



# ARCHIVE AVENUE

Connecting Dutch culture and community

TU Delft  
Faculty of Architecture and the Built Environment Architecture  
AR3AH115 Graduation Studio Revitalising Heritage

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## ABSTRACT

The ongoing digitalization of libraries has transformed the KB from a traditional physical book repository into a hybrid space prioritizing online accessibility. This shift, while expanding the KB's reach and preservation capability, raises questions about the future of physical engagement with Dutch heritage materials. This research examines the implications of relocating the KB's entire physical collection to an off-site automated repository and developments in the KB's urban and architectural context. The study highlights the risk of reducing spontaneous interaction and social relevance as digitalization and physical separation increase. Through an analysis of existing services and case studies, different categories of displaying physical heritage materials are explored to enhance physical public engagement, offering a preliminary framework for the KB's evolution in a digital age.

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## Introduction

The National Library of the Netherlands (KB), founded in 1798, plays a central role in preserving and providing access to Dutch cultural heritage materials. Located next to The Hague Central Station on the opposite side of the city center, the KB is part of a cultural cluster that includes institutions such as the National Archives, the Literature Museum, and the Art History Museum (RKD) (*figure 1*).

Today, this cultural landscape is undergoing a profound transformation. The Literature Museum and RKD, currently within the same building as the KB, are being relocated, and the KB itself is in the process of transferring its entire physical collection to an off-site repository in Delft ([Municipality of Utrecht, 2023](#)) ([ANP, 2025](#)). 121 kilometers of materials will be placed in an automated, climate-neutral repository. As a result of the developments, large portions of the KB's current building in The Hague will be vacated. In response, the KB is planning to demolish more than half of the existing structure, seeking to remove the residual building masses ([Martens, 2025](#)) (*figure 2*).

These combined changes, the relocation of both institutes and the physical collection, mark a fundamental moment in KB's institutional history. They reflect broader trends in digitalization and space optimization and raise questions about the KB's future role in the urban and cultural fabric of The Hague.

This research project, which is related to architecture and heritage, takes this transition as an opportunity to redefine the KB as a national library. Rather than treating the emptied spaces as voids to be erased, it explores how the existing architecture of the KB building can be preserved and reimagined. The goal is to develop a proposal that strengthens the KB's public role, increasing on-site engagement with its collections, and reinforces its identity as a cultural anchor.

This paper discusses the conceptual development and research for the proposal for the architectural design of the new KB.



Figure 1: Urban plan.

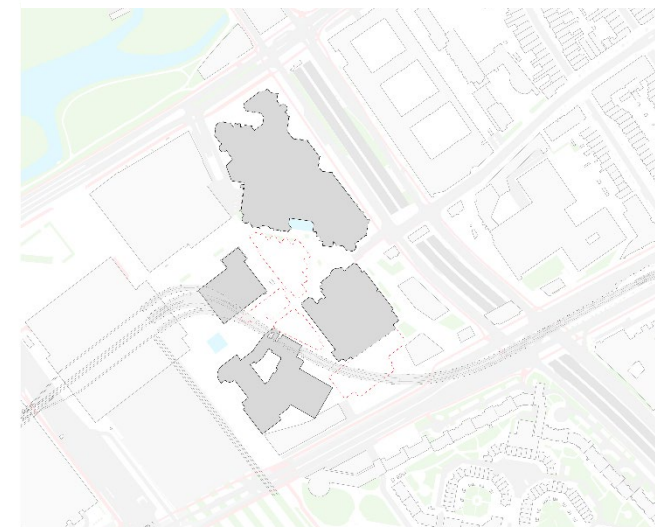


Figure 2: Future plans of the KB; the red dotted lines imply the masses that will be demolished.

## Problem Statement

In the 21<sup>st</sup> century, libraries have evolved from formal repositories of physical books into dynamic, hybrid institutions that combine digital and physical resources to stay relevant for today's society (Wandelt & Schmidt-Lux, 2022). Digital technologies have enhanced access to information, providing on-demand data from anywhere. Institutions like the KB embrace these developments to reach a broader audience on digital platforms to spread awareness of their collections, aligning with the purpose of national libraries (Lushington, Rudolf, & Wong, 2016). This shift towards digitalization of the KB is accelerated due to the prioritizing of digital collections over physical ones in 2019 (Boersma, Martens, Ankersmit, & Stappers, 2022). Figure 3 shows the steep decline in annual growth of physical collections and physical retrieval from the storage space. Undisputably, this is influenced by COVID-19, but even today the number of physically loaned is decreasing annually and is not even half of what it was before the pandemic (figure 4). The overall number of visitors to the reading room is also decreasing, while the new event space does attract visitors, but with planned or formal events (figure 5).

This transition toward digital-first operations introduces a challenge regarding the role of physical space in fostering spontaneous interaction and public engagement. While digitalization expands reach, in the case of the KB, it reduces informal and spontaneous encounters with heritage collections in physical settings. The current development of relocating the entire physical collection off-site is another step towards a digital library. While this offers long-term benefits for preservation, sustainability, and storage capacity, it also highlights the divide between the public and the physical presence of the national collection. The possible impact of the off-site repository will be examined later in the research.

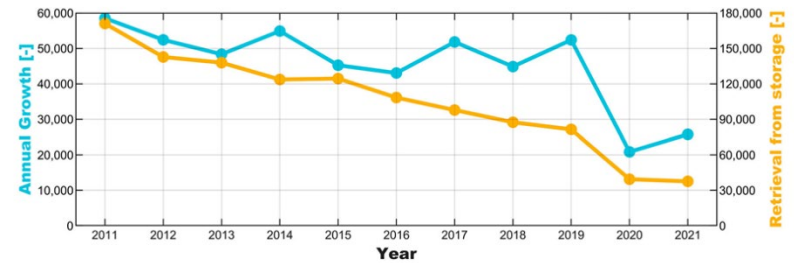


Figure 3: observable decrease in annual growth of physical materials. (Boersma, Martens, Ankersmit, & Stappers, 2022)

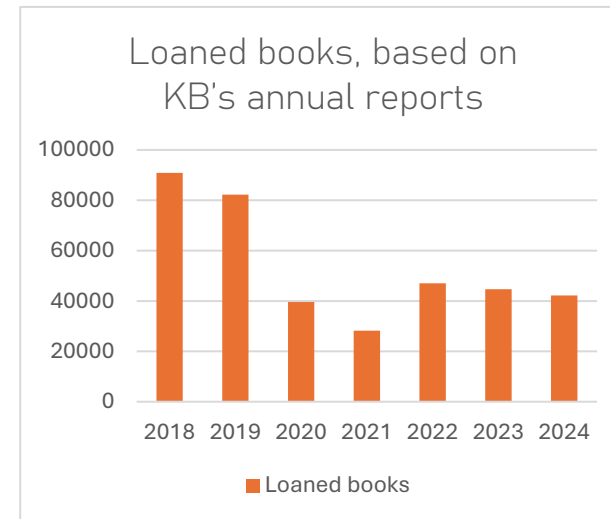


Figure 4: annually loaned books.

	2024	2023
<u>Bezoeken aan onze leeszaal</u>	42.172	43.871
<u>Bezoeken aan evenementen in de KB</u>	5.574	2.047
<u>Aantal uitleningen/verstrekte publicaties</u>	42.195	44.668

Figure 5: The reading room is used less in 2024, and fewer books are reserved. (KB, 2025)

The concern of losing social connection with the KB is echoed in recent warnings from the Dutch government's Social and Cultural Planning Office, which cautions the loss of social cohesion among institutions and individuals due to digitalization ([Sociaal en Cultureel Planbureau, 2025](#)). When collections are accessible primarily through planned appointments or online portals, the physical library risks becoming less relevant to citizens who are not already part of its research-oriented user base.

In addition to the digitalization trend, the spatial and architectural features of KB's building complicate physical accessibility. Despite its prominent location next to The Hague Central Station and massive size, KB appears to be in an introverted and institutional structure. Closed facades, upper-floor programming, and a lack of street-level transparency contribute to a general unawareness and limited spontaneous engagement with KB's services and collections. These aspects are a result of the KB's initial program, which prioritized preservation over public accessibility.

This research addresses the tension between digitalization and physical engagement. Without highlighting the physical collections and spaces, the KB risks becoming an increasingly distant institution; environmentally and economically sustainable but socially detached. This project, therefore, aims to explore how architectural and programmatic interventions can reinstate the KB as a physically engaging, socially relevant public institution.

## Project Aim and Research Questions

This project explores how the KB can foster spontaneous physical engagement with its collections, which represent the assembly of Dutch heritage materials. While digital access continues to expand, the KB's physical holdings remain essential to the institution's identity and public function. However, strict preservation and security measures restrict the ability to exhibit these collections openly to the public, limiting spontaneous interaction with physical materials for visitors and passers-by, who could be potential visitors.

Simultaneously, it is acknowledged that Dutch heritage is more than just books. This project, therefore, aims to explore new approaches to foster public engagement with not only the KB's physical collections but also to exhibit them through different media and interpretations based on their content.

This project will respond to the ongoing transformations around the KB. With the entire physical collection moving to an off-site repository in Delft, adding further distance between the public and the collections, the aim is to enhance the physical presence of heritage materials at the KB. Important is to note that the KB would still need to function as a research library as well, where quietness is desired over informality and spontaneous or social interactions with physical collections.

The main research question for this goal is:

**How can the National Library of the Netherlands increase public engagement with its collections, on-site?**

The research is divided into three sub-questions to address this main question, investigating the Why, What, and How of physical engagement related to the KB.

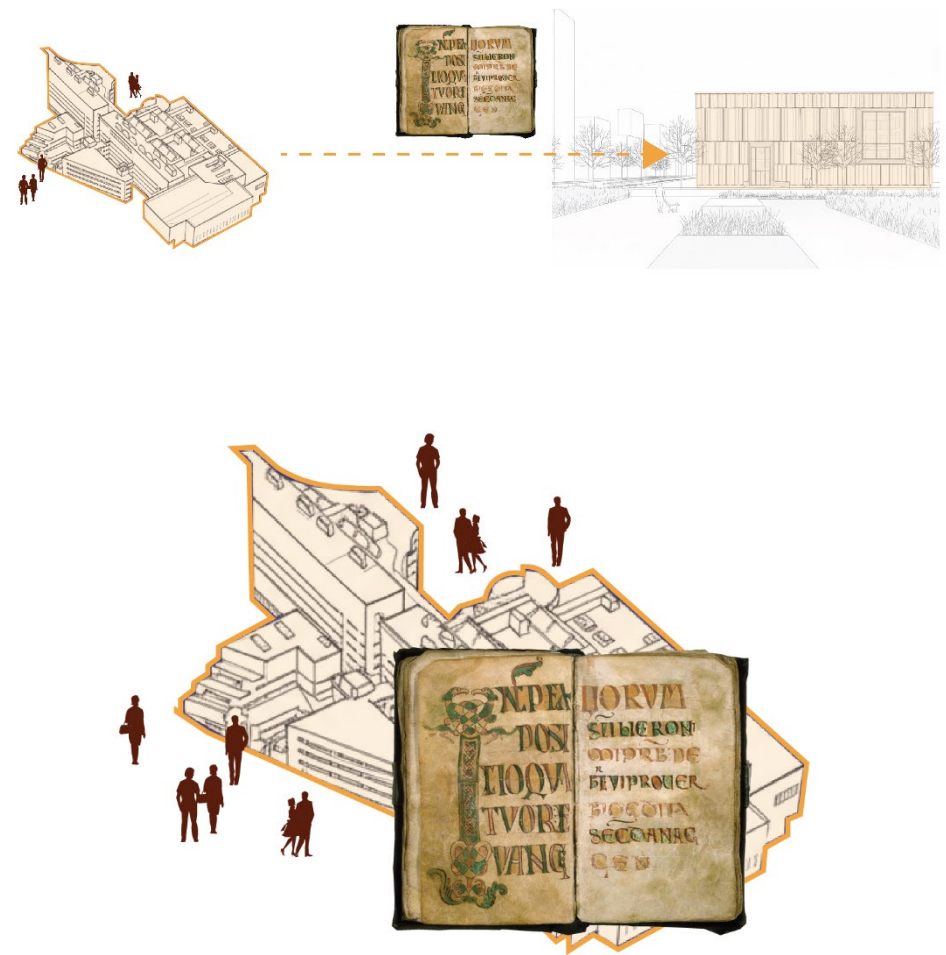


Figure 6: The new KB volumes will focus on informal engagement.

**1. Why is it essential to consider physical engagement with KB's collections?**

This question investigates the importance of maintaining and enhancing physical accessibility to the KB's collections, especially in light of the KB's current development plan to relocate its entire collection off-site. A literature review will examine this strategy, identifying its risks and potential. This analysis will provide a foundation to argue the need to focus on physical engagement and accessibility within KB's library, ensuring it remains a cultural and educational hub.

**2. What are different display strategies for physically exhibiting heritage collections?**

The second question explores various exhibition methods that can be used to physically present heritage collections, considering different levels of authenticity and visitor experience. This will be based on writings from Chhabra regarding authenticity in heritage interpretations, which categorizes display strategies according to their degree of physical authenticity and interaction. These different categories are then linked to the context of the KB, exploring display strategies that fit the library's perspective. Case studies on the necessary preservation and security measures related to the exhibition types will be analysed, investigating how these approaches can be implemented within the KB's context.

**3. How can the visibility of the KB's collections and its services be improved on an urban scale?**

The final question explores how exhibitions can become visible and inviting while ensuring the security and preservation of artifacts. Literature relating to defensible spaces and porosity are compared to find common principles from both perspectives. This results in a design brief of the spaces around KB's collections.

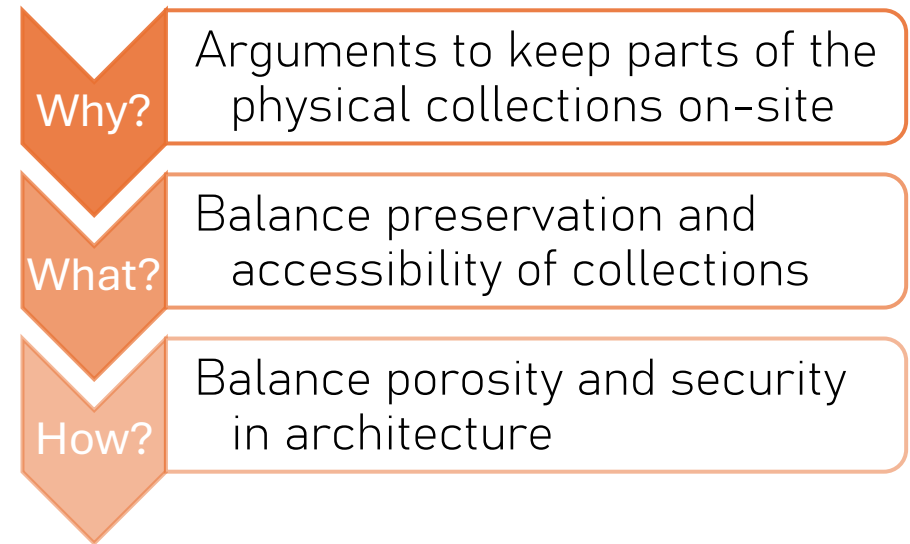


Figure 7: Project development..

## Sub-question 1

### Arguments to keep parts of the physical collections on-site

#### *Why is it essential to consider physical engagement with KB's collections?*

One of the core missions of a national library is to promote awareness and use of its collections among the public (Wandelt & Schmidt-Lux, 2022). As mentioned before, the KB is shifting its services towards digital platforms and planned events, which leaves a gap in spontaneous engagement with physical collections. The new off-site repository, currently in development, is another step towards a more digital library. This strategy is explored in order to argue for this project to focus on physical accessibility.



Figure 8: Render of the new repository in Delft. Credits: RVB/Office Winhov

## Off-site Repository

The Koninklijke Bibliotheek (KB), the Dutch National Library, is undertaking a significant move by relocating its entire collection—over 121 kilometers of publications—from its current site in The Hague to a newly constructed, fully automated storage facility in Delft (ANP, 2025). This state-of-the-art repository is designed to optimize preservation and sustainability, utilizing robotic systems to manage and retrieve materials stored in high-density, oxygen-deprived environments, thus minimizing fire risk and ensuring long-term protection of the collection.

The transition is set to be completed by early 2029, with the first items expected to be transferred by 2027. While the public will still access materials via study rooms at the renovated The Hague location, the new Delft facility itself will not be open to the public; access to materials will require appointments (Boersma, *The new book repository: sustainable and safe*, n.d.)

The KB's strategy of moving its entire collection off-site reflects a broader trend among major research and academic libraries, particularly in the United States. Since at least the 1970s, American academic libraries have faced mounting pressures from the expansion of their collections and the limited availability of on-site space. Initially, these libraries responded by constructing new buildings or expanding existing ones, but rising costs led to the adoption of off-site storage solutions.

By the late 1970s and 1980s, specialized high-density storage facilities became common, with institutions such as the University of California and Harvard University pioneering this approach. Today, dozens of such facilities across North America collectively house tens of millions of volumes, providing a cost-effective and secure way to manage growing collections while freeing up valuable space for public and research activities on campus (Payne, 2007) (Priddle & McCann, 2015) (Bridegam, 2001).

A key similarity between the KB and academic libraries in the United States is their primary user base: researchers. Both types of institutions prioritize the preservation and accessibility of scholarly materials. However, a notable distinction is that while many libraries using off-site repositories retain their most frequently used or anticipated materials on-site, the KB plans to relocate its entire collection to the new facility. This comprehensive move underscores KB's commitment to both preservation and efficient space management. It aims to safeguard the reliability of its national collection for future generations while maintaining public access through modernized, appointment-based services. In this sense, the visitors' experience will remain similar to the current situation, as materials need to be reserved as well. This already implies the gap in spontaneous interaction and browsability in the current situation.

Despite numerous reasons for and against the off-site repository, implementing this system appears to be necessary, given that KB's building foundations are at full capacity while its collection continues to grow. The potential and risks of this strategy will be explored in more detail. This data will not be used to argue whether the repository should be relocated or not; the new repository is already in development. Instead, it will be used to determine how the collection should be handled.

A literature review will explore the risks and potential of the off-site system. The literature is mainly found on Google Scholar by using variations of keywords:

"off-site repository", "off-site storage", "library", "national library", "physical accessibility", "accessibility".

With these keywords, specific papers have been found describing the process of relocating a library's collection to an off-site location, along with collection management aspects, risks, and opportunities.

The following sub-chapters will explain the risks, potentials, and collection management found in the literature.

## Risks

The majority of the risks are related to the physical accessibility of the library's collections and their management (*figure 9*). Multiple cases mention that the collections put away in the off-site repository are rarely used anymore.

When the Amherst College Library had moved a total of 90.000 volumes to an off-site repository in 1998-1999, this repository was only used slightly more than twice a week. Only 0.0013% of the off-site collection was used within one year (Bridegam, 2001).

A similar phenomenon was noted by librarians of academic libraries in the United States who were interviewed by Priddle & McCann in 2015. The reduction of immediate access is mentioned to contribute to this, as mostly undergraduates will look for similar readings online where they can access this 'on-demand'. Another librarian refers to the off-site repository as a "monument to deferred disposal" (Riley, 2012).

Another risk related to physical accessibility is the reduced possibility of physically browsing through the collections. While this is already very limited for visitors at the KB, this aspect also influences the public service provided by librarians. The previously mentioned study by Priddle & McCann (2015) also provides this librarian's perspective on using relocated collections. When collections are stored out of sight, they are out of the librarians' minds, limiting the number of reading suggestions for visitors.

Challenges in collection management and logistical complexities are related to the new infrastructure and workflow necessary because the repository is off-site. Besides the need to train librarians and put more effort into describing the materials on a digital platform, it also has to be decided which materials to relocate off-site (McCaffrey, 2021) (Pop & Mailat, 2011). This will be discussed later in this chapter, after the potentials.

Risks	Sources	Counts
 <b>Reduction of browsing</b>	[Bridegam, 2001] [O'Connor, Wells, & Collier, 2001] [Riley, 2012] [Ballegoote & Borie, 2020] [Priddle & McCann, 2015] [Pop & Mailat, 2011]	6
 <b>Loss of immediate access</b>	[Bridegam, 2001] [Hazen, 2000] [Payne, 2007] [Vattulainen, 2004] [Priddle & McCann, 2015] [McCaffrey, 2021] [Sherton, 2005]	7
 <b>Logistical complexities</b>	[Bridegam, 2001] [Ballegoote & Borie, 2020] [Priddle & McCann, 2015] [Sherton, 2005]	4
 <b>Challenges in collection management</b>	[Bridegam, 2001] [O'Connor, Wells, & Collier, 2001] [Hazen, 2000] [Riley, 2012] [Ballegoote & Borie, 2020] [Payne, 2007] [Vattulainen, 2004] [Priddle & McCann, 2015]	8
 <b>High costs</b>	[Bridegam, 2001] [Riley, 2012] [Payne, 2007] [Priddle & McCann, 2015] [McCaffrey, 2021]	5

Figure 9: Risks assessment of the off-site repository.

## Potentials

In contrast to the risks of an off-site repository, almost none of the potentials are related to physical accessibility on-site (*figure 10*).

However, the new off-site repository can potentially improve the KB Inter Library Loan system. With the new automated retrieval system, the off-site repository can function as an efficient document supply center, like the National Repository Library in Finland (O'Connor, Wells, & Collier, 2001). Besides this, digital accessibility will also increase as there is an increased emphasis on preparing metadata for collections (Ballegoie & Borie, 2020). The description of the collections becomes more critical and accessible to users.

The developments around the new repository will increase accessibility on digital platforms and potentially at other institutes and libraries. The only place where accessibility will decrease is at the KB itself.

While the collections become less accessible in the KB library itself, disregarding social sustainability on-site, the off-site repository has significant environmental and economic sustainability benefits.

In an automated storage system where people are not needed in the retrieval process, climate control installations require less energy, which makes it cheaper, environmentally friendly, more secure, and results in a steady preservation climate. Besides climate control costs, building costs might also be less for an off-site repository. The British Library, for example, chose to construct a new repository in Boston Spa because building there would cost substantially less than building in London (Shenton, 2005).

With the collections moving off-site, the KB can use the freed-up space to strengthen social sustainability by using it for meeting and workshop activities. It can also use the extra space to enhance physical browsability, which can be used in the later design as a spatial principle (*figure 11*).

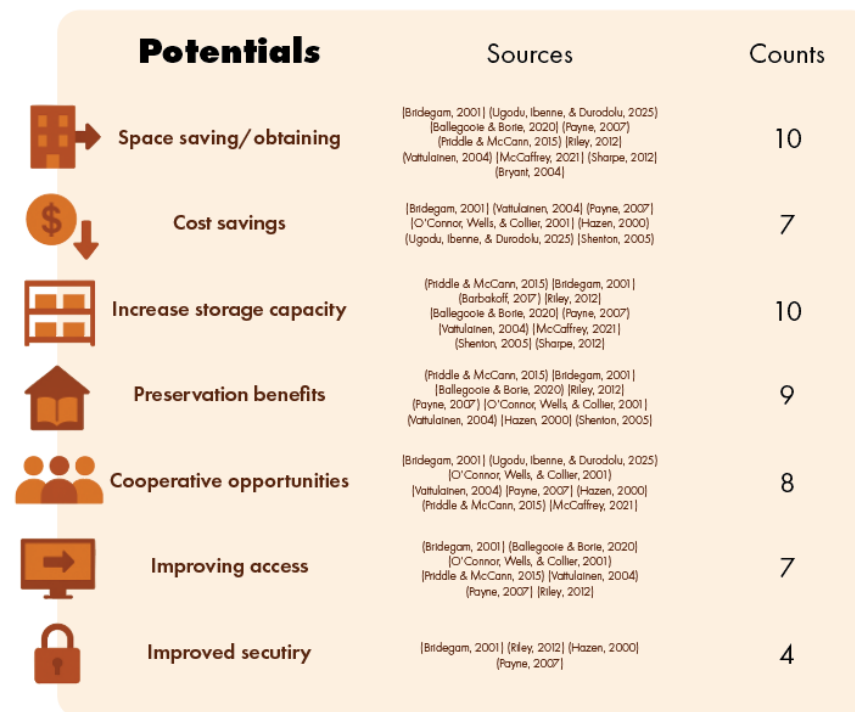


Figure 10: Assessment of potentials of the off-site repository

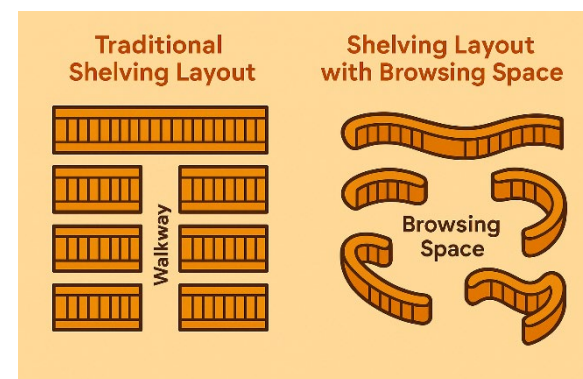


Figure 11: Interior layout for the reading room.

## Collection management

The KB plans to move all collections off-site, but for this proposal, it is desired to keep part of the collections in the library. The reviewed literature discusses different strategies for deciding which collections to move off-site and which to keep in the library.

The most discussed approach is to dispose of the less-used materials while keeping the most anticipated volumes on the bookshelves. Other considerations are format, age, size, and uniqueness.

The reason for this project to focus on physical accessibility is to counteract the digitalization of the KB, emphasizing fostering social cohesion among the KB as an institute and individuals ([Sociaal en Cultureel Planbureau, 2025](#)). The new development of the off-site repository is another step towards a digital library, adding a distance between the books and KB's visitors. However, potentials of the off-site repository can be used to tackle the risks. This project will argue for keeping the most used volumes in the reading room based on the lack of immediate and physical access to KB's collection. The extra space can be used to emphasize the physical browsability of these collections.

To ensure that the off-site repository will not become a "monument to deferred disposal", KB's collections should temporarily be exhibited, for example, with a monthly theme. The next chapter discusses the possibility of displaying the original collections.

## Sub-question 2

### Balancing preservation and accessibility

*What are different display strategies for physically exhibiting heritage collections?*

KB's collections are extremely valuable, making preservation often the priority over spontaneous accessibility and browsability. Comparing the KB to a museum, which serves a similar purpose, the KB is an impressive institute, as special collections can be viewed on request. Relating this to museums would be equivalent to being able to request van Gogh's most famous paintings for (almost) private viewings. However, most of the time, the special collections are hidden in a storage room.

This is a dilemma museums face as well: what is the benefit of collecting cultural materials if the vast majority will be placed in storage? Often, only 5% of a museum's collection is exhibited, with the most popular artifacts rotated while niche collections are disregarded (Groskopf, 2022).

This has not always been the case, as many museums started from private 'wunderkammers', better known as Cabinets of Curiosities (**Figure xxx**). The first public museum, the Ashmolean Museum (1677), was actually just an accessible repository (Chaliakopoulos, 2021).

In the 70s, a similar trend arose: the visible storage. It was noticed that the majority of the artifacts in museums were not visible to visitors, so the repositories opened up with the collections often behind glass (Fairley, 2023). This made a bigger part of the collection accessible to the public and more convenient for research.



Figure 12: Ferrante imperato collection 1599



Figure 13: UBC Museum of anthropology Vancouver Open repository. Credits Carol Cram

While collections and cultural attractions become more accessible, they also become more prone to damage. Often, glass vitrines, controlled climate, or security measures ensured by staff are sufficient to address this, but visitors still tend to touch and damage the objects. A study about the exhibition space of the Smithsonian's National Museum of Natural History even shows more cases of visitor damage around the core, where the degree of visibility is at its highest (*figure 15*) (Hirsch & Gallagher, 2024). To tackle this, a new strategy has been developed: the use of highly detailed replicas of original objects, known as facsimiles.

This strategy is also known to the KB, as they have used facsimiles in exhibitions before. Before Club Erasmus, the space on the first floor was reserved for a permanent exhibition in collaboration with the National Archives (*figure 14*). Not only original materials but also detailed facsimiles, indistinguishable from the originals. Security was ensured by specially designed showcases that offered a resistance of ten minutes against theft, which is exceptionally long (Hoogstraten, Reeken, & Uljee, 2007). The air purification also had to be perfect to preserve the valuable items. Forty showcases are placed in the exhibition space, filled with special collections. Other media are also used in the room, like touch screens, sound, and light (Kossmanndejong, n.d.). The facsimiles are now put away in storage, inaccessible to the public (mentioned during the tour).

An example of how big the scale of this strategy can be is in France, where part of the Lascaux cave and its historical paintings have been replicated just 200 meters from the original to ensure their preservation (Dowson, 2025). The facsimile is used to communicate the history and narratives of the place. The original cave has not become more accessible, but the narrative has. It even adds an extra layer of accessibility to visitors, as it is now possible to touch the exhibit.

While the preservation of the original object (cave) is guaranteed, the visitors' experience arguably decreases as what they perceive is not 'authentic'. This opens up a new discussion point about authenticity in

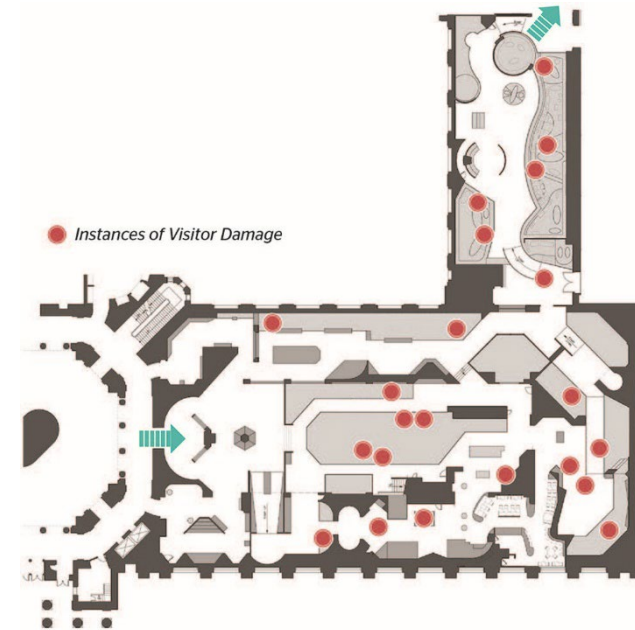


Figure 15: Instances of visitor damage, Hirsch&Gallagher, 2024



Figure 14: Previous exhibition room at the KB. Credits: boekendingen, 2013

heritage tourism. This will be further used as a framework to determine various types of exhibitions and their accessibility and security levels.

Within the context of heritage tourism, various levels of authenticity are initially developed and discussed among researchers. For this paper, the definitions from Chhabra (2005) are used. The goal is not to mangle in the discussion of authenticity and various experiences, but to use this as a framework to determine different ways of exhibiting KB's collections.

Chhabra's five categories of authenticity are interpreted and used in the following way:

1. Objective authenticity refers to the factual realness of the heritage object or tradition. In the case of the KB, this would be represented by the original collections.
2. Constructed authenticity refers to the illusion of objective authenticity, which can either be a fabricated reality or a transparent negotiation between the presenter and the observer; the presenter can choose to be open about the artifacts being indistinguishable copies of the original. For the KB, this would be translated to replications of the original collections, such as facsimiles, which are already being produced by the KB in collaboration with publisher Lannoo.
3. Symbolic authenticity refers to symbolic embodiments of heritage materials that can still carry cultural meanings and are associated with original materials. For this, the KB can offer exhibitions of artistic impressions, like physical artifacts or performances. The existing KB Atelier is already stimulating artists to research KB's collections.
4. Existential authenticity is about experiences that create a sense of personal connection with the exhibited culture. Objective authenticity is insignificant; it is not about physical authenticity but emotional bonding. In the case of the KB, this can be represented with activities like workshops related to Dutch heritage: craftsmanship, traditions, cooking, etc...



Figure 16: Replication of the Lascaux cave.



Figure 17: Different levels of authenticity at the new KB.

5. Transformative authenticity can be considered a more extreme version of existential authenticity. Not only does the visitor feel a personal connection to the culture, but the experience leads to personal transformation or a change in identity. This type of authenticity is disregarded for this project, as a library should not directly interfere with personal transformations.

To enhance public engagement with KB's physical collections, it is important to acknowledge the wide variety of visitor interests, backgrounds, and expectations. Not every visitor will be drawn to the original historical books; some may be more attracted by a multisensory experience, artistic interpretations, or physical activities. To reach a broader audience and to intrigue various individuals who walk past the KB daily, display strategies must cater to different types of engagement, offering a range of experiences. This inclusive approach lowers the threshold for interaction by allowing people to engage with KB's collections in ways that align with their personal interests. This range of strategies will be decided based on Chhabra's typology of authenticity in heritage experiences.

Two museums have been visited to explore the preservation methods for the exhibits. The Boijmans van Beuningen Depot in Rotterdam is a repository focused on showcasing the entire collection of the museum, making it a suitable case study for objective authenticity. The second case study is the 'Huis van het Boek' museum in the Hague, which exhibits not only original collections, but also replicas, artistic impressions, and includes a workshop space. The intent was to use this case to explore constructed authenticity, but it rather showed how various types of artifacts are handled by the same institute. This shows the importance of security and preservation measures per level of authenticity and forms the base for the last research question which is later discussed.

Both museums charge an entrance fee, creating a border between the public urban space and the public function. This automatically creates a secure area, as the entrance is controlled. After the two case studies, it is investigated how this boundary can be transformed into a border by balancing secure and porous architecture. This will be most suitable for the symbolic and existential authenticity-related functions.

Authenticity Level	Exhibition Type (KB Application)	Primary Material	Target Audience/Engagement Type	Public Engagement Threshold
Objective	Accessible repository	Original (special) collections	Scholars, Heritage Specialists	High (Guided)
Constructed	Facsimiles / Replicas	Durable Copies of Originals	Casual Visitors, Students, Children	Moderate (Visible, Interactive)
Symbolic	Artistic Impressions	Media Equipment, Contemporary Artworks	Art Enthusiasts, Passers-by	Low (Spontaneous, Visual)
Existential (+ transformative)	Makerspace Workshops	Tools, Digital Equipment	Community, Participants, Passers-by	Lowest (Participatory)

## The Boijmans van Beuningen Depot

Like many museums, the Boijmans van Beuningen museum had far more artifacts than its exhibition spaces could display. MVRDV helped them to design an accessible repository, creating a modern 'Wunderkammer'. Before this opening, only 8 percent of the museum's collections were displayed to visitors. This new depot made it possible for 154.000 artifacts to be publicly accessible (Museum Boijmans van Beuningen, n.d.). Visitors are free to wander through a five-floor atrium with adjoining galleries, making the building almost like a huge-scale Wunderkammer (*figure 18*). The depot exhibition spaces can only be accessed with a tour guide (*figure 19*). But how does the museum ensure a stable preservation climate for its collections while allowing visitors to enter the depot?



Figure 18 Depot. Credits Ossip van Duivenbode

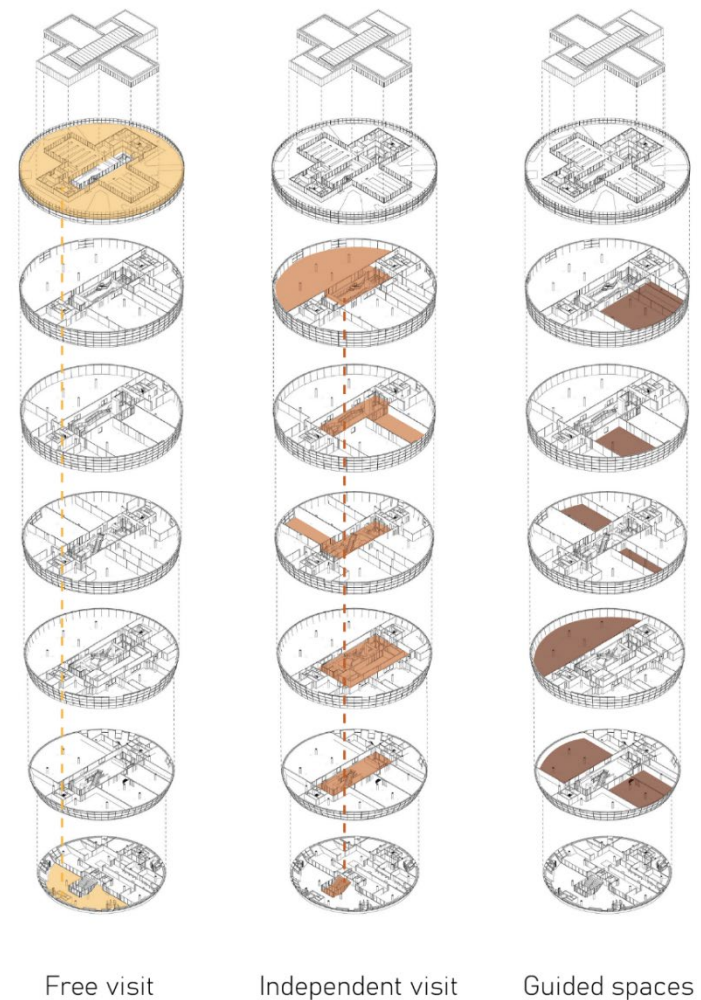


Figure 19: Public routings through the depot, based on drawings from MVRDV.

In response to flooding issues in the previous storage spaces of Boijmans van Beuningen, the Depot has a robust concrete structure that elevates its collections (Vervaet, 2018). This construction safeguards the collections from outside hazards, but the interior climate is equally crucial for their preservation.

The interior climate control system maintains five distinct climate zones, specifically fitted to the needs of different materials. A distinction is made between metals, plastics, organic and inorganic materials, and photography, which is divided into colour and black-and-white (Kisters, 2018). The access between the fully public area and the depots is separated by temperature locks to avert fluctuations. Furthermore, porous interior walls help stabilize the climate while allowing people inside (Zaucha, 2022).

Security is an essential aspect when preserving valuable materials. The depot is classified with the highest safety standard, risk class 3 (Niens, 2018). Access to sensitive storage areas is highly restricted and is only possible with tour guides. The tours are only available for 10 minutes every hour, with a maximum of 13 people per compartment. This allows the climate to stabilize again for the rest of the hour (Museum Boijmans van Beuningen, n.d.).

Physical barriers separate visitors from artworks and employees. Most of those barriers are glass walls emphasizing transparency regarding the museum's collections and preservation methods. The artifacts are secured in glass boxes around the atrium, which is available for independent visits. Additionally, modern security technologies, like cameras, sensors, and personalized access cards, ensure protection (Vervaet, 2018).

Behind glass walls are also restoration workshops, where employees and artists carefully repair damaged materials. The artists are consulted to ensure that the interventions respect the original intent of the works (Hees, 2018).



Figure 20: Strategies for collections preservation by the Boijmans van Beuningen Depot.



Figure 21: Facade of the Depot. Credits Ossip van Duivenbode

Applying these strategies to the 'new KB' would allow them to make their collection more accessible while still prioritizing preservation. This, however, would not create the possibility of making the building more open and inviting. Looking through the intense architecture of the Boijmans van Beuningen Depot, the facades are closed, and the building is only inviting due to its intriguing form and appearance (*figure 21*).

The balance between preservation and accessibility of collections is achieved, but there is no connection between urban life and the exhibition. Passers-by are only aware of what the building offers once they are already inside. This is because the collections are still valuable, and sunlight needs to be filtered. Additionally, an appointment is required to access most of the artifacts.

## Huis van het Boek

The building of the museum used to be the home of a baron who gathered an impressive collection of books. A few years after his passing, the house and the baron's private collection opened up to become an accessible museum (*Huis van het Boek, 2026*). The previous designation of the building is evident in its layout, which is clearly divided into small cubicles (*figure 22*). These cubicles make surveillance challenging for employees, which is why there are security cameras in every room to avoid any damage to the artifacts. An employee mentioned that guards are watching the security screens at all times. This allows the visitors to wander through the museum without a guide, contrary to the repository in Rotterdam.

While the building appears to have a better connection to the urban environment, all windows, except those at the reception, are closed off by either closets or thick curtains that are kept closed all the time, meaning there is no connection at all (*figure 23*).

The artifacts are preserved in glass showcases with controlled climate conditions, ensuring constant temperature and humidity. Artistic impressions are exhibited in various ways: they are either in glass showcases or out in the open. It seems size influences this decision, as small artifacts are secure behind glass, while larger objects, like statues and even paintings, stand in the halls uncovered. Here, security seems to influence the display method, as larger objects are less likely to be stolen quickly.

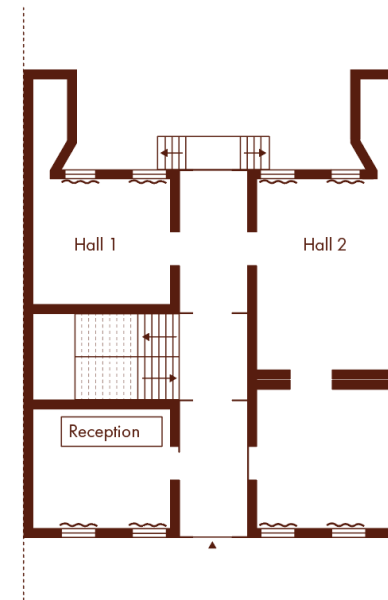


Figure 22: Layout of Huis van het Boek



Figure 23: Closed curtains at Huis van het Boek

## Sub-question 3

### Balancing security and porosity

*How can the visibility of the KB and its services be improved within the urban context?*

On an urban scale, the KB benefits from a strategic location. Situated adjacent to The Hague Central Station, offering various options for public transport, the KB is naturally integrated into the daily flow of commuters and locals. Major roads surround the building, and pedestrians and cycle paths even pass through its volumes, making the library convenient to reach. The connectivity positions the KB as a potentially prominent cultural landmark, integrated within the urban fabric of The Hague.

Despite this beneficial urban positioning, the KB's physical appearance at the building scale opposes this accessibility statement. The facades are largely closed off, providing minimal transparency or invitation to passers-by. The entrance is reached via a dark alley, as seen from the Central Station, making the route to the already confusing entrance even less inviting. The massing consists of large, monolithic blocks with no detectable hierarchy, resulting in an imposing and institutional aesthetic (figure 24, 14, 15 & 16). The KB's designation as the 'Royal' Library only reinforces the physical barrier of the facade.

Besides the appearance of the masses and facades, the spatial arrangement of the KB also contributes to the building not being perceived as inviting. KB's public functions are either located on the first floor, invisible to passers-by, or only accessible from the first floor. This separation from the street level creates a disconnect between the public functions and urban life, resulting in a general unawareness among the public regarding what the KB offers. Paradoxically, this spatial distance

is appreciated by current users, especially of the reading room, as it provides a sense of privacy and quietness.

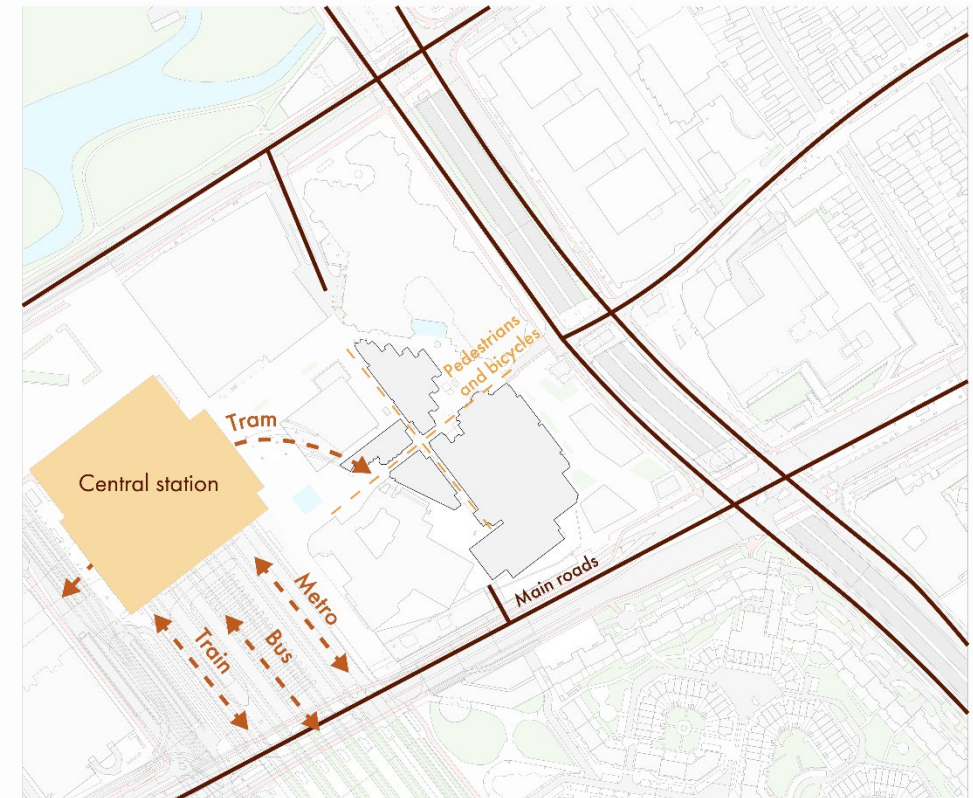


Figure 24: Infrastructure around the KB.



Figure 27: Closed facades. Credits: KB



Figure 29: Narrow entrance towards the entrance



Figure 26: Massive building blocks. Credits: Superneon



Figure 25: Confusing entrance. Credits: KB

While KB's collections and even their facsimiles will still require preservation measures against daylight and humidity, exhibitions with artistic impressions and workshops are more flexible. These spaces can especially be used to promote KB's collections to passers-by and to connect cultural materials with the community.

The formats of these levels of authenticity are temporary exhibitions and activities, making the need for preservation methods less essential. For these spaces, accessibility is essential and open facades are desired. The current KB Atelier, which serves as a space for artists, shows this by opening up to the outside through a glass facade. This creates an inviting area which appears accessible. It is however noted that not many people make use of the space, partly due to this aspect: the space is too open, making it feel less secure to leave personal belongings on the workspace while taking a break. This shows that the priority of balancing preservation with accessibility now shifts towards the needs of an inviting facade that offers security of personal belonging and artifacts of various levels of authenticity.

To strike a balance between the two, measures have been investigated towards the design of defensible spaces and the design of inclusive architecture by the use of two books. Shared strategies have been found in Oscar Newman's 'Defensible Space: Crime Prevention Through Urban Design' and Jan Gehl's 'Life Between Buildings', ensuring both of the goals.

Newman's book lays the foundation for 5 core principles for the design of secure urban spaces to prevent criminal behaviour. These principles are still widely used internationally to create safe environments, and studies demonstrate their effectiveness.

Gehl's 'Life Between Buildings' focuses on the social and functional aspects of urban spaces, aiming to create attractive communal areas. People are the priority of public spaces.

<b>CPTED Principle</b>	<b>Shared Attribute</b>
<b>1. Natural Surveillance</b>	<b>The Ground-Floor Facade (Transparency)</b>
	<b>Sightlines and Views</b>
	<b>Lighting</b>
<b>2. Territorial</b>	<b>Material/Pavement Change</b>
	<b>Street Furniture (Benches, Planters)</b>
<b>3. Natural Access Control</b>	<b>Threshold Spaces (Steps, Ramps)</b>
<b>4. Maintenance</b>	<b>Maintenance</b>
<b>5. Activity support</b>	<b>The Ground-Floor Facade (Activity)</b>

These attributes are related to the various exhibition types, considering the level of preservation necessary for each level of authenticity. Linking these principles with the authenticity levels provides many options, for example, a threshold space can take many forms, both interior and exterior. The following matrix is intended as a framework. This is further explored by design.

<b>CPTED Factor</b>	<b>Shared Attribute</b>	<b>Objective (Repository)</b>	<b>Constructed (Exhibition)</b>	<b>Symbolic (Atelier)</b>	<b>Existential (Workshop)</b>
1. Natural Surveillance	The Ground-Floor Facade (Transparency)	High security glazing, but mostly a blind facade.	Transparency to expose temporary displays; views focused on flow monitoring.	Transparency to connect interior activity with public street life.	Physical & Visual Porosity to display activities as well as objects.
	Sightlines and Views	Sightlines from staff (reception) towards the entrance point.	Clear view of the entrance point.	View from social spaces towards exhibitions.	Inward-looking to showcase activities to passersby, generating passive social control.
	Lighting	Low ambient light for preservation	Promotional lighting to highlight objects.	Lighting that encourages use and linger	Considerate lighting for activities, enhancing visibility from the outside as well.
2. Territorial	Material/Pavement Change	Clear territorial boundary due to material change	More subtle material change (e.g. different colour or pattern)	Using a material change to foster comfort.	Similar floor materials to the exterior space to minimize the boundary.
	Street Furniture (Benches, Planters)	No furniture to prevent obstruction of surveillance and access paths.	Fixed furniture for visitors to gather.	Flexible seating encouraging "ownership."	Modular, functional furniture. At the entrance, it should be inviting.
3. Natural Access Control	Threshold Spaces (Steps, Ramps)	High threshold with security.	Clear entrance point with low threshold, but with fixed border (ticket sale)	Create a low threshold to encourage spontaneous entry.	Create a low threshold to encourage spontaneous entry.
4. Maintenance	Maintenance	Emphasizing cleanliness also makes preservation of the collection easier.	Emphasize cleanliness for aesthetic reasons.	Emphasize cleanliness for comfort.	Emphasize cleanliness for comfort.
5. Activity support	The Ground-Floor Facade (Activity)	No direct relation between the collections and the activities on the exterior.	Temporary exhibitions can be displayed close to the facade to promote heritage collections.	Exhibitions with durable materials can be outside. Atelier-related activities can be visible from the outside	The workshop can be directly next to the facade to encourage activities.

## Conclusion

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This project explores how the KB can enhance public engagement with its collections on-site amid significant developments, including the relocation of its entire physical collection to an off-site repository and the departure of other cultural institutions from its building. These changes, driven by trends in digitalization, raise questions about the KB's role as part of a cultural centre within The Hague.

While digital access to collections expands the KB's reach, it simultaneously risks reducing spontaneous and informal physical interactions with heritage materials, essential for maintaining the library's identity and social relevance. Although beneficial for preservation and sustainability, the move to an off-site automated repository in Delft further distances the public from direct contact with the KB's physical collections. This project should prioritize the presence of physical heritage materials.

Moreover, KB's current architectural and urban setting contributes to its limited visibility and accessibility. Its introverted building design, characterized by closed facades and a lack of transparency, hinders spontaneous encounters with the KB's services and collections. Enhancing KB's integration into the urban fabric through architectural and programmatic interventions could increase public awareness and encourage informal visits, thus revitalizing its presence as the cultural centre of Dutch heritage.

Regarding exhibition strategies, this paper identified various display approaches that balance authenticity, preservation needs, and visitor experience. Implementing these display methods has the potential to create inviting environments that promote spontaneous interaction with the KB's heritage collections. While the other levels of authenticity are abstracted versions of the original artifacts/books, they each add value to the visitors' experience: Facsimiles allow for a multisensory experience, artistic impressions add an additional narrative, and workshops enable

hands-on learning. The latter two exhibition types can connect the new KB with the urban area as they require fewer preservation methods, which allows for more transparency. By separating these public functions from street level, the new design will not disrupt the existing urban movement but will even strengthen it.

The design of the different exhibition spaces (original materials, facsimiles, artistic impressions, and workshops) follows a framework that simultaneously considers security (Newman) and human-centred perspectives (Gehl). The resulting aspects are used as design principles and further explored by design.

## Discussion

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While this research highlights the importance of increasing physical engagement within a library, the KB is not just a public or research library. One of the aims of a national library is indeed to encourage awareness of its heritage collections, but it should not be at the expense of its primary goal: preservation of those collections. Whether the KB should be affiliated with the goal of serving as many visitors as possible is debatable. However, with the physical collection relocated, it is possible to focus on both preservation and the promotion of accessibility without these goals interfering with one another. Moreover, the KB, as a national library, can be seen as a leading institution in Dutch libraries and heritage, which might encourage the use of the new building to display Dutch heritage.

The doubt whether the KB should even become more open to the public also solicits the question of whether physical browsability, especially in the reading room, should be prioritized. The physical collections being off-site seems like a drastic change in their availability, but currently, they already need to be reserved to view them. In the later stage of this project, this needs to be realized in order to prioritize conceptual design choices.

This research could be expanded through case studies on architectural security and porosity, which could reveal more specific design principles for the symbolic and existential authenticities.

## Bibliography

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- Aliyusif, M., & Nadir, I. (2023). National Libraries: Typology, Main Functions and Modern Directions of Development. *GRANI*, 26(1), 15-20. doi:<https://doi.org/10.15421/172302>
- ANP. (2025, January 24). National library moves 121 km of collections to high-tech facility in Delft. *NL Times*. Retrieved from <https://nltimes.nl/2025/01/24/national-library-moves-121-km-collections-high-tech-facility-delft>
- Ballegoie, M. v., & Borie, J. (2020). Inside-Out and Outside-In: A Holistic Approach to Metadata Assessment for an Off-Site Storage Collection. *The Serials Librarian*, 78, 86-92. doi:10.1080/0361526X.2020.1697600
- Blueyard, Zeewaardig & Cultural Policy of The Hague's Municipality. (2023). *Cultuurvisie Den Haag 2033*. Education, Culture and Wellbeing. The Hague: Municipality of The Hague.
- Boersma, F. (n.d.). *The new book repository: sustainable and safe*. Retrieved May 13, 2025, from KB: <https://www.kb.nl/en/about-us/subjects/new-book-repository/sustainable-safe>
- Boersma, F., Martens, M., Ankersmit, B., & Stappers, M. (2022). A Robotic Storage Facility for the Dutch National Library Collections. *Studies in Conservation*, 67(1), 32-39. doi:10.1080/00393630.2022.2045420
- Bridegam, W. E. (2001, June). *A Collaborative Approach to Collection Storage: The Five-College Library Depository*. Washington, D.C.: Council on Library and Information Resources.
- Chaliakopoulos, A. (2021, february 13). The Pre-Modern Museum: What Is A Cabinet Of Curiosities? *The Collector*. Retrieved from <https://www.thecollector.com/cabinet-of-curiosities-museum-wunderkammer/>
- Chhabra, D. (2005). Defining Authenticity and Its Determinants: Toward an Authenticity Flow Model. *Travel Research*, 44, 64-73. doi:DOI: 10.1177/0047287505276592
- Dowson, T. (2025, February 20). *Lascaux II – the First Lascaux Replica*. Retrieved from Archaeology Travel: <https://archaeology-travel.com/france/lascaux-ii/#:~:text=Because%20of%20the%20damage%20caused,to%20the%20public%20in%201983.>
- Eekman, S., & Rotteveel, A.-K. (n.d.). *Rapportage impact project Makerlab*. The Hague: KB.
- Fairley, G. (2023, May 29). New trends in visible storage in museums. *Artshub*. Retrieved from <https://www.artshub.co.uk/news/features/new-trends-in-visible-storage-in-museums-2609045/>
- Grillo, R., Morelli, C., Rubano, V., & Vitali, F. (2023, May 26). A methodology for enhancing the accessibility of scientific museum's collections. *Extended Intelligence for Cultural Engagement (ExICE)*. doi:<https://doi.org/10.5281/zenodo.7973646>

- Groskopf, C. (2022, July 21). Museums are keeping a ton of the world's most famous art locked away in storage. *Quartz*. Retrieved from <https://qz.com/583354/why-is-so-much-of-the-worlds-great-art-in-storage>
- Hazen, D. (2000). Selecting for Storage: Local Problems, Local Responses, and an Emerging Common Challenge. *LRTS*, 44(4), 176-183.
- Hees, C. v. (2018). Verborgen schatten. *Depot Journaal 01*. (T. Somers, Interviewer) Rotterdam: Museum Boijmans van Beuningen.
- Hirsch, J., & Gallagher, C. (2024). Defensible Collections: Designing a Safe Exhibit Space. *Collections: A Journal for Museum and Archives Professionals*, 1–21. doi:doi/10.1177/15501906241234039
- Hoogstraten, D. v., Reeken, J. v., & Uljee, J. (2007). *Bedachtzame Dynamiek: Het Gebouw van de Koninklijke Bibliotheek 1982-2007*. Rotterdam: NAI Uitgevers.
- Huis van het Boek. (2026, January 9). *Het Oudste Boekenmuseum ter Wereld*. Retrieved from Huis van het Boek: <https://www.huisvanhetboek.nl/over-het-museum>
- Hurtado, M. F. (2018, January). Opening-up Storage: Collection Access as Public Programming.
- KB. (2025, March 18). *De KB in 2024: grote stappen in leesbevordering en data-onderzoek*. Retrieved from kb: <https://www.kb.nl/nieuws/kb-in-2024-grote-stappen-in-leesbevordering-en-data-onderzoek>
- Kisters, S. (2018, November). De collectie is van iedereen. *Depot Journaal 02*. (T. Somers, Interviewer) Rotterdam: Museum Boijmans van Beuningen.
- Kossmanndejong. (n.d.). *Legacy of The Netherlands*. Retrieved June 24, 2025, from [kossmanndejong.nl](http://kossmanndejong.nl): <http://kossmanndejong.nl/project/the-legacy-of-the-netherlands/>
- Lushington, N., Rudolf, W., & Wong, L. (2016). *Libraries – A Design Manual*. Birkhäuser. doi:<https://doi.org/10.1515/9783038216308>
- Martens, M. (2025, February 20). Het nieuwe boekenmagazijn van de KB. The Hague: KB.
- McCaffrey, C. (2021). 14 - Planning and implementing an automated storage and retrieval system at the University of Limerick. In J. Atkinson, *Technology, Change and the Academic Library: Case Studies, Trends and Reflections* (pp. 143-150). Cambridge, Kidlington: Chandos Publishing. doi:<https://doi.org/10.1016/B978-0-12-822807-4.00014-2>
- Municipality of The Hague. (2024). *Voorstel van het college inzake Ontwikkelvisie Den Haag Centraal*. The Hague. Retrieved from [www.denhaag.nl](http://www.denhaag.nl)
- Municipality of Utrecht. (2023, March 17). *Literatuurmuseum/Kinderboekenmuseum welkom in Utrecht*. Retrieved June 25, 2025, from [utrecht.nl](http://utrecht.nl): [Literatuurmuseum/Kinderboekenmuseum welkom in Utrecht](http://utrecht.nl)

- Museum Boijmans van Beuningen. (n.d.). *Over het Depot*. Retrieved June 24, 2025, from boijmans.nl:  
<https://www.boijmans.nl/depot/over-het-depot>
- Museum Boijmans van Beuningen. (n.d.). *What can you expect during your visit?* Retrieved June 24, 2025, from Boijmans.nl:  
<https://www.boijmans.nl/en/what-is-there-to-see>
- Niens, M. (2018, November). In de kleinste diameter van het depot moet alle belasting van het gebouw worden opgevangen. *Depot Journaal 02*. (T. Somers, Interviewer) Rotterdam: Museum Boijmans van Beuningen.
- O'Connor, S., Wells, A., & Collier, M. (2001, June). A Study of Collaborative Storage of Library Resources. *Library Hi Tech*, 20(3). doi:10.1108/07378830210444469
- Parka, E., Choi, B.-K., & Lee, T. J. (2019). The role and dimensions of authenticity in heritage tourism. *Tourism Management*, 74, 99-109. doi:<https://doi.org/10.1016/j.tourman.2019.03.001>
- Payne, L. (2007, October). Library Storage Facilities and the Future of Print Collections in North America. Retrieved from [www.oclc.org/programs/publications/reports/2007-01.pdf](http://www.oclc.org/programs/publications/reports/2007-01.pdf)
- Pop, C., & Mailat, G. (2011, April). Automated material handling systems (AMHS) in libraries and archives: automated storage/retrieval and return/sorting systems. Retrieved from <https://www.researchgate.net/publication/229021992>
- Priddle, C., & McCann, L. (2015). Off-Site Storage and Special Collections: A Study in Use and Impact in ARL Libraries in the United States. *College & Research Libraries*, 76(5), 652-670. doi:10.5860/crl.76.5.652
- Riley, J. D. (2012). Forward Into the Past-Offsite Book Depositories: The Future of Libraries. *Against the Grain*, 24(3), Article 10. doi:<https://doi.org/10.7771/2380-176X.6269>
- Shenton, H. (2005). Strategic Developments in Collection Storage of Libraries and Archives - Architectural, Technical, Political. *Liber Quarterly*, 15(3/4), 200-213. doi:<https://doi.org/10.18352/lq.7818>
- Sociaal en Cultureel Planbureau. (2025, Februari 13). *Digitalisering als uitdaging voor sociale samenhang in de toekomst*. Retrieved from scp:  
<https://www.scp.nl/actueel/nieuws/2025/02/13/digitalisering-als-uitdaging-voor-sociale-samenhang-in-de-toekomst>
- Vattulainen, P. (2004). National repository initiatives in Europe. *Library Collections, Acquisitions, & Technical Services*, 28, 39-50. doi:10.1016/j.lcats.2003.11.006
- Vervaet, C. (2018). *Het Depot Boijmans van Beuningen in Rotterdam*. Gent: Universiteit Gent.
- Wandelt, A., & Schmidt-Lux, T. (2022). Infinite Expansion, Unlimited Access, Encompassing Comfort: An Analysis of the Effects of Digitalization in Libraries after 1995. *Historical Social Research*, 47(3), 202-230. doi:<https://doi.org/10.12759/hsr.47.2022.31>
- Zaucha, T. (2022). Depot. New Storage Facility at the Museum Boijmans van Beuningen in Rotterdam. *Muz.*, 63, 25-35. doi:10.5604/01.3001.0015.8757