

Architectural History Thesis: Rotterdam's shifting street experiences

1925



1946

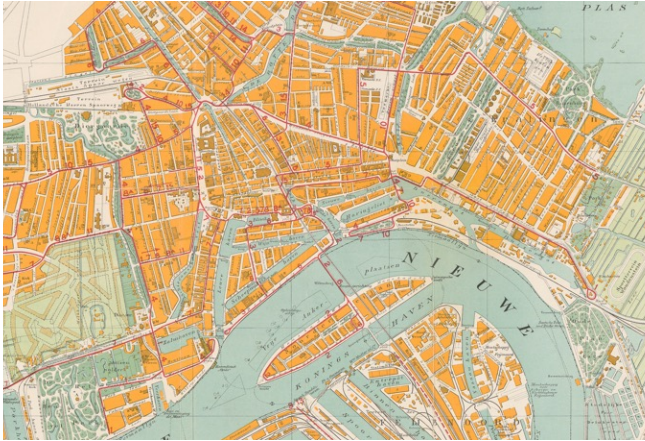


Figure 1: Map of Rotterdam in 1925 (pre war)



Figure 2: Map of Rotterdam in 1946 (reconstruction plan)

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Introduction

Subject Description

This thesis examines the transformation of Rotterdam's commercial spaces during the post-war reconstruction period, with a specific focus on the years 1940-1955. The research will analyse the architectural and spatial innovations that defined the city's retail spaces and how they reshaped urban behaviour and public interaction. The study centres on two case studies: the Lijnbaan, the first modern pedestrian shopping street in Europe, and the Groothandelsgebouw, a multifunctional wholesale trade centre. By exploring the intersection of retail, public spaces and architecture, this research highlights how these developments contributed to Rotterdam's economic recovery and urban socio-spatial identity in the aftermath of World War II.

What this study adds to existing research is a focused analysis of the interplay between spatial form and socio-economic function. While previous literature often treats architecture and economic recovery separately, this thesis bridges them, showing how built space shaped both civic identity and commercial vitality in post-war Rotterdam.

Research Question

How did the architectural realisation and use of commercial spaces, particularly retail spaces, in Rotterdam during the post-war reconstruction period (1940-1955) differ from the pre-war era. More specifically, how did innovations in spatial design, the interplay between retail and public spaces, and these changes, impact social behaviour and economic recovery, as exemplified by the two case studies, the Groothandelsgebouw and the Lijnbaan?

Structure

The research is organised into three main chapters, each addressing a specific aspect of Rotterdam's post-war commercial transformation:

Introduction

This chapter introduces the research question, outlines the context and significance of the study, and presents the structure of the thesis.

1. Interplay Between Retail and Public Spaces

Analyses the transition from traditional mixed-use commercial designs to post-war functionalist planning, focusing on pedestrianisation, spatial separation, and the emergence of purpose-built retail areas.

2. Architectural Principles and Innovations

Explores the architectural principles of modernist urban planning and examines the case studies of the Lijnbaan and Groothandelsgebouw to highlight spatial innovations that influenced retail and public space dynamics.

3. Impact on Consumer Behaviour and Economic Recovery

Investigates the economic impact of new retail layouts on consumer behaviour, urban interaction, and the broader role of public spaces in fostering community engagement and shaping Rotterdam's urban identity.

Conclusion

Summarises the findings and key elements, the research paper, contributes to the public knowledge about the post-war urban transformations in Rotterdam.

Research Method

This research employs both primary and secondary sources to examine the transformation of Rotterdam's commercial spaces and their social impacts. A comparative historical method is used to analyse urban planning and architectural development before and after the war, focusing on the strategies and principles that shaped the city's commercial landscape.

Primary Sources:

Architectural Design and Planning Documentation:

Key materials related to the design and planning of the Lijnbaan and Groothandelsgebouw are examined to understand the vision behind these developments and the architectural decisions that influenced them.

Government Reports and Public Space Development Plans:

City government reports related to economic development and public space planning provide valuable insights into the broader socio-economic context of the post-war reconstruction period, shedding light on the impact of urban redevelopment on both local businesses and residents.

Secondary Sources:

Academic Research and Theoretical Frameworks:

Scholarly work on post-war urban reconstruction, modernist planning principles, and the role of public spaces in shaping social interactions and behaviours in cities inform the analysis. These sources explore the influence of modernist ideals on urban life and the impact of new architectural practices on the public's engagement with commercial spaces.

Other Research Methods:

Visual Analysis:

Historical images, maps, and architectural drawings are analysed to understand how the design of commercial and public spaces shaped the urban environment. This visual data complements textual research by offering insight into the physical experience of the spaces in question.

Comparative Case Study Approach:

A case study methodology allows for a deeper understanding of how the Lijnbaan and Groothandelsgebouw both represented a departure from traditional urban forms. Qualitative data sources are used to explore how these developments impacted social behavior and urban interaction, with a particular focus on changes in consumer habits and the evolution of urban identity.

Literature Overview & Annotated Bibliography

Disclaimer:

Due to language differences in the source material consulted during this research, OpenAI's ChatGPT was used to assist with translations into English.

Primary Source (Archive)

- TIJX Tijen, W. van (Willem). Collection from the Nieuwe Instituut. (TIJX.110304691, TIJXph25-27.3, TIJXd14)
- MAAX Maaskant, HA (Huig Aart). Collection from the Nieuwe Instituut. (MAAX597.1-2)
- BROX Architectural firm Van den Broek and Bakema. Collection from the Nieuwe Instituut. (BROX.110412966, BROX907t1-73, BROX907r1-6, BROXmf907, BROXop244-245, BROXop265)
- Stadsarchief Rotterdam (I-187-01 / I-215-1A / PBK-497 / I-215 / L-6215 / L-1228 / PBK-2005-751 / 2004-5889-1-TM-3 / 105 / FL-76)

Online Article:

- Blok F. (2020). The Reconstruction of Rotterdam Revised. 3develop. url: <https://www.3develop.nl/blog/the-reconstruction-of-rotterdam-revised/>
- Wederopbouw Rotterdam. The Basic Plan by Van Traa. Platform Wederopbouw Rotterdam. url: <https://wederopbouwrotterdam.nl/en/articles/basic-plan-van-traa>
- Wederopbouw Rotterdam. Plan Witteveen, the first reconstruction plan. Platform Wederopbouw Rotterdam. url: <https://wederopbouwrotterdam.nl/en/articles/plan-witteveen>
- Wederopbouw Rotterdam. Groothandelsgebouw. Platform Wederopbouw Rotterdam. url: <https://wederopbouwrotterdam.nl/en/articles/groothandelsgebouw>
- Laar, P. v. d. (1998). Reconstruction, regeneration and re-imaging: The case of Rotterdam. *Cities*, 15(5), (pp. 337–344)

Book:

- Vanstiphout, W. (2005). Making Rotterdam: The reconstruction of a city. nai010. (pp. 13–19, 122-139, 152-161).
- Blom, A., Vermaat, S., & de Vries, B. (2016). Post-war reconstruction in the Netherlands 1945–1965: The future of a bright and brutal heritage. nai010. (pp. 5-15, 28-37, 44-51, 164-175).
- van Es, E., Hein, C., van Bergeijk, H. (2019). Van den Broek & Bakema: Vigorous protagonists of a functionalist architecture at the TH Delft. TU Delft Open. (pp. 9-86).
- van Ulzen, P., & Halbertsma, M. (2001). Interbellum Rotterdam: Art and culture 1918–1940. NAI. (pp. 8-11)
- Boyer, M. C. (1994). The city of collective memory: Its historical imagery and architectural entertainments. MIT Press. (pp. to be checked)
- Diefendorf, J. M. (1990). Rebuilding Europe's bombed cities – Chapter: The Lijnbaan (Rotterdam): a Prototype of a Postwar Urban Shopping Centre. Macmillan. (pp. 145-154)
- van den Heuvel, D. (2017). Commercial Collectivity and the Architecture of the Shopping Centre 1945–1975 – Chapter: The Lijnbaan in Rotterdam: A sound urban form against city disruption. Bloomsbury Academic. (pp. 65-78)
- Zijlstra, H. (2002). Het unieke Groothandelsgebouw in Rotterdam. Monumenten. (pp. 7-11)
- Groenendijk, P., Vollaard, P. (2021). Rotterdam Architecture City. nai010.
- Public Relations Office of the Municipality of Rotterdam. (1967). Rotterdam's new heart: Modern reconstruction, rapid growth. Rotterdam City Hall. (Stadsarchief Rotterdam - G000040824)
- Burns, L. S. (1935). Investment time scheduling in urban reconstruction: A quantitative study of the reconstruction of Rotterdam. Pasman Printing House. (Stadsarchief Rotterdam - G000030848)
- Maaskant, H. (2016). Hugh Maaskant: Architect of progress. In Hugh Maaskant, Architect of Progress. nai010. (pp. 9-21, 67-128, 383-419)
- Wagenaar, C. (1993). Welvaartsstad in wording: De wederopbouw van Rotterdam, 1940-1952. Groningen: s.n
- Runyon, D. (1969). An analysis of the rebuilding of Rotterdam after the bombing on May 14, 1940. University of Wisconsin (pp. 86-107)
- Nientied, P. (2018). Hybrid Urban Identity—The Case of Rotterdam. Scientific Research Publishing. (pp. 152–173)
- Aarts, M. (Ed.). (1995). Vijftig jaar Wederopbouw Rotterdam. Een Geschiedenis van Toekomstvisies. Bloomsbury. (pp. 65-77)

Images:

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- Figure 5: Collection from the Nieuwe Instituut - (BROX907t4)
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- Figure 7: Stadsarchief Rotterdam - (L-6215 Overview of the Lijnbaan with Lijnbaan flats on the left. In the foreground shops of Schröder and Spruyt van Rietschoten. The name ' Lijnbaan ' is in the foreground on a canopy)
- Figure 8: Stadsarchief Rotterdam - (L-1228 People shopping in the Lijnbaan . On the left a Schürmann shop, on the right shops of Au bon Gout, jeweler Lucardie, linen store Frankenhuis. In the background the town hall)
- Figure 9: Stadsarchief Rotterdam - (PBK-2005-751 Overview of the Groothandelsgebouw . In the foreground the Weena and in the background the railways)
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- Figure 11: Collection from the Nieuwe Instituut - (TIJXd14)
- Figure 12: Stadsarchief Rotterdam - (FL-76 Shoppers on the Lijnbaan)
- Figure 13: Groothandelsgebouw - (<https://ghg.nl/new-page/>)
- Figure 14: Stadsarchief Rotterdam - (105 Rotterdam during the Corona pandemic. The Lijnbaan is deserted)

Chapter One: Interplay Between Retail and Public Spaces

1.1 Transition from Traditional Mixed-Use Designs to Post-War Functionalist Planning

Pre-War Urban Structure and Mixed-Use Streets

Before the devastation caused by the German bombing of Rotterdam on May 14, 1940, the city's urban structure was characterised by a dense network of mixed-use streets. These streets housed small, individually owned retail shops interlinked with residential buildings, creating a vibrant commercial and social environment. Rotterdam's economic heart was built on narrow streets with vibrant markets, pedestrian-friendly commercial corridors, and mixed residential-retail blocks. This arrangement encouraged social interactions between residents and retailers, fostering strong community bonds and a sense of neighbourhood identity.



Figure 3: A typical mixed use street in Rotterdam pre-war

The pre-war cityscape was marked by key shopping streets such as Hoogstraat, Meent, and Coolasingel, exemplifying the European tradition of integrating commerce and living spaces. Following the destruction of these areas, early reconstruction efforts were guided by W.G. Witteveen, who drafted the first reconstruction plan in 1940 (Plan Witteveen). His approach sought to restore the city's pre-war organic layout with minor modern adjustments. However, as the scale of destruction became apparent, the municipal government initiated a more radical planning process, leading to the appointment of Cornelis van Traa as the chief urban planner in 1944. His approach was a departure from Witteveen's traditionalist vision, embracing modernist planning principles inspired by CIAM (Congrès Internationaux d'Architecture Moderne).

Post-War Functionalist Planning and the Shift to Zoning

Van Traa's Basisplan (1946) became the defining blueprint for Rotterdam's reconstruction, introducing a functionalist approach that emphasized zoning, efficiency, and traffic control. Unlike Witteveen's plan, which sought to repair and enhance the pre-war urban fabric, Van Traa envisioned a city with distinct functional zones: a central business district, peripheral residential areas, and dedicated traffic corridors. His plan aimed to optimize economic activity while accommodating growing demands for vehicular mobility, reflecting broader shifts in post-war urban planning influenced by both European modernism and American traffic engineering principles.



Figure 1: Map of Rotterdam in 1925 (pre war)



Figure 2: Map of Rotterdam in 1946 (reconstruction plan)

This transformation was not only the work of Van Traa. The reconstruction effort was overseen by the Wederopbouw Committee, in which key figures such as Gijsbert van der Leeuw played a central role. As the city's alderman for public works, Van der Leeuw was instrumental in securing support for Van Traa's Basisplan and coordinating with architects like Jo van den Broek and Jaap Bakema, who contributed significantly to the execution of the new urban vision. These architects, working within the office of Van den Broek & Bakema, were strong advocates of functionalist planning, promoting clearly dedicated zones for commerce, housing, and infrastructure.

A crucial aspect of this planning strategy was the introduction of large-scale commercial structures to replace the fragmented pre-war retail fabric. The Groothandelsgebouw (1953) and the Lijnbaan (1953) were key projects that embodied this shift. The Groothandelsgebouw consolidated wholesale trade into a single, multifunctional business centre, while the Lijnbaan became Europe's first pedestrian-only shopping street, marking a radical departure from traditional mixed-use streets. These projects underscored the functionalist principle of spatial separation, prioritizing commercial efficiency over the organic integration of retail and residential spaces.

1.2 Pedestrianization and Separation of Commercial and Public Zones in Post-War Developments

Influence of the United States and Traffic Control

One of the most defining aspects of post-war Rotterdam's reconstruction was its focus on traffic control and pedestrianization, heavily influenced by urban developments in the United States. The modernist vision embraced by Van Traa, Van den Broek, and Bakema drew inspiration from American urban planning models, where the separation of pedestrian and vehicular traffic was seen as a solution to urban congestion and commercial efficiency. The American experience with post-war suburbanization and downtown renewal provided valuable insights into managing increasing traffic volumes while maintaining commercial accessibility.

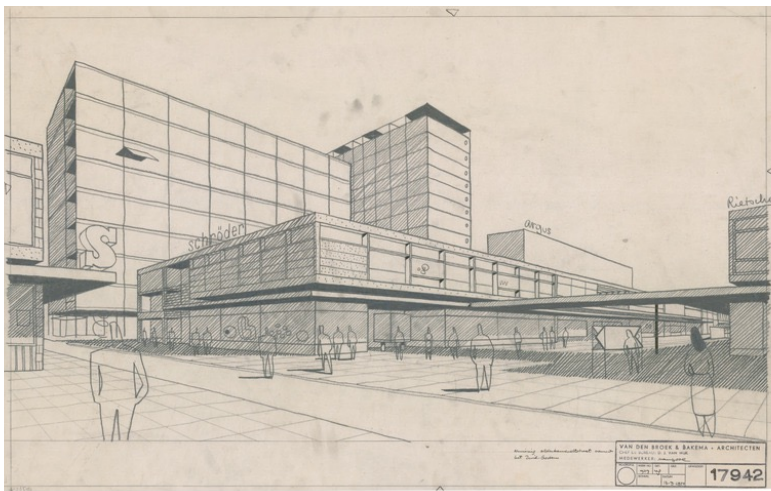


Figure 4: American influence on new design approaches

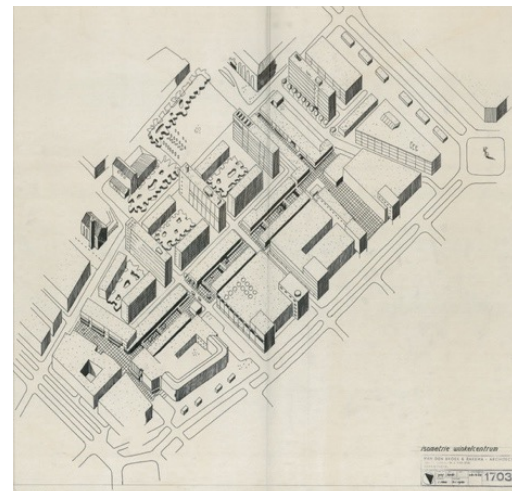


Figure 5: American influence on traffic and zone planning

At the core of this transformation was the idea of functional zoning: designing distinct spaces for retail, business, and public use while ensuring efficient transportation. Rotterdam's planners restructured the city centre to prioritize car mobility without compromising commercial and pedestrian activity. Wide boulevards, multi-lane arterial roads, and ring roads were introduced to facilitate smooth traffic flow and prevent congestion in the central areas. At the same time, new commercial spaces were carefully designed to integrate with this modernized transport network, balancing pedestrian accessibility with car-friendly infrastructure. Inspired by American business districts like those in Chicago and New York, Rotterdam adopted a dual approach that accommodated both automobile expansion and retail modernization. Underground parking garages and designated access points reinforced this strategy, ensuring that commercial zones remained both attractive and easily reachable.

Two key developments, the Lijnbaan and the Groothandelsgebouw, embodied this shift and illustrate how post-war urban planning in Rotterdam incorporated American influences. The Lijnbaan was a pioneering experiment in pedestrian-only shopping, reflecting the principles of American suburban retail centres while adapting them to a dense urban context. In contrast, the Groothandelsgebouw represented a different body of commercial modernism, centralizing business activities and integrating vertical access in a manner influenced by American wholesale and office complexes. Together, these projects reshaped the interaction between commercial activity, traffic flow, and public space, marking a departure from pre-war urban patterns.

The Lijnbaan: A Pedestrian-Only Commercial Experiment

Opened in 1953 and designed by Van den Broek & Bakema, the Lijnbaan showcased modernist pedestrianization. Inspired by American shopping malls and retail precincts, it was conceived as a self-contained commercial district, free from vehicular traffic. Unlike traditional European shopping streets, which combined commerce with residential functions, the Lijnbaan was designed exclusively for retail activity, incorporating public squares, green spaces, and modernist storefronts to enhance the shopping experience.

The Lijnbaan was one of the first large-scale pedestrian-only retail zones in Europe, setting a precedent for later developments across the continent. It reflected the modernist belief in functional zoning, where each urban activity had a distinct, dedicated space. The wide walkways, standardized storefront designs, and open-air concept were direct adaptations of American shopping centers, particularly the suburban malls emerging in the United States during the 1940s and 1950s. However, while American malls were often enclosed and car-dependent, the Lijnbaan adapted this model to a dense urban fabric, ensuring accessibility while maintaining a distinct pedestrian environment.

The Groothandelsgebouw and the Specialization of Commercial Spaces

While the Lijnbaan prioritized pedestrian retail, the Groothandelsgebouw (1953) represented a new model for commercial specialization and vertical integration. Designed by Hugh Maaskant and Willem van Tijen, this massive structure centralized whole-sale trade into a single location, improving logistical efficiency and reducing the need for scattered retail shops across the city.

Unlike traditional retailer districts, which encouraged small-scale interactions between shopkeepers and customers, the Groothandelsgebouw was designed for business-to-business transactions, integrating offices, showrooms, and transport infrastructure. This approach reflected modernist principles of economic efficiency through centralized planning, a strategy that paralleled American commercial skyscrapers, where various business functions were consolidated into large multi-use complexes. The building was strategically positioned near Rotterdam's Central Station and major traffic arteries, ensuring seamless integration with the city's transport network. It featured multi-level vehicular access, service ramps, and dedicated loading zones, allowing commercial operations to function independently of pedestrian traffic.

Together, these developments illustrate how Rotterdam's post-war urban strategy balanced car mobility with pedestrian-oriented spaces. While the broader city layout was structured to accommodate automobiles, key commercial areas like the Lijnbaan and the Groothandelsgebouw introduced innovations in spatial design that redefined the relationship between retail, business, and public space. These transformations not only reflected American urban planning influences but also reshaped social behavior and urban interaction, setting new precedents for commercial environments in the modern European city.

Impact of Zoning on Public and Social Life

While Rotterdam's post-war zoning strategies modernized the city and improved economic efficiency, they also transformed social dynamics. The shift from mixed-use streets to compartmentalized zones reduced informal interactions between merchants and residents, altering the character of urban life. The pedestrianization of shopping areas like the Lijnbaan enhanced the retail experience but also created a more specialized and less community-oriented city centre.

Furthermore, the emphasis on traffic control and accessibility for automobiles led to the prioritization of commercial and business interests over traditional neighbourhood structures. The Groothandelsgebouw, with its focus on wholesale trade, symbolized this shift towards a more corporate and large-scale economic environment. These changes reflected Rotterdam's ambition to become a modern, functionally efficient metropolis, yet they also marked the decline of its pre-war, community-driven urban fabric.

Rotterdam's post-war reconstruction transformed its urban fabric through functionalist zoning, pedestrianization, and traffic control. The Lijnbaan and Groothandelsgebouw exemplified this shift, prioritizing economic efficiency and spatial separation. While these developments modernized the city, they also altered its social dynamics, offering key lessons for contemporary urban planning.

Chapter Two: Architectural Principles and Innovations

2.1 Principles of Modernist Urban Planning Influencing Post-War Commercial Developments

Key Principles of Modernist Urban Planning in Rotterdam's Reconstruction

The reconstruction of Rotterdam after World War II was deeply influenced by the principles of modernist urban planning, which emphasized functionality, efficiency, and the separation of urban zones. These principles were largely derived from the ideas of Le Corbusier, the Congrès Internationaux d'Architecture Moderne (CIAM), and Dutch structuralist thinkers. The core principles included:

- **Zoning and Functional Separation:** Dividing the city into distinct areas for living, working, commerce, and leisure to optimize urban efficiency.
- **Pedestrianization and Traffic Management:** Reducing vehicular congestion in central areas by prioritizing pedestrian-friendly streets.
- **Open Spaces and Green Areas:** Integrating parks and public spaces into urban design to enhance the quality of life.
- **Architectural Standardization and Prefabrication:** Utilizing modern construction techniques to rapidly rebuild and modernize city infrastructure.

Key Figures and Their Interconnections in Post-War Rotterdam

The reconstruction efforts in Rotterdam were shaped by several influential architects and urban planners, each contributing their distinct vision to the rebuilding process.

- **Cornelis van Traa (1890-1970):** As the chief urban planner, Van Traa was instrumental in developing the Basic Plan (1946), which laid the foundation for post-war Rotterdam. He envisioned a city that functioned efficiently by organizing its core activities into clearly defined zones.
- **Jo van den Broek (1898-1978) and Jaap Bakema (1914-1981):** Leading the firm Van den Broek & Bakema, they played a pivotal role in shaping the city's new commercial landscape. They championed modernist principles in their designs of the Lijnbaan shopping street and promoted pedestrian-friendly urban environments.
- **Lotte Stam-Beese (1903-1988):** A key figure in Rotterdam's urban planning department, Stam-Beese introduced social housing strategies that complemented the functionalist approach by ensuring the integration of residential areas within the broader city structure.
- **Hugh Maaskant (1907-1977) and Willem van Tijen (1894-1974):** Architects of the Groothandelsgebouw, they adopted modernist principles to create a large-scale, multifunctional commercial hub that embodied the economic aspirations of post-war Rotterdam.

These figures worked within overlapping spheres, often collaborating but also engaging in ideological debates regarding the extent of functional zoning versus integrated urban environments. The tension between Van Traa's strict zoning approach and the more socially integrated visions of architects like Stam-Beese reflected broader discussions in modernist urbanism.

The New Urban Structure of Rotterdam and Strategic Location Choices



Figure 6: The basic reconstruction plan of the inner city

The extensive bombing of Rotterdam on May 14, 1940, left the city's historic core in ruins. Entire neighbourhoods such as Cool, Laurenskwartier, and Zandstraatbuurt were obliterated, forcing planners to reimagine the city's layout. Van Traa's Basic Plan proposed a radical restructuring, transforming Rotterdam into a functional, modern city with clearly separated commercial, residential, and industrial zones. This approach sought to eliminate the chaotic pre-war urban form, where small shops and residences were interspersed throughout the streets.

The Lijnbaan was strategically placed in the heart of the new shopping district, west of the destroyed Laurenskwartier, to create a pedestrian-focused retail experience that aligned with modern consumer culture

The area was chosen for its centrality and accessibility, ensuring that shoppers could easily navigate the city without traffic congestion.

Similarly, the Groothandelsgebouw was built opposite to Rotterdam Central Station, at the site of the former Delftse Poort neighbourhood, to serve as a commercial hub. Its proximity to transport links facilitated easy distribution of goods and reinforced Rotterdam's role as a major trade centre. This placement reflected Maaskant's vision of integrating commerce with infrastructure, ensuring efficiency and economic resilience.

Public Reception and Controversies Surrounding the Zoning Plan

While the functionalist approach to zoning was praised for its efficiency and modernization, it was not without controversy. Many residents and small business owners lamented the loss of traditional mixed-use neighbourhoods, where daily life was more organically integrated. The strict separation of residential and commercial spaces led to concerns about the loss of street-level vibrancy and a sense of community. Some critics argued that the rigid functionalism lacked human-scale urbanism, making parts of the city feel impersonal and disconnected.

Additionally, the relocation of residential areas to separate districts such as Pendrecht and Ommoord meant that inner-city life became more business-oriented, reducing the presence of local communities in the commercial core. While Rotterdam's government defended the approach as necessary for economic recovery and modernization, debates over urban liveability and mixed-use development persisted well into later decades.

2.2 Innovation in Spatial Design and the Interplay Between Retail and Public Spaces: Case Studies on Lijnbaan & Groothandelsgebouw

Lijnbaan: Reinventing the Retail Experience



Figure 7: Overview of the Lijnbaan



Figure 8: The Lijnbaan in use

Concept and Planning

Designed by Van den Broek & Bakema and completed in 1953, the Lijnbaan became Europe's first pedestrian-only shopping street, a ground breaking departure from traditional retail environments. Before World War II, Rotterdam's shopping streets were typically mixed-use, where commercial activities were integrated into residential areas, as exemplified by Hoogstraat and Meent. These pre-war retail zones were characterized by narrow, crowded streets where pedestrians shared space with vehicles, creating a chaotic environment. The Lijnbaan, however, represented a deliberate spatial innovation by creating a dedicated, vehicular-free commercial zone, consciously separated from residential areas, where pedestrian movement was prioritized over vehicular traffic.

This design marked a significant shift from the fragmented and congested pre-war urban fabric to a highly organized, business-focused, and consumer-oriented space. Van den Broek & Bakema's vision was not to create a traditional social street where daily urban life unfolded naturally, but rather to optimize retail efficiency. Unlike older shopping streets that supported a mix of commerce and living, the Lijnbaan was purely commercial, with no residential function integrated into its structure.

1. Pedestrianized Boulevard: A Space for Commercial Efficiency

The Lijnbaan's defining feature was its wide, car-free boulevard, designed to maximize consumer accessibility and intensify retail activity. By eliminating vehicular traffic, shoppers could move freely and efficiently between stores, fostering a more streamlined and immersive commercial experience. The design mirrored elements of American suburban shopping centres, particularly their emphasis on pedestrian comfort and retail convenience.

Consumer Behaviour and Social Interaction: While the Lijnbaan's pedestrianization facilitated concentrated foot traffic and intensified retail interactions, its social dimension was largely confined to business hours. Unlike traditional European shopping streets, which were embedded in mixed-use neighbourhoods and supported continuous urban life, the Lijnbaan became a consumer-driven zone, bustling with activity during store hours but devoid of vitality after closing time. Without residential integration, nightlife, or significant secondary functions, the space transformed into a ghost street in the evenings, emphasizing its role as a transactional rather than a socially inclusive space.

2. Spatial Hierarchy and Commercial Specialization

Unlike Rotterdam's pre-war retail districts, where shops were interwoven with residential life and smaller businesses, the Lijnbaan introduced a clear commercial hierarchy. Main retail avenues were lined with large storefronts designed for major retailers, while secondary commercial streets accommodated smaller businesses. The layout ensured a structured, efficient shopping flow, guiding consumers through a planned commercial circuit rather than a naturally evolving urban space.

Economic Impact and Retail Optimization: The Lijnbaan became a central driver of Rotterdam's post-war economic recovery. The pedestrian-friendly environment encouraged prolonged shopping visits, increasing consumer spending and reinforcing the city's position as a retail hub. However, this economic success came at the expense of a more organic social dynamic. Unlike traditional urban shopping streets, which remained vibrant due to their integration with residential life, the Lijnbaan functioned as a daytime retail machine, with limited interaction beyond commercial transactions.

3. Public Plazas and Green Spaces: Aesthetic Additions Rather Than Social Anchors

The integration of open public plazas and green areas was intended to enhance the visitor experience by making the shopping district more inviting. However, these spaces primarily served as aesthetic complements to the retail environment rather than true centres of social life. Unlike older European city squares, which were naturally occupied throughout the day and night by a mix of residents, workers, and visitors, the plazas in the Lijnbaan were only animated during business hours.

Limited Social Function Outside Retail Hours: While these open spaces allowed for brief pauses in the shopping experience and occasional public events, they did not foster continuous urban interaction. Once stores closed, the absence of residential or cultural functions left the area largely deserted, reinforcing the Lijnbaan's identity as a commercial corridor rather than a vibrant, lived-in urban street.

The Lijnbaan's design was a radical departure from Rotterdam's pre-war mixed-use urban fabric, prioritizing commercial efficiency over social continuity. Its pedestrianization intensified consumer experiences and maximized daytime retail engagement but did not establish a lasting social function beyond business operations. Unlike traditional shopping streets, which were embedded in the daily life of residents, the Lijnbaan became a transactional space—one that thrived during store hours but became lifeless after closing time. This shift exemplifies how post-war urban planning, influenced by American retail models, reshaped the relationship between public space and commercial activity, placing economic function over continuous urban interaction.

Groothandelsgebouw: A Monument to Economic Recovery

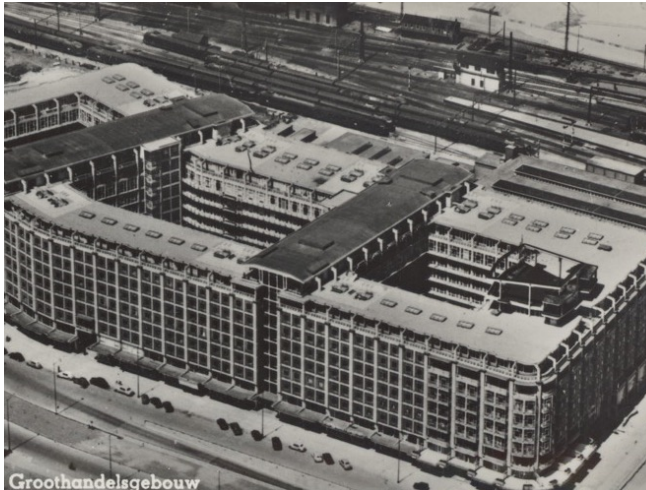


Figure 9: Overview of the Groothandelsgebouw in use



Figure 10: The Groothandelsgebouw in use

Concept and Planning

The Groothandelsgebouw, also completed in 1953, was designed by Hugh Maaskant and Willem van Tijen as a multifunctional wholesale trade center aimed at supporting Rotterdam's economic recovery after the war. The pre-war Rotterdam was primarily characterized by fragmented and inefficient commercial spaces, where business operations were scattered across the city in small, disconnected buildings. The Groothandelsgebouw, in contrast, represented a spatial innovation by creating a centralized, highly organized structure that integrated multiple commercial functions—offices, wholesale trade, showrooms, and storage—within a single building. This innovative approach reflected the post-war need for greater efficiency and adaptability in urban commercial spaces.

1. Vertical Integration of Functions:

The building's large, rectangular form accommodated a wide range of commercial activities, stacked vertically to maximize the use of space. The separation of different functions, offices, trade areas, and storage, within a single structure was a novel approach compared to the pre-war fragmented office and commercial layouts, which often required separate buildings for each function.

Economic Impact/Recovery - The Groothandelsgebouw played a key role in Rotterdam's economic revival by consolidating business activities within one large, efficient space. Its multi-functional design allowed businesses to operate with greater ease and synergy, reducing logistical barriers and promoting commerce. By centralizing operations, the building helped to streamline business activities and boosted the overall economic efficiency of Rotterdam's wholesale trade sector during a critical time of reconstruction.

2. Direct Transport Accessibility:

The Groothandelsgebouw's design incorporated internal ramps, loading docks, and corridors specifically dedicated to the movement of goods. This feature ensured that commercial activities could operate seamlessly, with minimal disruption to other functions within the building. Pre-war commercial spaces lacked such internal logistics systems, making the movement of goods more cumbersome and inefficient.

Economic Impact/Recovery - By providing efficient transport access within the building, the Groothandelsgebouw facilitated smoother trade flows, reduced operational costs, and enhanced business productivity. These efficiencies were crucial for Rotterdam's economic recovery, as they allowed the city to better serve the needs of its international trading partners and reclaim its position as a key commercial hub in post-war Europe.

3. Adaptable and Modular Interiors:

The use of reinforced concrete and modular construction allowed for large, flexible interior spaces that could be adapted to the evolving needs of businesses. This was in stark contrast to the fixed, rigid layouts of pre-war commercial buildings, which were often unable to accommodate the changing needs of modern businesses.

Social Behavior/Interaction - While the Groothandelsgebouw was primarily a business hub, its design also fostered limited but significant social interaction. The accessibility of public spaces like cafes and exhibition areas allowed for business professionals to interact informally, enhancing networking opportunities and promoting collaboration within the building's diverse commercial tenants.

Architectural Innovations and Urban Impact

The Groothandelsgebouw's design was not only a technological feat but also an architectural statement. Its massive scale and functional layout reflected the modernist ideals of efficiency and adaptability. The building's integration of different commercial functions in a single, cohesive structure set a new precedent for future multi-use developments. In comparison to pre-war commercial spaces, which were typically fragmented and inefficient, the Groothandelsgebouw demonstrated how spatial design could optimize both the flow of goods and the use of interior space.

In terms of urban impact, the Groothandelsgebouw was a key player in the transformation of Rotterdam's commercial landscape. Its efficient, centralized design marked a departure from the chaotic and scattered commercial spaces of the pre-war period, fostering an environment that was conducive to business growth and economic recovery.

The Lijnbaan and Groothandelsgebouw represent two monumental examples of spatial innovation that reshaped Rotterdam during the post-war reconstruction period. Both projects were a response to the inefficiencies and fragmentation of the pre-war urban fabric, offering innovative solutions to create more organized, efficient, and user-friendly commercial spaces.

The Lijnbaan redefined the relationship between retail and public spaces by introducing pedestrianized streets, integrated green spaces, and a clear spatial hierarchy, promoting a more organized, accessible urban experience compared to the mixed-use, vehicle-heavy streets of pre-war Rotterdam. The creation of public spaces within the Lijnbaan led to a new form of social interaction, turning the shopping experience into a communal, social event that encouraged leisure, gathering, and engagement.

Meanwhile, the Groothandelsgebouw introduced vertical integration of commercial functions and advanced logistical features, setting new standards for efficiency and adaptability in large-scale commercial spaces, something absent from the disjointed, inefficient pre-war commercial areas. Its impact was felt in the economic recovery of Rotterdam, where it facilitated smoother business operations, greater productivity, and a re-established position as a key trade hub. Together, these two projects illustrate the transformative power of spatial design in post-war urban recovery. They not only addressed the social and economic challenges faced by Rotterdam but also laid the foundation for modern urban planning principles that continue to influence cities today.

Chapter Three: Impact on Consumer Behaviour and Economic Recovery

3.1 The Influence of New Retail Layouts on Shopping Patterns and the Commercial and Economic Success of Rotterdam

Revitalization through Modern Retail Spaces: The Groothandelsgebouw and Lijnbaan

The Groothandelsgebouw, designed by architects Hugh Maaskant and Willem van Tijen and built in the early 1950s, was one of the most innovative commercial spaces of its time. Positioned as a multi-functional office and retail building, it was conceived as a response to Rotterdam's need for modern infrastructure after the extensive bombing of 1940. Its design embodied a combination of international modernist trends, as exemplified by its open-plan structure and innovative use of concrete and glass. The Lijnbaan, designed by Jo van den Broek and Jacob B. Bakema, completed in 1953, was a pioneering pedestrianized shopping street that embodied a new vision of urban life, integrating retail spaces with open-air plazas and integrating public spaces with commercial functions. Both buildings represented a break from the fragmented, traditional mixed-use architecture that characterized pre-war Rotterdam and set the stage for the city's economic and social recovery.

The Groothandelsgebouw was a monumental symbol of Rotterdam's ambition to rebuild as a modern, progressive city. As one of the first large-scale office and commercial spaces in post-war Europe, its impact on economic recovery was profound. By offering new spaces for both local and international companies, it played a crucial role in attracting investments back to Rotterdam. The innovative design, which encouraged interaction between business and retail spaces, helped revitalize the commercial heart of the city. This architectural model influenced later developments in urban planning, helping to establish Rotterdam as a city at the forefront of modern commercial architecture.

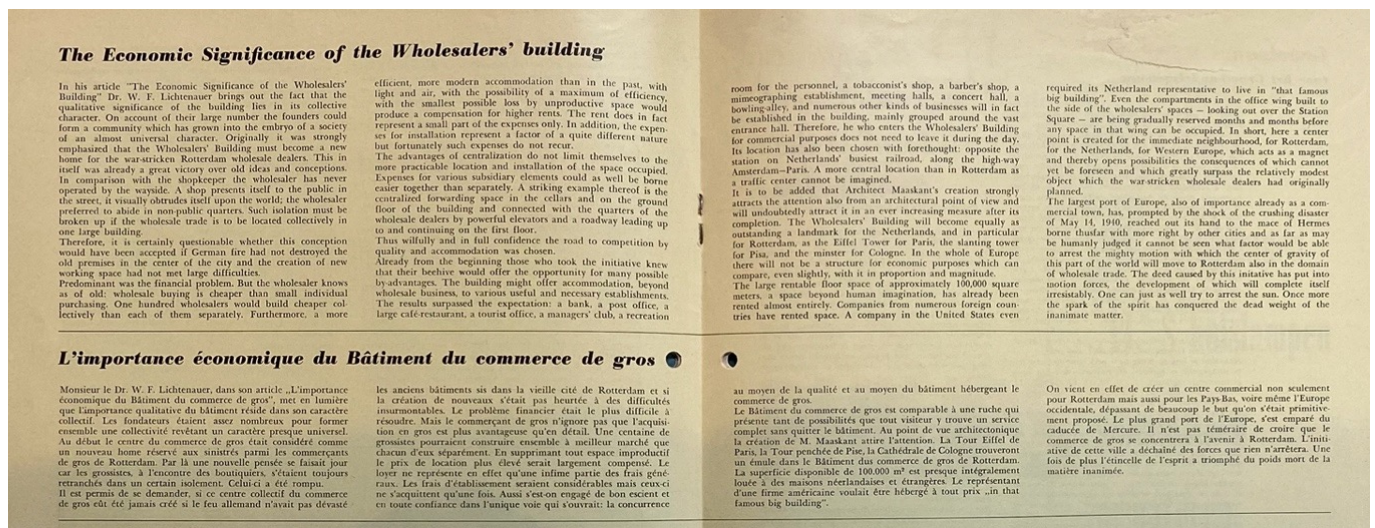


Figure 11: The Economic Significance stated in an old article

Similarly, the Lijnbaan served as a prototype for post-war shopping centres in Europe. Its design reflected the functionalist ideals that emerged after the war, emphasizing the importance of pedestrianization and the separation of traffic from retail and leisure spaces. The Lijnbaan's pedestrian-centric layout encouraged people to spend more time in the area, facilitating consumer interaction and bolstering retail activity. The Lijnbaan attracted both local residents and tourists, becoming a vibrant commercial centre and symbolizing the city's post-war rejuvenation. The shopping street was also connected to other new public spaces, increasing the flow of people and, consequently, boosting the local economy.

The commercial success of these spaces, particularly the Lijnbaan, was not merely a result of their design. The effective integration of retail spaces with surrounding urban environments also increased consumer engagement. The Lijnbaan, with its focus on accessibility, aesthetics, and public interaction, significantly reshaped Rotterdam's retail sector. Consumers flocked to these spaces, not just for shopping, but for leisure and social interaction, increasing the commercial activity in the city and contributing directly to its economic recovery.

Changes in Shopping Patterns and Economic Growth

The spatial innovations implemented at the Lijnbaan and Groothandelsgebouw also influenced broader shopping patterns in the city. Before the war, Rotterdam's retail spaces were more fragmented and not as integrated with the public sphere, reflecting the older, more traditional commercial areas. The introduction of open-plan spaces and the emphasis on pedestrianization in the post-war developments not only created new consumer experiences but also altered consumption behaviours.

The Lijnbaan became a destination rather than just a shopping area. By introducing the concept of the modern shopping centre, it drew consumers from a wider radius, increasing both foot traffic and the diversity of businesses. As described by Diefendorf (1990), the Lijnbaan became an essential part of Rotterdam's social fabric, as it combined the economic benefits of shopping with the broader cultural experience of urban interaction. The Groothandelsgebouw similarly attracted international businesses, contributing to Rotterdam's role as a key trade and economic hub in Europe during the 1950s.



Figure 12: The current use of the Lijnbaan



Figure 13: The current use of the Groothandelsgebouw

This revitalization of retail spaces led to the reorganization of the commercial landscape, which played an instrumental role in the recovery of Rotterdam's economy post-World War II. New retail patterns emerged, characterized by increased demand for consumer goods, higher turnover rates in stores, and the growth of local businesses. The economic success of Rotterdam in this period can be directly attributed to the design and operation of spaces like the Lijnbaan, which provided a modern environment conducive to commercial growth and consumer interaction.

3.2 The impact of the new approach on the Socio-Spatial consequences, more specifically the Community Engagement and Urban Identity

Rebuilding Community Engagement through Public-Private Space Integration

The Groothandelsgebouw and Lijnbaan were not only commercial spaces; they were key components of a broader social project aimed at rebuilding Rotterdam's post-war identity. The Lijnbaan, in particular, was designed with a focus on public accessibility, with open spaces that encouraged pedestrian movement and interaction between consumers, shop owners, and residents. This approach to spatial design fostered a sense of community, as people from different social backgrounds could share these spaces, regardless of their economic status. In a city that had experienced such extensive damage during the war, these spaces played an important role in restoring a sense of attraction and social pride.

As van den Heuvel (2017) explains in her study on the architecture of shopping centres, the integration of commercial spaces with public realms encouraged a new type of urban interaction. Consumers were no longer passive recipients of goods but were encouraged to engage in a more dynamic form of city life. The separation of traffic and commercial areas, combined with the pedestrianized shopping zone, facilitated this new type of engagement. It gave people the opportunity to linger in public spaces, fostering social interaction and contributing to a sense of belonging in a newly reconstructed city.

Impact on Urban Identity and Social Integration

The Lijnbaan, with its emphasis on modernist aesthetics and functionality, played a significant role in reshaping Rotterdam's urban identity. The architectural approach of the Lijnbaan, which was specifically designed to be a "new heart" of the city, symbolized Rotterdam's recovery from the devastation of the Second World War. As noted by Nientied (2018), the construction of the Lijnbaan allowed the city to overcome the psychological scars left by the war and helped define a new collective urban identity.

The Groothandelsgebouw, though more focused on commercial use, also contributed to this sense of renewal. As a symbol of modernity, it helped to reestablish Rotterdam as a city that was looking forward, not backward. The integration of businesses, social spaces, and urban functions helped create a dynamic environment that was both modern and open to the public, making it a key part of Rotterdam's broader social and economic recovery.

Moreover, both projects contributed to the integration of Rotterdam into the larger European and global urban narrative of post-war reconstruction. As Zijlstra (2002) emphasizes, these developments were not just about rebuilding a city's physical infrastructure, but also about reasserting its position in the global urban order. The Lijnbaan and Groothandelsgebouw thus became symbols of both Rotterdam's post-war identity and its commercial potential.

Public Reception, Critique, and the "Ghost City" Issue



Figure 14: Lijnbaan at night

Despite these aspirations, both the Lijnbaan and Groothandelsgebouw were not universally acclaimed. One of the most critical aspects of the Lijnbaan was its social and spatial limitations, which were often cited in public critiques. One of the most significant criticisms was its design as a purely commercial, pedestrianized zone without any provisions for residential spaces. As a result, the Lijnbaan became a "ghost city" at night. During the day, it was a bustling shopping area filled with consumers and businesspeople, but after hours, it lacked the vibrancy of a true urban centre because there were no residents living in the area. This absence of a residential community meant that the Lijnbaan was left vacant of the night-time activity that usually contributes to a vibrant urban life. The lack of residents in close proximity to the

shopping areas meant that the spaces lacked a constant human presence after working hours, which created a stark contrast to other European cities where mixed-use developments combined commercial, residential, and cultural functions.

This critique was particularly highlighted by critics who felt that the Lijnbaan, while innovative in its design, did not sufficiently foster a sense of long-term community engagement. In the words of Wagenaar (1993), the Lijnbaan's "sterile" environment, absent of residential areas, made it feel more like a commercial spectacle than a living, breathing part of the city. The design, with its emphasis on functionality, did not allow for organic community-building in the way that older, mixed-use urban environments did.

While the design prioritized the efficiency of retail spaces and the creation of a modern, pedestrian-friendly environment, it also ignored the importance of integrating these spaces with residential areas to create a sense of ownership and attachment. As Burns (1935) notes in his study of urban reconstruction, the success of urban spaces in fostering community life depends on the degree to which people can "live" in these spaces, not just shop or pass through them. The lack of a residential presence, in this case, was a significant oversight that limited the Lijnbaan's ability to fully realize its potential as a vibrant and integrated part of Rotterdam's urban fabric.

This critique of the Lijnbaan's lack of residential space was not isolated, as many urban theorists and planners at the time recognized the importance of mixed-use developments in fostering sustainable urban environments. The Groothandelsgebouw, while more integrated with office spaces and businesses, did not face the same degree of criticism for this issue because its design included offices and business premises that operated outside of regular shopping hours, thus maintaining a certain level of activity even at night. However, it too faced some criticism for its strictly utilitarian approach, which some critics felt lacked the warmth and human-centered focus of other urban spaces.

The contrast between the Lijnbaan's daytime vibrancy and its "ghost town" atmosphere at night reflects a broader criticism of modernist architecture in post-war urban planning. The Lijnbaan, like many modernist developments, placed too much emphasis on spatial functionality and efficiency at the expense of human-scale, lived-in urban environments. It demonstrated how modernist ideals, when taken to an extreme, can fail to account for the social needs of the city's residents, ultimately leaving behind a space that, while impressive in its design, did not foster the long-term social cohesion that many had hoped for.

The Groothandelsgebouw and Lijnbaan stand as enduring symbols of Rotterdam's post-war ambition to rebuild and modernize. However, while they were successful in revitalizing the commercial heart of the city and played an important role in economic recovery, they also highlighted critical shortcomings in post-war urban design. The lack of residential spaces in the Lijnbaan and the resulting absence of community engagement during night hours serves as a key critique of the modernist, functionalist approach. These developments, while innovative, demonstrated the importance of balancing commercial and residential needs in creating a truly vibrant, integrated urban space. In this way, the Lijnbaan and Groothandelsgebouw illustrate both the successes and limitations of post-war urban reconstruction in Rotterdam, contributing to the broader discourse on the intersection of architecture, urban planning, and social life.

Conclusion

This research has examined how the architectural and urban innovations of post-war Rotterdam, specifically the Groothandelsgebouw and the Lijnbaan, shaped not only the physical reconstruction of the city but also played a transformative role in its economic recovery and the evolution of consumer behaviour and community engagement. By focusing on these two pivotal developments, this study contributes to a deeper public understanding of how spatial design and modernist planning directly influenced urban life in the aftermath of wartime destruction.

In Chapter One, the context of Rotterdam's near-total devastation during the Second World War was established, highlighting the urgency and ambition that guided the city's reconstruction efforts. This chapter laid the foundation by showing how post-war urban planning in the Netherlands and particularly in Rotterdam was driven by a modernist belief in functionality, efficiency, and renewal.

Chapter Two explored the architectural and urban strategies employed in the Groothandelsgebouw and the Lijnbaan, demonstrating how these projects introduced spatial typologies that broke from pre-war patterns. The Groothandelsgebouw emerged as a landmark of commercial ambition, reflecting the shift toward multifunctional and vertically integrated buildings. Meanwhile, the Lijnbaan reimagined the retail experience through pedestrianization and open-air design, offering an early model of the modern shopping centre. These developments were both practical responses to destruction and symbolic gestures of Rotterdam's modern identity.

Chapter Three then analysed the broader implications of these spatial innovations on consumer behaviour, economic vitality, and social life. The Groothandelsgebouw helped reestablish Rotterdam as a centre for business and international commerce, while the Lijnbaan created a new kind of public-commercial space that encouraged social interaction and consumer engagement. At the same time, this chapter critically examined the socio-spatial limitations of these projects, particularly the absence of residential integration in the Lijnbaan, which contributed to its characterization as a "ghost city" after hours.

The key takeaway from this research is that the Groothandelsgebouw and Lijnbaan were not just architectural responses to post-war needs, they were active agents in reshaping how people interacted with the city, how commerce was conducted, and how social life was organized. They represent both the promise and the limitations of modernist urban planning.

What this study adds to existing research is a focused analysis of the interplay between spatial form and socio-economic function in post-war Rotterdam. While past literature has often emphasized either the architectural significance or the economic recovery in isolation, this research bridges those domains, showing how built space directly influenced consumer patterns, business development, and community formation. It also highlights the importance of public space design in fostering long-term civic identity, not merely commercial success.

In reflecting on Rotterdam's transformation, this paper reinforces the idea that cities are not rebuilt by infrastructure alone, but through the thoughtful design of spaces that support both economic vitality and human connection. As such, the lessons of the Groothandelsgebouw and Lijnbaan remain highly relevant in contemporary urban debates on resilience, liveability, and inclusive design.