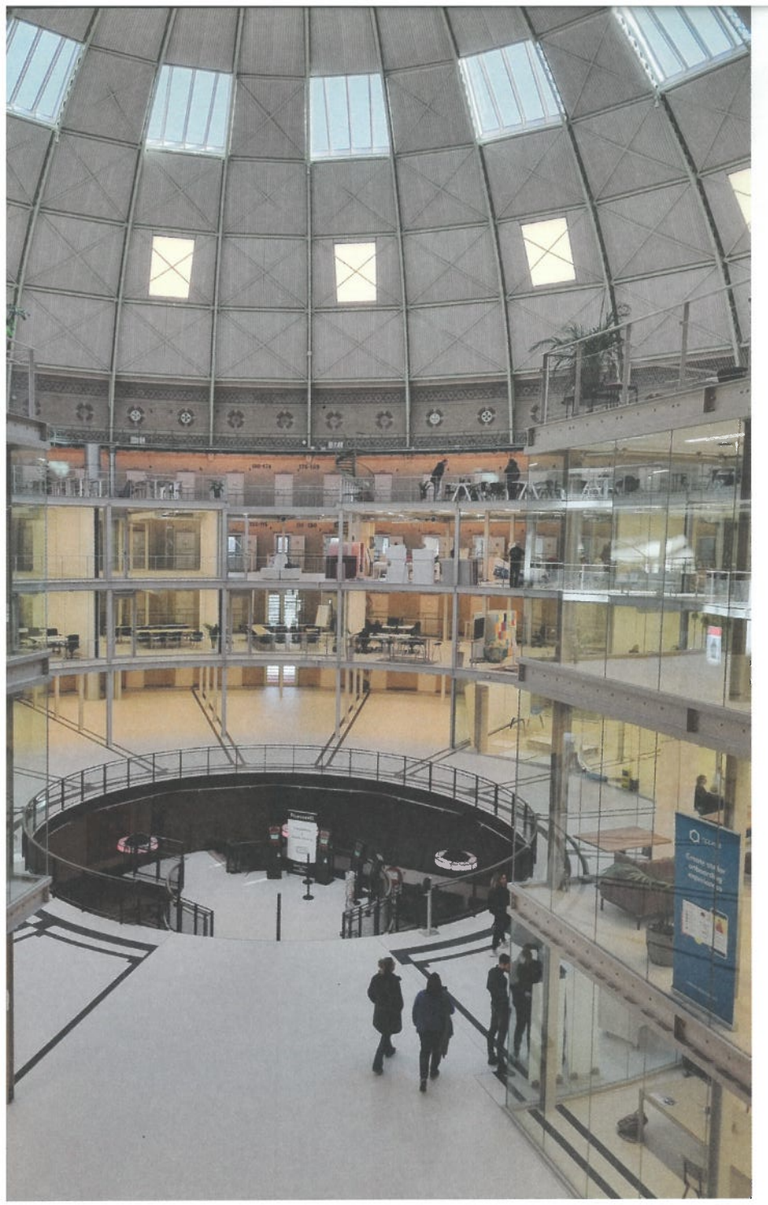
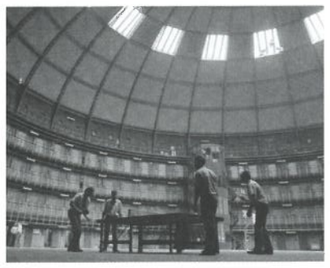
‘Listening’ to a building

De Koepel is an iconic building in the city of Haarlem. The former panopticon has been magnificently repurposed into an educational campus with a cinema, restaurant, co-working space, bookshop, and game museum. Architect *André van Stigt* of Buro Van Stigt highlights six aspects of the building’s conversion.



e + below] The new and the old Koepel.



To make De Koepel a functional building, we had to reduce sound reverberation to a normal level, from 7 to about 1.2 seconds.

[1] Take overall responsibility

For the successful redevelopment of buildings – such as churches, monasteries, barracks, warehouses – you need a think tank of architects, end users, and local residents who look at the potential and opportunities that a building offers. This is the reverse of what normally happens. Often, there is a developer who wants something and seeks to fit it in the building. But it is better to 'listen' to the building and find a purpose and an economic use for it. Then a building becomes much more 'alive' in its surroundings, is incorporated into the neighbourhood, and will thrive economically.

We used this approach for De Koepel and another project, De Hallen in Amsterdam, a former tram depot, which had been abandoned for ten years. De Hallen was a national heritage monument with 16 million euros in overdue maintenance, and the government didn't know what to do with it. We set up a foundation in which we said the building should contain a mix of functions that would ultimately strengthen the neighbourhood, including a library and social enterprises such as *Recycle,* where people with a psychiatric background could learn to become a bicycle repair specialist.

The idea was that the 'stronger functions', such as the restaurants, bars, hotel, and cinemas, would pay a higher rent within the complex than the library and the social enterprises. Through private investors and crowdfunding, we raised 10 million euros and arranged the financing with Triodos and Nationaal Restauratiefonds. In addition to being an architect, my role was also to ensure that the financing, the financial constructions, and the subsidy applications were completed. In order to achieve a successful end product, you have to take overall responsibility and think about this at the beginning of a project.

[2] Digging a basement

We dug a four-metre-deep hole inside De Koepel for several reasons. At the beginning of the project we already looked at the installation of the energy supply. Heritage conservation regulations stipulated that these systems had to be kept out of sight, so we put them under the roof of the dome and in the basement. We have a thermal storage system with wells at 80 and 115 metres deep, where energy can be extracted from the water temperature difference.

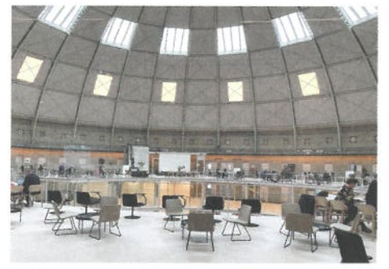
We also built a basement for the foundation of the building, because the domed roof is very heavy. The foundations on the outer walls were fine, but the cell walls that supported the dome as well – like the buttresses in a church – had sagged more than the outside. De Koepel was slightly leaning inwards. By making the basement four metres below ground level, we created 4,000 kilos of upward force.

[3] Lecture hall and cinema

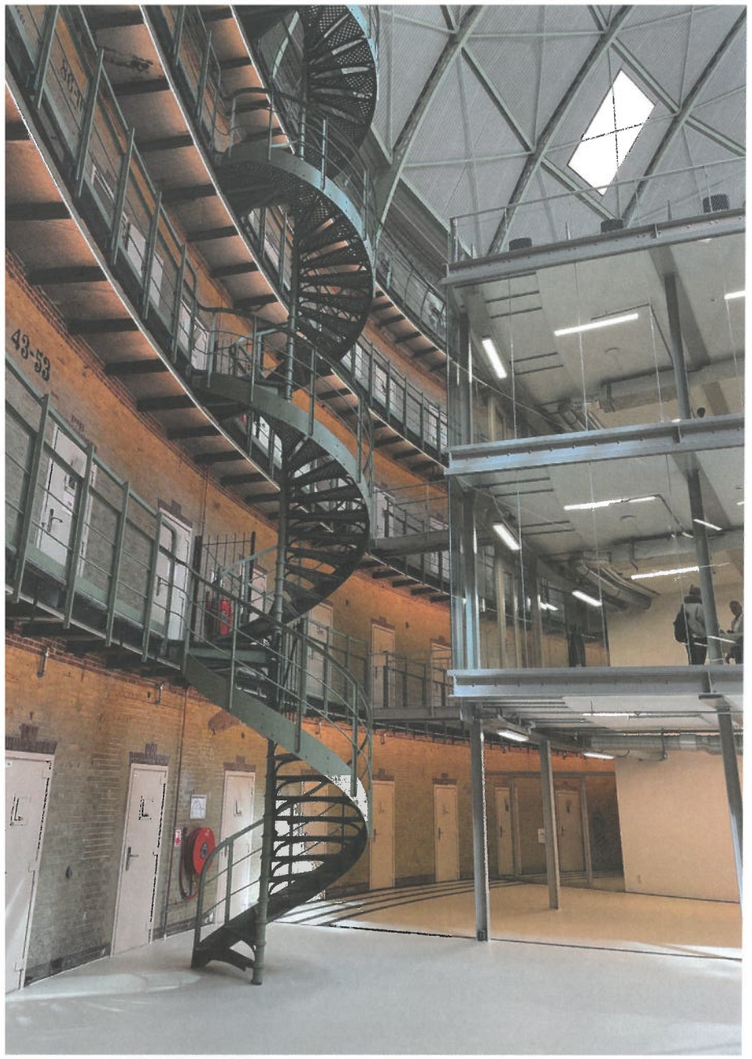
The basement was built for practical reasons but also for educational and entertainment purposes. Because of my work on the Olympic Stadium in Amsterdam and De Hallen, I was approached by a number of people from Haarlem who wanted to keep De Koepel for the city. It was a symbol of the city and, like the panopticon in Breda, De Koepel was in danger of being sold and becoming a commercial function. We then developed the 'Open De Koepel' initiative. One of the ambitions of the municipality of Haarlem was to have a university, and I saw possibilities in the basement of De Koepel. Basically, the building is not suitable for education. The cells could function as educational spaces where you can have one-on-one conversations, but there had to be lecture halls as well. These are the most expensive elements in universities, because they are barely used: four days a week, from 9:00 to 12:00. That's only 12 of the 168 hours in a week. However, lectures are held in an ascending auditorium, which is the same layout as a cinema. We then approached the party that also operates the cinemas in De Hallen and struck a lucrative deal with them. The cinema shows films from 12:00, seven days a week, for a total of 84

The cinema operator makes the halls available to the university, which uses them for 12 hours a week, without having to lease the space.

[above left] The spacious foyer of De Filmkoepel. [above] A hole four metres deep was dug inside De Koepel to facilitate building six lecture halls and cinemas. Photo: Julien Staartjes (cinemas).



[top] Co-working space on the top floor. [bottom] Photo studio at ground level.



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dome roof. We put eight centimetres of hard compressed insulation and eight centimetres of soft compressed insulation against it. We also used acoustic glass that attenuates 36 decibels.

[5] Transparent building

When I entered De Koepel for the first time, I saw a lot of potential. You had to look through the gloom and darkness of the building, and I started thinking about the lighting plan for the interior. Within the building, we made a three-storey glass extension that houses offices, meeting rooms, and a photo studio. In order to keep the building transparent, we illuminated the walls behind the extension area. LED strips were attached to the underside of the balustrades, so that the masonry of the cell walls has a higher light output than the spaces in the recessed area, so you can really see through the glass.

[6] Restoring former glory

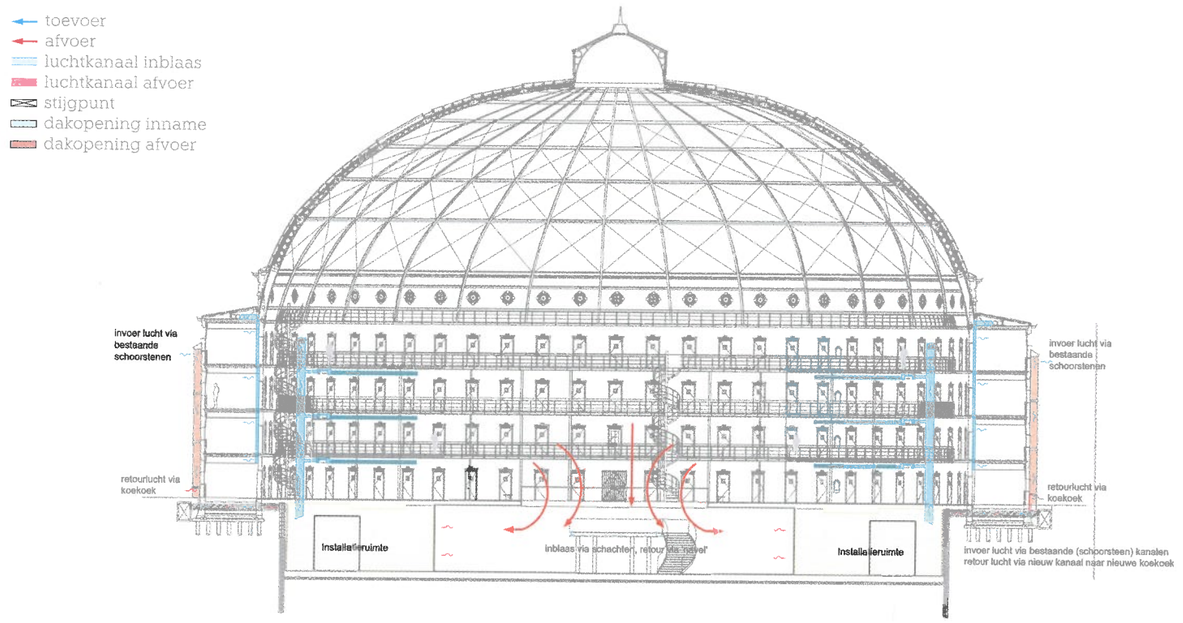
De Koepel is not without reason a heritage monument. It was designed by an acclaimed architect, *Willem C. Metzelaar*, and built by craftsmen. De Koepel was considered high-quality architecture, and the government was proud of the building. The architect carefully thought about the colours, the guttering, and the brickwork. It wasn't something they had to do cheaply and in a hurry. These were proud buildings, made with public money, in which they wanted to demonstrate the architectural highlights of the time. The span of the dome is 52 metres in diameter, larger than the span of St. Peter's Basilica in Rome.

We wanted to bring the building back to its former glory by cleaning it up, highlighting the beautiful brick architecture, and restoring the old colour scheme. All the colours we used in the new parts of the building are softer tones of the original colours. We have literally used the same colour with white added twice. I wanted the new part of the building to be restrained in relation to the monument, so the quality of the monument comes to the fore. We can hardly ever make monuments as beautiful as these, because often the craftsmanship and the money for it just don't exist; above all, our work ensures that the building remains a unified whole.

hours. The halls in De Koepel are made available by the cinema operator, which the university uses for 12 hours a week, without having to lease the space.

[4] Echo, echo, echo

Another big challenge was the shape of De Koepel, which was constructed as a panopticon. The idea behind this circular design is that a single security guard can observe all the prisoners without them knowing if they are being watched. That meant there was a reverberation time of seven seconds in the space. If you said something, seven seconds later the sound you made would return. To make it a functional building, we had to reduce the reverberation time to a normal level. It is now about 1.2 seconds. We had to create a lot of square metres of absorbent surface to dampen those sound waves. The largest surface in De Koepel is the



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[top of the page] Ventilation diagram of De Koepel.
[above] Vertical windows were installed underneath the original horizontal cell windows, which were positioned 180 centimetres high and prevented inmates from looking outside.
[right] A prison cell converted into a workspace.