Is it possible to charge a brick with an entire culture?

Architecture is inevitable for all of us. Being the streets we walk, the roof that gives us shelter and the bench we use for rest, architecture is a part of our cultural and historical heritage that have shaped us into the people that we are. The emotions, through which we perceive architecture, are colored by our past which varies from country to country, from region to region, from city to city. These emotions brings us together but can also separate us.

The fall of 2017 was a historically important period for the the region of Catalonia due to the political situation. A referendum took place October 1st and the independence movement was stronger than in many years. It’s more than just a question about political controversies, cultural heritage and a past of suppression. It’s about people, it’s about emotions, it’s about the streets they walk, the roof that gives shelter and the bench used for rest.

A History of Catalan Independence memorial park serves the purpose of highlighting the history as well as cultural heritage of Catalonia. The site chosen for this is Parc de Barceloneta, a deactivated park in the middle of a busy beach area that has been taken over by tourists. Creating a monumental park in honor of the history of the independence movement by celebrating catalan culture is a way to bring back the area to the Catalans.

To approach the culture of Catalonia this research focus on the Catalan brick due to its different dimensions compared to the Castilian type. These components reveals further cultural treasures beneficial for the creation of the memorial park. Alongside exploring old catalan construction methods in a new and challenging way, catalan arts and craft are used as a key to investigate form finding. This will be a way to raise the question of old, brilliant brick techniques that we no longer use.

Result of this research lies in both the design as well as the understanding of catalan culture and brick work. It’s the combination of using old building techniques on a platform based on art and tradition on a site of historical importance to create a brick park usable in a manner that reflect both the catalan lifestyle and mindset.
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INTRODUCTION
Is it possible to change a brick with an entire culture?

Architecture is inevitable for all of us. Being the streets we walk, the roof that gives us shelter and the bench we use for rest, architecture is a part of our cultural and historical heritage that have shaped us into the people that we are. The emotions, through which we perceive architecture, are colored by our past which varies from country to country, from region to region, from city to city. These emotions brings us together but can also separate us.

The fall of 2017 was a historically important period for the region of Catalonia due to the political situation. A referendum took place October 1st and the independence movement was stronger than in many years. It’s more than just a question about political controversies, cultural heritage and a past of suppression. It’s about people, it’s about emotions, it’s about the streets they walk, the roof that gives shelter and the bench used for rest.

Touching this subject raises questions about the architects role in a world of politics. Regarding one’s rights, obligations and possibilities while working with a politically charged project, as well as personal repercussions. Especially concerning a culture other than one’s own.

What are the personal and professional dilemmas and repercussions of working as an architect in a politically charged environment?

How to, in a righteous way, apprehend and temporarily become a part of an other culture?
**BACKGROUND**

**REASON AND BACKSTORY OF THE DISCOURSE**

**FALL 17’**

During my exchange semester at ETSAV (Escola Tècnica Superior d’Arquitectura) in Barcelona I got caught up in the political situation of fall 2017. Not only did it affect my living situation but my studies as well. Many of the teachers and students were politically active and since the school is small the whole independence movement became a big part of my exchange year.

The referendum, strikes, demonstrations, manifestations, lectures, violence, convert, the list goes on for the political situation that appeared. Experiencing this without having enough knowledge to fully understand it made me start asking people, doing research and following the news, realizing that this has to do with much more than people being for and against independence of Catalonia.

This battle goes back to even before the regime of Franco and includes cultural heritage and differences. It’s about language and mentality but also art and architecture.

I saw this as an opportunity to embrace this situation I was put in. Including this in my Thesis could be a way for me to get a deeper understanding of the situation but also be able to explain it to others - through architecture.
AIM
A history of catalan independence memorial park should serve the purpose of letting the visitor understand or remember the history as well as cultural heritage. This together with the people is what defines Catalonia. A building that represent and honor the effort of hundred thousands of people thought the years. While in the meantime, personally speaking, be a way for myself to process the experience of living in Barcelona during this historical fall with all that it includes. But apart from that, the purpose is also to explain the political situation in a fair and understandable way, which is something that media have failed to do due to as well economical interest as corruption.

SITE
The site chosen for the research is the Park of Barceloneta, or in catalan: Parc de la Barceloneta. That, despite its fortunate location by the beach, is a rarely used site. A dark and ambiguous space that many people try to avoid. In addition to that, the tourist invasion of Barcelona has lead to the tourist taking over Barceloneta leaving it a ghost town off season. This memorial park is in that sense a way of bringing back Catalonia and it’s cultural heritage to the area of Barceloneta.

“As an architect you design for the present, with an awareness of the past for a future which is essentially unknown”

- Norman Foster
METHODOLGY

HISTORY, BRICKS & EMOTIONS

HISTORY
The research begins with gaining knowledge of and understand the history of Catalonia. What has happened? What is the situation now? What is yet to come? Through different books and articles showing both sides of the story to get a broader and fairer understanding of the situation. In addition to that, doing interviews with people on site in Catalonia, which is a way to get a range of subjective opinions of the story including emotions and experiences.

BRICKS
A part of the Catalonian architectural history is their method of brick constructions. Through studies of the techniques as well as visiting and analyzing existing brick buildings in Catalonia, their architectural heritage will be better understood. To later be applied in a suitable and respectful way in the creating of the memorial park.

EMOTIONS
All of the key points in the research circles back to emotions. To be able to portray the historical event in an architeconical way the emotional experience is key. By using the full potential of brick, these emotions can be recreated through the play of culture, light and pattern.
Previous Research

ETSAV: Restaurant in Brick by Parc de Ciutadella

**Bricks**

During my exchange semester at ETSAV I was working in the studio 7A, where the focus was brick. The task was to design a restaurant by the UPF Library, an old brick water reservoir, by Parc Ciutadella in Barcelona. A group project where I got the chance to work with one student from the University of Illinois and one student from École polytechnique fédérale de Lausanne.

**Most Out of the Least**

Our project Making the Most out of the Least, focused on the possibilities and capacity of brick. By working with thin curved walls we created a structural system with the walls while in the meantime creating a variety of spaces. The focus was on the brick itself as well as the experience of the visitor, therefore the studies of this studio will be useful for this thesis project. We also made brick play the main role to solve structural, technical and circulation problems of the project. In addition the site Parc Ciutadella makes it relevant since the memorial park is located in Parc de Barceloneta.
REFERENCES
HOLOCAUST MEMORIAL - PETER EISENMAN
In Berlin, by the road Ebenstrasse and close to Brandenburger Tor, the Memorial to the Murdered Jews of Europe (Holocaust Memorial) was in 2004 constructed.

The architect Peter Eisenman together with the engineers from Buro Happold designed this enormous concrete park with grid arranged blocks with on a sloping field.

The aim with this memorial park was to create a uneasy, confusing atmosphere with lost touch of the human scale. The graveyard like area plays with light, scale and pattern in a way that affects the visitors state of mind. Where angles and the perspective of the eye makes it difficult to anticipate the feel of the space around the corner.

CATALONIA IS NOT SPAIN - SIMON HARRIS
“How much does the world know about Catalonia and its role as a great medieval empire and one of Europe’s first nation states? In Catalonia Is Not Spain: A Historical Perspective author Simon Harris takes the reader through 1,000 years of Catalan history focusing on the Principality’s often difficult relationship with Castile-dominated Spain. This insightful and balanced history gives an insider’s background to the current political situation and why Catalonia is currently deciding whether or not it wants to be independent from Spain.”

Simon Harris is a British author and Catalan historian and has written two book about the subject. He has lived in Barcelona since 1988 and began his research in the early 90s.
MAIN REFERENCES

HOLOCAUST MEMORIAL - PETER EISENMAN

VIEW 1 - Uphill ground

VIEW 2 - Curved landscape

VIEW 2 - Low landscape

Upper plane defining the landscape

Maze of pillars

Lower plane defining the ground

Pattern of pillars with top and bottom planes

STRATEGY

Tall area

Curved limit

Low entrance

High entrance

Interior hill
BACKGROUND
The author Simon Harris moved to Barcelona in the 80's working as a tour guide. He fell in love and fell in love in the city. And it was through his mother in law of his first marriage that he got introduced to the, by the time quite concealed, history of Catalonia. Today he considers himself “an adopted Catalan”, as the first chapter of the book states, and feels Catalan.

ABSTRACT
“Catalonia is not Spain: a Historical perspective” covers the history Catalonia as well as explaining how these events has lead up to the independence movement of today. It also includes uncertainties and controversies between the Castilian and Catalan version of what happened in the past with the aim of explaining the tension between the two sides.

PARALELLS
Throughout the book several parallels are drawn to the historical situation between England and Scotland. Which as for a Swedish architecture student a more relatable reference would be the Sami.

AFTER THE BOOK
Much has happened since 2014, when the book was published, but in advantage making it more relevant. This will be followed up with an interview with Harris where topics not included in the book will also be discussed.

MY REFLECTION
The reason for choosing this book as a main reference is that it’s written from a perspective of foreigner looking into the situation of Catalan history and politics. Trying to understand, trying to be involved and a part of it. Watching with the eyes of his own culture that works as a scale in the hopes of understanding. That is the same type of starting point for this research.

Despite the book being a good source, in terms of understanding as well as it being quite condense, it’s important to have in mind that it’s a subjective view of the story. Which is being indicated by his use of adjectives.
CATALAN BRICKS

PART I: HISTORICAL BUILDINGS IN BARCELONA

DEPOSIT DE LES AIGUES - carrer de llull

HISTORY
Old water reservoir now UPF Library. Made by Antoni Gaudi and Cornet de Reus.

BRICKS
Catalonian brick both interior and exterior, with a variety of bonds.

CONSTRUCTION
Arches in two directions support the large spans of the buildings. Skylight in form of a cross.

CASTELL DELS TRES DRAGONS - passeig de picasso

HISTORY
Modernist building from 1887-8 by Lluís Domènech i Montaner for Universal Exposition of Barcelona.

BRICKS
Catalonian bricks except for the front side (image above) which is by bricks of Spanish brick dimensions.

CONSTRUCTION
Bricks flipped to hold the heavy load from installations such as windows.

CASA DE LES PUNXES - avenida diagonal

HISTORY
Art Nouveau Modernism by Josep Puig i Cadafalch from 1905 for the Terradas Brutau family.

BRICKS
Catalonian brick with shifted bond and every other brick flipped.

CONSTRUCTION
Openings through pointy arches using rotation of the brick and range of mortar amount.
CATALAN BRICKS

PART II: HISTORICAL BUILDINGS IN BARCELONA WITH NEW EXTENSIONS

PLAZA DE TOROS MONUMENTAL - gran via de les corts catalanes

HISTORY
Bullring now used for events. Noucentista by Manuel Joaquim Raspall i Mayol, expansion by Ignasi Mas i Morell.

BRICKS
Spanish brick with a variety of bond types. Elements of white and blue tiles (not shown in picture above).

CONSTRUCTION
Working with shifted bricks to create openings (top part of image).

PALAU DE LA MÚSICA CATALANA - carrer de palau de la musica

HISTORY

BRICKS
Catalonian bricks with shifted bond. Angled creating an arched shape.

CONSTRUCTION
Stacked to create pillars [window in image]. Change of depth to create a pattern [decoration in image].

COSMOCAIXA - carrer d’isaac newton

HISTORY
Former asylum for the blind by Josep Domènech i Estapà from 1904-1909 with an expansion from 2004.

BRICKS
Meeting of new and old Catalan bricks with different type of bond.

CONSTRUCTION
Use of brick in alla different directions. Brick covered beams for a slim appearance.
CATALONIA
HISTORY OF CATALONIA FROM AN INDEPENDENCE PERSPECTIVE

TIMELINE - HISTORICAL EVENTS

711 Moorish Invasion
    Under Saracen control

801 Frankish Forces
    County of Barcelona was taken

987 First Independence
    During Borell II’s rein

1213 The Battle of Muret
    Catalan king was slain

1640 Reapers War
    Followed by the second independence in 1641

1714 War of Spanish Succession
    Attempts to recover the democratic institutions lost under Felipe V

1716 Nueva Plata
    Castilian occupation of Catalonia

1778 Industrial Revolution
    Charles III opened up American commerce to Catalans, trade of firewater really took off

1914 The Catalan Commonwealth
    Modernizing cultural movement, with aim of improving Catalonia

1925 Primo de Rivera
    Dictatorship 1

1939 General Franco
    Dictatorship 2, after the end of the Civil War

1979 Estatut 79
    Next step toward autonomy

1992 Olympic Games
    Including a urbanization program for Barcelona
CASTELLERS
One old catalan tradition is Castellers, which is a type of human towers where people in teams compete against each other over who can build the highest. People of all ages and gender participate and during big festivities, such as La Mercé, where a big crowd is cheering anyone can be asked to join in and help the team support the base. Or be a part of the protection net in case any would fall off the tower. The teams wear matching outfits and practice several kind of formations.

CORREFOCS
Fire run, or Correfocs in catalan, is a tradition found in Barcelona during festivities. People dress up as devils or demons and some prepare dance routines accompanied by firecrackers, fire works, sparklers and music. Viewers dress in protective clothes and goggles to be able to come close to the parade. This tradition has it’s origins from the 12th century but was banned during the dictatorship of Franco. Today the tradition has spread all over Catalonia.

FESTES MAJOR
During the summer every year Festes Majores is being celebrated in the city of Barcelona and it’s closest surrounding. Neighborhood by neighborhood arranges different activities, events, shows and concerts. Colors are being highlighted, both in clothing and decorations. Each neighborhood has its own color. Included in the festival each street can theme and decorate the facade and in the end of the week one winner is announced.
Joan Miró
Born in Barcelona, Joan Miró is one of the city’s most famous painter, sculpture and ceramicist. With a child like typle inspired by surrealism.

On the mountain of Montjuic is a museum dedicated to his work, the Fundació Joan Miró, and many of his sculptures decorates the streets of Barcelona. Some examples are Woman and Bird near Placa d’España and his pavement decoration on La Rambla.

Salvador Dalí
One of Catalonias, and Spains, most prominent surrealist is Salvador Dali, born in Figueres.

His art is known world wide but not very present in the area of Barcelona. But one train ride away, in the city of Figueres, it’s possible to visit the Dalí Museum where some of his works are displayed. His surrealistic pieces creates a form language rich of curved lines and smoothness, with the feeling of melting.

Pablo Picasso
The Málaga-born, Spanish artist Pablo Picasso is sometimes referred to as “Catalonias adopted son”, M. Eaude Catalonia - a cultural history. He moved to Barcelona with his family in young age and grew up there.

Today it’s possible to visit some of his work at the Picasso museum in el Born, where different style peropds of his art are being displayed. It’s also possible to join guided tours around the city to experience the life of Picasso.
HISTORY
Apart from what many people think, Catalan is not a Spanish dialect but an own language. It developed from the Vulgar Latin and was the official language of the Kingdom of Aragon 1137-1749.

AREA
Catalan is not only spoken in Catalonia. In Spain Valencia, the Balearic Isles, the eastern fringe of Aragon and some municipalities of Murcia also speak the language. And outside Spain it’s Andorra, the northwest Sardinian and Roussillon in France.

SIMILARITIES
The Catalan language has many similarities to both Castellano (Spanish) and French.

Catalan - adéu
Castellano - adios
English - good bye

Catalan - si us plau
French - s’il vous plaît
English - Please
### TIMELINE - POLITICAL EVENTS

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<td>25-29/9</td>
<td>Strike optional at ETSAV</td>
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<tr>
<td>1/10</td>
<td>Vote referendum of independence</td>
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<tr>
<td>3/10</td>
<td>Strike general strike and demonstration</td>
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<tr>
<td>6/10</td>
<td>Approval of new law by catalan parlament</td>
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<tr>
<td>9/10</td>
<td>Demonstration Spanish side</td>
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<tr>
<td>16/10</td>
<td>Arrest of president of independence movement</td>
</tr>
<tr>
<td>17/10</td>
<td>ETSAV class stop at 12.00 for student speech</td>
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<td>18/10</td>
<td>Suspension of catalan autonomy by Spain</td>
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<td>27/10</td>
<td>Declared Independence by catalan parlament, Spain start article 155</td>
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<td>30/10</td>
<td>Arrest of politicians if they return to work</td>
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<td>8/11</td>
<td>Strike general</td>
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<td>11/11</td>
<td>Demonstration to free political prisoners, 750k attended</td>
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<td>21/12</td>
<td>Vote for new catalan parlament</td>
</tr>
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<td>17/1</td>
<td>New President of catalonia elected, Paramount</td>
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<tr>
<td>30/1</td>
<td>Demonstration of Puigdemont for president</td>
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ZOOM x1
Catalonia is located on the northeast cost of Spain bordering to France and Andorra via the mountain chain Pyrenees. It consist of the four provinces Lleida, Tarragona, Girona and Barcelona. The city of Barcelona is the capital and is located in the centre of the coastline.

ZOOM x10
Barcelona's city centre consist of different areas, where the one show in the picture to the left is Eixample, Raval, Gothic quarters, El Born and Barceloneta.

Important sites
- The two most central squares: Placa Catalunya and Urquinaona
- The two main streets: La Ramla and Via Laietana
- The monument: Arc de Triomf
- Two parks: Parc de Ciutadella and Parc de Barceloneta

ZOOM x15
Parc de Barceloneta is the site chosen for this project and it's located by the beach of Barceloneta. Where the streets Carrer del gas and Passeig Martim together with the highway in the north closes the area.

The park lies on the site of a former Catalana de Gas factory that was demolished in 1989. Today it contains part that has been preserved from the factory that’s used as a reminder of it’s history. During the 19th century Barcelona was the industrial headquarter of Spain, the “The Manchester of the Mediterranean”, S.Harris Catalonia is not Spain - a historical perspective. In Barceloneta gas was the main industry.

Designers of the park are Jordi Henrich and Olga Tarrasó. They conserved the old water tower, Torre de les Aigües, and used the laminated steel structure of the gasometer and turned it into the a basketball court. A part from the court and the water tower, the park contains a football field, the restaurant Gamer and a statue of Simón Bolívar. As well as two small playgrounds and a couple of benches and ping pong tables.

Another conservation of the old gas factory is the office building itself, located next to the park. Today it’s used by Fàbrica del sol.

Despite these different elements the park is rarely used. While the outside gym, on the other side of Passeig Martim, is occupied at any time of the day.
STATUE
Simón Bolívar was important for making several South American states independent from Spanish rule.

STREET ART
Picasso inspired graffiti decorates a wall of the football field. “Truth, justice, reparation - because they were us”.

BEACH
Opposite the street is the beach of Barceloneta, a busy place during summer and winter.

SOCIAL SPACES - things to do in the area

CAFÉ
The park has a Café, named Gamar, with outdoor seating and the possibility to borrow books.

PLAYGROUND 1
One playground, in the color red, is located in between a basketball court and a football field.

PLAYGROUND 2
One playground, in the colors red and blue, is located next to Café Gamar.

SPORTS - activities in the area

TABLE TENNIS
Five ping pong tables are placed along side the street Carrer del gas.

BASKETBALL
A circular basketball court with a 20 m high metal frame fence is located on the site.

FOOTBALL
A football field is located on one corner of site, belonging to the club CFB.
BRICKS OF THE AREA

TORRE DE LES AIGÜES - a water tower in brick

TOWER
A water tower from 1905, designed by the Modernist architect Joseph Domènech i Estapà.

BRICKS
Catalan bricks, formed by playing with depth. Creates a resemblance with the striped catalan flag.

BRICKS
Bricks framing a window opening to support the loads of previous glass installation.

CLUB DE FÚTBOL LA CATALANA - football field

FENCE
Brick wall protecting the football field from wind and sight.

BRICKS
Spanish brick in a brown color put in two types of directions by layer.

DIRECTION
Top layer is put in a different direction, as well as corners between different height.

PARC DE LES CASCADES - by Av. del Litoral

PARK
A brick landscape in between the two busy streets Av del Litoral and Carrer de Salvador Espiri.

BRICKS
Spanish bricks put in different pattern and direction to create wall, floor and bench.

CONSTRUCTION
Use of different combination of direction to create stair steps out of brick.
ALEPPO PINE TREES
Type of pine tree common in the Mediterranean region, often found at low altitudes close to the sea. It’s medium sized (15-20 m) and with slender needle leaves and conic cones.

TIPU TREES
Also called Tipuana and is mostly found in South America. It can grow up to 30 m and is often used for shading. The leaves are pinnately compound and its flowers bright yellow.

PALM TREES
Both on site and along the street bordering to the beach. That type of subtropical palm tree commonly found in along the catalan coast line, with tall slim branches and short sprawling leaves.
BRICK
CATALONIAN vs CASTILIAN

DIFFERENCES BETWEEN BRICKS

CATALAN BRICKS

This type of brick is famous for being used to construct catalan vaults.

Measurements of the Catalan brick are:
- Length: 29 cm
- Depth: 14 cm
- Height: 5 cm

CASTILIAN BRICKS

This type of brick is similar to the European standardization.

Measurements of the Castilian brick are:
- Length: 24 cm
- Depth: 11.5 cm
- Height: 6 cm
STRETCHER

100% CATALAN

Visibility 100% Catalan 0% Castilian

100% CATALAN

Visibility 100% Catalan 0% Castilian

100% CATALAN

Visibility 100% Catalan 0% Castilian

52% CATALAN, 48% CASTILIAN

Visibility 47% Catalan 53% Castilian

100% CATALAN

Visibility 100% Catalan 0% Castilian

100% CATALAN

Visibility 100% Catalan 0% Castilian

100% CATALAN

Visibility 100% Catalan 0% Castilian

SHINDER

100% CATALAN

Visibility 100% Catalan 0% Castilian

100% CATALAN

Visibility 100% Catalan 0% Castilian

100% CATALAN

Visibility 100% Catalan 0% Castilian

52% CATALAN, 48% CASTILIAN

Visibility 56% Catalan 44% Castilian

100% CATALAN

Visibility 100% Catalan 0% Castilian

100% CATALAN

Visibility 100% Catalan 0% Castilian

100% CATALAN

Visibility 100% Catalan 0% Castilian

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**HEADER**

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</tr>
<tr>
<td><img src="image1" alt="Header 100% Catalan" /></td>
<td><img src="image2" alt="Header 100% Castilian" /></td>
<td><img src="image3" alt="Header 52% Catalan, 48% Castilian" /></td>
</tr>
<tr>
<td>Visibility 100% Catalan 0% Castilian</td>
<td>Visibility 0% Catalan 100% Castilian</td>
<td>Visibility 47% Catalan 53% Castilian</td>
</tr>
</tbody>
</table>

**ISOMETRIC**

<table>
<thead>
<tr>
<th>100% CATALAN</th>
<th>100% CASTILIAN</th>
<th>52% CATALAN, 48% CASTILIAN</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image4" alt="Isometric 100% Catalan" /></td>
<td><img src="image5" alt="Isometric 100% Castilian" /></td>
<td><img src="image6" alt="Isometric 52% Catalan, 48% Castilian" /></td>
</tr>
<tr>
<td>Visibility 100% Catalan 0% Castilian</td>
<td>Visibility 0% Catalan 100% Castilian</td>
<td>Visibility 48% Catalan 52% Castilian</td>
</tr>
<tr>
<td><img src="image4" alt="Isometric 100% Catalan" /></td>
<td><img src="image5" alt="Isometric 100% Castilian" /></td>
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<tr>
<td>Visibility 100% Catalan 0% Castilian</td>
<td>Visibility 0% Catalan 100% Castilian</td>
<td>Visibility 48% Catalan 52% Castilian</td>
</tr>
</tbody>
</table>
DIFFERENT PATTERNS - STRETCHER, SHINDER

STRETCHER

100% CATALAN

Visibility 100% Catalan 0% Castilian

100% CASTILIAN

Visibility 0% Catalan 100% Castilian

55% CATALAN, 45% CASTILIAN

Visibility 50% Catalan 50% Castilian

SHINDER

100% CATALAN

Visibility 100% Catalan 0% Castilian

100% CASTILIAN

Visibility 0% Catalan 100% Castilian

55% CATALAN, 45% CASTILIAN

Visibility 50% Catalan 50% Castilian

83% CATALAN, 17% CASTILIAN

Visibility 80% Catalan 20% Castilian
BRICK TECHNIQUES

COMMON CATALAN BONDS

**BOND 1**

Layer 1

Layer 2

Elevation

Isometric of layer types

Isometric of combination

**BOND 2**

Layer 1

Layer 2

Elevation

Isometric of layer types

Isometric of combination

**BOND 3**

Layer 1

Layer 2

Elevation

Isometric of layer types

Isometric of combination
**BRICK TECHNIQUES**

**COMMON CATALAN BONDS**

**BOND 4**

Layer 1

Layer 2

Elevation

Isometric of layer types

Isometric of combination

**BOND 5**

Layer 1

Layer 2

Elevation

Isometric of layer types

Isometric of combination

**BOND 6**

Layer 1

Layer 2

Elevation

Isometric of layer types

Isometric of combination
BRICK TECHNIQUES

INTERSECTION BY USE OF BONDS

WIDE INTERSECTIONS

ISOMETRIC
Intersection using bond with 59 cm width and under layer with 44 cm width.

LAYER 1
Top layer using bond 5 with a 59 cm width.

LAYER 2
Lower layer using bond 3 with a 44 cm width.

INTERSECTIONS

ISOMETRIC
Intersection using bond with 44 cm width and under layer with 29 cm width.

LAYER 1
Top layer using bond 3 with a 44 cm width.

LAYER 2
Lower layer using simplified variation of bond 3 with a 29 cm width.

NARROW INTERSECTIONS

ISOMETRIC
Intersection using bond with 29 cm width and under layer with 14 cm width.

LAYER 1
Top layer using simplified variation of bond 3 with a 29 cm width.

LAYER 2
Lower layer using straight row of bricks, 14 cm width.
2 BRICK WIDTH SPLIT

ISOMETRIC
Splitting 1 wall using bond with 2 brick width, into 2 walls with 1 brick width.

LAYER 1
Top layer, angle change of 5 degrees.

LAYER 2
Lower layer pushed 15 cm.

3 BRICK WIDTH SPLIT

ISOMETRIC
Splitting 1 wall using bond with 3 brick width, into 3 walls with 1 brick width.

LAYER 1
Top layer, angle change of 10 degrees, center straight.

LAYER 2
Lower layer pushed 15 cm.

4 BRICK WIDTH SPLIT

ISOMETRIC
Splitting 1 wall using bond with 4 brick width, into 2 walls with 2 brick width.

LAYER 1
Top layer, angle change of 5 degrees.

LAYER 2
Lower layer pushed 15 cm.
ARCHES - columns creating frames

STRUCTURAL ARCH
Example from arched pillars inside UFP Library, parc de Ciutadella.

SYSTEM
Angled bricks, 5 degree increase per step, working in compression.

PROFILE
Together 72 bricks create an arch with a 1.5 m wide and 1.6 m high span.

ROOF - typical catalan vault roof

CATALAN VAULT
Example from the roof inside Fabrícia Mortitz in Sant Antoni.

SYSTEM
Angled bricks with shinier facing down, working in compression. Layers of 5.

EXPANDED ALTERNATIVE
Varying the number of layers. Different bond and higher arch.
**BRICK TECHNIQUES**

**EXAMPLES OF OPENINGS FROM CATALAN BUILDINGS**

**OPENINGS - stacked bricks into mullions**

**STRUCTURAL ARCH**
Example from large opening with mullion in the facade of Palau de la Música Catalana.

**SYSTEM**
Stacked bricks creating load bearing mullions for larger openings.

**PROFILE**
Example of a 3 layer mullion with header side facing forward.

**OPENINGS - combined with pillars**

**EXTENDED WIDTH**
Example from the entrance of Casa de les Punxes in Eixample.

**SYSTEM**
2 bricks depth with two types of layers, alternated.

**EXPANDED ALTERNATIVE**
3 brick depth with one type of layer with varied center.
BRICK TECHNIQUES

ANALYSIS OF GAUDÍ BRICK WORK

CHURCH TOWERS
Sagrada Familia, Barcelona

ROOF SKELETON
Casa Milà, Barcelona

ORIGINAL IDEA
Many of Gaudí’s towers are based on the structure of the tradition Castellers.

ORIGINAL IDEA
By using gravity Gaudí calculated the skeleton shapes of his structures.

SIMPLIFIED INTERPRETATION
Layers of brick with two directions alternated. First layer creating a circle held together by mortar, second layer separated creating openings.

SIMPLIFIED INTERPRETATION
Brick skeleton through arches with halve bricks used for the upper part. One layer of bricks explained above, in reality a second layer with overlap is added.
**BRICK TECHNIQUES**

**ANALYSIS OF GUASTAVINO BRICK WORK**

**CURVED ROOF**
Guastavino’s, New York City. An event space named after him.

**ORIGINAL IDEA**
The dimensions of the catalan bricks make it possible to create double curved surfaces.

**SIMPLIFIED INTERPRETATION**
Roof structure in compression with four arched openings and four points of support. One layer of bricks explained above, in reality a second layer with overlap is added.

**SPIRAL STAIRCASE**
St. Paul’s chapel at Columbia University

**ORIGINAL IDEA**
By using Catalan bricks Guastavino managed to create slim stair structures.

**SIMPLIFIED INTERPRETATION**
Brick wall with rotation following a spiral inner line, creating a smooth curved surface. Support from floor and wall.
STRUCTURE

The structure of castellers is based on a heavy bottom and a lighter top. Each element rests on the one underneath and holds up the one above. They stand together in a circular formation, raising together by building level by level.

The body can be represented as the load bearing brick and the arms holds together like the mortar.

The bricks are arranged circular moving closer to the center for each level.

**DIRECTION 1**
Stretcher side facing forward. Range of 12-3 bricks in 8 layers.

**DIRECTION 2**
Shinder side facing forward. Range of 13-9 bricks in 5 layers.

**DIRECTION 3**
Header side facing forward. Range of 10-6 bricks in 5 layers.
CULTURE INTO BRICKS

SYSTEM OF CORREFOCS TRANSLATED INTO BRICKS

PATTERNS

The pattern of correfocs is created through the circular movement of the sparkles, spreading more the further it gets. The fire mostly spread horizontally but some sparkles move more vertically.

The different pieces of glowing coal can be represented by the light from each removed brick within the wall, creating a light pattern.

LOW LEVEL OF CAVITIES
Lower number of bricks removed from the circular wall. Evenly spread throughout the space.

HIGH LEVEL OF CAVITIES
Higher number of bricks removed from the circular wall. Randomly spread out throughout the space.
CULTURE INTO BRICKS

MODELS OF THE CASTELLERS STRUCTURE
CULTURE INTO BRICKS

MODELS SHOWING LIGHT & SHADOWS FROM CAVITIES
FORM FINDING
Interpretation of a Miró painting.

Outlines traced then extruded and cut by curved planes.
Interpretation of a Dalí painting.

Outlines traced then extruded and cut by curved planes.
Interpretation of a Picasso painting.

Outlines traced then extruded and cut by curved planes.
Interpretation of a Miró painting, nr 2.

Outlines traced then extruded and cut by curved planes.

VIEW 1 - Smaller hill
VIEW 1 - Front tubes
VIEW 1 - Large star arrangement
Interpretation of a Miró painting, nr 3.

Outlines traced then extruded and cut by curved planes.
Interpretation of a Miró painting, nr 4.

Outlines traced then extruded and cut by curved planes.
INTERPRETATION OF A MIRÓ PAINTING, NR 5.

Outlines traced then extruded and cut by curved planes.
CAVITIES
Day Pattern
Using cavities to create light pattern on the inside of the brick structure. A way to further push the brick formations and shells while creating dramatic interiors through the spread of daylight. With the effects changing throughout the day when the position of the sun changes.

Night Pattern
Using cavities to create light pattern on the outside of the brick structure. The openings from the extractions of bricks will also create dramatic light pattern during night time when light fixtures on the inside are turned on. This creates light patterns from artificial light turning the structures into lanterns during night.
LEVEL 1

8% GAP
Brick lantern with small gap between the bricks. 8% of the surface is open.

SHADOWS
Day time, west low light. Inside shadows create slim lines of light. No light pattern outside.

LANTERN
Night time. Bright inside light, slim lines of light outside.

LEVEL 2

25% GAP
Brick lantern with large gaps between the bricks. 25% of the surface is open.

SHADOWS
Day time, west low light. Inside shadows create large squares of light. Outside are smaller squares.

LANTERN
Night time. Bright inside light, squares of light outside.

LEVEL 3

56% GAP
Brick lantern with very large gaps between the bricks. 56% of the surface is open.

SHADOWS
Day time, west low light. Inside shadows create very large squares of light. Fewer squares outside.

LANTERN
Night time. Bright inside light, rectangles of light outside.
LEVEL 1

8% GAP
Lantern with 5 layers of bricks. 8% of the surface is open.

SHADOWS
Day time. Light from south west. Light pattern with small light dots.

LANTERN
Night time, light from inside. Light pattern on outside not visible.

LEVEL 2

25% GAP
Lantern with 5 layers of bricks. 25% of the surface is open.

SHADOWS
Day time. Light from south west. Light pattern with squares in different sizes.

LANTERN
Night time, light from inside. Light pattern of smaller dots on the outside.

LEVEL 3

56% GAP
Lantern with 5 layers of bricks. 56% of the surface is open.

SHADOWS
Day time. Light from south west. Light pattern in rectangular shapes.

LANTERN
Night time, light from inside. Light pattern of larger squares on the outside.
PUNCTURED COMPRESSION

SHELL STRUCTURE WITH HOLES - EXAMPLE 1

FORCE DIAGRAM

ORIGINAL
Colors explaining the force distribution of original shell.

PUNCTURED
Colors explaining the force distribution of punctured shell.

EXAMPLE 1
PUNCTURED COMPRESSION

SHELL STRUCTURE WITH HOLES - EXAMPLE 2

0 cm GAP
All bricks put together, no light pattern, strong structure.

4 cm GAP
Small gap between the bricks, slim light pattern, quite strong structure.

8 cm GAP
Large gap between the bricks, wide light pattern, quite weak structure.

12 cm GAP
Large gap between the bricks, wide light pattern, quite weak structure.

16 cm GAP
Larger gap between the bricks, bright light pattern, weak structure.

20 cm GAP
Larger gap between the bricks, bright light pattern, very weak structure.
COMPONENTS
PLATFORM - Extruded artwork
Open shell structure using brick wall as additional support.
2 - ROOF BY SHELL IN COMPRESSION

PLATFORM - Extruded artwork

FORCE DIAGRAM OF SYSTEM CONCEPT

High

Low

Extra brick layer for green area

Small shell opening

Shell structure with three points of support and top opening.

TRANSLATION 2
Doughnut shaped shell using two circles of ground support, outer and inner layer.
Skeleton system of arches supported by a top shell adding pressure in two directions and lower shell in one direction.
5 - PAVILION USING JOINED BRICK ARCHES

PLATFORM - Extruded artwork

FORCE ARROWS EXPLAINING SYSTEM CONCEPT

Skeleton system of arches joined in pairs by horizontal bond and connected on one side.
TRANSLATION 6

PLATFORM - Extruded artwork

FORCE ARROWS EXPLAINING SYSEM CONCEPT

Straight wall supported for possible wind force by using seating platforms on both sides.
7 - LANTERN BY BRICKS FACING DIFFERENT DIRECTIONS

PLATFORM - Extruded artwork

STRUCTURE PATTERN OF SYSTEM CONCEPT

Oval lantern with generous gaps, layers with brick facing two directions

TRANSLATION 7
8 - LANTERN BY SEPARATED BRICKS

PLATFORM - Extruded artwork

STRUCTURE PATTERN OF SYSTEM CONCEPT

Connection line between layers, mortar line

Second Layer, air gap, overlap

First Layer, air gap

Oval lantern with generous gaps, bricks with shinier side facing forward.

TRANSLATION 8
PORTAL BY VAULTED BICK ROOF

PLATFORM - Extruded artwork

STRUCTURE PATTERN OF SYSTEM CONCEPT

Using method of catalan vaulted roof to create brick portal. Alternative support using reinforcement.

Connection line between layers, mortar line

Light gap between bricks

TRANSLATION 9
10 - INTERSECTION BY DIFFERENT BOND WIDTH

**PLATFORM - Extruded artwork**

**BOND EXPLANATION OF SYSTEM CONCEPT**

Use of different bond widths to create intersections with overlapping mortar pattern.

**TRANSLATION 10**
**PLATFORM - Extruded artwork**

**BOND EXPLANATION OF SYSTEM CONCEPT**

Use of angle increase to split one wall into two walls.
Creating seating platforms by integrating a wider bond with a brick wall bond. Generates additional stability.
MEMORIAL PARK
OVERVIEW

BRICK LANDSCAPE TOPOGRAPHY
Situations

Relatives Gathering, Sunday at 14.48
Morning Coffee in the Shadows, Tuesday at 09.42
Taking a Short Cut, Wednesday at 16.29
BRICKS OF INDEPENDENCE

SITUATIONS

6

Boule with Friends, Monday at 18:14
EPILOGUE
Working with a political charged topic about a culture other than one’s own was quite tough in the beginning. It took a long time just to get the facts straight and everyone had strong opinions, even people without any actual facts. Although, one thing that struck me was that as the project moved on so did the primary focus. Quickly the topic changed to bricks in general and the discussions turned more technical.

It has been fascinating talking to people about culture and very interesting to scrutinize old building techniques. During the research these two sides of the story merged more and more, which enriched the research and strengthened my initial argument. To work very technically with structural brick formations on a platform based on paintings and traditions pushed me towards a deeper understanding of catalan culture and catalan building techniques. This research mainly focused on that specifically, still it resulted in a finished project - the creation of History of Catalan Independence Memorial Park.

What makes this park a memorial for the history of catalan independence and in honor of the catalan people and culture? It’s the combination of using old building techniques on a platform based on art and tradition on a site of historical importance to create a park usable in a manner that reflect both the catalan lifestyle and mindset.

So to conclude; yes, it is possible to change one piece of brick with an entire culture.
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ARTICLES


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PHOTOS USED IN RESEARCH

#1

#2

#3
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#4

#5

#6

#7
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Silhouettes in Elements, page 64-75, skalgubbar.se
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