

the kiln

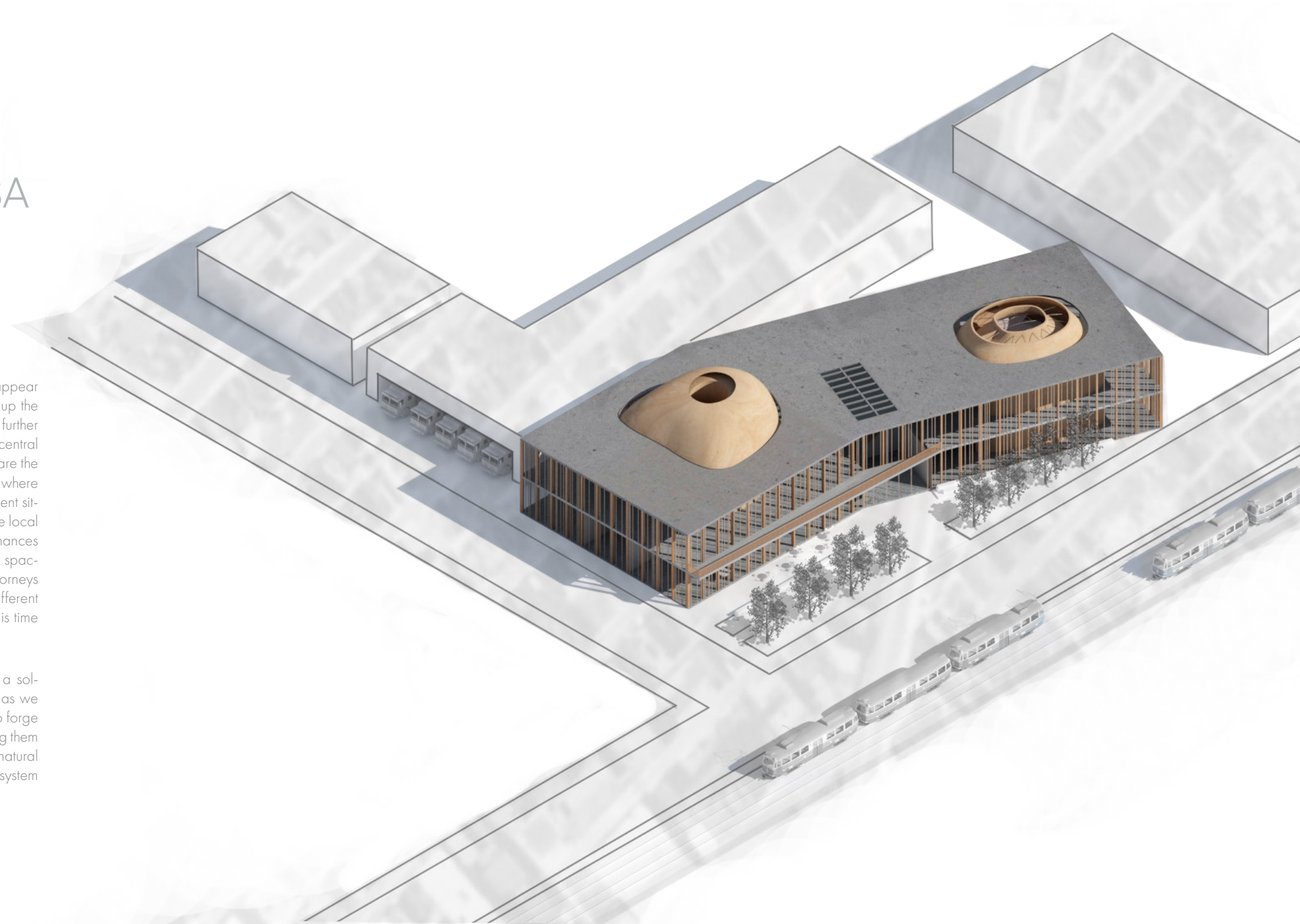
- City hall, USA

*Municipal building, including courtroom and community hall, a fictitious site in USA
Bachelor thesis
Project of two architects and one acoustician
Sixth semester, 2018*

Concept

As you approach the Kiln two clear shapes appear through the wood and glass raster which makes up the facade. The two purposes of the building are further emphasized when entering the lobby where the central staircase guides you one of two ways. To the left are the public spaces belonging to the community hall, where you can enjoy a coffee in the sun or a quiet moment sitting down before entering the hall to engage in the local politics or to watch one of the different performances held in the intimate hall. To the right are the private spaces of the courtroom and its auxiliary spaces for attorneys and their clients, with generous areas permitting different parties of a conflict a comfortable wait before it is time for negotiations.

A kiln is a sort of oven used to bake clay into a solid structure, a metaphor we like for our building as we imagine the local community using the premises to forge an even stronger bond with the people surrounding them every day. We want the building to become a natural gathering point and a way to integrate the justice system and city politics with the people living here.



SW isometric view of the direct context, including firestation, police station and lightway rail.



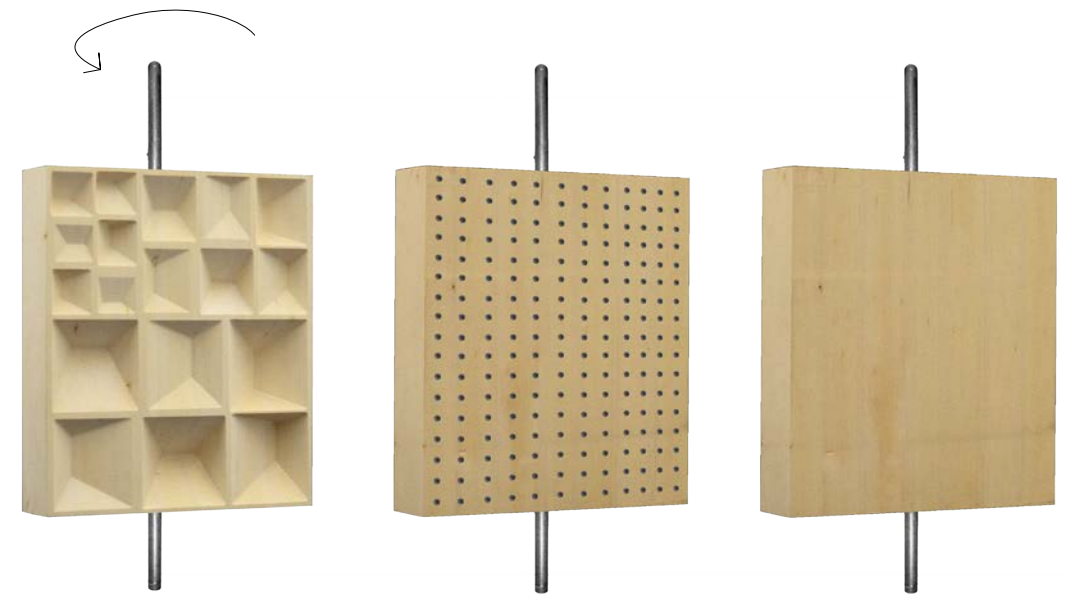
Above. Section of the entire edifice.



Community Hall

The 222 seats community hall is shaped for distinguished acoustical properties that can be adapted to the use of the space and while assuring a strong feeling of intimacy built up by the proximity of the audience to the performers.

The entire complex is structurally decoupled from the site ground as well from the rest of the building. The inner and outer shell of the community hall reduce the transmission of airborne sound. This is achieved by using a concrete complex with STC 70+. The room is still provided with natural light coming through a double glass opening on both the outer and inner shell to prevent any transmission of noise from the outside. That way, the users of the different spaces of the edifice remain undisturbed, while people can enjoy a performance at the community hall.



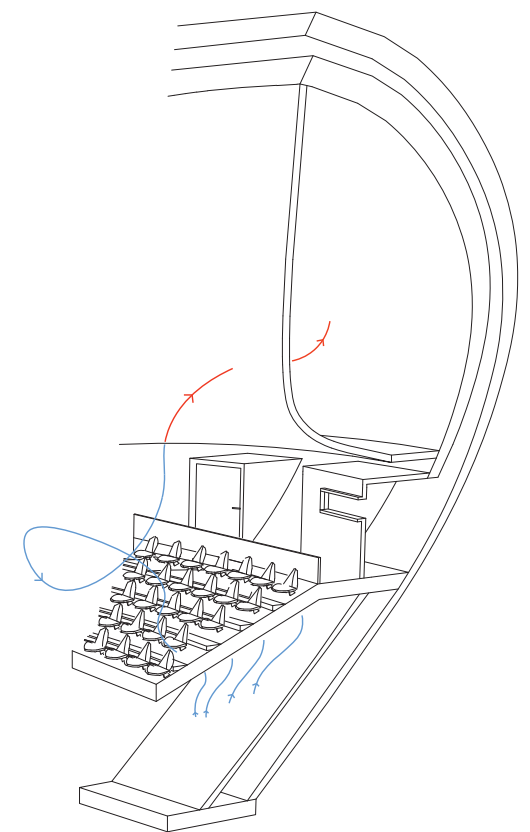
Variable acoustics

The community hall is a multipurpose room that can be used for a wide range of activities, from city council meetings or multimedia presentations using a projection screen unfolded from the ceiling, to small musical ensemble performances. The acoustical variability of the hall is achieved by rotating the wooden wall panels mounted on steel rods to expose different sides and therefore create optimal surfaces for speech and music.

All the wall panels have a highly reflective diffuse side with different visually appealing patterns that ensure a scattering of the sound energy and avoid flutter echoes and coloration. The second side is absorptive and consists of either a micro-perforated panel or a Helmholtz resonator.

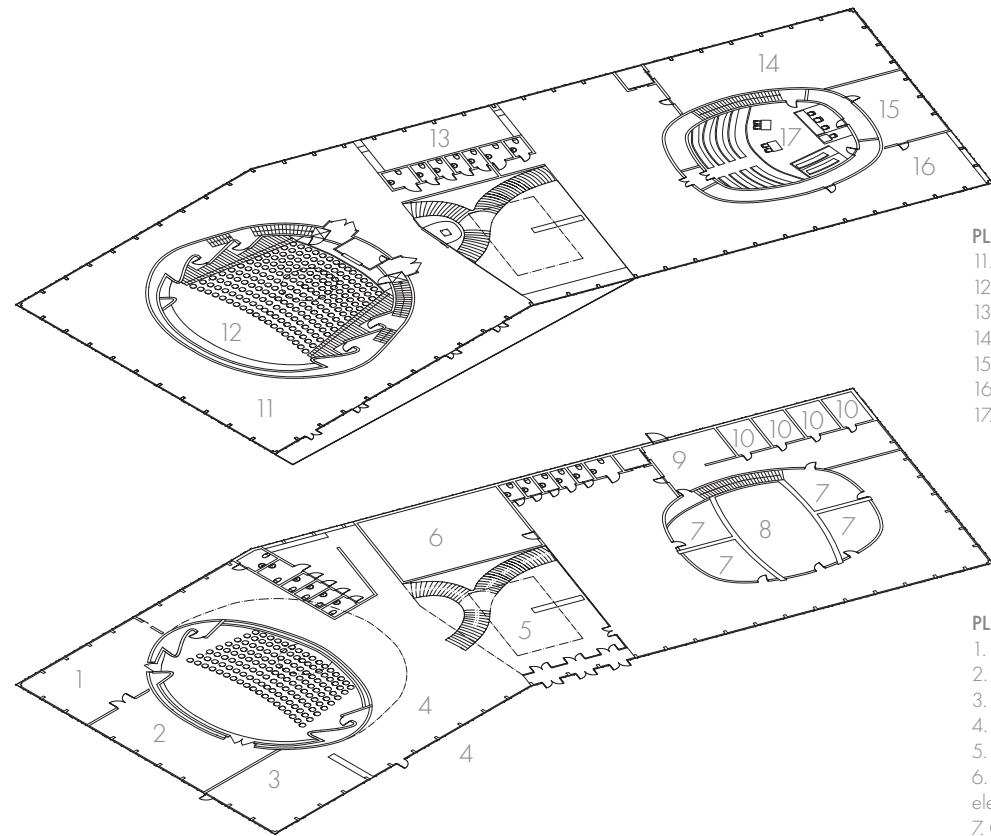
Ventilation

The volume below the seats is used as a large plenum silencer to deliver a fresh air at a slow velocity while the heat is exchanged through the ceiling. Anti-vibration connectors are implemented so the lined ducts have minimal contact with the structure.



Above. 3d milled acoustical panel 1:1.

Below to the right. Schematic sketch of ventilation system.



PLAN 2

- 11. Lounge area
- 12. Community hall
- 13. Coat room
- 14. Auxiliary office spaces
- 15. Judge's chamber
- 16. Law library
- 17. Court room

PLAN 1

- 1. Anteroom
- 2. Storage room
- 3. Café/kitchen
- 4. Café seating area
- 5. Lobby area/reception
- 6. Mechanical and electrical equipment room
- 7. Client/attorney conference rooms
- 8. Jury room
- 9. Bailiff's office
- 10. Holding cells



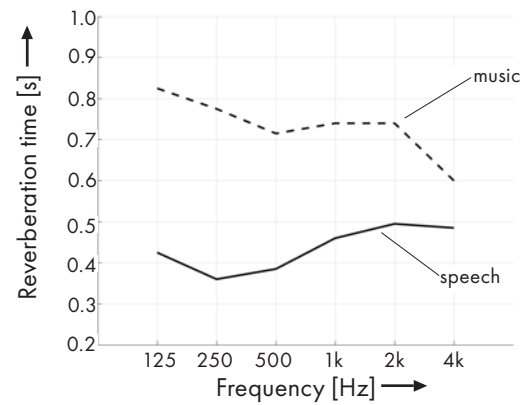
Courtroom

This part of the building includes a complex of conference rooms, a jury room and holding cells on the ground floor and on the second floor a judge's chamber and a courtroom designed to receive 70 people.

Besides being decoupled from the ground site, this section is also vertically decoupled from the rest of the building by neoprene bearings. The different rooms and the circulation areas are covered with a floating floor with IIC 70 to avoid impact sound transmission. To preserve the speech privacy, the airborne noise insulation of the different rooms is achieved through the use of high sound rating partitions consisting of heavy walls with a minimum thickness of 25 cm of cast concrete with mineral wool and wood covering on both sides. A corridor surrounds the courtroom, which combined with thick concrete walls, provide an excellent sound insulation to the main room.

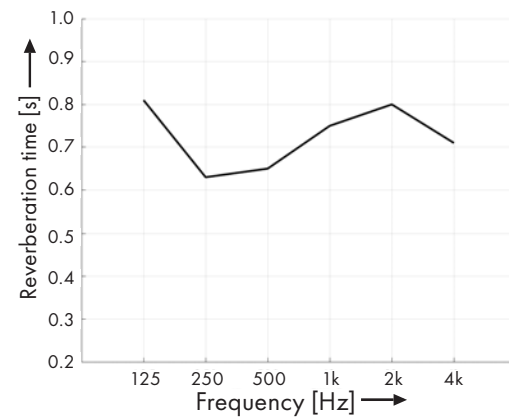
COMMUNITY HALL

Music mean RT: 1.2 seconds
Speech mean RT: 0.6 seconds



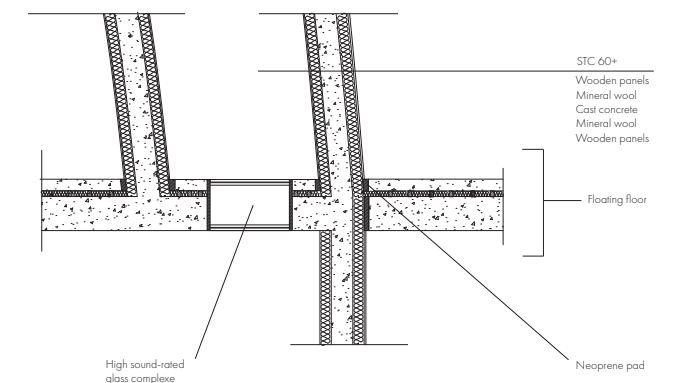
COURTROOM

Mean RT: 0.7 seconds



Below. Room response, showing the reverberation time in both rooms.

To the right. Detail of floor, showing general idea of decoupling the rooms.



REFLEKTION KANDIDATARBETE

Ett roligt och spännande samarbete mellan överskridande årskurser och inriktningar. Något som borde nyttjas oftare under programmets gång, om möjlighet finns.

Denna möjlighet vi hade med att jobba med någon som kan en helt annan disciplin än vad vi själva har kunskap inom, tycker vi att vi använt oss av till fullaste grad och portionerade ut arbetet väl under de timmar vi hade med ett nära samarbete emellan.

Arbetet mellan fysisk och digital värld var något vi utnyttjade i vårt projekt, vilket även fick det att kännas mer verklighetstroget på ett sätt.

En utveckling av projektet hade varit att jobba vidare med det exteriöra rummen, hur byggnaden förhåller sig till andra i staden samt det övriga utrymmena i byggnaden. Eftersom att fokus hamnade på Community Hall och Court Room, på grund av tävlingens fokus haltade det övriga något i utformningen. Vi hade även gärna sett över det tekniska och det konstruktiva över byggnaden.

Att utföra ett såpass långt och omfattande arbete med intensiv arbetsbelastning hela vägen tillsammans med en kollega gav en bra inblick i hur vi gissar att det i vissa fall kan vara senare i arbetslivet. Med ökad ansvarskänsla, goda test av tålamod men till slut också en delad känsla av slutförande när allt knöts ihop. Både prövande och roligt!

August Sjölin och Albin Norrman