Housing Morphology in Manchester
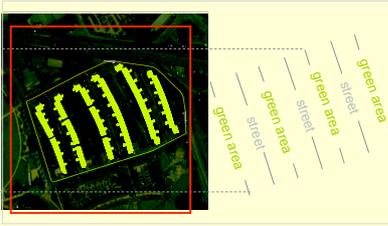
Bentley House Estate, "RedBricks"

Fieldwork & Analysis carried out by Christian Beros, Eirini Rafailaki

The Bentley House Estate is one of the few remaining parts of Hulme, Manchester, not to have undergone regeneration through demolition and new build.
It has six blocks of three storeys high flats remain, with 248 homes in total. They were built in the late 40's early 50's of red brick - hence the local name of "Redbricks".
The blocks are organized through a series of streets and green areas, and it is surrounded in the North and East sides by the highway and the West side by Hulme Park. The Main entrances are in the street side of the Building while the back entrance to the Private garden is in the green area side, the common access to the flats is located in the boxes at the ground floor that are at the same time stairs access and storage boxes for the dwellers. The ground floor flat has a back yard that is accessible from the inside of the flat and from common green area as well. Some Flats Has Balconies looking to the street and to green areas as well and they are used as storage for some flats and in most of the cases are used to hanging clothes.


Nolli Map, 1923. Scale 1:10.000

Nolli Map,1938. Scale 1:2.500

Nolli Map, 1970. Scale 1:2.500

Nolli Map, 2005. Scale 1:2.500

Area Distribution

46.39%	Common Green
19.88%	Road
15.18%	Path
6.25%	Private Garden/Yard
11.97%	Building

There is a predominance of the open space against the buildings in the selected area and also a high percentage of roads in the system.

Land Use

40.0%	Residential
58.38%	Public Space
0.20%	Communal Facilities
1.41%	Leisure

The Residential landuse is the higher percentage in the area and there is a very little amount of services or communal facilities close to the estate

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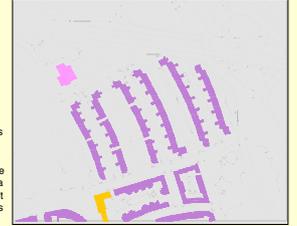
Research Question
How boundaries can affect the spatial and social structure of a city area? and How can we differentiate this Boundaries?

Methodology
In order to study both sites the analysis has been developed in two main areas, Macroscale, which includes Visual Graphic Analysis (VGA) and Axial Analysis of each estate in order to study the relations between the estates, its surroundings and the whole structure of the city. And Microscale which includes the convex space analysis, door types categories, buildings facades and permeability graphs with the purpose of clarify the internal relations of the estates.

VGA diagrams

In the first case (integration), is possible to appreciate the segregation in the East and North sides of Redbricks and the most integrated lines the one that cross the highway connecting both sides of the city and the corner at the southwest of Redbricks. This suggests that the Highway has an important role in the segregation of the Northeast rows as well as the park at the south of the estate which blocks the connection with the rest of Hulme.

In the second case (connectivity) the diagram shows a better correlation in the one with the field's observations in the one with the borders, in which is possible to distinguish the disconnection of the internal rows of the estate compared with the longest roads of the system, especially with the ones that are crossing the highway.
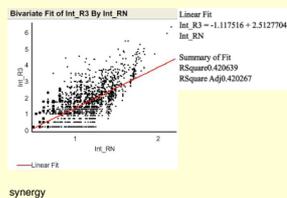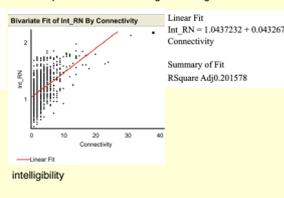
Axial analysis

Axial map of Redbricks featuring *global integration*

Axial map of Redbricks featuring *local* integration R3

Axial map of Redbricks featuring Connectivity

Bivariate Fit of Int_R3 By Int_RN

Linear Fit
Int_R3 = -1.117516 + 2.5127704 Int_RN

Summary of Fit
RSquare 0.420639
RSquare Adj 0.420267

— Linear Fit

synergy

Bivariate Fit of Int_RN By Connectivity

Linear Fit
Int_RN = 1.0437232 + 0.0432676 Connectivity

Summary of Fit
RSquare Adj 0.201578

— Linear Fit

intelligibility

The syntactical analysis of the area of Hulme where Redbricks are located might explain the observations and reveal substantial information about the complex's organization and its social profile. The syntactic analysis was conducted for a part of Manchester of around 2.5 miles. Therefore, the axial representations could be considered as axial break-ups.
The images allow concluding that very few lines of the system are well integrated (in red colour). Mancunian Way and Princess Road are not as much integrated as one might expect. On the contrary, Stretford Road and Chorlton Road (in the south and west part) present a high level of integration, performing a strong influence in what regards to the linkage of the Redbricks with the south and west part of Hulme.

Number of axial lines :1562
Mean Global Integration (Radius n) :1,1779
Mean Local Integration (Radius 3) :1,6374
Mean Depth from Most Integrated :8,1749
Mean Integration (Radius-Radius) : 1,4815
No. of Cul-de-sacs (connectivity=1) : 334

Angular analysis

When the segments are examined globally according to the average amount of turning it takes to get to any other line within the system an *angular analysis* of the segment graph is being conducted. In case of Redbricks, the angular step depth from four different lines of the system is measured. In all cases the values have not great differences. The break-ups indicate that people prefer to walk around the complex (lines in red colour).
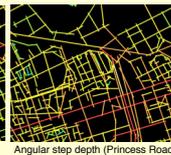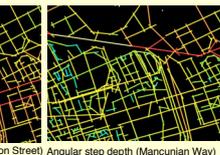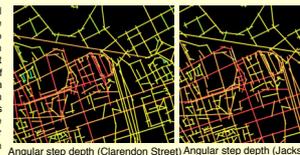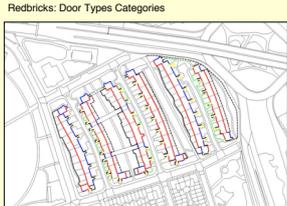

Angular step depth (Clarendon Street) Angular step depth (Jackson Street) Angular step depth (Mancunian Way) Angular step depth (Princess Road)
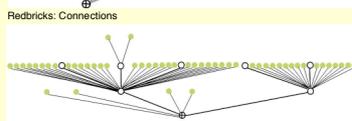

In case of Redbricks most of the main entrances are located between the first and the second row, between the third and the fourth and between the fifth and the sixth row of buildings. From the two green areas (which are located between the second and the third and between the fourth and the fifth row) there is no access to the buildings as almost only back doors can be found.

49.01%	
25.74%	
25.25%	

■ Back Door
■ Gate/Garage Door
■ Main Entrance

Redbricks: Door Types Categories

In Redbricks the spaces between the first and the second row, between the third and the fourth and between the fifth and the sixth row of buildings are very controllable, as there are the front doors and windows. Apart from that, the fences in front of the building units are low or very low, and consequently they permit visibility. However, the green spaces between the second and the third and between the fourth and the fifth row are *not* controllable at all, although there are a lot of windows looking towards them.

■ Blank Wall
■ Doors&Windows
■ Doors only
■ High opaque fence
■ High see through fence
■ Low fence
■ Very low fence
■ Windows only

Redbricks: Bulding Facades

Redbricks: Connections

Redbricks: J-graph from outside to the main entrances

In order to describe access and permeability, a basic representational scheme was conducted. The residential premises of Redbricks are highlighted in black colour, the *outside* (Jackson Crescent) is represented as circle with cross, the main entrances (*access* and *permeablity*) as transparent green dots and the *convex spaces* (that one finds from outside towards the deepest part of the Redbricks) as unfilled dots.
The potential for social encounter amongst users is reinforced by the spatial organisation of the buildings. This is apparent in the structure of the *justified permeability graph* (Figure) drawn from the outside (the place with highest values in terms of visual steps from the most integrated corner in the system has been selected).

convex_P by Connectivity

■ 20 to 26
■ 7 to 14
■ 1 to 7
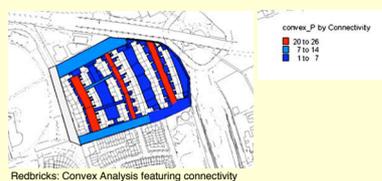
Redbricks: Convex Analysis featuring connectivity

The convex break-up (connetivity) demonstrates that the three streets inside Redbricks are very well connected it could be stated that the above three streets support movement and permeability. This spatial typology provides the users of the buildings - both the *'inhabitants'* and the *'visitors'*- easy access to the aforementioned streets. However, it may also be referred that Mancunian Way and Princess Road have the character of *'boundaries'* for Redbricks, as while there is direct visibility towards the Estate, there is no accessibility. The closest to Princess Road row is actually the most disconnected place of the Estate due to the *one-dimensional boundary* that the road creates.

Boundaries effects
Redbricks

In terms of *land use*, it is possible to argue that the Parks and communal facilities that are surrounding Redbricks have an exclusion effect in the estate, separating and segregating Redbricks from the rest of Hulme development.
Regarding *Visual control* it is possible to determine a difference in terms of control over the space between the access of the Redbricks to the flats an the green areas that only have backdoors and windows, this leads in a lack of surveillance over the green areas which produce insecure and untidy places.
In relation to *permeability* the Highway lines determine the movement through the state and the segregation of the plot from the rest of the Hulme development. The parks also have an important role in this disconnection due to the size of its borders that blocks continuity of the grid.
In terms of *connectivity* the disconnection of the East rows is defined by deepness in the system which transforms Redbricks in a kind of island between the parks and the highways.