

ARNHEM - UNDERGROUND SOLUTIONS FOR URBAN GOVERNANCE CHALLENGES

For about a century the challenge of lack of possibilities to extend cities horizontally, has been met by going vertical. Skyscrapers allow architects and governments to profile themselves, financiers appreciate the visible investment opportunity and end users are proud to live or work in a landmark. Going up is however not always a viable alternative to urban sprawl, because of technical and financial obstacles. Moreover, high constructions dominate their environment. Last but not least, "going up" is often undesirable in places where other functions, like public space or the landscape, have older rights.

The possibilities of the other vertical dimension, "going down", have been ignored mostly till present. The universe below the surface is much more modest in both its visibility and attraction to powers like capital and politics. It is a domain that is subconsciously associated with death and hell, an area left to technicians in order to deal the profane practicalities of the urban organism. There, out of sight, they put their pipes, cables and waste. At the very best the underground is used to solve logistical issues like transport.

In Arnhem underground building is primarily a governance issue

The municipality of Arnhem has recognized that the other half of the vertical dimension is not just about solving practical issues in a technical sophisticated way. It is about governance. "Going down" offers the solution to tackling lack of space, while improving urban quality. It is a process of transformation that does not parasite on immaterial values like horizontal space or future possibilities. It allows an increased and intensified use of the most central places, without hindering existing functions. Underground building adds to their possibilities instead.

By going beyond the obvious and indeed rather technical possibilities of the underground, towards bringing parking, retail and even public facilities such as schools and cultural spaces underground, the city as a whole literally gets new layers of use. New dimensions are opened up to the citizens of Arnhem. These new functions and possibilities are introduced without competition with existing more delicate values like nature, so that win-win situations are created. Underground space does not dominate by its sheer existence: it creates extra options and synergy.

To simultaneously increase spatial quality this way and solve urban issues like accessibility or lack of safety, more is needed than just technical knowhow and money. In fact Arnhem is an intermediary town without particular wealth in financial assets. What has made Arnhem the "underground capital of the Netherlands" is a combination of factors that are potentially present in any setting, but that require large stamina, creativity and determination to come to bloom. For it definitely takes a lot of guts to transform and upgrade the guts of a town. A strong vision on governance level needs to be combined with the ambition to create long term quality. Determination is necessary to balance contradicting interest and see the larger picture. The high investments required, may bring benefits to others than the problem owners resulting in an interesting organisational puzzle. Inspiring to overcome the uncertainties and bring parties together for prolonged partnerships, is a governance issue that in Arnhem has resulted in rewards of high quality urban space.

Even in Arnhem the underground holds promises

To the present day, building projects in Arnhem have to watch out for unexploded remnants of the battle of Arnhem. In the first decades after the war, reconstruction has been done as efficient as possible, meaning that cheap construction gave a sprawl of low grade and often incoherent urban tissue. The remaining open space in Arnhem today consists of much appreciated parks and nature. To absorb growth, the town opts for densification and simultaneously upgrading the quality of existing urban space. A clear ambition to improve the spatial quality of Arnhem has brought the town to think both high and deep, especially on the main axes.

Some examples of underground construction are used to highlight the success factors as well as issues involved in realising ambitions in the sub terrain level.

Arnhem Central Station: Uniting contradictions through multilevel thinking

The Arnhem Central Station is such a node where urban use is intensified to allow for increased numbers of passengers. The large scale project to renew the station and its environment, is budgeted at 555 million Euro. It intends to reconstruct and upgrade the spatial quality of the area, while anticipating considerable growth in number of transfers. Remarkable is the tunnel that bundles all cables, pipes and waste transport. This will finish once and for all, that holes be dug in the pavement for any single repair-job. Although such an early coordination and integration of underground logistics is far from being obvious in most places, this tunnel can still be considered to be the more basic, technical application of underground building.

Before any sketch has been made of the buildings that once will stand on top, a parking garage has been constructed as a foundation for a new transfer hall, houses and offices. In a continuous interaction between the city, construction engineers and architect Ben van Berkel (UN Studio) the limits of the technical possibilities were explored and stretched, in order to live up to the vision and ambition level. Over 1.000 cars on three underground layers, defy the prejudice that garages are dark and scary places. The attractively shaped and coloured space has been elected the best garage in the Netherlands in the year 2005, with the highest possible score. Only with sufficient parking space and high quality transfer options, the expected future growth in public transport use can be facilitated.

To keep options open in the process of planning future buildings on top of the existing garage, a large flexibility is required from partners in the project organization. Much emphasis is put on "soft" aspects such as regular and open communication between all stakeholders. Contradictions need to be reconciled into integrative solutions. This requires a willingness from all parties, to be innovative and think in multilevel solutions.





Quality of historic cellars increases future profits



Intensive collaboration with a multitude of partners, was also required to restore the historic cellar complex in the downtown area. With the majority of cultural heritage in the town centre destroyed during the war, (re-)discovering historic values encouraged Arnhem to overcome organisational challenges. In order to renovate and link 34 cellars, the collaboration was required of each of the owners and/or users of the buildings on top of them. The busy shopping area would experience hinder from the construction works.

Although some of the cellars had not been entered for as long as 30 years, there was storage space in many others. In return for giving up their cellars, the project organisation has facilitated a restoration of their façades. This resulted in an upgrade of the area on street level, besides of the opening of a new layer of space underground.

The underground complex has become an historic world in itself, by linking the individual spaces. An underground journey into the medieval past can be made by wandering through the cellar-complex. The space is used as a tourist attraction, as well as for renting out to parties such as weddings. These new possibilities have given a valuable impulse to this part of the town centre, which risked decaying. The added value of having new space and new possibilities, has stopped that process and offered the area a fresh start. Without the need to change or invest much, the old cellars offered the participating shopkeepers new perspectives for the future.

Musiskwartier: keeping up vision and ambition throughout the process

A multitude of both small and large retailers were also partnering with the municipality and project developers to realise the Musiskwartier project. Due to the quick post war reconstruction Arnhem still had quite a lot of low grade urban space such as courtyards directly next to the most valuable retail space. In a collaborative effort, large surfaces of retail were added and existing buildings were restored or renovated.

Arnhem, Musiskwartier



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To increase diversity and the attractiveness of the area more daily life functions needed to be integrated in the plan, without competing with the higher quality functions on street level. Therefore 65 housing units were added to assure security and liveliness also after shop hours, as well as sufficient parking space to serve both businesses and individuals. These apartments and parking spots were added on top of shops and department stores, while a supermarket and a fitness studio were put underneath. This way only the entrance escalators are situated in the shopping area which is densely filled with mostly smaller non-food shops at street level. Keeping up the vision and balancing out the very different interests of a diverse group of stakeholders over a prolonged period of time, required skill and stamina from the municipality.

Water museum: creative transformation of challenges into assets



The Dutch Water Museum has been planned next to the watermill of the Sonsbeek park near the town centre. When the last baron sold his estate to the municipality over a century ago, he requested that the natural values be kept in its original splendour. The continued commitment to this clause, did make the design exercise for the new museum quite a challenge. The Begijnen watermill from 1404 that was to house the museum, was too small for the ambitious programme and 2000 square meters of exposition space were planned underground.

Planning and realising those plans is not the same thing. In the building phase of the project, much creativity was needed to deal with the surprises presented by the underground. For instance, the building needed to be waterproof, but should not float up like a ship either. Unexpected soil conditions and the underground water streams that were an important reason to locate the building there in the first place, forced changes on the original plan throughout the process. In the end the design of the spaces has been altered, to assure the solution fitting best to the ground in which the museum was located.



Artez school of art: the vision of the larger picture realised

Like the Water Museum, the extension of the Art Academy is located in a valuable natural setting, where new constructions are not really welcome. Height differences that are fairly spectacular for Dutch standards, border the Rhine river. Where these two types of landscape meet, the existing academy designed by the famous Dutch architect Gerrit Rietveld has a splendid location. For making an extension, it was considered inappropriate to both the landscape and the existing building to do so above ground level. Therefore the design of architects office Henket and partners, located everything but the fire escapes underground. Still nowhere in the building the students feel claustrophobic as they feared initially. The space has the same light and gracious quality as the ballet lessons that are given there.

This despite the fact that the heavy construction of ABT Building Technique Advisors, is prominently visible. In order for the construction to withstand the forces of nature for at least a century, large metal beams span the space. This does not influence the transparency and visibility, that were part of the design philosophy of the original building. The transparency symbolised that linkages and interaction should be possible between art and society.



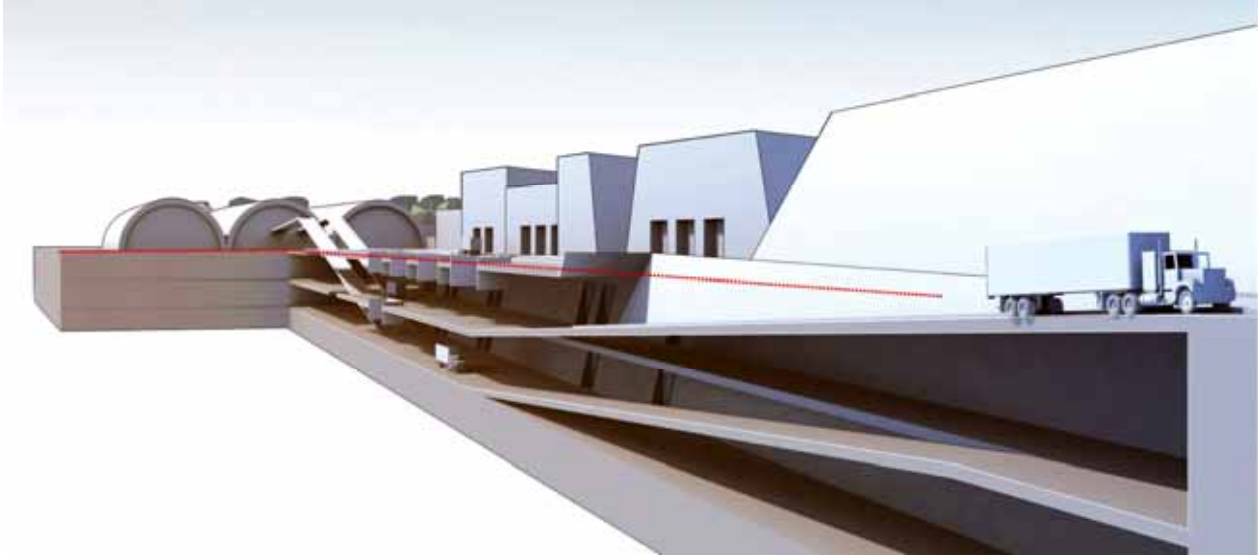
This school is the ultimate proof that underground building does not need to be limited to utilitarian functions. Here the underground building was not merely a matter of solving problems or getting rid of something ugly, it came forth from the vision to improve the quality of the town as a whole. Looking beyond the exercise at hand to the larger picture assured here that urban quality in the broader sense was enhanced.

Koningspleijn: Investing in the future

The Koningspleijn industrial area at the moment is still more dream than reality, plans are in a very initial phase. Like with the other examples, the ambition level is high and the plans are motivated from a strong vision. The idea is to not let this area become just another industrial area, but combine the necessities of employment and production, with the aspirations of sustainability. On the Koningsplein area top of the bill researchers and businesses intend to develop Energy and Environment Technology into a sustainable motor for the local economy.

Here too intensifying the use and exploiting the possibilities of the area by use of the underground are almost self evident elements of the planning process. Splendidly located where the IJssel river splits off the Rhine, any low grade use of the space would be an insult both to the environment and the possibilities this area has. Development into a 'chain port' for the eastern part of the country is foreseen by making use of the rail- water- and road transport options. A former port basin will be used to create multi level solutions.

Cables and other utilities like those connected to the heat power plant will be placed underground. In general every inch of the area will be used preferably double, to create sustainable solutions.



In order to develop this ambitious project, most certainly the temptation to go for the quick wins will need to be overcome in favour of a more durable result. Because politicians need to be reelected every four years it is certainly difficult to withstand those temptations and hold on to visions and ambitions.

Success factors of high density redevelopment projects

All six examples of underground building in Arnhem show proof of the same success elements. Creativity and innovation were combined with a strong commitment to make a multi stakeholder collaboration work and not just on paper. A high ambition level was paired with a vision to improve the quality of the urban space in the town. Strong leadership withstood the temptation to go for the quick solutions, profit or an easy way out of problems.

Because when venturing into the unknown underground, problems are bound to present themselves and they will not just be of a technical nature. Engineers have the knowledge and willingness to solve the technical issues, but the willingness to overcome organizational and political contradictions, is not self evident. This willingness and determination to go for quality is what made the relatively small town of Arnhem big in the field of underground building.

Any town big or small, rich or poor could apply the lesson we learned. In any setting there is a possibility for underground building offering synergy options for all stakeholders involved. The conditions and setting in the six examples are completely different in size, scale, use and setting. Arnhem Centraal is infrastructure in an environment of extremely high land prices. In the Cellar example historic spaces that were rediscovered were reused, while in the Muis project new space was created for retail. Functions housed underground vary in the examples from car parking to educational and cultural spaces. The setting was in some instances untouched nature and in others contaminated down town ground that had been dug around in numerous times. Regardless of the circumstances in any particular case, the underground dimension presented possibilities to enhance the quality of the urban tissue and make Arnhem more attractive and sustainable.