

Spatial Scars of Conflict

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Abstract

The world has always been shaped by conflict, leaving visible and invisible traces within the built environment. Many of these traces still exist today, but are often overlooked, ignored, or unnoticed in everyday life. At the same time, questions arise about which traces remain visible, which disappear, and how memory can be made visible within the urban space.

This thesis investigates how architecture can be used as a tool to make subtle traces of conflict visible within the city. The focus lies on spatial and material traces that appear in façades, building fragments, and urban situations, often outside official memorial sites or institutional forms of remembrance. Through small-scale architectural interventions, the thesis explores how overlooked traces of conflict within the urban fabric of Darmstadt can be revealed and spatially situated.

The thesis combines theoretical research, empirical investigation, and spatial design exploration. Methods such as site observations, mapping, interviews, and design research were used to identify, analyse, and spatially interpret historical traces in Darmstadt. Theory, research, and the design process were continuously connected and reflected throughout the work.

Based on the theoretical and empirical findings, the three design principles perception, readability, and meaning were developed. These principles were spatially interpreted and translated into site-specific architectural strategies. From this process, three different modes of response emerged: reveal absence, reorient attention, and frame evidence, describing different spatial approaches for dealing with visible, half-visible, and not visible traces of conflict.

During the design process, it became clear that each site has its own spatial, historical, and atmospheric conditions and therefore requires an individual approach to its scar. At the same time, the process revealed how small the gap can be between making traces visible and beautifying historical violence. As a result, not only visibility itself became important, but also the way visibility is created.

The thesis shows how complex memory within the urban space truly is. Architecture cannot solve conflicts, but it can contribute to making hidden traces visible, creating awareness, and anchoring memory within everyday urban life. Architecture should not beautify traces of violence, but make them visible and open space for reflection.



Fig. 1. Building destroyed after an air raid in Darmstadt, 1918.
Stadtarchiv Darmstadt, with permission

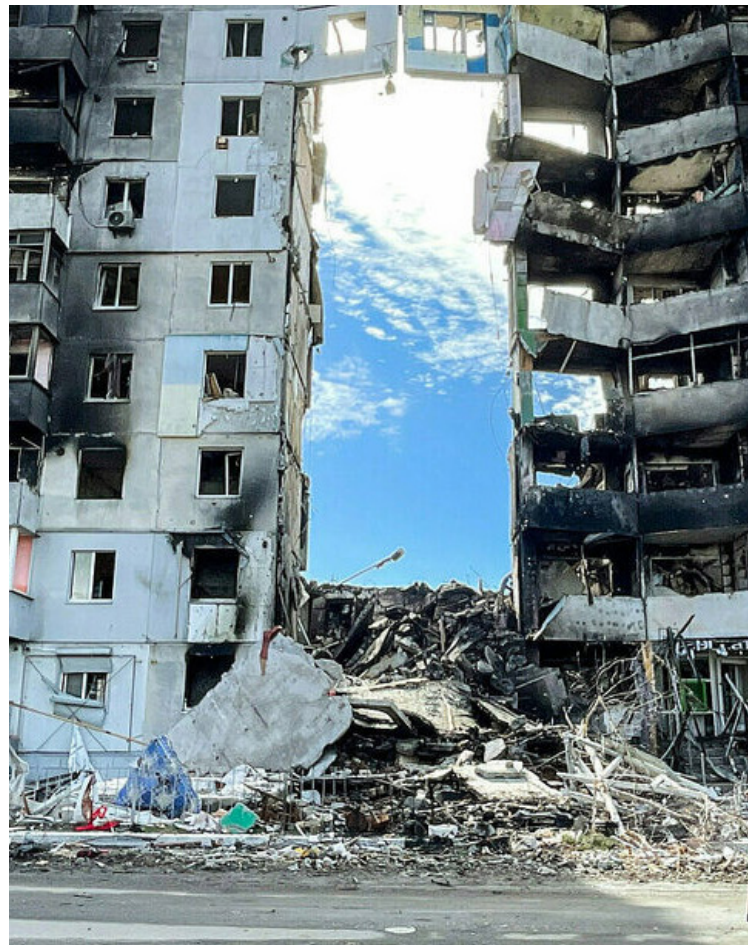


Fig. 2. Borodjanka, Ukraine 2022.
Foto: Daniel Ceng Shou-Yi/dpa. With permission



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Even today, it still makes my hair stand on end when I see these bombed cities - Syria, Gaza, Ukraine. It looks just like Darmstadt, like the Darmstadt I was in, right in the middle of it.

Dr. Fritz Deppert

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Student Background

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| 2024 -2026 | Master of Science,
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| 2021 - 2022 | Research Assistant, Department of
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History, Anhalt University of Applied
Sciences, Bauhaus Dessau, Germany |
| 2020 - 2021 | Internship at Gibbins Architekten
GmbH BDA, Hamburg, Germany |
| 2017 | Participation in the „Kostprobe“
project, Burg Giebichenstein School
of Art, Halle (Saale) Germany |

Volunteer-Experience

- | | |
|----------------|--|
| 2023 - Ongoing | Engineers without Borders,
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| 2020 - 2024 | Cultural centre Kleinmecka
Assistance in the traditional crafts
restoration of a historic farm in
Germany |



Lisa Parzeller



Prologue

I have never experienced war myself. Growing up in Germany, however, I learned about the country's history from an early age in school. Beyond formal education, personal conversations shaped my understanding even more. My grandmother, who experienced the end of the Second World War as a teenager, was an important influence. Through her stories, history became more real and tangible to me.

She spoke about everyday life during the war, night air raids, staying in shelters with neighbors, and the uncertainty of that time. She also talked about changes in her surroundings: neighbors who suddenly disappeared, classmates who were gone from one day to the next, and the presence of soldiers in everyday life. The destruction of Darmstadt in 1944, where both my grandma and I are born and raised, were largely destroyed within a short time (Stadtarchiv Darmstadt, 2019).

Some of these traces still exist in the city today, but they are often overlooked. For example, my grandmother pointed out markings on building facades that indicated former air-raid shelters, small signs that are still part of the built environment today.

I only realized later how differently people relate to history depending on where they grow up.

During a dinner with friends here in

Gothenburg, someone mentioned that a bomb had recently been found. My first reaction was almost indifferent: "so what?", assuming it was, as is often the case in Germany, a World War II bomb that sometimes leads to evacuations of entire neighborhoods. Only after a few moments did I understand that they were talking about a recent bomb. This brief moment made me aware of how used I am to the presence of war remnants in everyday life—on construction sites, for example, and how different this experience can be in other countries.

These personal memories are subjective, but they sparked my interest in this topic. They draw attention to forms of memory that are not directly visible, yet still carry great meaning. This raises questions such as: How do we remember, and what happens when memories fade? Where can spatial traces of the past still be found today, beyond officially designed memorial sites?

This work explores questions of memory, responsibility, and how history is embedded in space. At a time when antisemitism and exclusion are becoming more visible again, and current wars, such as those in Ukraine and Gaza, show once more how violence shapes cities, buildings, and public spaces, this topic feels especially important to me.



Fig. 3. Grandma



Introduction

Research Questions

- What role does Architecture play in creating Visibility of historical Traces of Violence?
- How can small-scale architectural interventions reveal and situate overlooked traces of conflict within the urban fabric of Darmstadt?

Keywords

Urban Memory
Conflict
Spatial Reading
Spatial Interventions

Aim

This thesis explores architecture as a medium of remembrance beyond institutionalised forms of memorialisation. It focuses on overlooked spatial traces of past conflicts that still remain embedded within everyday urban space.

Using Darmstadt as a case study, the project investigates how small-scale architectural interventions can make these hidden layers visible and understandable. Through literature review, empirical field research, and research-by-design, the thesis examines how architecture can reveal and frame traces of violence within the urban fabric, and contribute to a more nuanced culture of memory.

Delimitation

This work aims to make historical traces legible without over-monumentalising them. It deliberately distances itself from classical monuments and official commemorative architecture, focusing instead on small-scale urban traces and places that lack institutional protection. The project is not intended to create a monument or memorial. Its outcome is an architectural mapping of the visible and invisible damage caused by the Second World War in Darmstadt. Architecture is understood here as a tool: a means of revealing, framing, and communicating historical traces, rather than an object of remembrance itself. The work does not aim to heal, reconstruct, or symbolise, but to make history visible and spatially legible.



Introduction

Structure of the Thesis

This work is structured as a research and design process that combines theoretical investigation, contextual analysis, empirical research, and architectural design. Theory and design are not understood as separate fields, but as closely connected processes that continuously influence one another throughout the project.

The booklet begins with a short introduction to the background of the city of Darmstadt, as well as the historical event to which this work refers and the spatial consequences of the destruction of 1944 within the city. It then discusses the current approach to memory in architecture and explains the resulting problem statement, which became the starting point of the research and was further explored in two parallel directions.

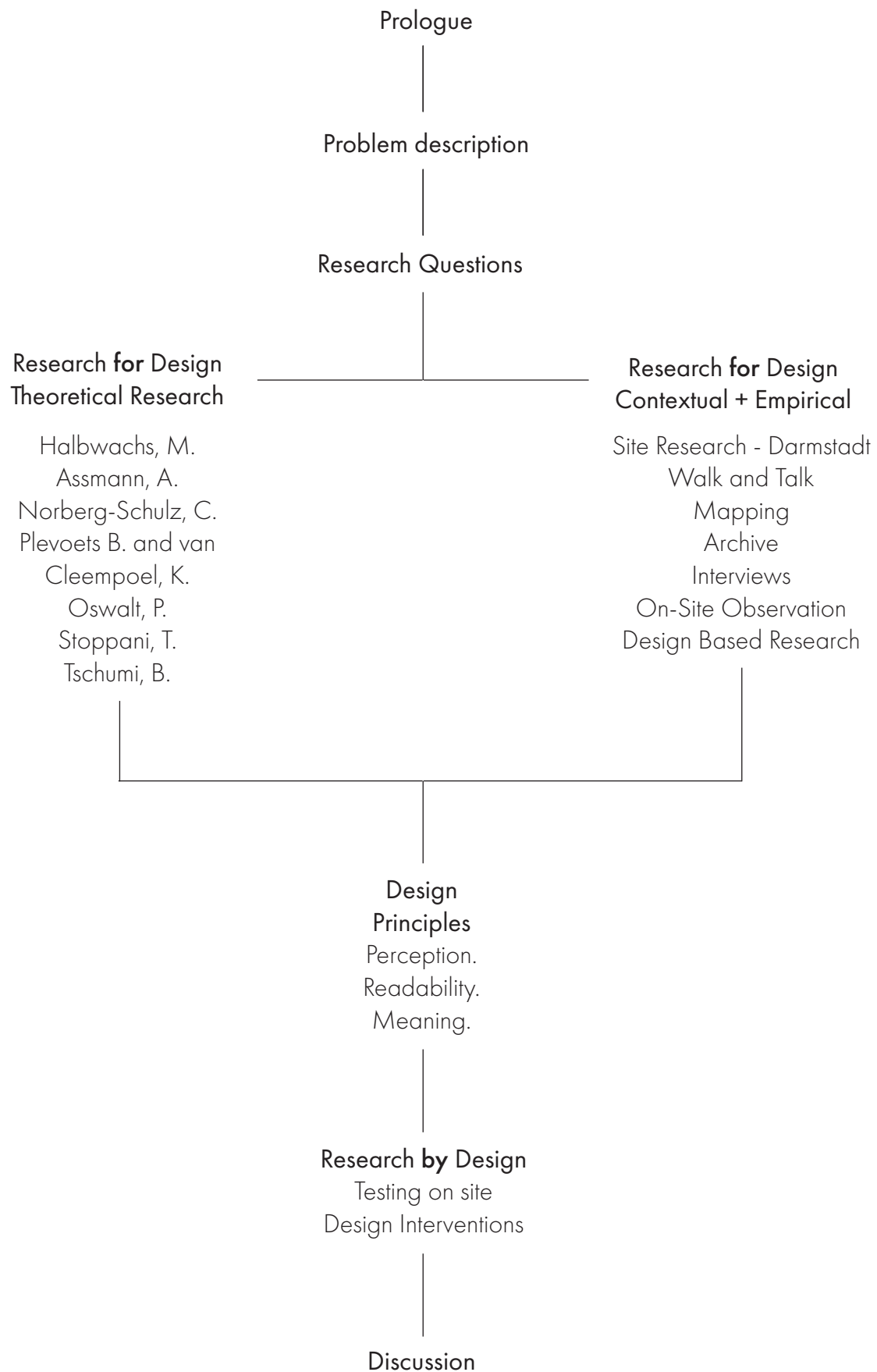
The first direction forms the theoretical part (research for design). It investigates theories of collective memory, space as archive, architectural agency, and violence and trauma in space in order to understand how traces of conflict in urban space become visible, invisible, preserved, or erased.

The second direction includes the contextual and empirical part (research for design). Methods such as mapping, site visits, archival research, interviews, and design research in Darmstadt

were used to explore how historical traces in everyday urban space are perceived, understood, overlooked, or remembered.

Based on the findings from both the theoretical and empirical research, the three design principles **perception**, **readability**, and **meaning** were developed. These principles were first defined theoretically and later spatially interpreted through the empirical findings and the design process, translating them into architectural strategies. Based on these principles, a research-by-design approach was applied to develop and test site-specific architectural interventions in Darmstadt. The interventions explore how small-scale architectural strategies can make overlooked traces of conflict within the urban fabric visible and spatially embedded.

The theoretical references are not understood as fixed starting points, but as an ongoing source of inspiration and reflection throughout the design process. Literature is used iteratively to support ideas, question assumptions, and create a broader context. In this way, theory does not only function as descriptive background, but as an active tool within the design process that directly shapes the architectural interventions of this work.





Context

Site Background Darmstadt

Darmstadt is a German city located south of Frankfurt am Main, with around 170,000 inhabitants (Wissenschaftsstadt Darmstadt, n.d.). It is an important center for science and research and is home to the European Space Agency (Wissenschaftsstadt Darmstadt, n.d.). In addition to its scientific focus, Darmstadt is also known as a city of culture.

In 1901, the last Grand Duke, Ernst Ludwig, founded the *Mathildenhöhe Darmstadt*. This site made Darmstadt widely known as a center of Art Nouveau and was declared a UNESCO World Heritage Site in 2021 (Wissenschaftsstadt Darmstadt, n.d.). Architects, artists, and designers worked together to create a group of studio houses, residential buildings, exhibition spaces, and gardens. Their goal was to create a *Gesamtkunstwerk* „total work of art“ that combines architecture, art, and landscape (Institut Mathildenhöhe Darmstadt, n.d.).

After the end of World War I, political changes led to the abdication of the Grand Duke (Stadtarchiv Darmstadt, n.d.). In the following decades, the po-

litical situation in Germany changed significantly. During the National Socialism period, Darmstadt became the largest military base in southern Germany (Stadtarchiv Darmstadt, n.d.).

In 1940, Darmstadt was first hit by air raids, followed by further attacks in the following years (Stadtarchiv Darmstadt, n.d.). However, the most dramatic event in the city's history occurred during World War II. On the night of September 11–12, 1944, an Allied bombing raid led to the so-called *Brandnacht* (Night of Fire), during which large parts of the historic city center were destroyed (Stadtarchiv Darmstadt, n.d.). This event caused major changes in the urban structure and strongly influenced the rebuilding of the city after the war. Its effects are still visible in the city today.

This event and its consequences will be discussed in more detail on the next pages.



Fig. 4. Mathildenhöhe, Darmstadt. Nikolaus Heiss, with permission.



Fig. 5. Mathildenhöhe, Darmstadt. Stadtarchiv Darmstadt, with permission.



Historical Background Feuersturm

On the night of 11 to 12 September 1944, the city of Darmstadt was attacked by units of the RAF Bomber Command of the United Kingdom and was largely destroyed within a short time (Stadtarchiv Darmstadt, 2019). The air raid had devastating consequences for the city and its population and lasted only about **25 minutes** (Stadtarchiv Darmstadt, 2019). During the attack, a combination of high-explosive bombs and incendiary bombs was used. This military strategy aimed first to tear open roofs with explosive bombs and then to ignite as many individual fires as possible with incendiary bombs (Stadtarchiv Darmstadt, 2019). About half an hour after the attack, thousands of small individual fires merged into a large fire that quickly spread across the entire city. In this firestorm, temperatures in some areas reached up to **1,000 degrees Celsius** (Stadtarchiv Darmstadt, 2019).

The historic old town of Darmstadt was particularly affected. It was chosen as the main target area because the buildings there contained a large amount of wood, creating ideal conditions for the development of a firestorm. The target area had previously been marked by marker aircraft using red and green flares, known as *Christmas trees* (Stadtarchiv Darmstadt, 2019). As a result, around **99 percent of the old town was destroyed** and about 80 percent of the city's total building stock was damaged or destroyed (Stadtarchiv Darmstadt, 2019).

The impact on the population was immense. Streets were blocked by rubble, fire, and smoke, making rescue and firefighting efforts almost impossible. (F. Deppert, personal communication, March 27, 2026).

Many people suffocated in the smoke, in bunkers, or burned in the flames (Stadtarchiv Darmstadt, 2019).

Others jumped into wells or water sources in desperation to escape the fire, but died from the extreme heat of the water (Stadtarchiv Darmstadt, 2019). The number of victims is estimated at around 11,000 to 12,000 people. Considering the size of the city, this death toll is among the highest during the Second World War (Stadtarchiv Darmstadt, 2019).

Of Darmstadt's approximately 110,000 residents, about **66,000 people lost their homes that night** (Stadtarchiv Darmstadt, 2019). Large parts of the city lay in ruins after the attack. It is notable that potential military or industrial targets were comparatively little damaged, as they were located outside the main target area (Stadtarchiv Darmstadt, 2019).

The scale of the catastrophe is also shown by the fact that the fire could be seen from cities up to 20 kilometers away. Charred leaves and debris were thrown high into the air and in some cases carried as far as 10 kilometers (Stadtarchiv Darmstadt, 2019).

The destruction of the so-called "Night of Fire" marks the deepest turning point in the history of Darmstadt. Large parts of the historic city were lost, and the history of the former residential city is now visible only in a few places in the urban landscape. Even today, the full extent of the suffering and destruction can only partly be reconstructed from the reports of survivors.



Fig. 7. A one-man bunker in Darmstadt withstood the fire. Stadtarchiv Darmstadt, with permission.



Fig. 6. Destruction of Darmstadt after the air raid 1944. privat archive.



Fig. 8. Destruction of Darmstadt. Stadtarchiv Darmstadt, with permission



Context



Fig. 9. Destruction map. Stadtarchiv Darmstadt, with permission.



Spatial consequences of Destruction

Darmstadt after the air raid of 11. september 1944.
The image shows the scale of destruction; the black
areas indicate the buildings that survived.



Context





Spatial consequences of Destruction

Comparison of Darmstadt today and Darmstadt after the destruction of 1944.



Memory in Architecture Current Approaches in Germany

In contemporary architecture, memory is often addressed through clear spatial strategies such as monuments, memorials, the reconstruction of destroyed buildings, and heritage preservation (Oswalt, 2023). In these contexts, memory is shaped through space, curated, and made visible to the public (Birle et al., 2009).

In Germany in particular, a strong architectural language of memory has developed (Oswalt, 2023). It focuses on clarity, responsibility, and visibility. Memory is often expressed in deliberate, symbolic, and easily recognizable forms (Oswalt, 2023). These approaches often aim for completeness and consistency, for example, through restored façades, reconstructed buildings, or clearly defined memorial sites. In this way, memory becomes physically present and institutionally anchored (Oswalt, 2023).

The discussion of historical traces of violence in Germany is closely linked to confronting the National Socialist past. As Aleida Assmann (n.d.) explains, German memory culture includes both physical forms of memory, such as monuments and historical sites, and social practices like rituals and commemorative days.

Architecture plays an important role in this process. It not only provides the physical setting for memory but also shapes how history is understood Aleida Assmann (n.d.).

Historical sites are therefore meant not only to inform but also to be experienced emotionally and physically, allowing people to connect with the past on a personal level (Assmann, n.d.; Assmann, 2020).

Different architectural strategies can be identified in dealing with historical traces. Heritage conservation focuses on preserving existing buildings and maintaining their material continuity. (Deutsche Stiftung Denkmalschutz, n.d.). Reconstruction, on the other hand, aims to rebuild what has been lost and recreate familiar images of the past (Oswalt, 2023). One example for this is the *Neue Altstadt Frankfurt*.

These strategies take different forms. Some buildings are intentionally preserved as ruins, such as the *Kaiser Wilhelm Memorial Church*, where the destruction remains visible.

Projects like the *Alte Pinakothek* combines historical elements with new architecture. In some cases, destroyed structures have been completely removed and replaced by new buildings.

After German reunification, questions of identity became increasingly important: How do we want to remember, and how should this memory be expressed through architecture? While these approaches have shaped a strong culture of remembrance, they often focus on visible, monumental, or officially recognized forms of memory (Oswalt, 2023).



Fig. 10. Kaiser Wilhelm Memorial Church
Berlin. Pexels.



Fig. 11. Alte Pinakothek. Munich.



Fig. 12. Neue Altstadt Frankfurt. Pexels.

Traces of Conflict in the Built Environment

- Traces of conflict are part of our everyday surroundings.
- Many buildings were heavily damaged during the war and later reconstructed.
- Some buildings were rebuilt exactly according to their historical appearance.
- Others were reinterpreted in a contemporary way, and some were left in their damaged state.
- This shows that reconstruction can deal with destruction in different ways: it can either absorb the damage or leave it visible.
- Destruction itself has become an important part of the identity of a place.
- Rebuilding everything exactly as it once was would mean making this destruction disappear and ignoring this part of history.
- This raises an important question: preservation is not neutral.
- Reconstruction can erase history, and in some cases we risk losing it.
- Reconstruction is therefore never a neutral act.

German Context and Culture of Memory

- In Germany, dealing with history is closely connected to questions of memory and responsibility.
- Suppressing or ignoring difficult history can make the past more abstract and weaken the understanding of the moral

and political lessons of the Nazi period.

- After German reunification, questions of identity became more important again:
- How do we want to remember the past?
- These questions often become visible in architecture, through monuments, reconstructions, and symbolically charged buildings.
- Historically, the German approach often emphasized rupture rather than continuity.
- At the same time, there has been a renewed interest in rediscovering and engaging with the country's own history.

The Problem of Reconstruction

- Exact, photo-realistic reconstruction can be problematic because it can simplify history instead of encouraging critical reflection.
- Often, only the historical facade is reconstructed, while the interior is a completely new functional building.
- This creates a separation between the outer appearance and the actual building.
- In such cases, architecture becomes two unrelated projects: a historical image on the outside and a contemporary structure inside.
- Paradoxically, history can disappear in the name of preserving history.
- Architecture can sometimes appear as if the pain and conflicts of the past had never existed.

- When the past is reproduced as an exact image, it risks being separated from the present instead of being critically engaged with.
- At the same time, reconstruction can also be understood as an attempt to reconnect with the past from the perspective of the present.
- However, there is no reason to idealize historical conditions.
- There is no single historical state that can be considered the only “correct” or “true” one.

History as a Construction

- History is not something fixed or complete.
- It is constantly interpreted and reinterpreted from the perspective of the present.
- History emerges through selection, interpretation, perspective, and values.
- In this sense, we actively construct history through the ways we frame and tell it – sometimes consciously, sometimes unconsciously.
- Engaging with history therefore means appropriating it in a reflective way.
- Rather than simply copying historical forms, the past should be actively interpreted and integrated into the present.
- The challenge is to find architectural forms that reflect on history instead of reproducing it mechanically or presenting an idealized version of it.

Key Questions

- These reflections raise several important

questions:

- What is worth preserving?
- Can monuments and buildings become storytellers — and who tells the story?
- Why are some traces preserved while others disappear?
- Who decides what remains visible?
- How do these traces shape our understanding of history today?
- Which traces are considered worthy of preservation, and who makes these decisions?
- How does the visibility of history influence our perception of the past?
- History needs to remain visible — even when it is uncomfortable.
- The Problem and the Gap
- Practices of remembrance are often selective.
- There are clear hierarchies of authenticity, with a strong focus on monumental institutional sites.
- Most architectural forms of remembrance concentrate on monuments, official memorials, or reconstructed landmarks.
- At the same time, everyday traces embedded in the urban fabric often remain unnoticed.
- This is where a critical question emerges: What happens to the non-monumental traces of history?
- How can architecture engage with overlooked or ordinary material remains?
- history gradually disappear.

with how
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this today



Problem Description

Based on the background presented earlier, the following issues can be identified.

Hierarchy of Remembrance

What is made visible – and what is not? Architectural remembrance mainly focuses on monumental places such as memorials, commemorative sites, officially protected heritage, or symbolically charged buildings (Oswalt, 2023). This creates a hierarchy of attention, where certain forms of history become visible while others are pushed aside.

Memory becomes selective, not always intentionally, but through visibility, accessibility, and institutional framing. Everyday buildings and subtle material traces often remain outside collective awareness (Oswalt, 2023). As a result, traces in the ordinary urban environment are often overlooked and gradually disappear, leading to a loss of the city's own history.

Architecture acts as a filter: it decides what remains visible and what fades into oblivion. Memory is therefore not neutral, but shaped by institutions, political interests, and social narratives (as cited in Krause, 2021; Oswalt, 2023). The result is a condition in which some traces remain visible, while others recede into invisibility.

Reconstruction

Architecture, and especially reconstruction, is never neutral, it actively shapes how we deal with the past (Oswalt, 2023). As the main theoretical source for this chapter, Oswalt's work (2023) forms the primary basis of the following arguments, which is why this section mainly refers to a single source. During rebuilding, damage is often repaired, covered or completely removed. Visible traces of war and violence to disappear from the city. Reconstruction can either absorb destruction or make it visible (Oswalt, 2023).

However, when a historical state is recreated as accurately as possible, there is a risk of separating the past from the present (Oswalt, 2023). This becomes particularly clear in façade reconstructions such as Frankfurt's New Old Town (p. 31), where the exterior shell has little relation to the interior. Buildings split into two separate realities (Oswalt, 2023).

Traces of time are erased, and an idealized, timeless image is created (Oswalt, 2023). Precisely reconstructing historical states can become a problematic way of dealing with history (Oswalt, 2023). Reconstruction may also instrumentalize history by smoothing over conflict, aestheticizing it, or using it for political purposes. In the name of preserving history, history itself can be erased (Oswalt, 2023).

Invisible Spatial Consequences

War and violence leave behind more than visible ruins. They also create long-term spatial consequences. These can include gaps in the urban fabric, changed street structures, fragmented spaces, hidden bunkers, or layered materials (Plevoets & Cleempoel, 2019).

These traces are often not directly readable and are rarely marked as sites of memory. Yet they still shape the identity of places, their atmosphere, and how urban space is perceived today. Social structures and everyday movement patterns can also be consequences of past violence (Tschumi, 1994).

For people who experienced these places during times of destruction, these memories remain present, even if they are no longer physically visible. (F. Deppert, personal communication, March 27, 2026). Memory is therefore not limited to official memorial sites but is distributed across the entire city.

Memories are linked to specific places, but they are also spread throughout the city.

Contested of Monuments

The primary function of monuments is to create an object that recalls events or individuals from the past in the present. However, many monuments today have lost their original meaning and are often seen as problematic or ambiguous (Spiegel, 2024). Although they are still part of the urban landscape, many people no longer know what they represent or whom they commemorate. This points to a key issue: monuments are not neutral, but reflect specific historical narratives (Deutschlandfunk Kultur, 2024). They were often created to support identity of former regimes and to present political ideas, such as victory, power, or opposition to others (Deutschlandfunk Kultur, 2024).

At their core, monuments determine which parts of history are considered worthy of remembrance and should be anchored in collective memory. As Assmann describes, they can also reinforce certain interpretations of history and maintain specific narratives (Deutschlandfunk Kultur, 2024).

Over time, many monuments lose their specific historical context (Deutschlandfunk Kultur, 2024). What remains is their physical presence in public space, which is either reinterpreted or ignored. This creates a gap between their original intention and how they are understood today.

Fragmented Knowledge

Another problem is that knowledge about these places is often fragmented. Information about war damage, disappeared buildings, or spatial consequences of violence is often found only in archives, historical documents, through witnesses, or expert knowledge.

In everyday urban life, this knowledge is rarely visible or accessible to most people. As a result, many traces are not noticed or not understood in daily life. With the loss of eyewitnesses, personal connections and memories linked to these places also disappear. Without knowledge, spatial traces lose their meaning or remain invisible.

As a result, many traces go unnoticed or are not understood. With the loss of witnesses, personal connections to these places also disappear. Without knowledge, spatial traces lose their meaning or remain invisible.



Problem Description



Fig. 13. Close-up of the Memorial to the Murdered Jews of Europe, Berlin. Pexel. Michał Lis, 2018



Fig. 14. Frauenkirche, Dresden, Germany. Pexels. Ines Martin, 2015.



Fig. 15. Memorial commemorating the persecution of the Sinti and Roma by the Nazis. Darmstadt



Fig. 16. Memorial to the former synagogue, Darmstadt



Fig. 17. Neue Altstadt Frankfurt. Pexels



Fig. 18. Memorial at the mass grave for the victims of the 'Night of Fire' at the Waldfriedhof. Darmstadt.



Fig. 19. Kaiser-Wilhelm-Denkmal, Koblenz, Germany Pexels Nick, 2024.

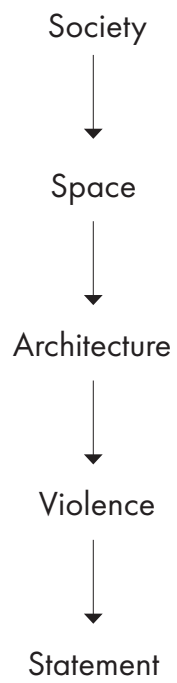


But how
do cities
carry and

communicate
memory?



Theoretical
Contextualisation



Introduction

This chapter presents the theoretical contextualisation that forms the foundation of this thesis and supports the understanding of the identified problem. Theory plays a central role, providing the tools to explore how memory, space, and architecture are connected.

Five thematic perspectives structure this chapter. It begins with a societal understanding of memory, then considers space as a carrier of history, and architecture as an active actor shaping what is visible or invisible in the urban environment. It further examines how violence becomes embedded in space and how its traces remain present over time.

These theoretical perspectives not only explain the problem but also guide the development of the project. They inform the methodology and support a design-based research process, where knowledge is generated through analysis, interpretation, and design.

This contextualisation provides the basis for identifying three design principles: perception, readability, and meaning. They translate theoretical insights into spatial strategies and form the link between theory and the final architectural interventions.



How memory is Constructed

Based on the situation described in the previous chapter, the following section examines the collective memory of a society. It is based on the idea that memory culture should help shape the present in a way that prevents the past from repeating itself while also preserving it for the future. The aim is to give an overview of how memory is formed as a social construction, before later discussing how it is perceived and anchored in space.

Maurice Halbwachs defines collective memory as an intangible form of shared experiences, narratives, and social practices that develop in certain places or regions (as cited in Krause, 2021). Certain events are therefore not only remembered individually, but are embedded in a social framework and carried by whole societies or nations. A purely personal memory hardly exists, since every "I" is closely connected to a "we" and is formed through exchange with social groups such as family or nation (as cited in Krause, 2021). In this way, memories contribute to social cohesion and collective identity. Collective memory preserves the past beyond the lifespan of individuals and creates continuity between generations (as cited in Krause, 2021).

Individual memories, by contrast, are subjective, shaped by perspective, and limited in time. They are fragile and would disappear over the long term if they were not actively stabilized (as cited in Krause, 2021). Aleida Assmann (2020) expands this idea by arguing that memory is never neutral, but always a constructed and selective product of social processes.

What remains present is often what supports the current self-image of a group, while painful or shameful events are often pushed aside. Memory is also dynamic and changes over time through generational shifts, new perspectives, and social developments.

To overcome this fragility, societies develop ways to stabilize memory. This happens through so-called *memory culture*, expressed in rituals, commemorative days, monuments, and social practices. A special role is played by architecture as a material carrier of memory (as cited in Krause, 2021), for example in the form of monuments, street names, or other spatial markers. People often feel a stronger emotional connection to familiar places and buildings than to abstract political events. The loss of a well-known building can therefore be experienced as a deep rupture (as cited in Krause, 2021).

In summary, individual memory is subjective and temporary, while societies use memory culture, especially through architecture, to make the past visible, create identity, and carry memories across generations.

The following chapter therefore examines how physical space and architecture function as material carriers that provide collective memory with a lasting framework and make history tangible in everyday life.

Space as Carrier of Memory

Building on the discussion of collective memory, this section examines how memory is anchored in space. Although memories are socially constructed (as cited in Krause, 2021), they often need material forms in order to last over time. The city can therefore be understood as an archive: a space where history is stored in buildings, streets, and fragments (Assmann, n.d.).

Plevoets and Van Cleempoel (2019) describe the city as a layered repository in which materials, stories, and different time layers overlap. Urban space is not static, but constantly changing. Every architectural intervention adds a new layer of meaning and enters into dialogue with what already exists.

Memory emerges through the relationship between time and place. It becomes readable through material traces such as wear, damage, fragments, or reused building elements. Discoloration, patina, and signs of use show that a place has a history. Because these traces result from real events and everyday use, they often feel authentic.

Christian Norberg-Schulz (1980) also describes this idea through the concept of *Genius Loci*, the spirit of place. It refers to the character of a place shaped by history, surroundings, and human life. Architecture should not cover this character, but make it visible (Norberg-Schulz, 1980).

This becomes especially clear in places marked by war or destruction. Traces often appear in fragments, damaged buildings, empty plots, or changed urban structures. These remains are more

than simple ruins, they keep memory present in everyday life and make visible what is missing. One example is the *Neues Museum in Berlin*. Here, traces of war were not completely removed, but deliberately preserved and integrated into the new building. Damaged surfaces and missing parts remain visible and continue to make the history of the place tangible (Plevoets & Cleempoel, 2019).

The city as an archive also plays an important role for identity and orientation. People need reference points in order to feel connected to a place. Historical structures and familiar traces create continuity and orientation. Without them, cities can quickly feel generic and lose their connection to their own history.

The urban space keeps its history alive in the materials and structures it has. These traces connect the past and the present and make memories real. The role of architecture is not just to create something new, but also to decide which features are kept and which are erased.



Fig. 20. Neues Museum Berlin, with permission.



Architecture as Selection, Preservation and Erasure

If the city is understood as an archive, architecture becomes a curatorial practice. It does not only shape space, but also decides which historical traces remain visible and which disappear. Especially in relation to traces of destruction, violence, and conflict, it becomes clear that architecture is never neutral, but always connected to processes of selection (Oswalt, 2023).

Heritage protection, UNESCO, and other institutions also aim to preserve historical evidence (Deutsche Stiftung Denkmalschutz, n.d.). However, they too make selective decisions: not everything is protected, preserved, or recognized as worthy of remembrance. What remains depends on institutional criteria, political decisions, and cultural values (German UNESCO Commission, n.d.).

This becomes especially visible in reconstruction projects, which often follow identity-based or national narratives (Oswalt, 2023). In many cases, the focus is less a critical engagement with the past than on creating an idealized historical image. One example is Frankfurt's New Old Town, which was partly rebuilt in 2018 after its destruction during the Second World War (Engler, 2025). Many of the buildings consist of modern concrete structures with reconstructed historical façades. Such façade reconstructions create historical images without establishing a direct relationship to the internal structure (Oswalt, 2023).

In contrast, Architektenbüro Bruno Fioretti Marquez (BFM) adopted a more nuanced strategy in reconstructing Gropius's war-damaged Wohnhaus (Direktorenhaus) and Meisterhaus in Dessau's Bauhaus ensemble which got

destroyed 1945 (Stiftung Bauhaus Dessau, n.d.). Completed in 2014, BFM's „architecture of uncertainty“ (Architektur der Unschärfe) preserved original contours and visible bomb damage traces, avoiding exact replicas while making historical ruptures legible alongside modernist forms (Goethe-Institut, n.d.).

Many reconstructions create historical images without addressing the building's inner structure or the ruptures of a place. Visible traces of war and destruction are often repaired, smoothed over, or removed. As a result, destruction as part of the site's history disappears from the urban landscape, although these traces are an important part of the place and contribute to historical understanding (Oswalt, 2023).

The central issue is not only reconstruction itself, but more generally how architecture deals with historical traces. It can make memory visible, transform it, or render it invisible through planning. History is not fixed or objective, it is shaped by selection, interpretation, perspective, and values. We construct history through interpretation, framing, and storytelling, consciously or unconsciously (Oswalt, 2023). Architecture translates these interpretations of history into built form and influences which narratives remain visible (Oswalt, 2023). The key question is who decides these stories and which perspectives are made visible.

Historical remains should therefore neither be reconstructed as exact replicas, nor aesthetically smoothed over, nor completely replaced (Oswalt, 2023). What is needed instead is a sensitive approach that keeps different layers of time readable and also preserves traces



Fig. 21. Meisterhaus Gropius. Dessau.



Fig. 22. Neue Altstadt Frankfurt. Pexels

of destruction and rupture. In this way, architecture can make the past present without falsifying it (Oswalt, 2023).

Architecture therefore helps decide what is remembered and what is forgotten. The main question is not only what is built, but which history remains visible through it. Especially when dealing with traces of violence, trauma, and conflict, a sensitive approach is needed that keeps different historical layers readable. The next chapter therefore examines how such events become spatially embedded.



Violence, Absence, Spatial Traces

Following the discussion of selection and visibility, this section examines how violence becomes inscribed in space and remains embedded there.

Violence does not only leave visible rubble or destroyed buildings, but is also a process that deeply affects the material, spatial, and social structure of the city (Stoppani, 2016). Conflicts therefore do not end with the event itself, but often remain present in urban space for a long time. War, terror, and political violence change buildings, streets, movement patterns, and the perception of places. The city itself becomes a carrier of memory and trauma. It reacts like an injured body whose wound may heal, but remains as a scar (Stoppani, 2016).

1. Material Damage

The visibility of violence in the city can be seen most clearly in damaged buildings or fragments of architecture (Stoppani, 2016). Stoppani describes these scars and damaged structures as “silent witnesses” of past violence, whose presence makes history physically and spatially tangible. Even after renovation or rebuilding, traces often remain visible in repaired surfaces or irregular materials. Violence is therefore not only remembered, but kept present in the everyday material fabric of the city (Stoppani, 2016).

2. Spatial Traces through Changes in the Urban Structure

Violence is not only visible through damage to individual buildings, but also through changes in the urban structure. Destruction can lead to empty plots, changed street layouts, fragmented block structures, or interrupted sightlines (Stoppani, 2016). Entire neighborhoods can be permanently changed

by war or political intervention. Even when new buildings are constructed, visible breaks often remain in the cityscape. Conflict therefore does not only damage single objects, but changes the spatial structure of the city itself (Stoppani, 2016).

3. Absence as a Trace of Violence

Another category is the spatial readability of absence. Missing buildings, empty spaces, or intentionally preserved voids point to what is no longer there. What has been lost can have an equally strong effect as what remains (Stoppani, 2016). These gaps in the urban fabric make loss visible and keep the memory of destruction present. If these places are not fully rebuilt or reconstructed, they remain as spatial reminders of past violence. Stoppani(2016) argues that consciously “not building” or preserving emptiness after a disaster is not passive, is an act of design tool.

4. Violence as Event and Changed Meaning of Places

Referring to Tschumi(1994), Stoppani (2016) explains that architecture is not only made of form, but also of the events, movements, and actions that happen within it. Space gains meaning through the relationship between built form and human activity. A place can therefore be permanently shaped by what happened there. A park, square, or street can be deeply changed by a violent event, even when no physical damage remains visible (Tschumi, 1994).

Violence therefore becomes inscribed into the symbolic and social perception of a place (Stoppani, 2016).

5. Visible Scars instead of Complete Healing

According to Stoppani (2016), one possible way of dealing with such wounds is not to erase traces completely, but to keep them visible. She refers to Lebbeus Woods, who proposed for Sarajevo after the war in the 1990's, instead of simply repairing damaged buildings, she suggested adding new elements such as "Scars" or "Scabs" into the ruins. These interventions would make the history of conflict readable and turn destruction into part of the city's future development. Violence is not suppressed, but critically integrated into the present (Stoppani, 2016).

6. Invisible Effects and Atmospheric Traces

Some places are avoided by people who experienced violence there. Other places feel heavy, empty, fragmented, or emotionally charged. Certain routes are no longer used, squares lose their former openness, or buildings remain linked to negative memories. These immaterial effects are often harder to recognize than physical damage, but shape the city just as strongly. The city therefore carries both visible and invisible scars at the same time (Stoppani, 2016).

Stoppani describes this as an "invisible realm" of effects that changes the psychological comfort of people. Even when buildings are repaired, the city remains a "wounded and traumatized but still living body." It carries "scars" and "ghost presences" that recall what happened and remain embedded in the urban fabric (Stoppani, 2016).

In summary, violence becomes spatially readable on different levels: through direct damage, through absence, through changed structures, through social

effects, and through atmospheric tensions. Conflicts do not disappear when the event ends, but can remain present for generations in materials, forms, and meanings. Trauma is therefore not temporary, but remains spatially perceptible over time (Stoppani, 2016). For architecture, this creates the responsibility not to hide or beautify such traces, but to make a thoughtful and reflective way of dealing with them possible.



Theoretical Contextualisation

Statement: Position and Design Principles

Based on the theoretical contextualisation, together with the work on site, and interviews with residents of Darmstadt and witnesses, presented in the following chapter three design principles have been identified for the further development of the design project: **Perception, Readability, and Meaning**. These principles describe the conditions needed for historical traces in the everyday city to become visible, understandable, and cultural relevant.

The theoretical research showed that traces do not speak for themselves. Maurice Halbwachs describes memory as socially shaped and influenced by its surroundings (as cited in Krause, 2021). What people see is never neutral, but affected by collective views and contexts. Aleida Assmann (n.d.) adds that memory needs carriers and forms of communication. Without visibility, traces can hardly become part of collective awareness. This leads to the first principle: **perception**. A trace must first be noticed, spatially experienced, or made visible before it can become part of memory.

The second principle, **readability**, comes from the idea that visibility alone is not enough. A damaged wall, an empty plot, or an unusual fragment in the city can be seen, but not understood. Halbwachs explains that places gain meaning through social memory, not only through their physical form (as cited in Krause, 2021). Bernard Tschumi (1994) also argues that architecture gains meaning through use, movement, and interpretation. Historical traces therefore need to be recognizable and understandable in order to communicate their history.

The third principle, **meaning**, deals with the question of relevance. Why should a trace matter today? Philipp Oswalt (2023) argues that societies actively

decide what should be remembered and what should be forgotten. Architecture can create meaning, but it can also erase it. Assmann (n.d.) shows that memory is selective and shaped by present values. Teresa Stoppani (2016) explains that trauma can remain written into space long after the event itself. Meaning is therefore not automatic, but created through context, interpretation, and social relevance.

My own observations in Darmstadt confirmed these theoretical ideas. Many people pass such places every day without noticing them. Existing traces are often overlooked, misunderstood, or not seen as historically relevant. Damage and spatial breaks are more common than first expected, but usually receive little public attention.

The interviews with residents and witnesses also confirmed these ideas. Personal stories change how people see a place. Several interviewees said that knowledge and stories changed their view of certain places. Another person said that traces need explanation and context, so they are not misunderstood, ignored, or politically misused. Witnesses explained how important visible traces at the original location are for them. Memory therefore takes place throughout the whole city, not only at official memorial sites.

If one of these three levels is missing, traces often lose their impact: what is not perceived remains invisible. What is not readable remains unclear. What has no meaning can be ignored, misunderstood, or forgotten.

From these findings, the three design principles: **perception, readability, and meaning**, are defined on a theoretical level. Based on the results of the empirical research, they will later be translated into spatial design strategies.

→ Perception

Perception is a social construct. Material space is important because spatial structures are more tangible than political facts. People only remember what is seen as noticeable or meaningful. When history is made visible and can be experienced through space, it can create identity and allow a reflective engagement with the past.

→ Readability

Architecture makes history readable by keeping these layers visible as historical evidence. A readable space therefore offers reliable orientation for the collective consciousness. It materializes historical narratives in a lasting way and protects them from the fleeting nature of spoken conversation.

→ Meaning

What is remembered is what is meaningful for the group's present self-image. Historical experiences are transformed into timeless narratives. This creates a constant dialogue between past, present, and future. Without this conscious marking and the communication through signs or material forms, what is perceived would remain temporary and could not become part of a society's collective memory.



But how
can memory
and urban
traces be

investigated
in practice?



Methods

Walk and Talk

This method is used to identify and understand locations in Darmstadt where traces of violence are still present, visible, or no longer visible. For this purpose, the walk takes place together with Dr. (PhD) Peter Engels, former head of the city archive. The walk allows for an on-site exploration of these locations, helping to situate them within the current urban context and to understand how they appear today. Through direct exchange with Dr. (PhD) Peter Engels, additional historical background know-

ledge about these places is gained, supporting a deeper analysis later in the project. At the same time, the method focuses on my personal and spatial perception of the sites. It allows me to experience the spaces, surroundings, and infrastructures in which traces of damage or transformation are present.

The findings from the walk are later used for mapping and for further archival research, where more information about these places is collected and analysed.

Site Observation

In addition to the walk with Mr. Engels, an individual observation is carried out, where I walk through Darmstadt on my own and look for traces. This is not done randomly, but guided by specific questions, such as: Is the “scar” immediately visible? At what height is it located?

Different perspectives are considered in order to understand the city as an archive (Assmann, n.d.), as well as how these traces are perceived in everyday life. At the same time, different types of damage are observed, analysed, and categorised, for example as visible, not visible, or partially visible.

Mapping

Mapping is mainly used as a tool for digital archiving. It helps to gain a spatial overview of where traces of damage can still be found in Darmstadt today and to document them visually. At the same time, it allows spaces that are not immediately visible to be made visible.

In addition, mapping supports contextual analysis and the visual representation of geospatial data. It not

only records physical locations, but also helps to understand the character of these places. In this sense, it relates to Christian Norberg-Schulz’s (1980) concept of *Genius Loci*, which describes the character of a place as shaped by its history, surroundings, and human life. Mapping therefore becomes a tool to read and interpret the city as a layered environment, where past and present are interconnected.

Interviews

In parallel with the other methods, interviews with witnesses are conducted to gain a better understanding of what happened during the night of the event. The aim is to capture personal experiences and translate them into a spatial context, as well as to understand lived experiences within the city of Darmstadt. This helps to develop a deeper understanding of how memory is experienced in everyday life, and where and how people remember

what they have lived through within the city. The interviews also aim to identify where individuals locate their own traces of memory, and whether these align with or differ from official memorial sites. The method is based on the idea that “everyone sees the same thing, but remembers it differently.” Personal memories are often fragile, unstable, and limited in time, and therefore need to be actively preserved (as cited in Krause, 2021).

Archival Research

Archival research is used to find additional visual material and important documents that support the investigation of spatial traces. This includes photographs, maps, and written witness accounts. The aim is to gain a clearer understanding of how the city looked before the war and how it changed afterwards. In this sense, the archive serves as a source of primary material.

It also provides new insights into the history of the city and may help to identify additional relevant locations. At the same time, the archive acts as a point of convergence for the other methods: places identified through interviews, individual observation, and the walk with Mr. Engels are further explored and contextualised through archival material.

Design Based Research

Design-Based Research (DBR) is a research approach that connects theoretical knowledge with practical application. It aims to develop interventions that are both scientifically grounded and relevant in practice (University of Hamburg, n.d.).

Design ideas are developed based on theory and existing research, tested in practice, and then evaluated. Based

on these observations, they are adapted and tested again. This creates a continuous exchange between theory and practice.

In this project, DBR is used to test different spatial strategies and design interventions. The results are reflected in relation to theoretical concepts, allowing for adjustments and further development.



What does
this mean
for the

city of
Darmstadt?



Applying the Methods in Darmstadt



Fig. 23. Collage 1

On a walk with Dr. Peter Engels

During my site visit in Darmstadt, I met Dr. (PhD) Peter Engels, the former head of the city archive and together we walked through Darmstadt. During the walk, he showed me several places where traces of the "Night of Fire" can still be seen today. In one courtyard, for example, the fire wall of a former building is still clearly visible. In other locations, parts of facades remain as relics from that time. He also pointed out a building that currently holds one of Darmstadt's well-known pubs, where the missing upper floor reveals only the gable wall of the neighbouring house. (Selected as one of the intervention sites in this thesis p.73).

He showed me further scars of the "Night of Fire" that I had not been aware of before. As the author of several books on the event and its aftermath, he has extensive knowledge and can be described as a kind of living city archive. His work is driven by the intention to keep the memory of what happened alive and to raise awareness of Darmstadt's history.

During our walk, we also spoke with a few passers-by at different locations. It became clear that most people were not aware that these traces even exist.

This shows a general lack of awareness of such damage within the city's urban fabric.

He also shared background information that was new to me, such as how buildings from the post-war period were altered or removed to adapt to car-oriented urban planning. This reflects how reconstruction often prioritised traffic infrastructure over the preservation of historical structures, making many traces less visible today.

The conversation also highlighted how political and complex the handling of these traces is. Many damaged buildings have been demolished and replaced for economic reasons, often prioritising development over historical value. At the same time, I realised how difficult it is today to locate these traces, and how dependent I am on the knowledge of people.

Nevertheless, the meeting was very valuable, as he connected me with further knowledge holder who were important for the continuation of my research. It was, in a way, the starting point of a chain of conversations.



Fig. 24. Collage 2

Site Observation

Building on the conversation with Dr. Engels, I went out again on my own and walked through the city. I explored different neighbourhoods, including areas that I knew from archival research had been less heavily damaged. I looked more closely at buildings, specifically searched for bunker markings, and was able to identify additional ones.

Through this process, I became aware of how many subtle traces still exist when one actively looks for them. Many of these traces only become visible and readable when understood within the right context. At the same time, an attempt is made to analyse and categorise different types of damage, for example as visible, not visible, or partially visible.

Conversations with friends from Darmstadt also showed how perception changes once one begins to question their surroundings and engage with them more consciously. They started to look for more “scars” in the city and moved through the urban space with greater awareness. As a result, further traces emerged that had previously gone unnoticed. Through my own on-site observations, I identified additional signs, although I could not always cle-

arly determine whether they were direct remnants of the war or the result of later changes. This shows how important context is when interpreting such traces. Overall, this process demonstrated how strongly the perception of one’s own city can change through targeted questions and conscious observation, and how many hidden layers can become visible in the process.



Mapping destruction traces

Mapping was mainly used as a tool for digital visual archiving and to gain a spatial overview of existing damage within the urban space. It made visible what is not immediately perceptible in the physical environment and allowed these findings to be documented.

It was used to collect traces and analyse their distribution across the city. Through this process, it became

clear that these traces are still spread throughout the entire urban area.

Mapping also brought together different sources, including findings from the walk with Dr. (PhD) Peter Engels, my own on-site observations, interviews, and archival research.

In this way, mapping was used as an analytical tool to record, compare, and relate traces of damage within a spatial context.



Applying the Methods in Darmstadt

Archive work

Archival research was used to identify, verify, and contextualise existing traces within the urban space. It made it possible for me to reconstruct a second reality of Darmstadt that is no longer visible today. This helped me to understand what the city looked like before the destruction, which streets still exist, and which spatial structures have been lost.

At the same time, the archive was used to check whether certain traces are actual war damage or the result of later modifications. Through the availability of photographs, documents and maps it

became clear where buildings and spatial structures are missing in Darmstadt. In addition, archival research deepened my understanding of the current spatial structure of the city. Traces became more readable, and their meaning could be more clearly grounded. The archive was not used in a traditional sense as a collection of texts and historical information, but as a spatial tool. It serves to understand what is missing, to confirm what still exists, and to explain what is visible in the urban fabric of Darmstadt.



Fig. 25. This photo was taken by Dr. Fritz Deppert of Darmstadt, the one above was taken by the author.



Applying the Methods in Darmstadt

Interviews

The interviews were mainly used to gain further information about the scars within the city and to collect personal insights. I was often referred from one person to another, which showed me how important interviews were for the development of this work. At the same time, it became clear how fragmented the knowledge about the traces is, and how dependent one is on the knowledge and personal experiences of individuals, an aspect already mentioned in the problem description of this thesis (p. 33)

The conversations also connected me more closely to the history of Darmstadt and allowed me to develop a more personal relationship to the places and what happened there. Through these

stories, the sites could be experienced from a more emotional and different perspective than I had before.

One of the people I interviewed was Dr. (PhD) Fritz Deppert, who experienced the night of the fire in Darmstadt as a child and we talked in great detail about his memories. Excerpts from the interview are shown on the following page, while a full version can be found in the appendix.

His stories and experiences eventually led me to choose one of the places he spoke about as one of the three sites for my intervention: the place where Fritz Deppert spent the night and which he still remembers spatially to this day.



Fig. 26. Dr. Fritz Deppert,
born in 1932 in Darmstadt.
Survived the Night of Fire
© Lisa Parzeller



Fragments from the Interview
with Dr. Fritz Deppert: Spatial
Narratives and Memories

Did you have a favorite spot in Darmstadt?

- My favorite places in Darmstadt were Kapellplatz and the Insel, because that was where I was born.



What was your childhood like before the attacks began?

- After the first attack, the carefree feeling of my childhood was gone, completely gone.
- What I saw there was too much for a child...



What spatial memories do you still have of that night?

- I still remember the large vaulted cellar where we spent the night. I was sitting on an old sofa where you could feel the springs through the fabric. The bunker smelled of masonry and dust.
- People ran down Rheinstraße, but they did not survive because there was no oxygen left. Everything down there was already burning so intensely that the oxygen had disappeared. We ourselves could hardly breathe, because the fire consumes the oxygen. And there was such a violent storm that we could barely walk on our own. We had to hold onto each other because the fire was coming from everywhere.
- On Kapellplatz, even the trees were burning, and the firefighters were no longer extinguishing the fires, they were extinguishing the people, the bodies.
- The church bells near Herrngarten were ringing, but no one was ringing them. The storm wind itself made them sound. It was ghostly... it sounded ghostly too...



What did you miss afterwards? What were your favourite places like afterwards?

- The places I was attached to, the places I knew and loved, were simply gone.
- There was nothing left to miss. There was no place of memory that was still truly a place anymore. In that sense, I did not miss the city itself.



Is it still visible to you today in some way?

- Sometimes something still comes back, for example, when construction work is happening again near the Krone corner and the ground looks like a field of rubble, or when I am at Mathildenplatz.

-And it is sad that today there are once again people who can understand these experiences: people coming from Ukraine or from Gaza.

Even today, it still makes my hair stand on end when I see these bombed cities: Syria, Gaza, Ukraine. It looks just like Darmstadt, like the Darmstadt I was in, right in the middle of it.



How can research be interpreted

into spatial
design
strategies?



Spatial Approaches to Memory

The following projects serve as examples of existing approaches to dealing with memory and traces of conflict within the urban environment and as part of a broader discourse. They do not directly influence the final interventions, but rather serve as inspiration and demonstrate different ways architecture can work with memory, visibility, and spatial traces.



Fig. 27. Stolpersteine in Ober-Ramstadt, Germany

Project Name: Stolpersteine (Stumbling Stones)

The project *Stolpersteine* is an artistic memorial created by the artist Gunter Demnig. The memorial stones consist of $96 \times 96 \times 100$ mm brass plaques that are visibly embedded into the ground in front of the last voluntarily chosen homes of victims of National Socialism. (Stiftung - Spuren - Gunter Demnig, 2026) Today, the project is spread across Germany and Europe and has become part of European remembrance culture (Stiftung - Spuren - Gunter Demnig, 2026).

Memory is created here through encounters within the public space and through minimal, decentralised markings embedded into everyday urban life. The *Stolpersteine* carry a strong symbolic character, as they return the victims' names, identities, and a place within society. At the same time, they direct attention towards often invisible or forgotten histories within the city. In this way, the project works with spatial strategies that can be described as Re-orient Attention and Frame Evidence.



Fig. 28. Open Fracture. concept of a memorial site at the destroyed Romanivskiy Bridge near Irpin, Ukraine. With permission

Project Name: Open Fracture

Open Fracture by Balbek Bureau (Ukrainian architecture studio) is a memorial project located at the destroyed Irpin Bridge near Kyiv, an important site of civilian evacuation during the war in 2022. Instead of reconstructing the bridge, the project preserves the fracture as a raw spatial symbol of trauma, loss, and resilience. Through minimal architectural interventions such as observation platforms and a pedestrian walkway, visitors are confronted directly with the remaining destruction and the traces of conflict (balbek bureau, 2022).

Memory is created here through spatial intervention and the deliberate preservation of rupture, absence, and fragmentation. Rather than hiding or monumentalising the destruction, the project exposes the damage and allows a direct spatial confrontation with the realities of war. In this way, the intervention creates awareness through the existing trace itself and works with spatial strategies that can be described as Reveal Absence and Frame Evidence.



Interpreting Theoretical Principles to Spatial Design Strategies

The three principles of **perception**, **readability**, and **meaning** were initially derived and defined from the theoretical contextualisation of this thesis. However, the empirical research showed that these principles cannot remain purely theoretical concepts, but need to be understood and translated spatially, since the identified problems directly appear within urban space itself.

Site observation, walk-and-talk, and mapping especially revealed that many historical traces are barely noticed in everyday life. Damages, fragments, or spatial breaks are often physically present, yet remain invisible within daily routines. This also became clear in my own perception: only through careful observation and conversations on site did I begin to notice traces that had always been present in the city, but that I had never consciously perceived before. This spatially confirmed the principle of **perception**: the question of how spatial traces can become visible and noticeable at all.

The archival research further showed that many places contain historical layers and stories that are hardly readable within the contemporary cityscape. Destruction has often been rebuilt over, altered, or pushed out of the visible urban environment, even though its history still exists. Many of these places only became understandable through historical documents, maps, and photographs. Mapping additionally helped to spatially connect and visualise traces distributed across the urban fabric.

This reinforced the principle of **readability**: the question of how spatial traces can become not only visible, but also understandable.

The interviews with experts and witnesses finally showed how strongly personal narratives can change the perception and meaning of a place. At the same time, it became clear that physical traces become especially relevant when they are connected to a clear historical and social context. Without this context, traces risk being overlooked, misunderstood, or losing their meaning. This reinforced the principle of **meaning**: the question of how spatial traces can gain social relevance and meaning.

The comparison between theoretical assumptions and the findings from the applied methods therefore revealed a recurring gap between what physically exists in space and what is actually perceived, understood, or recognized as relevant. This difference forms the basis for the spatial translation of the three principles.

Perception, readability, and meaning are therefore understood not only as abstract theoretical concepts, but as spatial conditions that can be addressed through architectural strategies. The following section translates these three principles into concrete spatial interventions and design strategies.

→ Perception

Do I notice it?

Perception refers to the degree to which a spatial element becomes physically noticeable through sensory experience. It concerns visibility, presence, scale, contrast, movement, and atmosphere.

> The element is perceived.

→ Readability

Do I understand what I see? (that it is a trace of violence)

Readability refers to the degree to which a spatial intervention can be understood, interpreted, and connected to its context. It concerns clarity, legibility, interaction, orientation, and relation between trace and intervention.

> The trace is recognised as meaningful, historical information.

→ Meaning

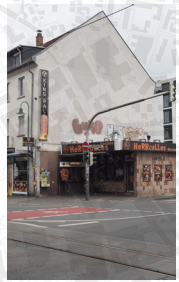
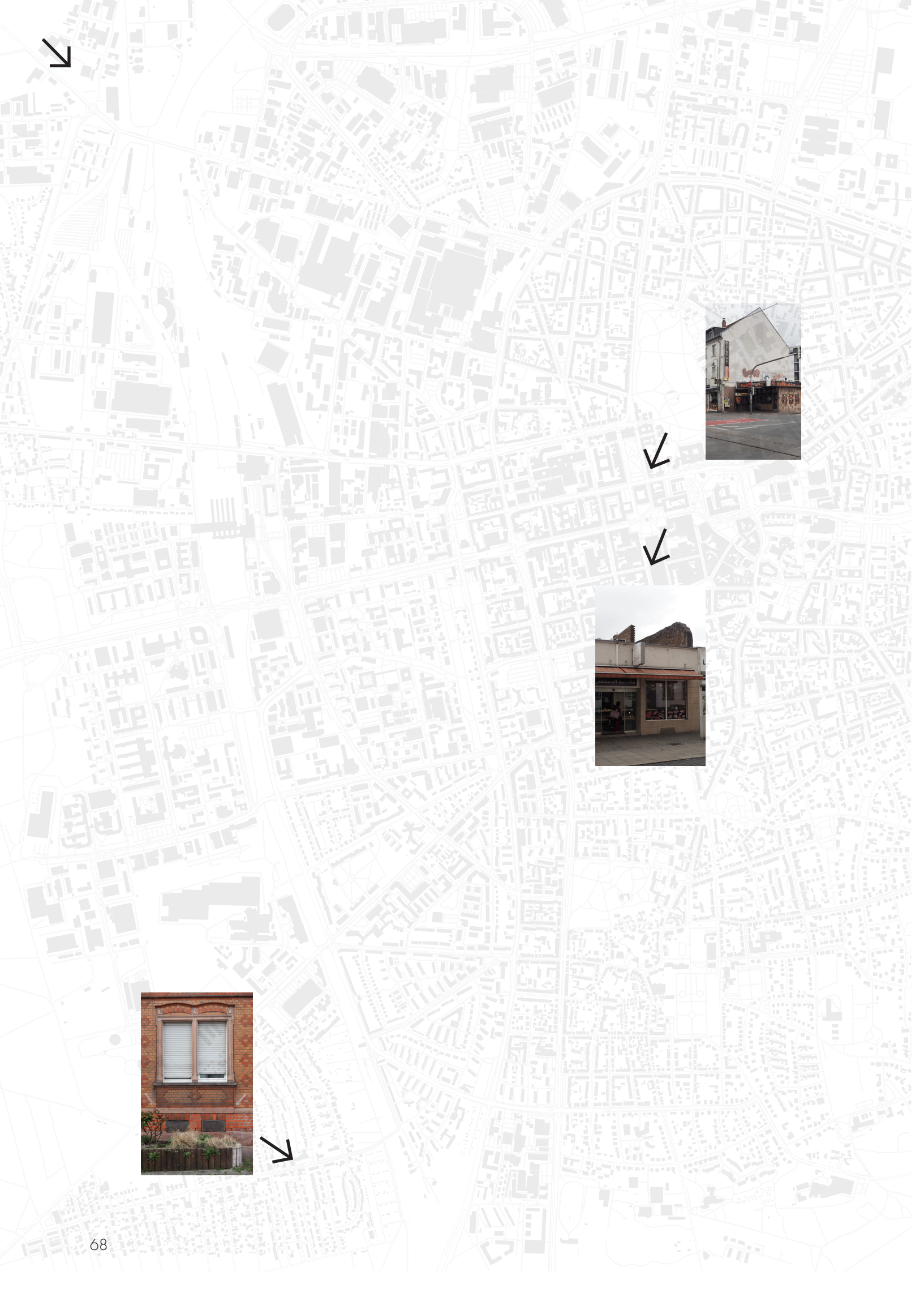
What does the element "mean"? Meaning refers to the capacity of a spatial intervention to convey historical, emotional, cultural, or social significance beyond its physical form. Make the history visible, make it not louder, make it deeper, space for reflexion or changeable through wear and tear on materials.

> The trace has a deep impact in terms of content.



How can these
principles be
translated

into urban
interventions
on three sites
in Darmstadt?



Selection of the Three Sites

Through the applied methods: site observation, archive research, and interviews; three sites were selected based on different conditions of traces: visible scars, half visible damage, and traces that are no longer visible today.

At the same time, it was possible to verify that these traces are scars of conflict. This understanding was supported through archive research and conversations with Dr. Fritz Deppert, my grandmother, and Dr. Peter Engels.



Different Conditions of Traces and Site Context

1. Not Visible

This site is an empty plot located at an intersection (*Zeughausstr./Mathildenplatz*) next to the Mathildenpark, where Dr. Fritz Deppert survived the night of the fire. Today, the damage is no longer directly visible. However, archive research revealed that a residential building once stood on this site. Another indication of this is the windowless gable wall of the neighboring building that can still be seen today. In

addition, slight traces of the former building remain visible on the façade of the neighboring house.

This is a typical case in which the upper floors of the building were completely destroyed by fire, while the ground floor survived. Today, the remaining ground floor contains a well-known pub in Darmstadt.

2. Half Visible

This site is also one of the cases in which only the ground floor remained after the destruction. As visible in the archive image, residential buildings once stood here. Today, only the remaining fire walls of the former row of houses are still visible. They cannot be directly recognized from the street level, but become visible from a short distance away.

Today, several shops are located here, and this scar is situated directly in the city center of Darmstadt near *Luisenplatz*.

3. Visible

This situation is one of the still visible scars of conflict within the urban fabric. It consists of two arrows painted in white oil paint on the exterior façade of a residential building. The arrows served as wayfinding signs to a shelter cellar and were meant to guide people to safety in case the streets were filled with smoke. More generally, they indicated the locations of shelters within the city during air raids.

The markings were also used to help rescue workers identify where survivors could possibly be found in collapsed buildings. Both in the past and today, the building has been used as a residential house. However, the former shelter cellar no longer serves this purpose and is now used as a regular storage basement.

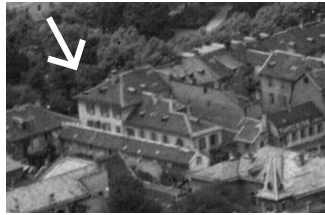


Fig. 29. Archiv Photo from Darmstadt before 1944. Stadtarchiv Darmstadt, with permission.



Site 1. Not Visible

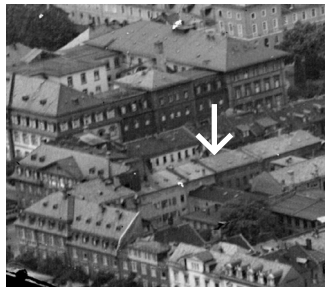


Fig. 30. Archiv Photo from Darmstadt before 1944. Stadtarchiv Darmstadt, with permission.



Site 2. Half Visible



Site 3. Visible

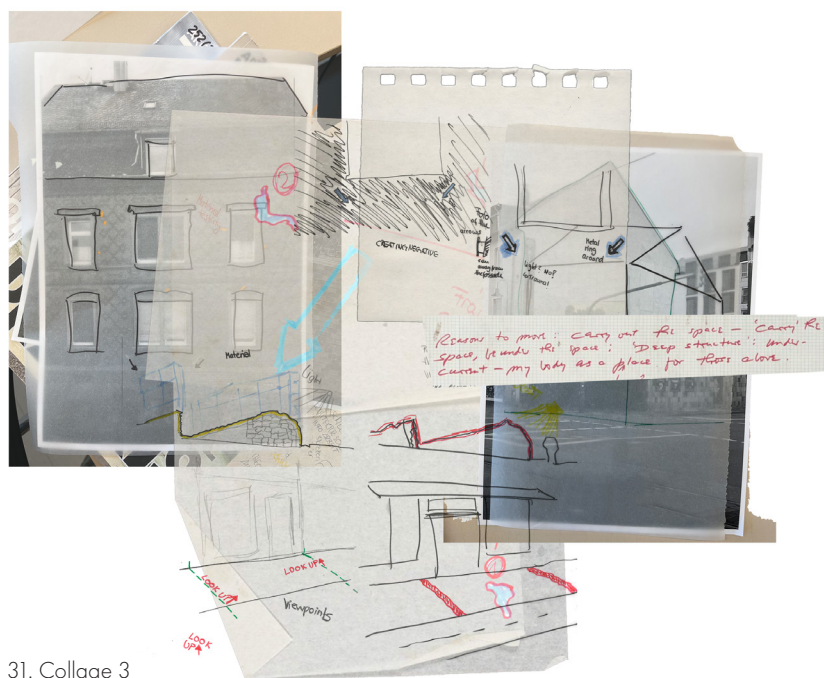


Fig. 31. Collage 3

Testing Spatial Strategies

The insights gained from the theoretical and empirical research were translated into spatial strategies through a Research-by-Design approach. Based on the identified sites and the spatial reinterpretation of the three principles, different ways of activating perception, readability, and meaning through architectural interventions were tested. The three design principles form the analytical framework for the development of the interventions and translate the theoretical investigation of conflict traces into spatial qualities. These principles are present in all three interventions, but expressed differently in each case and to different degrees.

The design process consisted of a continuous exchange between theoretical reflection and spatial testing. Different interventions, materials, forms, scales, and spatial situations were sketched, compared, and repeatedly evaluated in relation to the three principles. The aim was not only to make traces visible, but also to understand which architectural responses are appropriate and what problems they might create. During the process, it became clear how strongly material, scale, position, and perspective can influence the perception of a trace. Even small changes,

such as moving an intervention or changing the viewing angle, completely changed its effect within the urban space. At the same time, many interventions risked aestheticizing or monumentalising the traces instead of simply making them visible. Early ideas, such as highlighting war damages through color or emphasizing fire walls with light, increased visibility but also made the traces appear more decorative or abstract. Other approaches, such as enclosing damaged walls with glass, created a museum-like situation in which the scar became disconnected from everyday life.

Scale and presence also played an important role. Some interventions became too dominant, while others almost disappeared within the urban environment. Exact reconstructions of destroyed facades appeared artificial rather than honestly communicating the history of the site.

Through repeatedly testing, rejecting, and developing different approaches, a set of spatial strategies emerged that respond individually to each site while combining the three principles of Perception, Readability, and Meaning. From this process, the following interventions were developed.



Fig. 32. Collage 4

Intervention 1: addressing the Not Visible trace

The intervention translates the three principles of perception, readability, and meaning into a spatial silhouette made of corten steel that makes the loss of the former building visible without reconstructing its original form. Through its scale, materiality, and strong contrast to the existing façade, the intervention becomes visible from different perspectives within the urban space. The changing material makes history and time visible as an ongoing process instead of presenting it as something fixed or completed.

The fragmented silhouette is placed with a distance of 10 to 50 cm in front of the neighboring wall, creating an interaction with the missing space without overforming it. Different depths within the structure create changing perceptions depending on the viewing angle

and make the absence of the building readable. Instead of reconstructing the entire house, only individual fragments, such as the former staircase, are suggested, while other elements are intentionally left absent. This makes it clear that a building has been lost here and that this is not just a random empty space. Additional markings within the public ground surface indicate the former position of the house and connect the intervention to everyday urban life.

By avoiding symmetry and full reconstruction, the intervention distances itself from monumental or authoritarian architectural language. Instead, it works with fragmentation, emptiness, and visibility to make loss spatially experienceable and open space for reflection.



Fig. 33. Collage 5

Intervention 2: addressing the Half Visible trace

This intervention uses a series of periscopes placed within the public space to reveal and frame the remaining war damages on the building. These traces consist of two preserved fire wall ruins above a surviving ground floor. Different heights and scales of the periscopes allow different users to interact with the intervention and experience the trace from individual perspectives. Perception is created through the active use of the periscopes, which sharpens attention and encourages users to consciously engage with the hidden scar within the urban space. Each person sees the damage differently and reflects on it in their own way.

Readability is created through the directed framing of the remaining damages above the building and the clear relationship between the trace and the public space. By framing the damage within the periscope, the trace

becomes understandable as a scar of war. Additional texts or markings inside the periscopes can further communicate the historical context. At the same time, the intervention remains minimal, anonymous, and precise in order to avoid aestheticizing or monumentalizing the damages.

Meaning is created through the conscious confrontation with a trace that would normally remain overlooked in everyday life and by making the history of the site spatially experienceable. The intervention does not work through a loud or monumental gesture, but through a deeper engagement with a hidden trace of violence within the everyday urban environment.



Fig. 34. Collage 6

Intervention 3: addressing the Visible trace

This intervention works with a glass frame placed approximately 10 cm in front of the existing façade in order to reveal and reinterpret the historical trace. The focus is on the preserved arrow markings that once indicated the way to a public air-raid shelter during the war. Perception is created through the contrast between the transparent glass element and the existing brick façade, as well as through the addition of an unfamiliar object within the everyday urban space. Although the intervention remains minimal, it draws attention to the otherwise overlooked trace. Additional markings on the ground gradually lead towards the intervention and allow memory to be experienced as movement through the city rather than as an isolated object.

Readability is created through the clear relationship between the historical arrow, the glass frame, and the spatial

context. The intervention frames and highlights the existing trace without physically altering it, making the original function of the arrow understandable again. Additional text or a date on the façade can further communicate the historical background. Through the relationship between the historical façade and the glass element, the intervention creates different spatial layers: the historical façade, the present glass element, and the time in between.

Meaning is created because the arrow does not only function as a graphic sign, but also refers to a concrete experience of war, fear, and protection. Instead of freezing the trace into a static memorial, the intervention keeps it open to change and reinterpretation over time. By framing rather than reconstructing the trace, history remains experienceable within the everyday urban environment.



What does
it mean to
make traces

of violence
visible within
urban space?



Making Traces Visible

Modes of Response

The interventions resulted in three different Modes of Response: Reveal Absence, Reorient Attention, and Frame Evidence, which respond differently to the visibility and spatial condition of each trace. Together, they demonstrate how the three principles can be translated into different architectural strategies depending on the specific context of the site.

Critical Reflection

The interventions in this thesis do not simply make historical traces visible. They actively influence how the city is perceived, understood, and remembered. Even small architectural interventions can redirect attention, create meaning, and highlight certain stories within urban space.

As soon as architecture makes something visible, it also decides what becomes visible, how it becomes visible, and which story is being told. Architecture is therefore never neutral, but always influences how memory is constructed within the city.

During the design process, it became clear how thin the line between revealing traces and aestheticizing them can be. Light can dramatize or beautify damage, glass can create a museum-like atmosphere, and reconstructions can appear artificial or nostalgic. This raised the question not only of how traces can be made visible, but also when interventions begin to stage, control, or simplify history.

The interventions therefore do not aim to reconstruct history or create monuments. Instead, they try to interrupt everyday life for a moment, redirect perception, and make overlooked traces readable again within the city.

Memory is not separated from daily life, but remains part of the everyday urban environment.

At the same time, visibility does not automatically create memory or understanding. Even visible traces can still be ignored, misunderstood, or slowly disappear again within everyday life. The interventions therefore do not try to fix memory into one final narrative, but rather create moments of attention, reflection, and awareness.

The project also raises the question of whose memories become visible through such interventions, and which perspectives may still remain invisible. Memory within the city is always selective and shaped through social and cultural processes.

In addition, the interventions themselves are not static. Materials age, become damaged, are overlooked, or interpreted differently over time. The interventions therefore also become part of the ongoing transformation and history of the city itself.

These interventions are therefore not presented as perfect solutions, but as spatial tools that can shift perception and open new ways of reading the city and its hidden histories.



Discussion

This thesis started with the observation that traces of violence in urban space are often hardly visible and frequently overlooked. Although many of these traces still physically exist, they often remain socially unnoticed. As a result, cities increasingly lose their readable traces and therefore parts of their history and identity, even though the spatial consequences of historical conflicts still exist today. Regular bomb discoveries in Germany show that the war is still part of everyday urban life.

At the same time, interviews with witnesses in Darmstadt made clear that memory does not only exist in monuments or traditional memorials, but also continues to live within everyday and collective urban space. During the research, it became clear how complex and broad the topic of memory in the urban context actually is. Conflicts do not disappear with the reconstruction of cities, but remain embedded within their structure. The loss of architecture also means a loss of identity. This can also be seen in current conflicts such as Gaza or Ukraine, where cities are destroyed and people lose their built environment while still carrying the memories of these places within them.

At the center of this thesis was therefore the question of what role architecture

plays in creating visibility for historical traces of violence and how small-scale architectural interventions can reveal and situate overlooked traces of conflict within the urban fabric of Darmstadt. The aim of the work was to raise awareness about the importance of preserving and consciously framing traces of violence. History should remain visible, even when it is uncomfortable.

The theoretical investigation showed that cities store memories and that conflicts leave scars within the urban fabric. Invisibility does not mean that memory has disappeared. Hidden traces can be intentionally revealed through architecture. It actively influences what remains visible, what disappears, and how people remember. At the same time, it became clear that memory does not always need to be monumental or only represented through traditional memorials.

Small interventions can coexist directly at the places where history happened and integrate memory into everyday life. In this context, architecture should not romanticize or aestheticize historical violence, but instead create visibility and space for reflection. As became clear several times during the process: "I don't want to make them beautiful, I just want to make them visible."

To investigate how urban scars can be read and interpreted, the three principles of perception, readability, and meaning were developed.

These principles became the theoretical framework for analyzing the sites and, through a spatial reinterpretation, for developing the interventions. The applied methods: site observation, archive research, and interviews, were not only tools for collecting data, but also became tools for reading the city and revealing hidden layers of memory. Through the combination of these methods, traces of conflict could be identified, spatial losses became visible, and narrative layers within the urban space could be understood. The interventions therefore did not emerge randomly, but developed directly from the existing traces, the spatial conditions of the sites, and the findings from the theoretical research.

During the process, it became clear that each site has its own spatial and historical conditions and therefore cannot be treated with the same strategy. Every scar requires an individual approach. In this context, architecture should not aesthetically overwrite destruction, but instead make existing traces visible, readable, and experienceable. Small site-specific interventions can change perception and reactivate forgotten

histories without the need for monumental gestures. At the same time, it became clear that visibility alone is not enough. The way visibility is created is what matters. One of the most difficult realizations during the process was how small the gap can be between making something visible and aestheticizing it. "The gap between making something beautiful and just making it visible was so small sometimes."

This also led to a critical reflection on the political and ethical role of architecture. Memory is never neutral, and architectural interventions also carry political dimensions. Architecture influences social narratives, and narratives can be instrumentalized. Historical violence can be romanticized or misused over time. This creates a responsibility for architects when dealing with historical traces of violence.

Architects are never neutral, because design influences perception, interpretation, and memory. In this thesis, architecture was therefore understood less as a final answer and more as a mediator. The interventions are not meant to tell complete truths, but instead open discussions, encourage reflection, and create awareness. Architecture should not only deal with comfort, but also confront what is uncomfortable.

My own position within this work also is not neutral. As a German person from a post-war generation, I work from a post-memory perspective. I am neither part of the perpetrator generation nor a witness, but I am still culturally, socially, and spatially shaped by this history.

At the same time, this work also has limitations and risks. Political and economic factors always influence how memory is handled within urban space. There is also the risk that interventions themselves may eventually become part of everyday life and once again be overlooked. Furthermore, memory can be instrumentalized and historical violence can be romanticized. Precisely because of this, the work showed how important a conscious and sensitive approach to visibility is.

In conclusion, this thesis demonstrates how complex memory within urban space truly is and how large this field of research remains. Architecture cannot solve conflicts, but it can help make traces visible, create awareness, open discussions, and anchor memory spatially within everyday life. Architecture should not beautify scars of violence, but make them visible and open them for reflection.



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AI tools were used during the writing process of this thesis. ChatGPT was used to help structure the text and to assist with spelling, grammar, language, and cohesion in selected sections. All ideas behind the written texts and in general, as well as the analyses, design decisions, and overall argumentation, are the author's own work. DeepL was used for translation between German and English.

All AI-generated suggestions were critically reviewed, edited, and adapted by the author. In the prompts, specific emphasis was placed on changing only the most important parts and preserving the language and tone of the original text. All AI-supported content was based on the author's own written text, thoughts, and ideas.



Appendix



Mapping destruction traces

Through mapping and field research, traces across Darmstadt were documented and categorised according to their degree of visibility within the urban fabric.

The analysis revealed different conditions of perception: directly visible traces, partially visible traces, and traces that remain physically present but are no longer recognisable within everyday urban life.

This categorisation later informed the selection of the intervention sites and the development of different architectural responses.

Site Walk Data
10 urban walks conducted
18 traces documented
3 visibility categories identified
3 representative sites selected



Spatial Traces of Violence

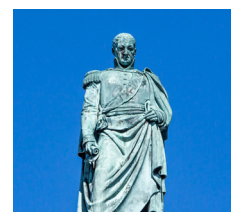
Not Visible



Half Visible



Visible



18 traces documented
3 categories identified
3 sites selected for intervention

