

Reflection

*[Designing the
Extroverted Library:
An Interactive and Inclusive Hub for the Future]*

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Reflection – Designing the Extroverted Library

MSc Track: Architecture, *Heritage Studio*

Introduction, theme and mentors

My graduation project, *Designing the Extroverted Library*, is part of the **Heritage & Architecture** studio within the **MSc Architecture, Urbanism and Building Sciences**. It re-positions the **Royal Library of the Netherlands (KB)** as an open, adaptive civic building that can support new forms of learning, making and public life in a digital society.

The work has been guided by three mentors whose perspectives shaped the process:

- Design / Architecture – Prof. Uta Pottgiesser (main mentor)
- Building Technology – dr. ir. Paddy Tomesen (second mentor)
- Research – dr. Emeline Lin (third mentor)

The reflection below discusses how research and design informed each other, how the chosen methods worked, the academic and societal implications of the project, and how the results might transfer to other contexts. It ends with personal takeaways, two self-posed reflection questions, and the tasks that remain in the final phase.

1. What is the relation between your graduation project topic, your master track, and your master programme (MSc AUBS)?

The starting point of my graduation project is the tension between the KB as **heritage** and the KB as a **living public building**. Architecturally and historically it is a significant work of OD205, with a clear structural grid and a distinctive “raincoat” façade, but in its current state it is also introverted, hard to read from the city and not fully prepared for contemporary modes of learning and digitalisation. This double character mirrors the core questions of the **Heritage & Architecture** track: how do we respect the cultural value of existing buildings while adapting them to new uses, technologies and ecological demands?

Within the broader **MSc Architecture, Urbanism and Building Sciences**, the project operates at the intersection of architecture, building technology and urbanism. On the architectural level, it explores how to reveal and reinterpret the qualities of the existing structure—through value-based retention, strategic subtraction and the design of new interior and façade spaces. On the technical level, it develops a modular timber façade, demountable details and a rainwater-collecting system as tools to make the building more climate responsive and circular. On the urban level, it repositions the KB in the station area by opening up the massing, creating KB Plaza as a new civic room and strengthening visual and physical connections to the surrounding institutions.

The topic therefore brings together my interest in **transformative heritage, resource-conscious construction and public space**, and uses the KB as a concrete case to test how these themes can be integrated in one design.

2. How did your research influence your design/recommendations and how did the design/recommendations influence your research?

From the start, research and design formed a continuous loop rather than separate phases. The study was organised around three sub-questions in a layered method—about emerging technologies in libraries, user expectations and DepthMapX as a decision-support tool—and each of these strands had a direct impact on the design (Fig.1).

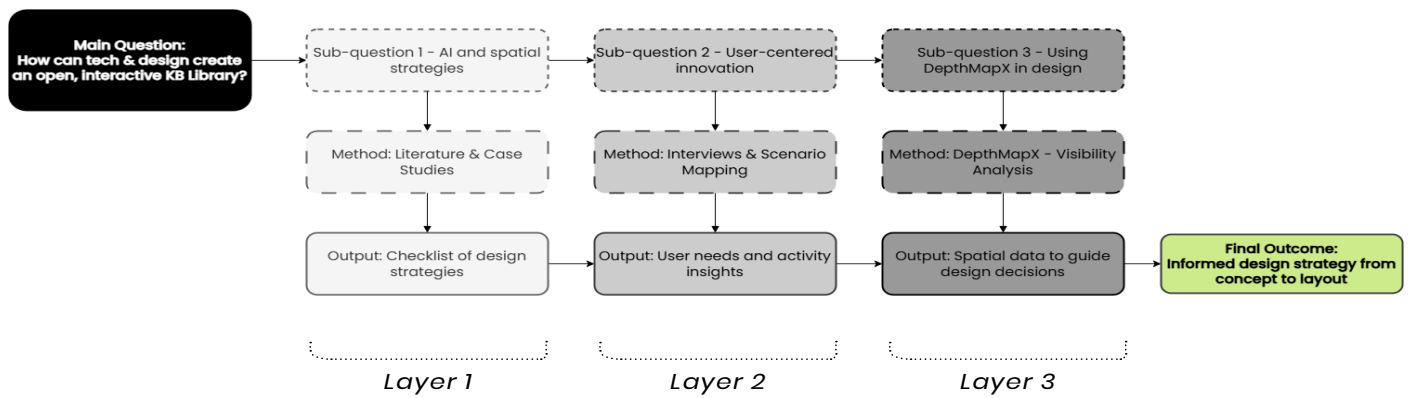


Figure 1, layered methodological approach

The **technology and literature study** on AI, robotics and adaptive building skins produced a “technology checklist” (Fig.2) of potential spatial strategies: robotic storage, AR/VR rooms, adaptive shading, modular structures, green façades and water systems. Instead of trying to use all of them, I treated the checklist as a way to critically decide what should become architecturally visible. This is how the robotic working core, the Hybrid Tech Ramp and the climate-adaptive, water-collecting façade emerged as the main technological anchors of the project: they are not just gadgets, but systems with a clear spatial and experiential impact.

Technology	Spatial Change	Design Impact	Estimated Space Use
AI-driven Cataloguing	Reduced space for physical catalogues	Digital kiosks replace large reference desks; open lobby flow	<1-2% (info desks only)
Robotic Shelving Systems (RFID/ASRS)	Compact vertical storage, fewer open stacks	Robotic corridors behind walls; public stacks reduced	10-15% (back-of-house)
AI Chatbots / Virtual Assistants	Less human-manned service points	Self-check terminals, help kiosks, mobile chat zones	<1% (dispersed stations)
IoT Sensors	Smart zoning and usage feedback	Dynamic furniture layout, responsive lighting, occupancy tracking	<1% physical, pervasive digitally
RFID Technology	Faster inventory and user interaction	Sleek self-checkout areas; secure yet open stacks	2-3% (within collection areas)
Automated Storage & Retrieval Systems	High-density, hidden storage	Archive functions relocated to compact areas, freeing up public space	Up to 10-20% (if integrated)
Spatial Design Network Analysis (VGA)	Optimized layout planning	Informs zoning and planning; no physical footprint	0% (methodology tool)
AR/VR Learning Spaces	Immersive, tech-based zones	Dark rooms, adjustable partitions, AR booths	3-5% (can be modular)
3D Scanning / Digital Twin	Real-time digital monitoring	Flexible planning and predictive maintenance; back-end integration	<1% physical (software-driven)
Spatial AI for Navigation	Personalized wayfinding	Interactive displays, smart signage, voice-guided access	<1-2%, integrated at circulation

Figure 2, The future library check-list, and spatial implications, made by Author

The **user interviews** revealed that people's expectations of a future library are both conservative and progressive. Many interviewees still valued quietness, clear orientation and the presence of books, while also expressing interest in more informal, social and technology-supported spaces. Translating this into design meant pushing more extroverted, noisy programmes—co-working, incubator functions, exhibitions—towards the façade and KB Plaza, and placing quiet reading and focused work in deeper, protected parts of the building. The interviews also highlighted the importance of legible circulation, which later fed into the articulation of the Hybrid Tech Ramp as a visible main route with places to pause, meet and access digital tools.

Using **DepthMapX** added another layer. By simulating visibility fields and potential co-presence in existing and speculative layouts, I could test whether spaces I imagined as social truly supported movements and encounters, or whether they produced confusion. The analyses of the corridor, ramp and new reading hall confirmed the importance of continuous sight lines along the main routes and showed where quiet zones risked being too exposed. This led me to refine the organisation of programmes, reinforce certain buffer zones and adjust some openings.

At the same time, the evolving design continuously pushed the research further. As the **modular façade** with green and water-collecting elements took shape, I needed a more systematic way to describe its behaviour under different weather conditions. This resulted in the weather-comfort matrix, in which the façade opens, shades, insulates or collects rainwater depending on the scenario. Similarly, as I refined the removal of blocks C and D and the carving out of KB Plaza, the heritage retention diagram and value maps had to be sharpened to justify why certain volumes could be taken away while others had to be preserved or carefully transformed. The design, in this sense, did not simply implement the research results; it also generated new questions that fed back into the research and made it more precise.

Mentor feedback helped to keep the interaction between research and design critical. For example, I initially tended to use DepthMapX mainly on versions of the plan that already contained strong design decisions. After feedback, I started to explicitly distinguish between analyses of the existing KB and tests of **speculative scenarios**, and I clarified in the text that the robotic core is treated as a **working, short-term buffer** for circulation, not as a full archival vault. This improved the methodological transparency of the project.

3. How do you assess the value of your way of working (your approach, your used methods, used methodology)?

I see the main strength of my approach in the way it combines **value-based heritage thinking, qualitative user insight, spatial analytics and technical prototyping** into one narrative. Starting from the group heritage research, the value framework allowed me to understand the KB as a gradient rather than as a uniform monument: some parts of the building are loaded with social, historic or architectural meaning, while others are more generic or problematic. This made it possible to argue why removing certain office bars to create KB Plaza is not an act of erasing heritage, but a way of bringing forward other, more important values.

The integration of **interviews and spatial analysis** was also valuable. The interviews grounded the project in real concerns and desires—fear of overly automated systems, appreciation for clear zoning, curiosity about digital tools—while DepthMapX and later climatic considerations helped me test how these aspects translate into space. I learned to treat these tools as instruments for reflection, not as proof: they point to tensions and potentials that I might otherwise overlook, but they do not replace architectural judgement.

A third important component was the sequence of **façade catalogues and construction details**. Translating the extroverted, adaptive concept into precise assemblies—timber frames, steel brackets, membranes, recycled concrete aggregate bags, planters and gutters—forced me to think about circularity, maintenance and reversibility from early on. This steered me away from one-off sculptural gestures and towards a system of repeatable, demountable modules that can change over time.

The methodology also had its challenges. There were moments in P2 when the project risked becoming overloaded with methods and diagrams, and the main story was at risk of being buried under tools. At that point, feedback made me prioritise: the KB Plaza, the Ramp connecting to the Halls and the adaptive façade became the core carriers of the concept, while other analyses were repositioned as supporting material. In retrospect, I think the approach was ambitious but productive, and it has allowed me to build an argument that connects concept, heritage, user needs and technical feasibility.

4. How do you assess the academic and societal value, scope and implication of your graduation project, including ethical aspects?

Academically, the project engages with questions that are increasingly relevant: how do we transform **late-modern institutional buildings** whose technical lifespan is far from over, but whose spatial and social performance is insufficient? The work suggests that a **value-based heritage method** can be a powerful tool not only for preservation but also for justifying strategic subtraction and adding ecological layers, such as a modular, water-collecting façade. It also tests how topics like AI and robotics can be addressed in an architectural project without slipping into uncritical techno-optimism.

On a societal level, the project speaks to three main issues. First, it explores the evolving role of libraries as **physical anchors** in a largely digital information landscape. By making the KB visually and spatially accessible—through an extroverted façade, KB Plaza and hybrid programmes—the proposal argues that libraries can remain vital as shared spaces for learning, making and debate. Second, it addresses the absence of generous, recognisable public space around The Hague Central Station, proposing KB Plaza as a new civic room that connects different flows and institutions. Third, it introduces an **adaptive, rainwater-collecting façade** (Fig.3) that makes environmental performance publicly legible: the building not only consumes resources but actively manages water, light and heat in dialogue with the climate.

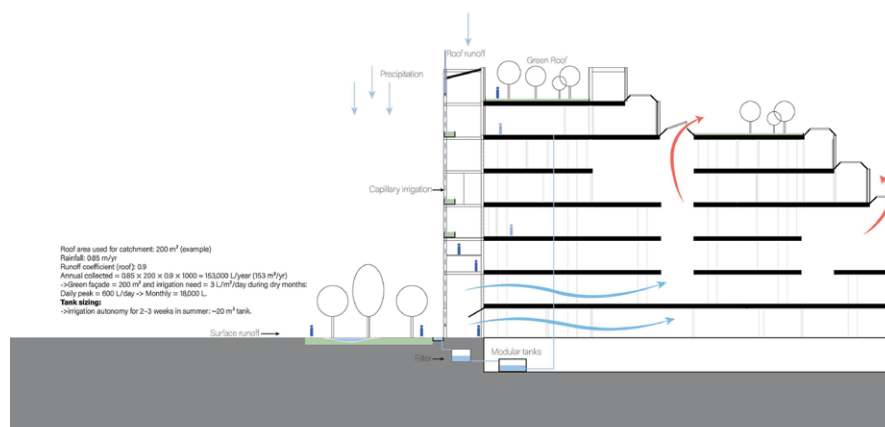


Figure 3, Rainwater collection system, made by Author

Ethically, several questions accompanied the design. Integrating AI and robotics into a public building raises concerns about surveillance, bias and user autonomy. I tried to respond by giving these technologies a **legible but modest presence**: AI appears as help rather than control, and robotics is confined to circulation of books, not to decisions about knowledge. Accessibility and inclusivity were another ethical focus. An extroverted building can easily become overwhelming; therefore, the design provides a spectrum of spaces—from fully open and public to more secluded and acoustically calm—so that different users can choose their level of exposure. Finally, there is the question of environmental responsibility: reusing the existing structure and designing new additions as modular and demountable are concrete ways to reduce material impact, but the project also acknowledges that any transformation of this magnitude comes with a footprint, and that long-term maintenance is key to making ecological claims credible.

5. How do you assess the value of the transferability of your project results?

Although the KB is unique in its location, history and spatial configuration, many of the strategies developed in the project are **transferable**. The methodological sequence—heritage value mapping, user research, spatial analysis and detailed technical development—could be applied to other national libraries, archives or large institutional complexes. The concept of thickened circulation spines, where movement routes host digital interfaces, social spaces and visible technical systems, can inform the transformation of universities, hospitals or transport hubs that struggle with legibility and social activation. The **modular, demountable façade system (Fig.4)** that integrates shading, habitable boxes, green modules and rainwater collection provides a prototype for upgrading other deep-plan buildings without demolishing their structural frames.

At the same time, certain aspects, such as the exact geometry of KB Plaza, the relationship to the tram viaduct and the reuse of the specific OD205 façade language, are site-specific. I therefore see the project not as a model to be copied literally, but as a **sample of principles** that can be reinterpreted in other contexts: prioritising value-based intervention, combining extroversion with refuge, making environmental systems visible, and designing for reversibility.

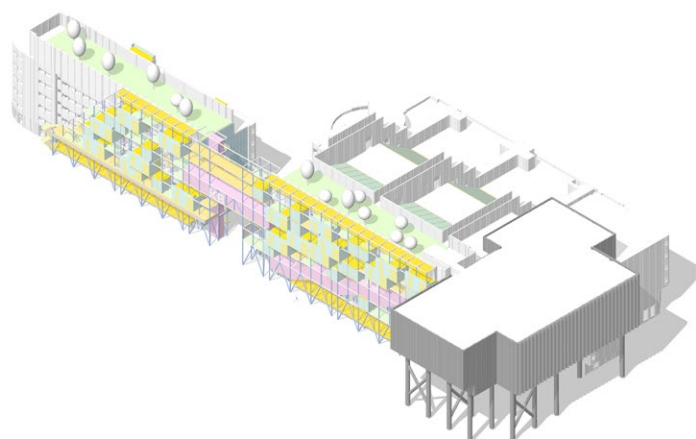


Figure 4, modular, demountable façade system, made by Author

Self-developed reflection question 1: To what extent can an “extroverted library” remain inclusive for users who need introversion?

One of the central tensions in the project has been the balance between extroversion and introspection. My initial sketches set a strong emphasis on transparency, visibility and activity along the façade. Through the interviews and my own experiences of libraries, I realised that many users come precisely because they need a quiet, protected environment. This insight led me to develop a **layered spatial strategy**: KB Plaza, the Hybrid Tech Ramp and the façade modules provide opportunity for encounter and exposure, while the new reading hall, deep-plan study areas and certain façade units are intentionally more introverted, with filtered light, acoustic treatment and less direct visibility from the outside.

Even with these measures, I am aware that the project has so far mainly engaged with younger, digitally oriented users. In the future, it would be important to test the proposed spaces with a wider range of users, including staff and visitors with different abilities or sensitivities. The project has taught me that extroversion is not simply a visual or formal quality, but a social condition that needs to be carefully calibrated if the building is to remain inclusive.

Self-developed reflection question 2: How far should speculative technologies be incorporated into architectural design?

At the outset I was eager to give AI, robotics and interactive media a visible presence in the project. Over time, and through critical reading and feedback, I realised that such technologies evolve far more quickly than the building itself. If the architecture is too tightly tied to a particular device or platform, it risks becoming outdated quickly. This led to a shift in my approach: instead of designing for specific gadgets, I tried to design spatial frameworks that can host different generations of technology. The robotic core is treated as a generic, flexible logistics space; AI appears as a set of touchpoints along circulation routes that can be updated or replaced; the façade’s environmental role does not depend on smart systems alone but also on passive principles such as depth, shading, planting and water management.

This has been an important lesson for me: speculative technologies can be powerful in shaping questions and scenarios, but the long-term contribution of architecture lies in robust spatial structures that remain meaningful even as specific tools change.