Chicago - embraced

V. Metzen
comparison
analysis
urban design
building design
appendix
What are the future characteristics of Midcity Chicago - and how can an architectural design support this development?
comparison
The fall of the social: public garbage bins

What elements define a pedestrian friendly space? Chicago’s North Broadway is a vibrant pedestrian street. How does it differ from a pedestrian area in the suburbs and in Midcity Chicago?

Taking aside economic vibrance, the difference in quality along North Broadway Ave. is the pedestrian friendly space: Many garbage cans and benches line up along the road.

However, the public space in Midcity is stripped to it’s essentials. Along the most vibrant pedestrian street in the area, all bins where stolen and sold to recycle.

The public space is neglected - a mirror of the true social and economic symptoms of the area: poverty.
A plastik bag, attached to the fence was the only possibility to dispose of garbage along the whole road.
“There used to be trash cans on almost every corner. The trash would pile up...around the can. After a few months the cans went missing. Apparently, they found their way to recycling centers...along with manhole covers.”

- logosc75 on chicago.everyblock.com
analysis
the fall of the social:
rise of the artificial environment

With the rise of the airconditioner, more and more public space in American lives was turned into an artificial environment.

One would wake up in an airconditioned house, drive in an airconditioned car to an airconditioned office and shop in airconditioned malls - and still does today.

Living and moving in an artificial environment has lead to the decay of the social environment.
the fall of the social:  
the Gruen effect

Victor Gruen is seen as the founder of the American shopping mall. However, his concept was to create a new city centre with shops, public spaces and communal buildings. He also pledged for communal transport, stating the increase of automobiles destroys public space in the city.

The concept was later misused into the famous large scale shopping malls and designed for pure economical profit, turning the space around the building into car...
The tendency toward spread and scatterization is further heightened by [...] the transport revolution, which has put at the disposal of many the financial means to acquire one, two, three or even more automobiles and the means for acquisition of more private space. In doing so however, we soon run afoul of some basic, deeply human needs: the need for sociability.
the fall of the built: 
ageing typologies and construction

Chicago’s building boom around 1900 lead to a rapid expansion of the city. This was done mainly with cheap and fast lumber construction.

But even the sturdy brick houses are vacant and decaying - partly because their typology and construction does not address current social and climate needs.

Chicago will be facing an enormous number of decaying buildings in the next decades.
urban design
Cluster cities aims to increase the built density in Chicago by enforcing already functional neighbourhoods.

The area in between decays. Materials get reused to support the new centres. And the landscape in between returns to nature.
building design
The roof as a typology: the gas station as a communal space

The roof in public space defines a zone in which the user exits his/her climatised comfort zones and is exposed to the natural climate. The roof acts as a threshold between inside and outside.

In West Chicago, the typology of the roof is merely found as a gas station. It therefore acts as a point of encounter, a communal space.

“The gas station today has the same function as the market square had in old Verona. It’s a place of social interaction, where all classes come together”

- Baz Lurman
american heritage as function:
the old/new communal centre

The first American settlers
designer their villages with a
system of public functions.

The grid in today's city breaks the
heirarchy that was once planned
into the urban design. Today,
the public functions of the once
planned city centre are spread
and dissolve.

The planned building takes this
planning tradion and turns it
into one building - the new city
centre.
Ideal town plan centre of first American settlers
The area is defined through existing old industrial brick buildings as well as small wooden houses. The urban concept embraces these plays with the public space in between them.

The concept wants to strengthen and create a potential built heritage in the area.
The roof creates a public space with different thresholds and uses. It encourages communal activities in the individualistic American society. It creates a transition between an artificial and natural environment.

It wraps around existing ruins - houses, industry, nature and thus merges the old into the new. It creates a network that supports and works with the existing to distribute energy.

In an environmental crisis situation, the building can be converted into a place of refuge - the passive climate system and its own electricity production keeps the building autonomous in this situation.
The functions of the building on the ground floor relate to the uses of the surrounding area - merging both into a multifunctional public space.
The floorplan consists of specific functions (e.g. sports, church, library, canteen) that define the classic urban centre of an American city.

Next to these, multi purpose rooms in different sizes offer a flexible use of the building. They also create spatial as well as climate buffer zones that increase the building’s flexibility and adaptability.
the slightly curved roof allows for a channeled flow of water into the middle of the building where it is gathered and reused.

It also follows the room's natural momentum line and thus supports the spaceframe structure.
appendix

details
energy
mapping
Facade detail b-vertical

20mm Firwood floorboards
100mm Subconstruction recycled firwood, sanded, coated
46mm screed
30mm Impact sound insulation
2000mm Recycled, reinforced concrete foundation
~100mm Insulation (exact height needs to be calculated to insure effective passive heating through earth)

Precast concrete element against water spill
(with drain to cistern)

Metal grid

vertical section b:1:5
Detail 1
Openable facade towards the inner courtyard. Consisting of sliding doors that angle into create the circle.

Facade detail b horizontal
Sliding door with wooden frame, fixed window with wooden frame:
36mm heat protection glass (U=0.71 W/m²K)
<table>
<thead>
<tr>
<th>Material</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>50x50 mm</td>
<td>recycled firewood timber, sanded and water proof glazed, distributed at random (mm, distance 50mm)</td>
</tr>
<tr>
<td>50x100 mm</td>
<td>recycled firewood timber, sanded and glazed, used as secondary facade construction, every 700mm</td>
</tr>
<tr>
<td>60 mm</td>
<td>Polycarbonate elements, plug connection, Aluminium frame, ( U = 0.87 ) W/m²K</td>
</tr>
</tbody>
</table>

Facade floor a

<table>
<thead>
<tr>
<th>Material</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 mm</td>
<td>recycled firewood timber (2.5m x 100mm), sanded and water proof glazed</td>
</tr>
<tr>
<td>50 mm</td>
<td>Subconstruction horizontal: recycled firewood timber (2.5m x 100mm), sanded and water proof glazed</td>
</tr>
<tr>
<td>50 mm</td>
<td>Subconstruction vertical: recycled firewood timber (0.5m x 100mm), sanded and water proof glazed</td>
</tr>
<tr>
<td>300 mm</td>
<td>Rainproof wood fibre insulation</td>
</tr>
<tr>
<td>1 mm</td>
<td>Foil</td>
</tr>
<tr>
<td>50 mm</td>
<td>Compressed wood fibre insulation, angled</td>
</tr>
<tr>
<td>1 mm</td>
<td>Foil</td>
</tr>
<tr>
<td>180 mm</td>
<td>Reinforced concrete (up to 260mm)</td>
</tr>
</tbody>
</table>

Total \( U \)-Value: \( 0.117 \) W/m²K
Detail 2: Outer facaed. Due to the roof structure, this faced needs to be able to cope with a vertical roof movements. It is furthermore covered playfully with recycled wooden pannels.
a. rotating solar panel
b. walkable metal grid
c. steel rod (with welded threaded bars)
d. wood rod

Detail roof construction 1:2 (knot = mero system)
Detail:
Column. The main columns are placed with a spacing of 1/5 and 4/5 to induce the support of the roof.

To work against horizontal movement, the roof is additionally fixed in the centre of the building.
Roof construction

60mm Polycarbonat

Aluminium frame, aluminium clamp, attached through threaded steel welded onto rod
appendix

details

energy

mapping
summer day

winter day

summer night

winter night

1. Heat exchanger
2. Heat recovery via wind around coil
3. Thermal earthmass (~10°C)
   gets warmer in years
4. Energy buffer roof. Acts as passive insulation
5. Solar panels adjustable for shading
ventilation

heating /cooling
appendix

details
energy
mapping
existing bus routes

building location
busroute connections to the centre
small shops
proposed new public spaces and centres