kraftLAB
Reimagined Courtyards for the Future of Fes

by Xiaoran Xu

Submitted to the Department of Architecture in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Architecture at the Massachusetts Institute of Technology

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kraftLAB
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ABSTRACT

In the urban labyrinth of Fes el-Bali, artisans toil away passionately in their courtyard houses that, with
the increasing density of the medina over the past century, have come to dominate the surrounding
architectural landscape. The homogenous typology of these riads presents a barrier to the interactions
between local artisan and visiting consumer. As a result, today’s craft economy is largely centered
around the middleman merchant, further distancing the artist from the tourist.

This thesis explores spatial reimaginings of the Moroccan courtyard through a novel architectural pro-
gram: the kraftLAB. Through this experimental crafting laboratory, the processes of craft production and
consumption are reconceptualized as a hybrid experience of artisan-tourist interaction, facilitated by the
reimagined sectional courtyard. This project proposes the development of an artisan network of kraft-
LAB architectures for the four main crafting trades of the medina (wood, metal, leather, and clay) that
assimilate into the figure-ground of the surrounding medina to help structure the informal craft economy
and mediate the connection between craftsmanship and consumerism.

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INTRODUCTION: THE STORY OF FES EL-BALI

In the 9th century, the imperial city of Fes was founded on the banks of the Jawhar river in Morocco. To protect their precious capital, the rulers of the Idrisid Dynasty built a five-mile wall around the medina, but despite these fortifications, political turmoil ravaged the city. During this turbulent history, Fes’ capital status remained in flux as control of the medina shifted continuously from empire to empire, until finally at the beginning of the 20th century, its status as political capital was permanently revoked and the city was abandoned by all political powers.

With the medina thus neglected, a community of Andalusian artisans sought refuge within its walls. Bringing with them a culture of intricate art and crafts, the artisans transformed the ancient walled medina into a niche of their own.

The artisans of Fes el-Bali toiled away passionately within the city walls, littering the city with their creations of wood, metal, hide, and clay. Crafting only for themselves, the artisans were free to create and manipulate material to their heart’s content. Only when they could craft no more did they regretfully relinquish their beloved trades, passing them on to aspiring generations.

Eventually the city itself began to grow as organically as the crafting trade. Each new building was its own masterpiece of craft and skill, uniquely distinct from all others that came before and never again to be replicated. Slowly, from the ruins of the abandoned capital, an ad-hoc skyline of architectural crafts rose over the land.
As the years went by, an influx of immigrants flowed into the city, eager to join this exclusive community, and timeworn artisans taught their trade to all who came. Bounded by the ancient walls, the medina grew inwardly, condensing until it reached a swelling density of over 1,000 inhabitants/hectare. Overwhelmed by this uncontrollable growth, the artisans of Fes el-Bali could no longer differentiate themselves from the masses; each new craft had already been designed and each new building came to resemble its neighbors until eventually the riad, or courtyard building, emerged as the only remaining architectural form in the city.

Today, Fes el-Bali is an urban labyrinth of stark, windowless riads and narrow, winding alleyways. It has become a directionless city of nearly all figure and no ground; yet the devoted artisans nevertheless choose to linger within its walls, carrying on the crafting traditions of generations.

From time to time, travelers wander into the labyrinth, seeking the renowned crafts of the medina; but helpless to navigate the labyrinth’s paths by themselves, they follow the medina’s many unofficial tour guides through its jagged streets. Tired artisans avoid the dense, unnavigable streets, preferring to labor in the shadows of their cramped riads, out of gaze of the public eye, forced to rely on merchants to sell their wares.

And in this manner, the medina lives on, playing host to the inhabitants of the figure and the inhabitants of the ground with little hope of interaction between the two.

By the end of the 21st century, the buildings of Fes el-Bali are stale from centuries of existence. As the old city crumbles, a new city of kraftLABs emerges in its stead...
BACKGROUND: A CRAFT ECONOMY

The tradition of craftsmanship in Fes el-Bali has remained central to the image and functioning of the city since its revival in the 20th century. In fact, crafting has come to define the Fassi lifestyle, serving as the source of income for over 75% of the medina population and thus making Fes the unofficial craft capital of the country.

Despite this predominant industry of crafting in the medina, the craft trade is still an informal economy for the people of Fes, with artisans relying entirely on merchants to sell their creations. This has resulted in a lack of direct dialogue between artisan and consumer as crafted products are passed blindly from artisan to merchant to consumer in a linear, rigid process which centers itself around the middleman merchant. This economic hierarchy simultaneously stifles the entrepreneurial spirit in artisans and limits the freedom of choice in consumers.

The kraftLAB economy seeks to put control back in the hands of the artisans and to provide the crafting industry with a more interactive, transparent operation process. At the center of this proposed model lies the kraftLAB, where artisans are free to promote their wares and tourist consumers are free to sample them. The middleman merchants become peripheral to the network, only existing to facilitate the selling/buying process once tourists have interacted with the artisans.

In this way, the kraftLAB brings together artisans and tourists and fosters between them an interaction which strengthens the connection between craft and tourism, the two main economic industries of the medina.
EXISTING CRAFT DISTRICTS
SELECTED KRAFTLAB SITES
SITE ANALYSIS: COURTYARD TYPOLOGIES

The traditional riad house features a two or three story courtyard space, usually centered within the building but sometimes nearing the front of the house, that is oriented parallel to the street. The geometric volume of the courtyard is, in almost all cases, formed by a pure extrusion of a square or rectangle. All of a riad’s windows, doors, and balconies are inward-facing, toward the interior courtyard rather than the building exterior. The original reason for this was to support Islamic notions of privacy, particularly for Muslim women.

Today, in addition to dwelling, the riad has adopted the roles of shop, hotel, restaurant, and even school, rendering meaningless the riad’s designed purpose of isolation and privacy. The medina has thus transformed into a homogeneous urban fabric of courtyard buildings.

A close analysis of riads in various sites within the medina identified the spatial anomalies that exist within the riad typology and the prevalent characteristics that are unique to each site. These localized traits were then adapted to each selected kraftLAB site to create urban infill that assimilates discreetly into the medina, in order to be undisruptive of the existing fabric.
metalLAB

IRREGULAR COURTYARD

SITE FIGURE
clayLAB

BROKEN COURTYARD

SITE FIGURE
KRAFTLAB TYPOLOGY

PRE-PRODUCTION

materials storage

PRODUCTION

FABrication

handiCRAFT

POST-PRODUCTION

artisan showroom
kraftLABs are experimental laboratories of craft, technology, and consumer-ism. They serve as platforms of exchange for artisans and consumers to interact within the medina. For artisans, they are communal workspaces that emphasize experimentation over production, a reversion back to the beginnings of the Fassi artisan community. For tourists, they are gallery spaces that showcase not only each artisans’ specialized crafts but more importantly, the crafting process itself.

Each kraftLAB consists of four components that deal with the entire crafting process, from pre-production - in the form of storage space for raw materials - to post-production - in the form of an artisan showroom that displays finished works.

In an economy that remains largely unindustrialized, the artisans of Fes el-Bali are slaves to the traditional modus operandi. kraftLABs introduce mechanized techniques into the manual crafting process, but in contrast to fab labs, they are not a complete overhaul of traditional crafting techniques. Instead, they feature hybrid fab/craft processes that preserve the handmade quality of the crafts while at the same time expediting the production process, which frees up time for artisans to devote to the creative exploration of their craft rather than the intensive labor of production.
JOHN HEJDUK - BERLIN MASQUE
architectural characters scattered in an urban lot

BERNARD TSCHUMI - PARC DE LA VILLETTE
ordered elements in an open park space
The dearth of architectural diversity within the medina results in a disorienting lack of urban organization, creating a barrier for artisans trying to showcase their crafts.

The establishment of an artisan network of kraftLABs in the medina locates and organizes the primary craft industries into sectors, making the currently dispersed craft production processes accessible to the consumer.

The network is formed from individual kraftLABs distributed at regular distances throughout the open spaces of the medina, creating a reliable system of landmarks that help structure the informal craft economy.

Each kraftLAB exists as an architecturally distinct, idiosyncratic character in an otherwise homogeneous landscape to help provide navigational cues in the urban context.
DESIGN: REIMAGINED COURTYARDS

In a city dominated by riads, where identical structures serve its every function, the building becomes redundant, lacking spatial distinction and architectural value. The kraftLAB aims to defy the spatiality of the traditional extruded courtyard building with experimental, contemporary reimagined courtyards that sit counter to the eternal courtyard typology of the medina. Unlike the isolated quality of the riad courtyard, the kraftLAB courtyard promotes artisan-consumer interaction through its integrated spaces.

Each kraftLAB employs a different displacement or carving operation to create novel solid-void relationships inspired by the surrounding typological characteristics. Though the massing strategy for each kraftLAB is formally distinct, they function similarly to produce two integrated paths of circulation - one for the artisan, one for the tourist.
woodLAB

PROGRAM & TYPOLOGY:

The multiple courtyard typology is useful for the ventilation of wood dust in confined woodworking spaces. The distribution of these mini-courtyards encourages airflow throughout the building.

CIRCULATION STRATEGY:

In woodLABs, a central spine serves as the primary path of circulation. Vertical displacements create secondary passages branching off from this path to provide sectional entrances for each courtyard.

WOOD-CRAFTING PROCESS:
MASSING STRATEGY:

MODEL STUDIES:
PROGRAM & TYPOLOGY:

The irregular courtyard typology allows for the creation of interior courtyards that receive filtered light, which fits the need of metalworkers who prefer lower-light conditions due to the high reflectivity of metal.

CIRCULATION STRATEGY:

In metalLABs, individual courtyards that appear separate from the exterior are connected interiorly to form a continuous irregular courtyard. The circulation exists as two intertwined strands around the void of the courtyard.
MASSING STRATEGY:

MODEL STUDIES:
leatherLAB

PROGRAM & TYPOLOGY:

The open courtyard typology provides well-lit, open-air terraces that facilitate the drying of processed and colored leather hides and provide necessary ventilation for the pungent tanning process.

CIRCULATION STRATEGY:

In leatherLABs, a ground-level central courtyard gives access to two elevated edge-yards at different levels. The circulation progresses in two interlocking spirals from the central courtyard through the edge-yards.

LEATHER-CRAFTING PROCESS:
MASSING STRATEGY:

MODEL STUDIES:
clayLAB

PROGRAM & TYPOLOGY:

The broken courtyard typology accommodates the need for temperature/shade regulation during the clay-crafting process by providing shaded exterior corridors for pottery-drying.

CIRCULATION STRATEGY:

In clayLABs, the primary circulation wraps around two sides of a central courtyard, with displaced solids forming the other two sides. Each displacement creates a sectional void that becomes an extension of the courtyard.

CLAY-CRAFTING PROCESS:
MASSING STRATEGY:

MODEL STUDIES:
RELATIONSHIP BETWEEN KRAFTLABS AND SURROUNDING CONTEXT
DECOMPOSITION INTO TOURIST, COURTYARD, ARTISAN SPACES AND THE INTERFACES IN-BETWEEN
CASE STUDY

KRAFTLAB IN THE URBAN FABRIC
EXPLODED KRAFTLAB SHOWING TWO MATERIAL STRATEGIES:

- transparent, solid glass walls for tourist-courtyard interface
- opaque, porous wood slats for artisan-courtyard interface
BIBLIOGRAPHY


