peculiarity.

Frampton turns to a "typology" and a "typography" to outline a region's culture. For Frampton, a "typology" evolves from a civilisation, or a cultural legacy. At its core is a cultural evolution emerged as a result of how human settlements enforce the changes occurred through the history while equally reacting to the peculiarities of the region. A "topography", or a geographical location, draws on the place's physical characteristics of a site's natural environment. Albeit in different ways, a "typology" and a "typography" reflect upon a context and identify the society's identity from the perspective of a "place-form" that mediates between the natural environment and its cultural heritage.

### 2.1.3 Architectonic aesthetic

Frampton's theoretical discourse has spotted the "misuse" of a universal technology. This is because Frampton views a modernist technology from the perspective of a "cultural legacy" realised through geometry adopted to reconfigure a place. Frampton in doing so adopts the perspective of a "body" that uses "multisensory", or bodily experience, to not only acknowledge, explore or read a place's uniqueness, but also resist a "technocratic" world. Frampton applies "multisensory" using construction materials that leave their imprint represented by texture or colour, for example, however, being relevant to a local context. The concern here is with the choice of natural and artificial elements to arrive at a "regionally sensitive architecture". Worth noting, Frampton does not completely negate a modernist technology. Instead, his discourse echoes integration in an effort to twist the techniques of the "global" world with the vocabularies of the local culture by reinterpreting architecture from its structural system to be found in both its assembly and its "artistic composition"<sup>[11]</sup>.

To realise integration, Frampton calls for the "architectonic" that its perspective views architecture design not merely from its structural system but also from a "mythic reality"<sup>[12]</sup>. An "architectonic" essentially points to a human-made construction that is assembled following the cultural values and a natural environment. For Frampton, it would be arguably mistaken to swap the "tectonics" for the technology. Rather, the former denotes that a "building" itself – its materiality, its joinery, its structure, construction and detailing – is raised to the level of an "art form",

thereby drawing on artistry, invention, or intention. In essence, the "tectonics", through the "art form", draw on the aesthetically constructed architecture design by "the functionally adequate form [that] must be adopted so as to give expression to its function"<sup>[15]</sup>.

## 3 Masdar City

### 3.1 Background to Masdar City

The City has been allocated over six million square kilometres to score a sustainable development. Its location (Figure 1) is approximately 18 kilometres far from Abu Dhabi's International Airport. The Masdar City, following its initial plan, occupies seven kilometres to host 90,000 inhabitants, 40,000 residents and 50,000 daily commuting for business. The City, planned and designed by Foster and Partners, has been designed as the "world ambitious eco-city project" because its design strives for a "zero carbon, zero-waste global benchmark" for a sustainable city<sup>[16]</sup>.



Figure 1. Masdar City's Master Plan, 2013 <sup>[23]</sup>

The spirit that has motivated a Masdar City's design concerns: "the solution was already there in the old architecture", however, "using technology to make it

more efficient<sup>[17]</sup>. What distinguishes a Masdar City's design concern the vernacular qualities<sup>[18]</sup>. Whilst the City has at its core "a hub for green technology innovation", the latter is in harmony with the Gulf region's culture<sup>[19]</sup>. In brief, a Masdar City's design sheds light on:

"[...] reinvent[ing] the traditional Arabic city [...] – where the person, not the vehicle is paramount, where design responds to the climate"<sup>[20]</sup>.

The strategies used in the Masdar City "respond to the climate" and include low-rise buildings, courtyards, linear gardens, or wind towers, besides adopting a pedestrian design to achieve a proximate walkability<sup>[19]</sup>. In particular are the vernacular aspects that include a passive design, a self-shading, a natural ventilation and a mixed use. The question that begs itself now concerns how "a hub for green technology" has been applied to the Masdar City in conjunction with a "universal technology". In response, the next subsection applies a place, a cultural identity and architectonic aesthetic to a Masdar City's design.

## 3.2 Applying Frampton's Regionalism to the Masdar City's design

### 3.2.1 A place

At this guide's core is a "place-frame"; including the material existence and the site design. The latter shows a Masdar City's "physical foundation" marked by a contradictory design. The city's urban structure on the one hand draws on a "loose grid" that weaves together its urban structure<sup>[21]</sup>, however, it becomes less affected by the grid despite being "entirely systematic". Furthermore, a Masdar city's site design has been set into two squares (Figure 2). The emphasis has been on a rigid geometry to unite the urban structure through a simple geometry of the basic shape; however, a distinction arises here due to the two squares being different in the size to, arguably, step away from being "monotonous"<sup>[21]</sup>. A contradiction continues in the site design by incorporating another geometry, namely a curving shape. A major "thoroughfare" (a boulevard) interconnects the two squares in a wavy fashion cutting through two tangential circles (Figure 2).



Figure 2. Site geometry of Masdar Master Plan <sup>[23]</sup>

Why the site design has been configured this way? Arguably, a "monotonous" design remains insufficient. The design in response turns to geometry that its physical arrangement leans upon the sustainable approaches. The two squares have been, for example, rotated 45 degrees from the north towards the north west/south east direction<sup>[22]</sup> (Figure 2) to capture a cool breeze while maximising a self-shading into the street's

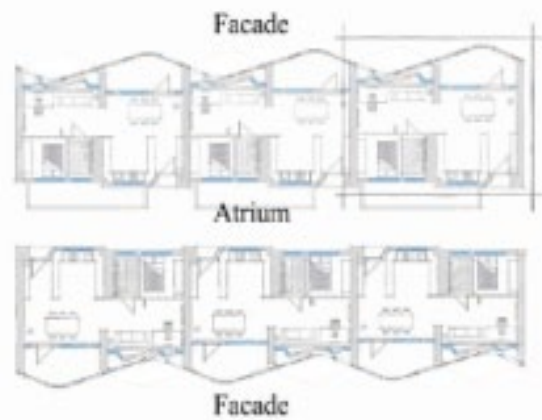
network which would shield the pedestrians from a direct solar radiation, however, without compromising their movements<sup>[23]</sup>. Another example concerns the two-parallel green "spines" (or, the "green fingers") (Figure 1), which have been shaped resembling a zigzag and cutting all through the two squares, from the north east to the east, to maximise a cool breeze, particularly at night<sup>[21]</sup>. Large open spaces, or urban parks such as the

Hyde and Regent Parks located in the US, would not fit into the Masdar City's harsh desert climate largely due to the exposed areas to the sun heat. Forster and partners have therefore turned to the "green fingers" that are placed across the Masdar City to fit in with orientation, thereby funnelling the wind direction into its path.

A further basis, which has configured the "metaphysical foundation" of the Masdar City, stems from the values of the past. An example is a compact urban structure, including narrow and "blind" alleys, "dead-end court streets" or the courtyard<sup>[23]</sup>. A Masdar City's design has in this vein drawn on a social sustainability, or how the place has been inhabited in the past. The design has been therefore clustered into four quarters (not necessarily residential); each has revolved around a square that acts as an "optimum microclimate" while benefiting from the passive cooling and the living environment as similar as a traditional courtyard<sup>[24]</sup>. It is suggested here that a Masdar City's design has echoed a courtyard's typology to actually benefiting from the latter's thermal comfort, however, has applied few amendments.

One change notes the traditional courtyard being transformed into squares, or plazas, yet resembling a public space's function. Such a change has at its heart the social transformation evolved over the time in the Gulf region<sup>[23]</sup>. A Masdar City's design in response avoids separating males' and females' spaces by incorporating "dead-end court streets", or, "blind" alleys – as it is in the past – through the "duplicate spaces" emerged as result of the disparity witnessed in the UAE's society between the wealthy and the poor<sup>[21]</sup>. Another change concerns the courtyard's function that acts as a "service node"<sup>[24]</sup> by the courtyard being directly connected with the traffic routes to achieve the "social dynamics"<sup>[24]</sup>. The urban blocks of the Masdar City are associated using pedestrian routes, transit network and light methods of public transport. A proximate walkability emerges through a variety of available transport modes. The latter's network does not constitute an "orthogonal grid pattern", rather, an "irregular and idiosyncratic"<sup>[21]</sup>. A further change concerns the courtyard's typology at architecture and urban design scales<sup>[23]</sup>. At the former scale, the courtyard has been packed between the buildings to resemble the atrium (Figure 3). At the latter scale, a Masdar City's design has adjusted the courtyard taking into account the relation of solids and voids<sup>[25]</sup>, the

courtyard's orientation and also the courtyard's height in association with the width's proportions of the surrounding urban structure<sup>[17]</sup>.



**Figure 3.** The atrium <sup>[17]</sup>

The changes, described above, arise due to the "global development" infused with a universal technology, however, remain regionally affected. The courtyard's concept concerned with the social interaction remains, its thermal comfort has been kept and the mobility network inheres a traditional pattern marked by irregularity. For Frampton, architecture design evokes a place's identity by being "critical" to the modernist technology, however, remains relevant to a local context. In a Masdar City's design, the place functions as a "symbiosis" between its mobility network and the "static elements" (for example, squares or courtyards)<sup>[25]</sup>. An architecture design, for Forster and partners, does not limit its scope to focus on the "object" (a modernist synthesis). Rather, it echoes adopting a traditional pattern to be placed into a "continuous fabric" of the present through "the function of walls for urban rooms"<sup>[25]</sup>. Not surprisingly, the spatial configuration of the Masdar City's design shows a narrow shape corridors which has been borrowed from the traditional alleys to be placed at the buildings' upper levels, whilst remarkably placing at the ground level wide ones to accommodate a modernist mode of traffic, consequently easing for multiple "scenes", while the upper floors "protrude" over the below ones by an "undulating" elevation to provide for a self-shading<sup>[23]</sup>. A Masdar City's spatial configuration apparently remains distinct from a traditional shading, or a canopy structure, of the Gulf architecture – a traditional shading briefly splits the atmosphere's void into varied

temperatures to ensuring that the alleys are shaded, nevertheless, compromising a natural daylighting.

The spatial configuration of a Masdar City's design not only varies from a traditional shading but also appears to yield support to the provision of shading, however, without affecting a day lightening. By integrating the "universal technology" with the regional values, Frampton addresses "specificity and locality" to resist "universalisation and universality" through a "critical" perspective. In a Masdar City's design, a "universal technology" has been found in this article to support the vernacular approaches. A Masdar City's spatial configuration has been a good example in this respect.

A further example concerns a material existence exemplified in the site design. Frampton in this example extracts the regional values using both a "place-frame", as illustrated previously, and a material existence. Yet, the choice of modernist materials in the design of the present arguably relies upon their relevance to the local context. The examples cited below illustrate this argument. The Masdar City's external walls, or latticed-wooden work, have been constructed of a reinforced-concrete while being coated with palm wood and terracotta cladding<sup>[26]</sup>. The latticed-projected oriel windows (screens) have been constructed using a glass-reinforced concrete (GRC) in conjunction with the sand being shovelled from the desert to create an "undulating" façade that has been coloured with the local sand to not only integrate the Masdar City with its desert context but also function as similar as a traditional screening while minimising maintenance<sup>[26]</sup>. Remarkably, an excessive size of glazing has not been abandoned in a Masdar City's design. By contrast, glazing has been featured with the large-sized screens that are constructed of terracotta tiles and are equipped with a texture marked by a traditional decorative pattern<sup>[26]</sup>. A large-sized glazing increases a natural lightening, however, maximises a direct "solar gain". The latticed-wooden and meandered surface protects the interior space from a direct "solar gain". Apparently, a Masdar City's design holds on the vernacular approaches using the modernist materials, particularly evident in the external wall's insulation. The latter has been not only highly "sealed" and "insulated" to buffer from the desert's heat, to function similarly to a massive wall, but also being "wrapped by 90% recycled aluminium sheeting" and coloured with a rose-red colour<sup>[27]</sup>. The diverse range of materials, including

terracotta tiles, aluminium and recycled steel, besides a GRC, show the "good thermal insulation properties"<sup>[28]</sup>. And here, the relevance to a local context is arguably neatly associated with yielding support for the vernacular approaches.

### 3.2.2 A cultural identity

Frampton in this guide refers to a "cultural construct" that stitches together the regions with their local cultures through a "myth" that addresses how a cultural identity of the place merges with its glorified qualities. A "myth", for Frampton, is conceptualised through the "precedents" of the history which inspire the architecture design of the present. Forster and Partners have been inspired by the traditional architecture of the historical Arabic cities. They have turned to the city of Shiham (Yemen) labelled by Forster as the "Manhattan of the desert"<sup>[21]</sup>. Their analyses of other Arabic cities have revealed that these cities have revolved in their urban structures around square's shapes. A Masdar City's design therefore includes one large square surrounded by the city's services (see the Umayyad Palaces built across the desert, for example, in Jordan). Not surprisingly, Forster and Partners have allocated another square, however smaller in size, to host the power generation facilities and to absorb the future expansion of the entire City<sup>[17]</sup>. Another inspiration stems from the Arabic city's fabric of a dense and a mix-used urbanism. A Masdar City's design has followed this path and shows zoning that includes employment-generated land uses, residential areas, parks, plazas and community's amenities.

It is suggested here that the geometry has been borrowed in a Masdar City's design to embody the "precedents" of the Arabic city, however, shows deviations in its application, arguably, derived from a design of the present. The latter does not limit its style to a particular geometry. A Masdar City's site in this vein shows almost a triangular shape (Figure 1) while incorporating two squares and a meandered shape (the "green fingers"). A hybrid style emerges in a Masdar City's design; however, deviations from the "universal technology" and traditional architecture remain. To explain, the square's shape inspired from a traditional Arabic city shows perpendicular angles (Figure 1) and, therefore, opposes irregularity that characterises those to be found in a traditional Arabic city. The squares' geometry of the Masdar City's design has not been applied using a pure geometry, rather, this design shows

a deviation from a modernist architecture and, instead, leans in its geometric arrangement upon the vernacular approaches. Indeed, the squares have been therefore rotated 45 degrees to capture a cool breeze and maximise a self-shading. A passive design has featured a traditional Arabic city and presents the “precedents” of the latter’s history to inspire a Masdar City’s design. In essence, the passive strategies clarify a Masdar City’s geometry that has been rationalised on the basis of the vernacular approaches.

The architecture of Abu Dhabi throughout the history witnesses harmony with the “harsh desert climate” by adopting a cool breeze, self-shading, a natural lightening, air flow, buffering from humidity and heat, and, eventually but not lastly, ensuring privacy<sup>[27]</sup>. The passive strategies represent the “precedents” of the Gulf history to inspire a Masdar City’s design to the extent that the City’s townscape feels 20-degree Celsius cooler than that of the neighbouring Abu Dhabi’s city<sup>[16]</sup>. A particular design aspect, which marks a Masdar City’s design, incorporates both a vernacular style of architecture and a modernist technology to achieve “efficient envelops” and “efficient systems”. A good example in doing so is illustrated in the “Mashrabiya”, or the “shell” that surrounds the window (Figure 4). Before proceeding, it is worth casting light on the “Mashrabiya”’s key concept. At its heart has been a passive design, it employs screening at the interplay between natural lightening and shadow. A screening has not been placed perpendicular to the horizontal level, rather, shows a latticed-wooden work that projects a bowed shell, or an inverted paramedical shape (Figure 4), to cool the interior (a self-shading).

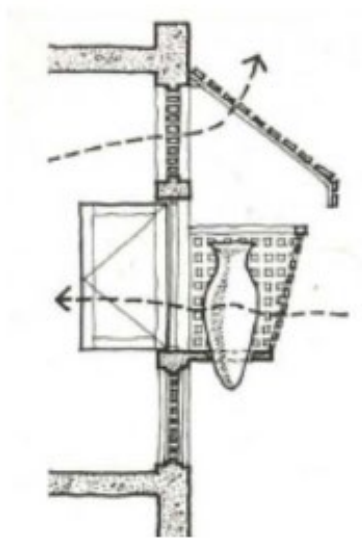


Figure 4. Traditional “Mashrabiya”<sup>[22]</sup>

Despite incorporating a solar-responsive dynamic shading (a modernist technology) in a Masdar City’s design the “Mashrabiya”’s passive strategy has provoked Forster and partners to avoid a direct “solar gain” reflected on the façade’s outer surfaces (a buffer from heating)<sup>[29]</sup>. Two strategies have been adopted in doing so. One concerns the screen’s geometry that has been meandered (a modernist shape) (Figure 5A) to maximise the shadow through a meandered, or wavy latticed, shape. The another strategy remedies the problem arisen at the intersection occurred between the “desired” and the “undesired” by installing three layers that aim at minimising firstly a glare, “none of the units have a direct sunlight going inside”, that is deliberate, or if it does, it is very limited<sup>[17]</sup>, and second providing for a shadow, however, without compromising a natural lightening; “the idea was that even with the shading, there is adequate lightening for reading and writing”<sup>[17]</sup>. The first layer is a balcony; it casts a shadow on the façade and protects a visual privacy through the “shell”. The second layer has been constructed of solid-aluminium, glazed panels and timber-framed windows; this layer has been highly “insulated” and equally “sealed” the inner façade<sup>[29]</sup>.

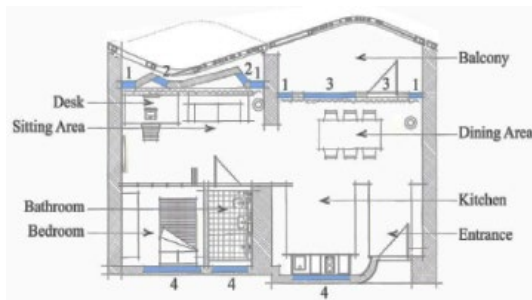


Figure 5A. Masdar City’s “Mashrabiya”<sup>[22]</sup>

A deviation from the “Mashrabiya”’s concept has been apparent in a Masdar City’s design by incorporating the modernist technologies, however, yielding support for a vernacular style. More importantly are the two strategies that go beyond providing for a shading and a natural lightening and extend their scope to remedy the problem arisen as a result of a glare. A distinction becomes evident in a Masdar City’s design from a traditional “Mashrabiya”. The wavy shell in this vein circumscribe the “angled” views<sup>[26]</sup>, enabling a placement of a large-size screening and easing for a



large spacing of the balcony's floor plan (Figure 5B), when compared for example with the rounded Balusters of the "Mashrabiya" (Figure 4)<sup>[17]</sup>.



**Figure 5B.** The balcony space facing screen-shield <sup>[17]</sup>

An argument arises which concerns the design of the present being inspired from the "precedents" (Figure 6A) while incorporating the technology. The argument underlies two aspects: one notes a deviation from the

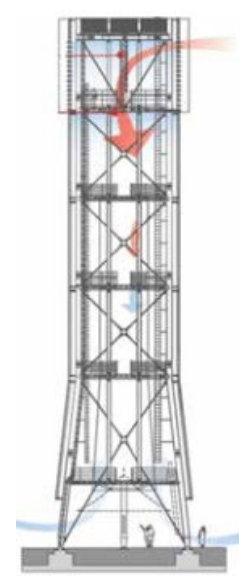
past and the second concerns a universal technology that remarkably supports a vernacular style (Figure 6B). For example, a wind tower has been inspired from a traditional wind catcher. A wind catcher has been reconfigured in a Masdar City's design despite holding in this design on its cooling strategy<sup>[23, 27]</sup>. A wind-tower (figure 6C) accordingly shows a steel structure that raises 45 m above the ground. The height enables the tower to pull in a cool breeze from the upper level into the public square existed at the ground level, however, the tower's function resembles a landmark (Figure 5B). A deviation from a traditional wind catcher arguably stems from a modernist philosophy, modern materials or their construction. The latter has at its stake a mechanical "air flowing" (figure 6C) occurred through sensors that have been installed at the top and enable the high-level louvers to divert a cool breeze down the tower<sup>[29]</sup>.



**Figure 6 A.** Wind Catcher <sup>[27]</sup>



**Figure 6B.** Masdar's Tower <sup>[27]</sup>



**Figure 6C.** Mechanical "air flowing" <sup>[27]</sup>

### 3.2.3 Architectonic aesthetic

The key, in this guide, is the "tectonics" realised through the "art form", or an aesthetically constructed architecture. In a Masdar City's design, the "tectonics" have been intersected at the interplay occurred between geometry, modernist materials and the vernacular strategies. It is argued here that the geometry, rather than a structural system – as Frampton suggests, draws on "artistry composition", invention, or intention. The geometry accordingly shapes the form visually, however, its basis stems from the vernacular approaches. An example is a Masdar City's shading, or the "masking solar" approaches, applied to the residential facades. Forster and Partners have suggested in this vein two

typologies to be applied to northern and southern facades (Figure 7A)<sup>[29]</sup>. As such, the latter façade (Figure 7B) has to be protected from the high and the low angle sun's heat in the summer and winter, respectively. The former façade (Figure 7C) has its focus on the low angle sun's heat, namely from March to September. The geometric response, as it is shown in the meandered shape (Figure 5B) and is represented through the "shading mask" (or, the "extremely shaded glazing") (Figures 7B and C), follows to affect the orientation, and in turn, protect from the morning sun, or more from the more excess solar gain in the afternoon. Its aim has been to circumscribe the sun's heat from a direct solar radiation to sneak through the glazed tiles.

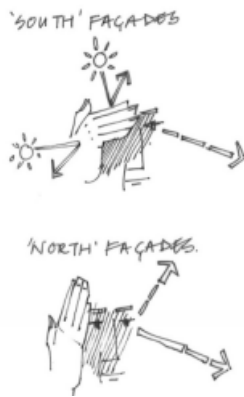


Figure 7A<sup>[31]</sup>

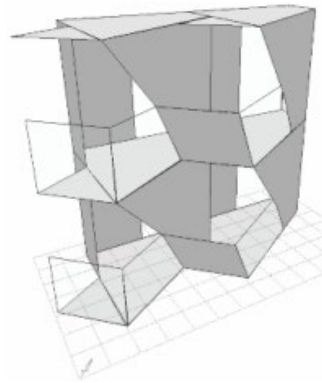


Figure 7B<sup>[31]</sup>

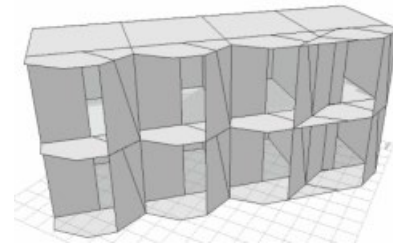


Figure 7C<sup>[31]</sup>

For Frampton, the “architectonic” essentially involves a human-made construction assembled following the cultural values and the natural environment. The latter has been achieved in a Masdar City’s design by holding on the geometry applied through a “shading mask”, as explained above. The cultural values, particularly in the residential facades, are realised through a traditional model in conjunction with the modernist technologies that have kept the essence of a traditional concept<sup>[30]</sup>. For Frampton, the marriage between the past and the present is feasible through a “multisensory” using construction materials that leave their imprint represented by texture or colour, for example, however, being relevant to a local context. The modernist technologies are exemplified, for example, through a glass-reinforced concrete coated with a terracotta cladding that not only assimilates with the desert’s colour, but also does not offend a local culture. An example to texture is a latticed shell that has kept the traditional concept of the “Mashrabiya”.

Frampton turns to geometry to redesign a place through a “multisensory” applied in Masdar City through the “art form”, played at the residential facades. What has been remarkably surprising are the wide and the straight lines shown at the ground level, whereas the meandered and “undulating” shapes seen at the above floors<sup>[23]</sup>. The varied geometry – that has constituted the hybridity comprised of wavy and linear/straight shapes – has been arguably rationalised on the basis of the vernacular approaches. The narrow spaces, viewed from the top floors, provide for shading as similar as the traditional alleys (Figure 8). The photovoltaic panels are positioned over the roof to cast further shadow reflected on the beneath meandered surface. Notably, the alleys are not designed to function as social spaces. Rather, the narrow corridors are used in the past as routes, thereby failing to accommodate a change occurred in the

present. The wide corridors placed at the ground level do so and absorbs the crowd while accommodating a modernist aspect concerned with a space utilised for social interaction. A hybridity of geometry follows which shows a paramedical corridor space (Figure 8) that fractures the sun angle onto the glazed tiles positioned at the ground floor. Not surprisingly, the glazed windows positioned at the ground floor are maximized in size to smooth the natural light’s entry. One may therefore argue that a modernist architecture has been borrowed to yield support for the vernacular approaches.

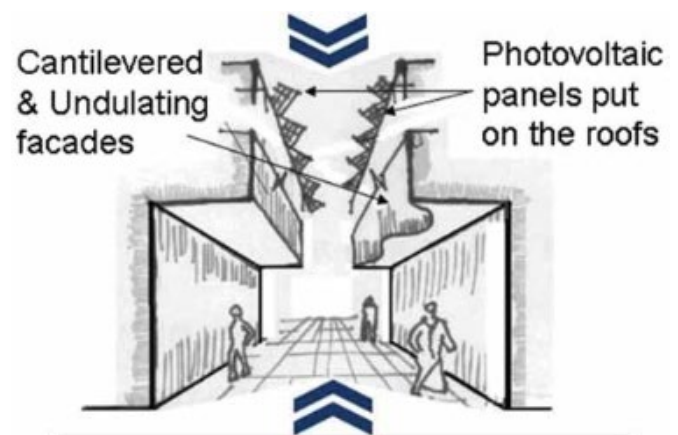


Figure 8. Undulating and Cantilevered Residential Façade<sup>[23]</sup>

## 4 Conclusions

This article has at its outset addressing how a modernist architecture (with its universal technology) intersects with a local architecture through the lens of Frampton’s hybrid “world culture”. What are the key concluding remarks that emerge when responding to this question?

Frampton’s critical regionalism incorporates the “globe” and the “local” in the architecture design of the present through the binary themes; this regionalism endorses an architecture design that addresses “specificity and locality” while being critical to

“universal technology”. Analysis in this article suggests that the “globe” and the “local” have been evident in a Masdar City’s design, however, how both are intertwined cast light on the vernacular approaches. A Masdar City’s design does not withstand the modernist technologies, but rather the latter have been welcomed in Masdar City’s design to yield support for a local architecture, namely strengthening the latter’s vernacular style. By incorporating a “universal technology”, a Masdar City’s design witnesses a deviation from both the past and the “globe”. A modernist architecture has not been applied in a Masdar City’s design based on a pure geometry, therefore subtracting meanings and values. Rather, its geometry has been not only inspired from the “precedents” of the history but also has been rationalised on the basis of the vernacular approaches. A Masdar City’s design therefore holds on the values of the past; that is, keeps the essence of the vernacular concepts while showing a deviation from a traditional architecture through the use of the modernist materials. A hybrid style emerges in a Masdar City’s design by the “universal technologies” and the local architecture existing side by side while the design’s synthesis steps away from the binary subjects. Instead, it supports the argument brought forward by OASE, the Journal of Architecture, in 2019: Frampton’s discourse paradoxically follows a contemporary’s style of architecture in relation to acknowledging the history while referring to context.

Central to Frampton’s discourse are the “tectonics”, or the “syntax” flagged by the “tactile” [that] exists side by side with the “visual”. A Masdar City’s design in this vein suggests that the geometry, instead of a structural system – as Frampton suggests, shapes the form aesthetically, however, this geometry leans in its order upon the vernacular approaches. The marriage between the past and the present has been evident in the Masdar City’s design through the lens of materials construction, as Frampton suggests, by applying the modernist materials that use colour and texture on the basis of relevance to a local context. Analysis of the Masdar City’s design adds that a “multisensory” has been realised through geometry played at the facades and comprised of varied geometric elements that neatly weave together elements borrowed from the past and the present. Relevance, or exclusion, of which elements to include and/or exclude in the design of the present relies again upon the vernacular approaches. What has been remarkably less untreated in Frampton’s

theoretical discourse is arguably a vernacular architecture (see also [2]) that in the Masdar City’s design embraces a model of the design principles, as it has been in the past. It is suggested here to reorient the prospectus of Frampton’s discourse by stitching together the vernacular approaches with Frampton’s regional alternative to yield “theories of truth that will have no global significance but are still meaningful within a universal context”<sup>[2]</sup>.

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