Research Paper

Incremental Development in Makkah

Individual Led Growth, Parcel by Parcel

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Abstract

Makkah is at an inflection point, looking for a way forward that builds on the history of the past fifteen centuries. The last decades have not been kind to Makkah. It has succumbed to the challenges of contemporary cities and tried to solve them with inadequate efforts. Makkah, which should be the best example of a city in the world, sits now as a struggling city. Much of the fault lies in the contemporary and conventional city planning methods that have driven development in the city which are at odds with the rich history of Arabic and Islamic culture and city building. It is possible, however, to realign this culture with the successful transformation of the city through a strategy that drives decisions, policy, planning and other elements of the general growth of the city. The overall strategy for transforming the spatial structure of Makkah is two-fold. The first is to move away from mega-projects to a city that is comprised of a much more diverse, compact urban fabric. The second is to disengage the idea of land-use from the planning process. Land-use is a flawed planning structure because it relies on projecting uses, the most ephemeral of elements of the city, to propose future city form. An Islamic city is cellular, growing from the individual and their family unit to the scale of communities. This is a fundamental shift from current, conventional land-use planning. It sets the parcel as the most important element of city building. This is critical because it starts with the smallest unit of developable land as the default, and creates an environment where the consolidation of parcels, which ultimately lead to city-killing mega projects, are the exception, and can only be executed through a rigorous process of variation or exception. The following describes an incremental approach to the redevelopment and growth of the city in spatial, economic, and regulatory structure.

Keywords

Incremental, Subdivision, Adaptability

1. Makkah

1.1. Islamic Arabic Structure

Makkah is at an inflection point, looking for a way forward, building on the history of the past fifteen centuries, while also creating the optimal future for the most important city in the world. The last decades have not been kind to Makkah. It has succumbed to the challenges of contemporary cities and tried to solve them with inadequate efforts. Makkah, which should be the best example of a city in the world, sits now as a struggling city. Much of the fault lies in the contemporary and conventional city planning methods that have driven development in the city, as in much of the world, which are at odds with the rich history of Islamic and Arabic culture and city building. It is possible, however, to realign the fundamental quality of the teachings of Islam and the historic pattern of Arabic cities built through incremental development with the successful transformation of the city. But it will take time, effort, and an understanding of a planning process that will sometimes seem at odds with today's ostensible best practices.

As described so clearly by Stefano Bianca in *Urban Form in the Arab World*,

> *"Perhaps the most significant social implication of Islam was the fact that the strength of its ritualized living patterns dispensed with the need for many formal institutions. A large number of administrative structures which are normally identified with cities - at least in Europe - did not develop, simply because the society had internalized its structuring constraints, which minimized the need for external controls. Its coercing mechanisms worked from within, so to speak, and needed little or no institutional support. Traditional Islamic cities had no municipalities comparable to those of the Western world, and the Crown and the Church in the institutional sense of Medieval Europe did not exist. Hence, the Muslim "res publica" was not the result of civil rights wrested from oppressive authorities but the outcome of the shared desire to follow certain religiously prescribed patterns of life which would hopefully provide man with peace and welfare in this world and salvation in the next world."*

This has been lost in today's Makkah.

Makkah, as the holiest city on earth, particularly the area circumscribed by the Haram, must be treated differently and more reverentially than any other place. It is truly sacred. Makkah should be the best example of city-building in the world. It should embrace the values that were present when it was manifest as the center of Islam, and those values should drive the decisions that form the future of the city. This will require stepping outside the conventions of city planning, development, and engineering. We can look back to the transformation of Damascus, from a Roman City to a thriving center of Islam, again, according to Bianca,

> *"In the residential districts, the orthogonal grid layout of Roman streets was to be gradually transformed into a much more irregular pattern. This change relied on the fact that the street layout in the private quarters was no longer controlled by a central civic authority and that individual houses, for reasons of family links, social convenience or simply lack of space, tended to grow together into larger clusters which interrupted, privatized or simply swallowed the existing street network."*

As a point of departure and a model for future development, we can look to the informal settlements of Makkah and how to address their status and understand the development process that led to their emergence. This can be understood more clearly by understanding the historic cities that were developed with the Arabic/Mesopotamian dendritic pattern, as opposed to the Greek, for instance, block pattern. The second part of this is how we build neighborhoods around the home and the process of aggregating growth utilizing the underlying order that stems from the religious authority, superseding the presence of a strong centralized municipal authority and planning process.

Makkah is one of the very few places on earth where everyone is medieval again, in the best possible sense of the word. If you are there, it is because you believe in the Islamic ontological order of the world. We don't have to create something that represents a sacred place, because everyone there already understands the sacred nature of the place. It is this collective understanding that provides the authority for the incremental development pattern. The challenge is make these sacred places manifest in the world.

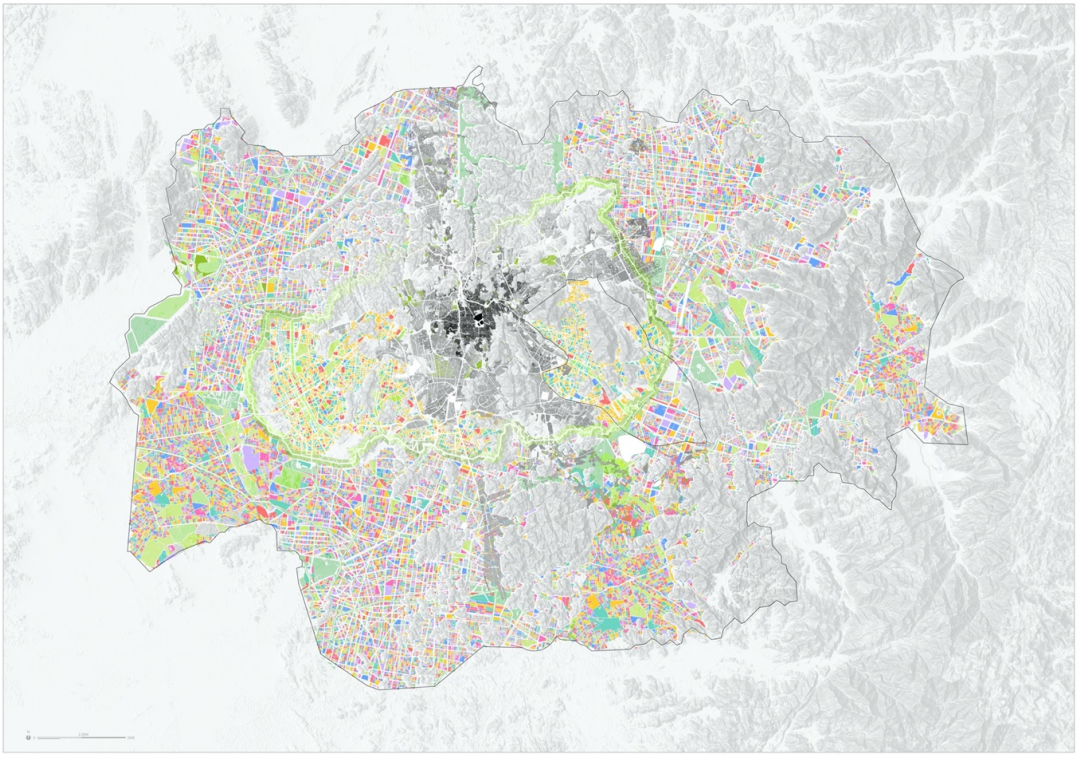


Figure 1 - Incremental Subdivision and Use Distribution. Source: Perkins&Will, Makkah Concept Plan.

1.2 Islamic Structure

The subdivision framework for the city, both in terms of organizing the existing city, and in developing the new areas of the city, is structured around the individual (person, parcel) as the fundamental element of creating the city. The individual parcel is aggregated into clusters or blocks that are small areas of community, whether families or just neighbors. Clusters and blocks are aggregated into neighborhoods, which are collectively identified areas with a particular identity emerging from the demographic situation as well as the businesses and other elements of the area.

Building from the logic outlined above, a clear organizational structure is proposed that directly aligns the ideas of cultural Islam, the form of the religious and family-oriented organization, with the planning organization for the city. In this structure there is a mutually supportive relationship that incentivizes development that aligns with the goals and daily practices seen in the citizenry of Makkah, as well as providing an urban context that can be both familiar and interesting to visitors, depending on the nature of the area of the city.

The underlying structure of each district, built from the aggregation of its neighborhoods, which are in turn comprised of smaller clusters and blocks, provides a framework for variation while ensuring the overall vision for the city, of compactness, connectedness, and adaptation, are not sacrificed during the planning process. With this simple system it is possible to facilitate development that aligns directly with the vision for the future city, which in turn aligns with the historic city-making of the Arabic city.

1.3 Vision and Strategy for Transforming Makkah

The vision for Makkah is to deepen the religious experience of the sanctuary through concerted development to greatly expand over planning time frames, empower families in the creation of the city and improve the conditions of visitor and resident life.

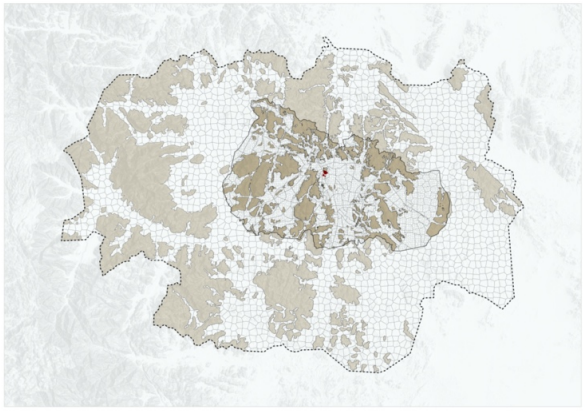


Figure 2 - Voronoi Tessellation Structure for Development Management Across Multiple Scales. Source: Perkins&Will, Makkah Concept Plan.

The strategy can be understood as a conceptual framework which drives decisions, policy, planning and other elements of the general growth of the city. But it must also be a deliberate process that leads to the betterment of the physical, social, and economic outcomes of the future City. This can be accomplished through a clear projection of a continuous, highly granular, fabric of the city that is a representation of the future city. It represents a form that is demonstrably high performing across all the core objectives for development outcomes.

Unlike the current planning process, this strategy doesn't provide an exact location or exact uses for future development, rather it puts in place a structure to facilitate the kind of development that is commensurate with the overarching strategic goals, those of individual led, incremental development, planned on the margins, as opposed to emanating from a strong central planning authority. This is further supported by a clear, comprehendible, and tested regulatory system that provides flexibility without sacrificing outcomes. The strategy is to very simply facilitate the development of a city that exceeds all baseline goals as measured against the best cities in the world.

The continuation of the city-wide, overarching strategic goals includes elements of the vision for the city's future. Global Islam is engaged through an alignment between member of the global Islamic community and specific, intensely developed areas, within the Haram. The nature of development inside the Haram is heightened, understood to be fundamental to achieving the goals for the city's future. The urban fabric and structure is set up to be immanently adaptable. It follows from historic city making patterns that have lasted, and adapted, over many centuries. The rich and varied city that emerges from the projection of the city's character reflects places that people, citizens, visitors, revere; that they love.

The Strategic Goals are set out to provide a clear method for projecting and evaluating planning and development efforts as the city unfolds into the future. The key strategic goal, the city as projected to the right, is the baseline against with all decisions are taken. What is described is the physical structure of the future city. The strategy is to remove structure plan, land-use plans, and other comprehensive planning devices that result in use-driven, inappropriate outcomes. The strategy is to be less concerned with what buildings and places are used for, and more with how they are organized in space.

This is further evidenced by a visualization of the city as it provides an understanding of the completeness and intensity of the fabric of the city within the Haram Boundary, the activity and focus on the Boundary itself, as an occupiable, programmed element of the city, and regional expansion, following the ideals of the sanctuary, but with less intensity, and allowing those things that are excluded from the sacred center.

The strategy for use is evidenced through the projection of the highest possible intensity of diversity and distribution. This strategy follows the logic of complete coverage of the urban fabric. A resident of the city can easily and quickly move through the city to perform daily tasks and rituals, and the visitor to the city

can move through a constantly unfolding, rich fabric, creating a sense of wonder and adventure that is endemic to the great destinations of the world.

This strategy facilitates the emergence of a poly-centric city, but not the polycentric city that is constituted from disconnected development nodes, connected by roads, but empty between the nodes. The centers in this plan emerge over time, with varying densities, attractions, uses, characters, to provide a city that is simultaneously continuous as well as varies.

The few truly great cities of the world do exactly this.

Figure 3 - Future Plan for Makkah. Source: Perkins&Will, Makkah Concept Plan.

2. The Incremental Economy

2.1. Filling the template

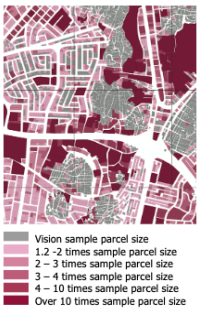


Figure 4 - Parcel Size Variation Across Makkah. Source: Perkins&Will, Makkah Concept Plan.

The major shift in Makkah that will support an expanded economy and drive value and growth is predicated on the surveying, platting and legalizing of the informal settlements, and setting up redevelopment of mega projects and development of new parts of the city based on small parcel, incremental development. Apart from the historical and cultural significance of the informal settlements, there is currently a large portion of the City by area that is being addressed as a nuisance, something that is to be removed and replaced. This is true while many of the mega projects of the city are viewed as having positive impact. But this is counterproductive.

By legally platting and identifying ownership rights of the informal settlements, Makkah is opening a pipeline to revenue generation from taxes and fees collected from newly established, and future, property owners. This sets the stage for individual development opportunities.

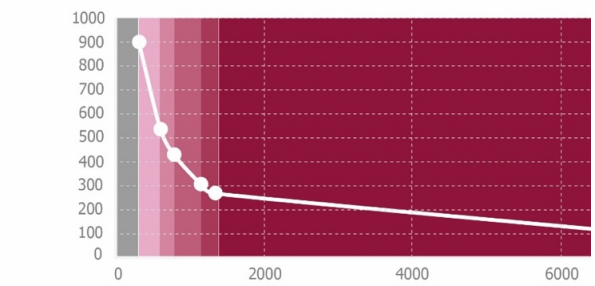


Figure 5 - Correlation Between Parcel Size and Project Opportunities. Source: Perkins&Will, Makkah Concept Plan.

The platform for this is the Kharaj, reformulated to support a transformed opportunity where informal settlement is formalized, from a legal and operational perspective. Programs can be put in place that include rehabilitation support for the informal settlements and they can be directly tied to the current disposition of much of the area, which is already organized around ethnic and national districts.

Land in highly performing cities is occupied by compact, diverse development, driving a diversified economy. Makkah currently doesn't provide this diversity and is moving towards single-developer, mega-projects.

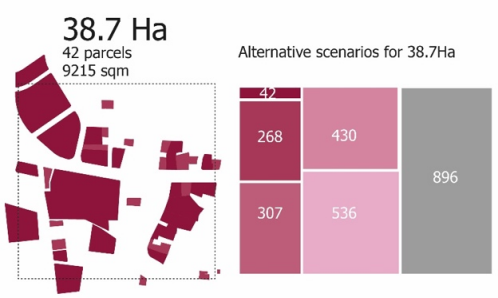


Figure 6 - Gross Project Opportunities Dependency for Parcel Size Variations. Source, Perkins&Will, Makkah Concept Plan.

The chart above illustrates the potential projects in existing areas as correlated to project compactness, acting as a proxy for development opportunity. There is an exponential decrease in opportunity as project size, and investment size, increases. The plan aligns an increase in opportunity as well as an across-the-board diversity to reduce future risk of moving away from diversification.

An analysis of the study area clearly demonstrates the impact land planning, project size and parcellation has on economic opportunity. This situation is exacerbated by the non-legal status of the informal settlements, which currently make up the majority of project and development opportunities, in gross numbers, across the currently developed city. Current trends are continuing to add to the problem.

The diagram and analysis above demonstrate the value capture of a diversified economic development program. The left is the future economic ecosystem, while the right is the current trend, setting the city up for a significant economic challenge when the large projects lose value and usefulness.

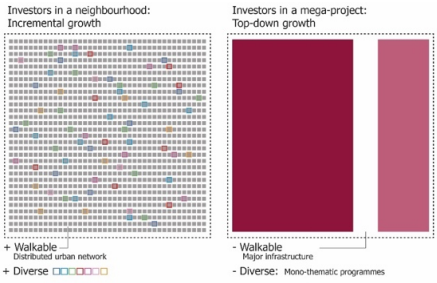


Figure 7 - Investor Distribution Analysis Relative to Parcel Size and Number. Source: Perkins&Will, Makkah Concept Plan.

Prosperity for everyone, for all citizens of Makkah, is directly tied to the opportunity presented with the increase in small, individual, and family-driven investment. The current planning framework for Makkah all but excludes this, providing instead programs and incentives for single, large, silver-bullet solutions, which may have some short-term benefit (quick wins), but are ultimately detrimental to the long-term health of the city and its economy.

These impacts can be clearly measured, as indicated in the analysis to the left, demonstrating opportunity to recalibrate areas of mega-developments into areas of smaller, sustainable more distributed development and economic opportunity.

The plan not only provides a significantly higher number of individual projects, but it also provides a higher amount of overall development. In most cases, redevelopment density, directly leading to expanded economic growth, is increased through redevelopment of smaller, more incremental projects.

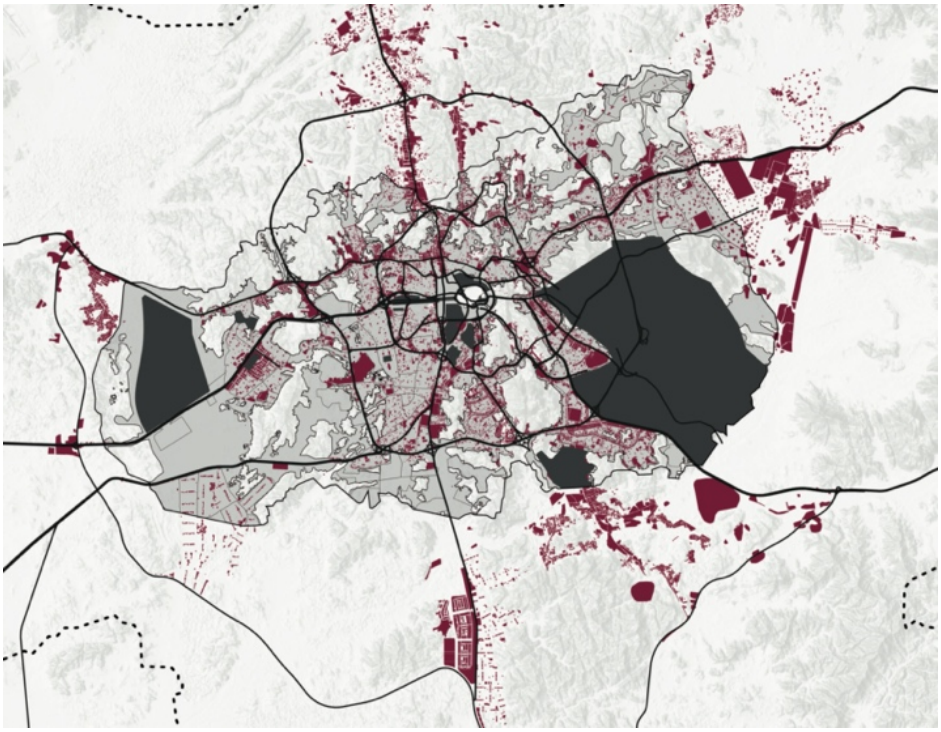


Figure 8 - Parcel Size Distribution Across Existing Makkah. Source: Perkins&Will, Makkah Concept Plan.

This will also directly address the rampant increases in land values, artificially inflated, through the planned distribution of smaller parcels, which will suppress speculation and lead to a more sustainable and varied The global population will immediately have an outlet for investments that supports each of these areas.

Figure 9 - Parcels with Ratios over 3 Times Baseline Small Parcels. Source: Perkins&Will, Makkah Concept Plan.

The rehabilitation programs should also provide support from the government, as an investment in these areas such that they transform into productive assets for the city. This can be done through simple programs that support infrastructure improvements, façade improvements, public realm improvements, etc.

These programs have provided significant economic redevelopment in cities that have instituted them, and huge gains in value have been realized. Currently Makkah is moving in the opposite direction, pushing to demolish and replace these areas with new, sterile, mega-developments that will ultimately be unsustainable economically.

The goal in this effort is to reframe the economic value of the informal settlements as something of value, to be supported and

nurtured. This effort will transform an environment of marginal existence into a thriving environment of expanding opportunity and production.

3. Regulating Incremental Growth

3.1. Performative Subdivision Regulations Over Land-Use and Zoning

An Islamic city is cellular, growing from the individual and their family unit to the scale of communities.

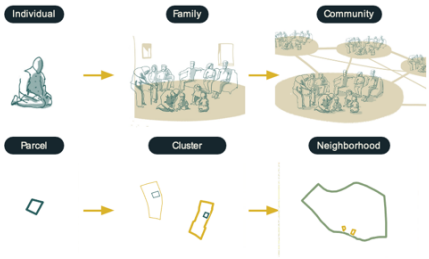


Figure 10 - Cluster Structure. Source: Perkins&Will, Makkah Concept Plan

The subdivision structure for the city, both in terms of organizing the existing city, and in developing the new areas of the city, is structured around the individual (person, parcel) as the fundamental element of creating the city. The individual parcel is aggregated into clusters or blocks, that are small areas of community, whether families or just neighbors.

Clusters and blocks are aggregated into neighborhoods, which are collectively identified areas with a particular identity emerging from the demographic situation as well as the businesses and other elements of the area.

The system for setting up categories of development, based on scale, is derived from the development patterns and designations that already exist in both the planned and informal settlements.

Figure 11 - Orders of Subdivision. Source: Perkins&Will, Makkah Concept Plan.

The plan simply reflects these naturally forming areas of organization and codifies them for efficiency of planning and management.

It is important to understand that this codification supports the final form of the city, which is not currently true throughout the regulatory framework.

Building from the logic outlined above, a clear organizational structure is proposed that directly aligns the ideas of cultural Islam, the form of the religious and family-oriented organization, with the planning organization. In this structure is a mutually supportive relationship that incentivizes development that aligns with the goals and daily practices seen in the citizenry of Makkah, as well as providing an urban context that can be both familiar to visitors, as well as interesting, depending on the nature of the area of the city.

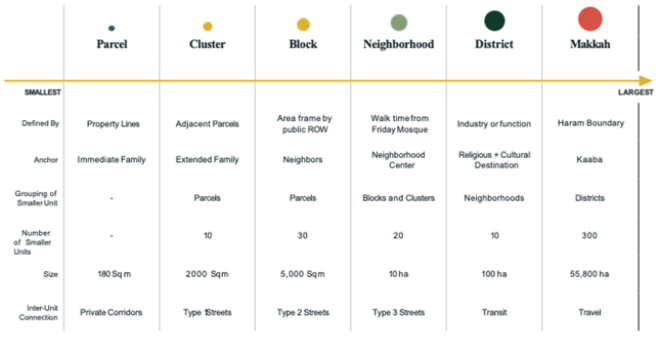


Figure 12 – Subdivision Categories by Scale. Source: Perkins&Will, Makkah Concept Plan.

The underlying structure of each district, built from the aggregation of its neighborhoods, which are in turn comprised of smaller clusters and blocks, provide a framework for variation while ensuring the overall vision for the city, of compactness, connectedness, and variation, are not sacrificed during the planning process.

The structure outlined to the right should be viewed as primarily a way to

organize and manage the development of the city not as an absolute projection of a particular future.

As described above, the parcel is the unit of a single family and the building block for the cellular network. This is the point of departure for the subdivision regulations for the entire city, both for redevelopment as well as for newly developing areas.

With this simple system it is possible to facilitate development that aligns directly with the vision for the future city.

This is a fundamental shift from current, conventional land-use planning. It sets the parcel as the most important element of city building. This is critical because it starts with the smallest unit of developable land as the default, and creates an environment where the consolidation of parcels, which ultimately lead to city-killing mega projects, are the exception, and can only be executed through a rigorous process of variation or exception. In this way the regulations, which ultimately have a greater impact on the form of the city than anything else, are incentivizing and directing development that is perfectly in alignment with the original vision.

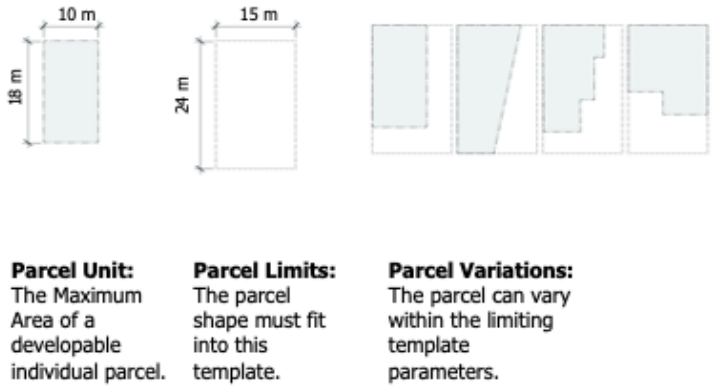


Figure 13 - Performance Criteria for Parcel Size and Size Variations, Setting Up Limits for Development. Source: Perkins&Will, Makkah Concept Plan.

The common strategy for creating a regulatory framework that leads to the implementation of a vision is to over-regulate, to think about all the possible permutations of a city and attempt to either require or restrict, based on the desired outcome. It is not possible to use this strategy, the idea that more regulation will lead to a more coherent and predictable outcome, to guide the growth and development of cities. There is a counterintuitive inverse relationship between the number of regulations and the consistency with which a place is ultimately formed.

The plan here is to reduce the regulations to the simplest, most critical elements. This simplified ordinance makes it impossible to plan and develop a city that is a series of disconnected mega-projects. The outcomes will always be highly connected, walkable, diverse communities. Without this simple structure in place, Makkah, nor any other city, will ever be the kind of place envisioned in the outcomes described for this project.

Subdivision Regulations:

Maximum Parcel Size 180 Square Meters

Maximum Nine Parcels can front Street Type I

A Block is comprised of a Maximum of 36 Parcels.

Street Type I – 6 Meter Maximum R.O.W.

Street Type II – 6 Meter Minimum, 9 Meter Maximum R.O.W.

Street Type III – 9 Meter Minimum, 24 Meter Maximum R.O.W.

The two examples to the right describe the physical outcomes resulting from the implementation of the plan's subdivision regulations. The results include all the elements that are critical to the success of the city, while providing a regulatory framework that allows for adaptation and variation, creating the rich urban fabric that is absent in Makkah, but present in the world's great cities.

Figure 14 - Variations on Subdivision Plans. Source: Perkins&Will, Makkah Concept Project.

It is important to note that while the ordinance requires smaller individual parcels, it is entirely possible for a single developer to plan and develop an entire cluster or block, or even an entire neighborhood. The ordinance, however, precludes the development from becoming a disconnected, unwalkable, island in the city.

There is nothing in this proposed framework that will inhibit developer activity, but it will provide assurance that new projects won't detract from the overall character and performance of the city. This is not the case currently. Most new proposed developments are disconnected (surrounded by access roads in most cases), and completely disconnected from the adjacent city.

This can also be tested at scale, as the two plans demonstrate. They show varying levels of planned, projected development, which is developed incrementally, while maintaining an overall structural form, or as a more marginally planned, aggregated development process that results in something less regular.

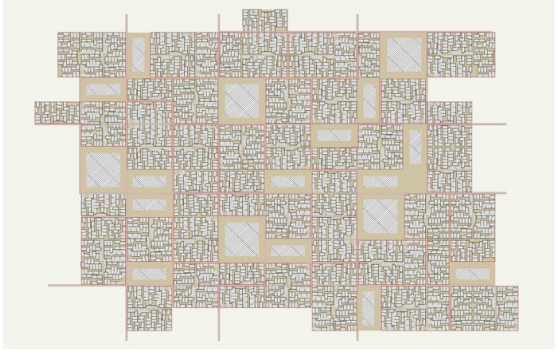


Figure 16 - Orthogonal Incremental Growth Example. Source: Perkins&Will, Makkah Concept Plan.

Figure 15 - Accretive Incremental Growth Example. Source: Perkins&Will, Makkah Concept Plan.

Both have the potential to become great places, neighborhoods, and districts, once populated with richly diverse buildings, populations, businesses, cultural and public venues. They are simply providing the legal and spatial structure to facilitate these outcomes.

Figure 17 demonstrates the contrast between currently proposed projects in Makkah and the planning framework for the proposed plan.

Each of these projects, and they are a small representation of the current proposals across the city, is organized with a projection of land uses (residential, administration offices, government offices), an internally driven plan, access through main arterials or highways, and a complete lack of connection to future projects. This is the default for conventional planning, supported by the initial question asked in each of these, 'what is the land use'.

The Al Sharashif Mountain project (Figure 17 - middle image) demonstrates every element of city design and planning that is detrimental to the future of Makkah. But it exists in its current form as a direct result of the development and planning criteria that are in place. As long as land-use and traffic demand are the first two elements of the planning process, the result will be these proposals.

It's important to understand that someone who lives in this project will never be able to leave it on foot. It's impossible to walk to the next district. To illustrate the contract between current mega-project development and the plan, the analysis at the left demonstrates what would be included in the development area under the plan.

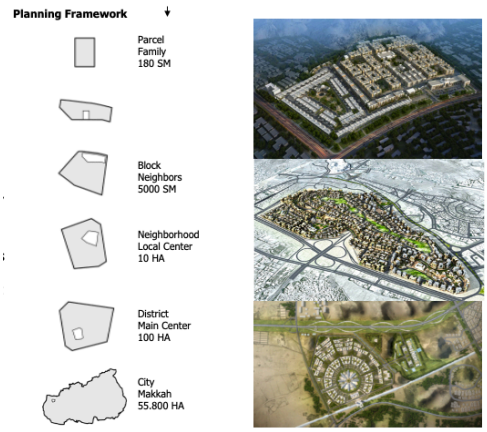
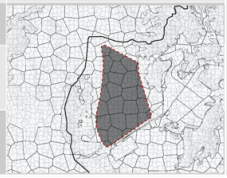


Figure 17 - Parcel aggregation categories and mega-project examples. Source: Perkins&Will, Makkah Concept Plan.

19 Districts	*1 Neighborhood = 1,000,00 SM*
186 Neighborhoods	*1 Neighborhood = 100,00 SM*
9,303 Clusters	*1 Cluster = 2,000 SM*
85,606 Parcels	*1 Parcel = 149 SM*
342,424 Families	
18,607,431 SM Land Area	
50,999,961 SM Built-up Area	

The gray area represents the study limits, the current limits of the proposed Bawaba project.

Figure 18 - Bawabat development criteria. Source: Perkins&Will, Makkah Concept Plan.

Bawabat, if developed based on the parameters of this plan, would provide 19 districts, each with its own distinct character, and 186 neighborhoods with the potential to create unique identities for each.

It would provide over 9,000 clusters of development, supporting community and family cohesion, and further providing a significant variety of places that aren't planned or possible in the current Bawabat proposal.

Over 85,000 parcels would be created, each of which represents an individual family, a family taking root in the city, building a future on the sacred land, and potentially tens of thousands of small businesses, supporting the community.

At a very manageable 4.0 FAR, this represents over 50 million square meters of development, a significant increase due to the efficiency and productive nature of the plan's development pattern and regulations.

In the proposed plan, the organizational planning platform precludes disconnected development. The projected boundaries between neighborhoods and districts don't buffer, rather than connect. Each of the boundaries is a street. Not a road or a highway, but a street that is inhabitable, crossable.

It's important to remember, as we plan the future of the city, that the boundary is the element of the city that gives political and structural presence to each place; a home, a park, a neighborhood, and that the fundamental purpose of a boundary is to bind together these elements of the city. A boundary, whether the wall between me and my neighbor, or the Haram is intended to bind to things together, to let each exist in its own way, with its own logic, but always bound together through the prior structure that is manifest in the legal subdivision of the city.

Figure 19 - Projected Voronoi Tessellation Plan Framework. Source: Perkins&Will, Makkah Concept Plan.

The plan anticipates this and provides a way to manage development without dictating ultimate form and use. There is no scenario in which a project can be planned and developed in isolation. The key element, from the parcel to the Haram, is the boundary, activated by the legal process of subdivision and animated through the process of design.

In the end, the land use plan is a reflection of the growth of various project types across a neighborhood, district or entire city. It is something to be managed, to ensure the actual, not the proposed, land use distribution meet the needs of the (current and future) residents, visitors and agencies.

This incremental district represents a comprehensive mix of project uses, distributed to meet the needs of Makkah's growth and support the overarching strategies and goals, such as reducing the need for commuting and reinforcing Makkah's value proposition as a place to live, visit and worship. The needs of residents, visitors and agencies are met in a sustainable, adaptable and resilient way.

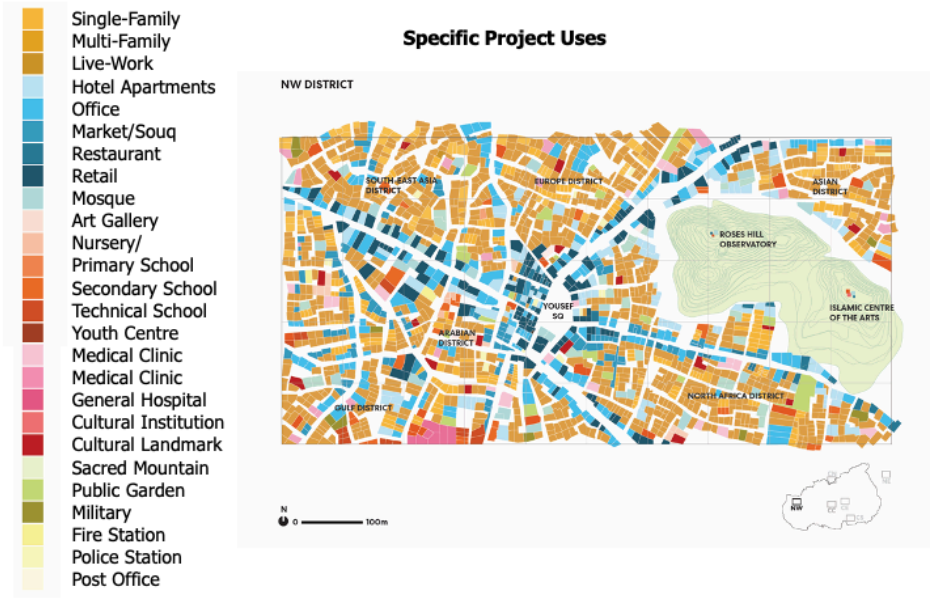


Figure 20 - Projected Incremental Use Distribution. Source: Perkins&Will, Makkah Concept Plan.

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4. Conclusion

We often find ourselves wandering through the older parts of cities and understand that these places are generally walkable, diverse, and varied. We experience these observations directly as we engage with our physical surroundings. These wanderings seem to generally elicit the same question; "Why can't we make places like this today?". This is not a question of historic character, authenticity, preservation, or materiality. It is, rather, a question of the process of subdivision and the actions through which these cities have been developed. The one consistent characteristic, common to all these areas, is that they were developed incrementally, over time, evolving with each addition in the absence of a strong, centralized projection of use distribution. Varied uses emerged in seemingly haphazard patterns.

The incremental development process is possible in both highly planned as well as more loosely planned cities. Manhattan is simultaneously one of the most rigidly planned cities as well as one of the clearest examples of incremental development over the past two hundred years. Paris is another example of a city borne of incremental development; however, it grew without a clear, centralized plan. Instead, it developed on the margins, with many smaller, individual decisions about its form and growth, with the basic unit of development the individual, parcel of subdivision. Manhattan is compositionally orthogonal, and Paris is compositionally organic. However, both are operationally organic, meaning the individual projects were developed in the absence a rigid, use-based system that projected zones and parcels of particular uses.

It is possible to build cities that are walkable, diverse and varied, and further, that are adaptable and sustainable, but only if we understand the fundamental structure that led to the outcomes of cities that emerged in pre-regulatory periods and those planned and developed in the post-regulatory, zoning and land-use prioritized, era; the era in which we find ourselves currently.

Makkah is unique in that it has the decentralized authoritative structure to truly develop as an incremental city, bringing richness, diversity, activity and individual impact to the creation of its neighborhoods and districts. In that sense we have both the opportunity and the obligation to facilitate this process. It can become a model for development.

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