

TERRABAYT

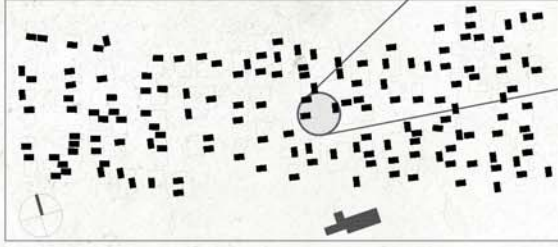
terra /ˈtɛrə/ - lat. earth bayt /bajt/ - ar. house

Terrabayt is a computational tool that allows for the involvement of the end user in the process of designing and constructing earthy architecture, aiming to improve the existing camp housing situation of Al' Zaatari refugee camp. The tool ultimately generates housing typologies more in line with the needs of its inhabitants, whose topological and geometrical characteristics are based on traditional Syrian ones; hence the name Terrabayt. From a practical point of view, the existing containers are combined with earthy additions to form this new typology. The existing structures and materials are utilized to minimize waste, and allow the camp inhabitants to remain in their units during construction. As the inhabitants build the earthy extensions, their sense of ownership, and self reliance will inevitably increase. This will allow for a transition from a state of "refugee" to that of a "homeowner", and a transition of Al'Zaatari from a "camp" to a "settlement".

Family X



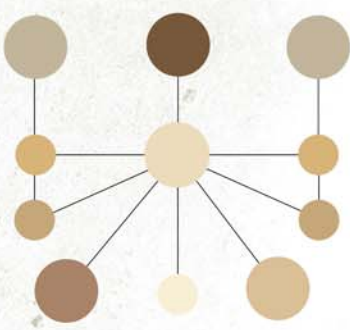
INPUT:
No of Adults: 3
No of children: 7
No of caravans: 4



SPACE REQUIREMENTS

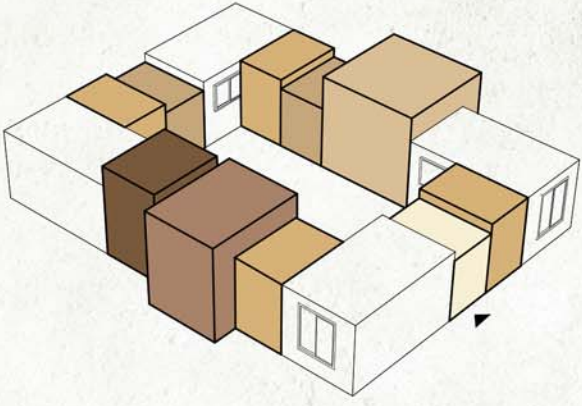
House vocabulary Areas (sm) Connectivity Graph

COURTYARD (Y)	60
CARAVAN (C)	15
LIWAN (L)	6
IWAN (I)	9
WINTER LIVING (W)	15
ENTRANCE (E)	6
KITCHEN (K)	15
TOILET (T)	6
BATHROOM	6



FORM GENERATION

Form is generated through dynamic relaxation process. The meshes are then analyzed in structural software in order to determine the needed thickness.

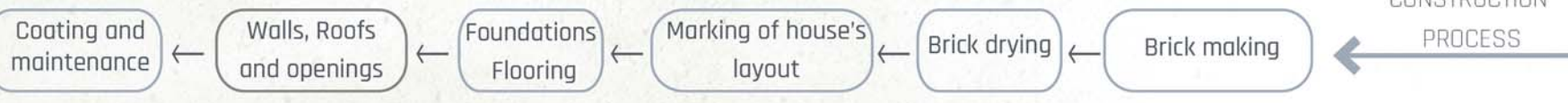
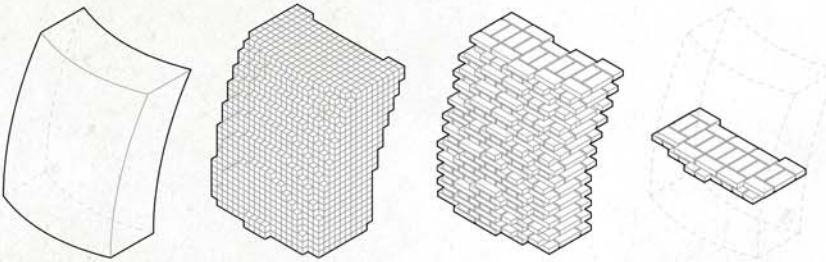


LAYOUT GENERATION

The housing layout is generated based on the connectivity graph and after each family's space requirements have been weighted by appropriate factors. Spaces are positioned in priority starting from the southwest corner moving counter-clockwise. The script runs until all spaces are placed around the courtyard.

BRICK PATTERN/VOXELIZATION

Once the volumes are generated, the brick pattern is applied to them through voxelization method. In this way construction becomes easier as walls and roofs are built up in horizontal layers.



floor plan_1:150



section_1:150



AR3B011 EARTHY

Authors:
Andri Lysandrou (4748395)
Anna Tsagalou (4746244)
Ginevra Nazzari (4744756)
Ivan Avdić (4749472)
Momir Nikolic (4740726)
Okan Türkcan (4309634)

Instructors:
prof. dr. ir. Sevil Sariyildiz
dr. ir. Prouz Nourlan
dr. ar. Serdar Asut
ir. Hans Hoogenboom
dr. Michele Palmieri
dr. ir. Fred Veer
ir. Dirk Rinze Visser