

POLITECNICO DI MILANO
SCHOOL OF ARCHITECTURE URBAN PLANNING
CONSTRUCTION ENGINEERING



THESIS

Kymatika. A Caravansary Design-Project for the City of Mashhad

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ACADEMIC YEAR 2015-2016

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Abstract

To describe the '*performance of knowledge*', we must inevitably rely on the traces 'it' has left in sources that have survived. They are not 'a' neutral witness to historical events, they are media of retelling.

The gist of *Kymatika* experiments, involved spreading a thin layer of sand across a vibrating plate, changing the frequency at which the plate vibrated, and then watching the sand as it shivered, forming regular, highly geometric patterns. Those patterns depended upon, and were formed in response to, whatever vibration frequency that was chosen by *Chladni*.

The aim of the design-project is to update the heritage of a 'Caravansary' using as a case study in an area in *Mashhad* currently under government development due to transformation of religious core of the City. The concept is based on stopping the demolition of historical fabric, preserving the existing footprints, to discover new infrastructures which can cooperate with potential invisible patterns metaphorically performed by visible frequencies of site. 'Caravansary' as a historic inspiring elements of Iranian architecture, here used as an archetypical model for settlements. Mainly due to the type of enclosure it provides square or rectangular shape as roadside shelter for travelers looking for rest or recovery from the day's journey.

The plot, close to the religious center of Mashhad - Iran's holiest city, is still easily recognized in its original inheritance opposite to gridiron texture of new town. The nowadays condition of the selected urban fabric suffers the building of a new traffic ring-road and several radial roads running to and from Holy Shrine, producing the loss of the historical City-center in response to accommodation and parking facilities for pilgrims.

The project consists of different layers of functions such as commercial (*Bazar*), cultural and temporary or permanent –accommodations, which all together form a surrounding to the inner court-yard which reflects the original relationship between outside and inside Iranian architecture. At a large scale, the Project-design proposed to figure out linkages among local road-network, environs and urban-fabrics to shape a dwelling based on former functions.