



The (R)Urban Temporary

Towards Resilience Through an Alternative Copenhagen

Master's Thesis

Chalmers School of Architecture
Direction: Rurban Transformations

2022

Department of Architecture and
Civil Engineering

Fabian Lecker

Supervisor: Marco Adelfio
Examiner: Kristina Grange



CHALMERS
UNIVERSITY OF TECHNOLOGY

The (R)Urban Temporary -
Towards Resilience Through an Alternative Copenhagen

Master's Thesis 2022
Chalmers School of Architecture
Department of Architecture and Civil Engineering
Master's Programme of Architecture and Urban Design

Author: Fabian Lecker
Examiner: Kristina Grange
Supervisor: Marco Adelfio

Keywords

Resilience
Temporary
Permanence
Copenhagen
Urbanism
Rurbanism

Abstract

This thesis work has its starting point in the increasing challenge of current and future uncertainties, crises, and risks that cities face today and how resilience can enhance our possibilities to counteract those.

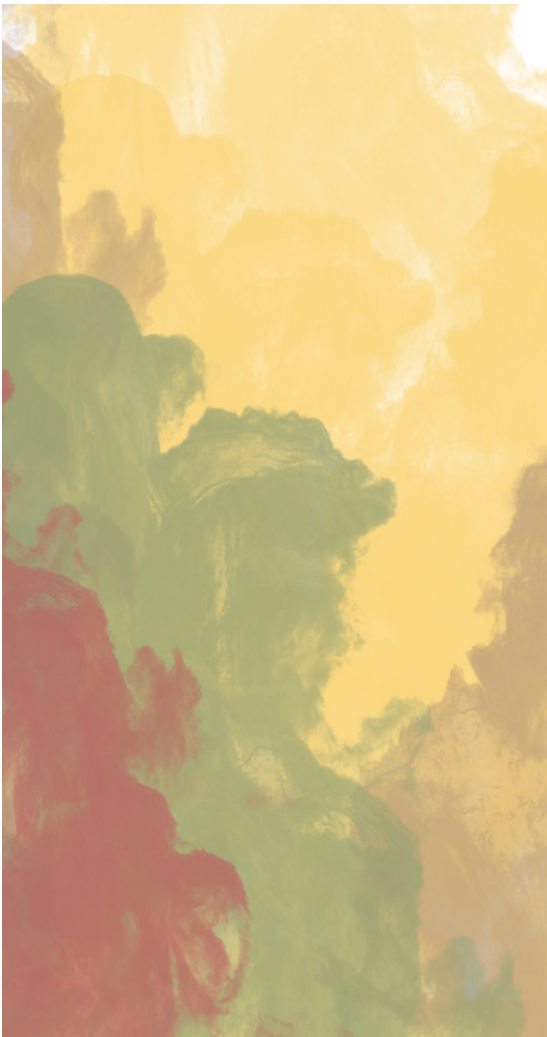
Translating this issue into the field of architecture, this thesis identifies the growing disconnect between our permanently planned cities and our faster and faster-changing societies as a challenge towards resilience.

Studying recent Copenhagen urban developments - which are hugely based on planning and designing for permanence throughout all scales, functions, and locations - supports the need for a shift in how we develop our cities moving forward. The thesis therefore, explores how, in contrast to that, planning and designing for temporariness can be an alternative approach.

The aim is to create design strategies as a toolbox to set up temporariness in the built environment. Those strategies then get translated into exemplary iterated architectural elements. Furthermore, the thesis explores how connecting and combining strategies and elements creates an improved (r)urban environment capable of reflecting societies needs and demands. It moreover investigates how to react to those over time by adapting the elements through their strategies based on their predicted duration of existence.

Several supporting site visits help analyze the distinctive identity of the application context, a former shipyard area in Copenhagen called Refshaleøen.

The elements then get implemented in that rurban environment to showcase experimental scenarios that explore the possibilities of designing for temporariness as an alternative to the current reality of (r)urban development.



"A use is not temporary until it has proved to be so,
by disappearing."

Bishop & Williams (2012, p. 5)

Content

	1	Abstract	
1 Outline	4	Introduction	Background & Intention
	6	Research Questions	Thesis Structure
	6	Methodology	Glossary
	8	Delimitations	
2 Theory	10	Challenges	Liquid Modernity
	14	Beyond Sustainability	Societal Changes
	16	Resilience	Emerging Future Pressures
	18	Permanent vs. Temporary	
3 Concept	24	Manifesto	
	26	Temporary Categorisation	
	28	Strategies	
4 Application of Concept	30	Approach	
	32	Local Context	History & Today
	40	New Elements	Architectural Language
	54	Combinations	
	62	Temporary Maps	
5 Reflection	64	Open Questions	History
			Construction
			Uncertainty
	70	Author Background	Bibliography
	72	Index	Figures
	74	Appendix	Strategy Glossary
			Reference Cases
			Elements

1 - Outline

"I hope that any reader (...) will constantly and skeptically test what I say against [their] own knowledge of cities. The point is, we need desperately to learn and to apply as much knowledge that is true about cities as fast as possible."

Jacobs (1961, p. 16)

Background & Intention

The topic for this thesis developed during my time in Copenhagen, Denmark, where I got the chance to work on master plans both in that city and others.

I experienced the slow and fixed processes aimed to manifest spaces for the future without knowing about the future.

Especially for Copenhagen, the city with the goal of being "the first carbon neutral capital in the world" (CPH 2025 Climate Plan, 2016, p. 6), those standardized planning processes for permanence do not seem to match the mindset of being a frontrunner.

In contrast, studying in Lisbon, Portugal, showed me the opposite of a temporary city, a place seemingly cast out of stone with the past always present in the urban environment.

This made me think about the different approaches to future cities, which resulted in this thesis.

Work approach

The work approach has its starting point in "No More Dreams?" by Roemer Van Toorn (2007). He criticizes the current practice in architecture based on merely minor corrections to the stable "neoliberal economic engine" instead of proposing new systems and working approaches. With that in mind, the initial analysis of the mainstream modus operandi does not lead to cor-

recting it but instead results in the proposal of alternatives. However, it does not propose to change the current reality completely. Instead, it wants to start a discussion about the state of the building culture. Therefore, rather than answering the research questions, it raises more.

(R)Urbanism

The thesis title of (R)Urban draws from the chosen test site, Refshaleøen, which will later be briefly defined with rural characteristics. However, this thesis argues that planning and designing for temporariness is necessary towards Social Resilience, regardless of the characterization of an area as urban or rural. Different approaches must be applied when translating the Strategies for Temporariness into architectural elements and their adaption to a local context.

That being said, this thesis does not fully develop the idea of the contrast between urban and rural areas as it would be needed in a detailed development. Instead, it only investigates the difference on the surface level and acknowledges the need for a more comprehensive analysis when adapting the concept of temporariness to a specific local context.

Thesis Structure

This thesis is organized into five chapters:

Chapter 1 outlines the topic and states the research questions and methodology.

Chapter 2 introduces relevant theory connected to the main topics of societal changes, uncertainties, resilience, permanence, and temporariness.

Chapter 3 presents a manifesto as the combined outcome of the theory and authors' opinion and then introduces a concept design with strategies towards temporariness.

Chapter 4 translates the concept into architectural elements adapted to the local context of the chosen test case. It afterward combines the elements and displays such a combination in that context.

Chapter 5 closes the thesis work by critically reflecting on the concept and suggesting follow-up topics through open questions.

Glossary

Resilience

Describes the capacity to react positively to crises, risks, and uncertainties. This thesis focuses on Social Resilience regarding the physical environment being able to react positively to society's changes.

Risk

An upcoming situation that involves possible and calculable danger or loss.

Uncertainty

In contrast, future situations can not be calculated in uncertainty since they are unknown.

Temporariness

Describes a limited period of time.

Permanence

Describes an unlimited period of time.

As noted by Bishop and Williams (2012, p. 5), "a use is not temporary until it has proved to be so, by disappearing (...)". Therefore the terms temporary and permanent are in this non-implemented work not used in their actual duration of existence but their intention of staying or disappearing/changing.

Research Questions

The aim of this thesis is to investigate two topics. Firstly and more general it looks into alternatives to the current way of developing cities:

1. Can Design and Planning for Temporariness be a step towards Social Resilience?

And secondly, what an adaption of that general system to a chosen test site can look like:

2. How can Design and Planning for Temporariness be implemented in the local context of Refshaleøen, Copenhagen?

Methodology

The methodological process is illustrated in figure 1 on the right.

This thesis begins with research for design as a method to investigate the chosen general challenge of societal change and uncertainties, risks, and crises affecting contemporary cities.

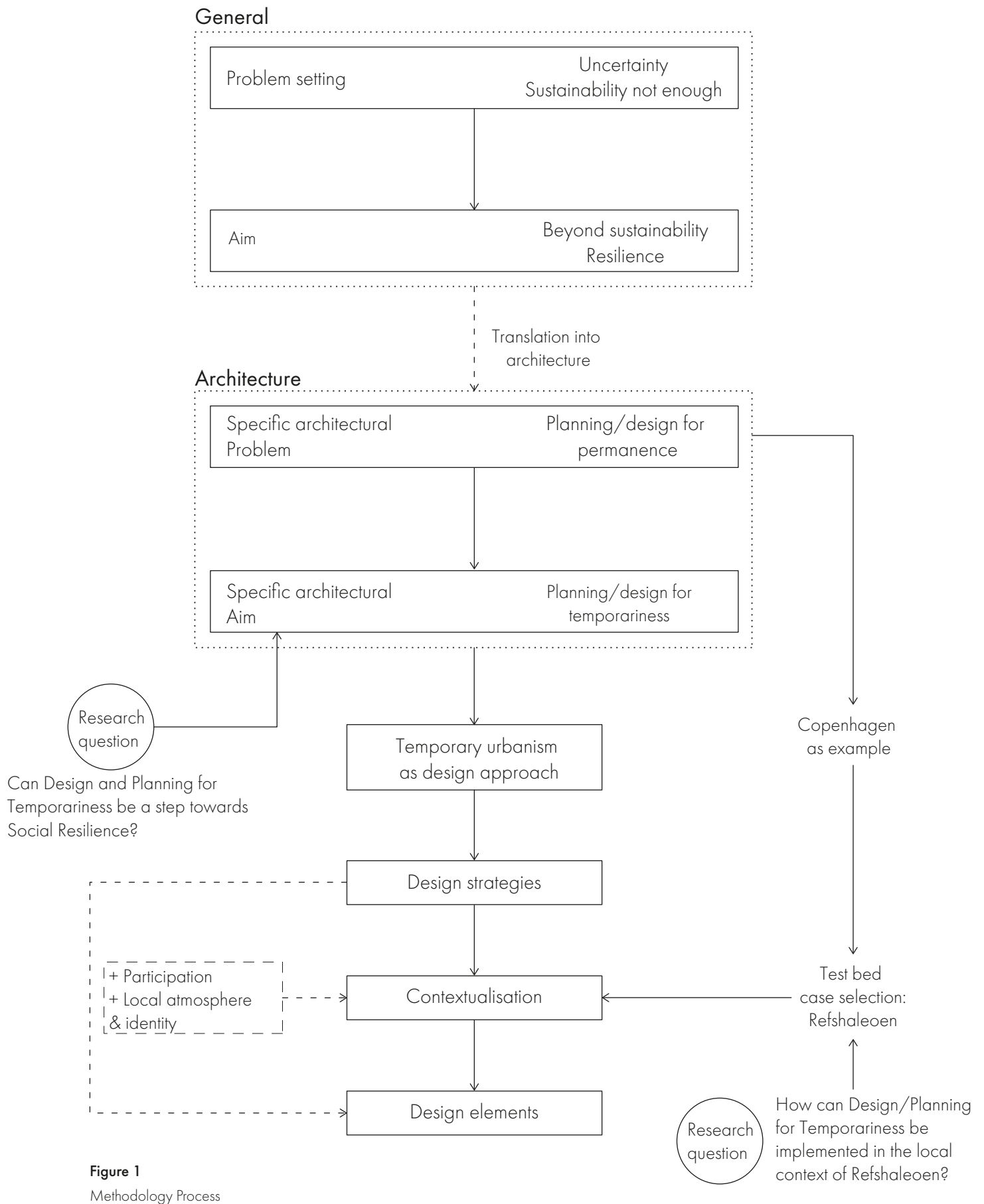
It investigates the need to go beyond sustainability and towards resilience based on papers and literature references on those topics. It then researches the architectural discourse of permanent versus temporary development.

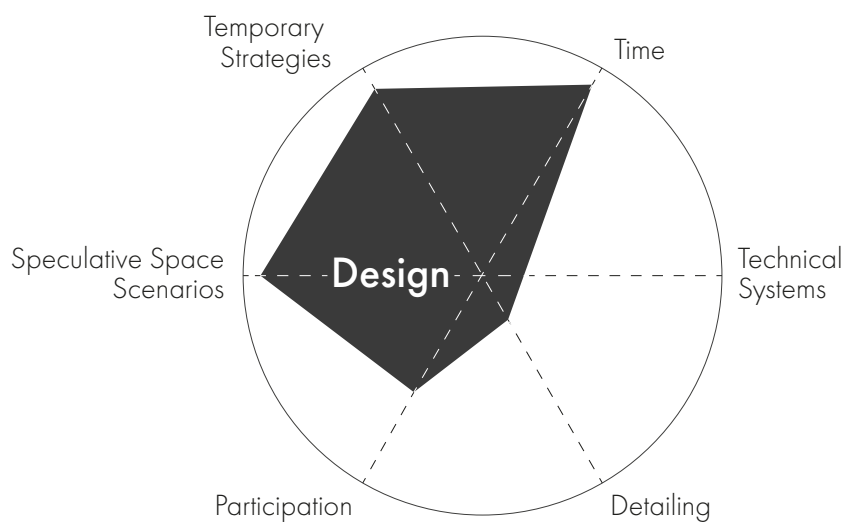
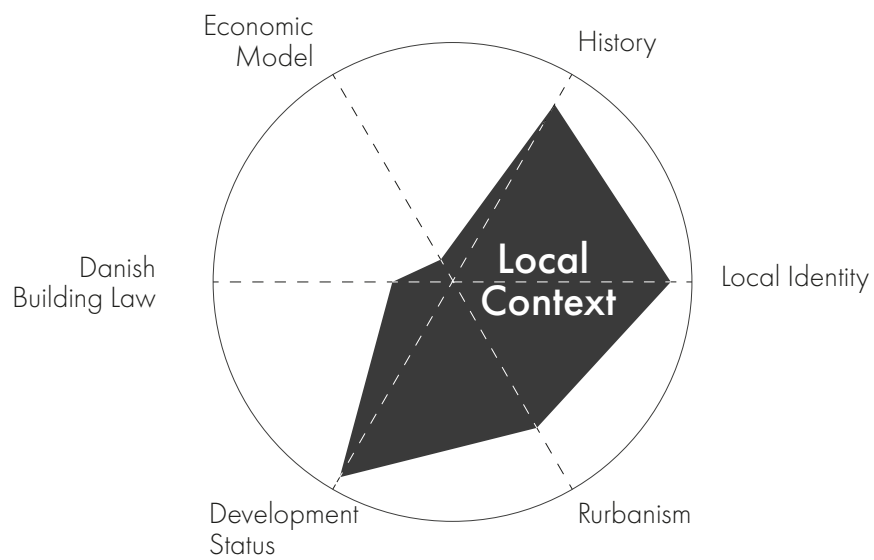
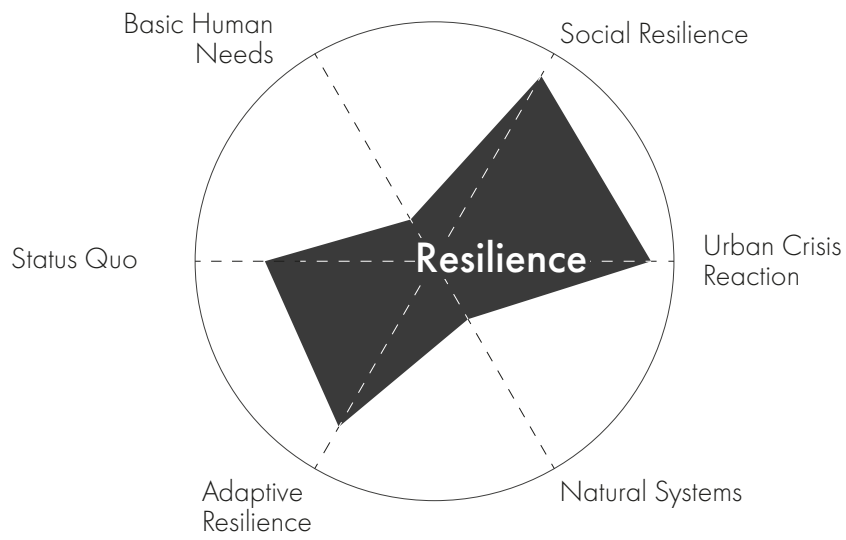
As seen in figure 1, this is displayed in the first research question.

To understand the ongoing urban planning situations, it analyses Copenhagen's areas. It identifies one of them as the local context for the later design, which connects to the second research question.

To link the developed concept back to the initial aim of resilience, strategies get developed by investigating reference cases.

The final stages of the thesis consist of research by design through iterations of architectural elements as translations of the previously developed strategies.





Delimitations

The figure on the left shows the delimitations of the explored main topics Resilience, Local context, and Design. The extents of the exploration are qualitative and not quantitative.

Resilience in this thesis focuses on strengthening social resilience rather than ecological resilience or basic human needs such as shelter, food, and safety. Furthermore, social resilience is investigated in the urban rather than the rural areas, focusing on the present as the starting point and thinking about the future.

When it comes to the local context, the economic system is not investigated, nor is the area's

building law. Instead, the focus is on the local identity, primarily on its history and current development status.

The Design is an investigation of the identified temporary strategies, which are influenced by their existence in time. Since that is a future topic, it only proposes speculative scenarios due to uncertainties. Detailing and technical systems are not explored, and participation is mentioned throughout the work but will require further research outside of the scope of this work.

Instead of proposing a detailed design project or master plan, this work proposes a (r)urban concept design.

Figure 2
Delimitation Diagram

2 - Theory

Challenges

The following topics are investigations into the different challenges connected to this thesis. They set the relevance for the concept introduced later.

Liquid Modernity

The book *Liquid Modernity* by Zygmunt Bauman is used as a foundation for the arguments presented in the theory for this thesis.

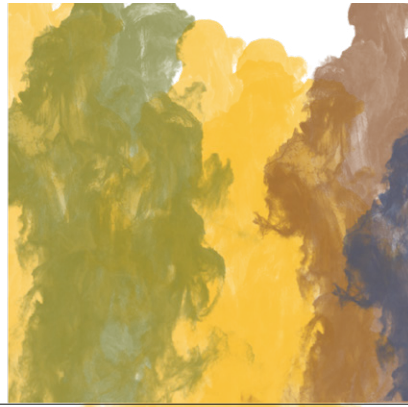
His book on the change of our societies describes the process from former solid modernity towards a liquid one.

Previously, societies were thriving towards a perfect, stable state of things. Change was only necessary until the world reached a point where enough knowledge was accumulated to finally stop changing. (Bauman, 2000, as cited in Bishop & Williams 2012, p. 21).

In the case of outdated solids, which refers to old values and systems, they were replaced by 'new and improved solids', again to be perfected. Therefore, a clear end to change could be reached. Society's journey towards that goal was everybody's duty.

However, recent times have shown that the confidence in that social construct vanished, and we no longer rely on the premise that "the presently cherished values (...) will stay immune to the flow of time" (Bauman, 2012, p. 166). According to Bauman, "we no longer believe that a state of perfection will ever be achieved: change is here to stay, as 'a permanent condition of human life'." (Bauman 2000, as cited in Bishop & Williams, 2012, p. 21). The impact of globalization led to a new need for openness that sees fixed obstacles as a challenge.

Furthermore, the speed at which society is changing is increasing more and more, as the following texts will show.



Societal Changes Towards Liquid Modernity

These examples of societal changes showcase the transformation from solid to liquid modernity.

Political change

In the larger picture, political movements and their increasing speed of change accelerated society's transformation. Globally, and especially in Europe, "the fall of the Berlin Wall and the end of Communism, have seen a fundamental shift in the way we see the world." (Bishop & Williams, 2012, p. 23). This lost "continuity of power" (Bishop & Williams, 2012, p. 182), where democratic governments are not long enough in power to implement their proposed ideas have led to a disconnect of top-down action and society's trust in them.

"Social forms and institutions no longer have enough time to solidify and cannot serve as

Figure 3

Illustration - from solid to liquid

frames of reference for long term life plans, so individuals have to find other ways to organize their lives.” (Bauman, 2000, as cited in Bishop & Williams, 2012, p. 21).

Population shift

In addition to that, the shift in population location drastically influences the way we lived together then versus now. For example, while approximately 50% of the European population lived in cities in 1950, this number increased to 75% in 2020, with a further increase expected to 85% in 2050 (United Nations, Department of Economic and Social Affairs, Population Division, 2018). This change in human connection and density resulted, among other factors, in more interaction with strangers and less identification with the community.

Digitalization

Building on the argument of interaction with strangers, the incredible speed of digitalization fundamentally changed the human way of life. In an interconnected global world, societies influence each other in ways never seen before. Even though the physical world looks to some extent the same as before, it is far from the same, and many aspects remain hidden in the outside world (Malter & Rindfleisch, 2019).

To shortly sum up how majorly digitalization has transformed our lives and will continue to, Malter and Rindfleisch put it in 2019 in their paper ‘Transition to a Digital World’ as follows:

“Digital technologies are transforming education, commerce, transportation, healthcare, communication, entertainment, and general interpersonal interaction, from finding a mate (or just a date) to finding a job, finding any type of information, to reorienting family life and leisure time.”

Those findings suggest that digitalization will not reach a perfect state of solidity but will remain unfinished and in a state of constant transition.

Vacancy

Moving toward more direct physical changes, post-industrial cities nowadays have large areas of former production lying vacant in proximity to urban areas (Bishop and Williams, 2012, p.24). Copenhagen, for example, has seen a significant decline in industrial capacity over the last decades and is transforming into a city of knowledge. In the US, “(...) industrial decline and

suburban development (...) have ‘hollowed out’ the inner city areas, leaving vast areas of vacant land” (Bishop & Williams, 2012, p.24). I argue that those vacancies, combined with increasing property values, decrease the trust of societies in political and economic stakeholders and also contrast everybody’s right to the city.

Living together

The way we live together is in constant change over time. For the last decades, aging societies and a movement away from traditional family models have increased the change directly impacting the physical environment. In addition, studies suggest a further increase in the senior population and a decrease in persons in younger generations (García & Molina, 2017). Together with a rising number of child-free and single-parent households (García & Molina, 2017), the existing housing stock is becoming increasingly unfit to fulfill the demands of today’s society.

With more people living alone and new emerging living concepts such as co-living, senior housing, and patchwork living, the housing situation is becoming more diverse.

Moreover, the Covid-19-pandemic as a significant disruptor made humanity question its way of living, with lockdowns changing the relevance and role of homes.

Work

The current pandemic also has a significant impact on the way we work. The previously mentioned change of cities transforming from industrial powerhouses to locations for knowledge production is a significant factor in changing the way we work. This new state does not require the same physical requisites as past working environments (Bishop & Williams, 2012, p. 26).

Co-working, project-based employment, and the decline of traditional careers are additional factors. Where past family businesses made the path for young professionals quite certain, the present speed of societal change leaves them in the dark about what their work will look like in the coming decades.

Automation and digitalization furthermore shift the need for human labor, and “3D printing technology could potentially turn every garage into a micro-factory (...)” (Bishop & Williams, 2012, p. 26).

Emerging Future Pressures

With the previous topics giving an overview of changes leading up to the present, the following points give a brief insight in possibilities of future pressures on societies.



Figure 4

Flood in a German Town 2021

As an abstract concept, urban and rural areas can be seen as systems that face disturbances to their stability (Laboy & Fannon, 2016). Systems in this thesis are loosely defined as complex interconnected elements, both physical and non-physical. The societal changes already highlighted some of the forces and events that led to changes in systems. Many of them are still ongoing in the present, and similar changes will likely occur in the future. In addition to them, there are unknown forces and events, here defined as uncertainties, that the future can bring, increasing the pressure on systems.

Climate change as the most significant challenge to humanity not only holds many crises and disasters ahead, but the issue of tipping points accelerates the risk of major disturbances. The Stockholm Resilience Center stated in 2014 that "Human pressure has reached a scale where the possibility of abrupt or irreversible global change can no longer be excluded." Other catastrophic events such as the Chernobyl or Fukushima fallout, Terrorism attacks, or floods such as in Germany in 2021 (Figure 4) add to the pressures systems face nowadays and will do so in the future. Laboy and Fannon (2016) summarize the above events: "These recent large-scale natural and manmade disasters have demonstrated the limitations of conventional risk management in the built environment, and of course, the com-

plex web of technical, social, economic and organizational domains."

The speed of political change is another pressure on those systems. We cannot rely on the current political setups to stay in power moving forward (Bauman, 2012) and therefore face increasing uncertainty. For example, municipalities cannot plan large-scale developments in the long term due to rapid budget and planning changes, which results in the need for more flexibility.

Similarly, financial instabilities lead to the same type of uncertain planning. The last major financial crisis saw many building projects abruptly stopped due to their inflexibility of smaller development steps or possibilities to change, among other issues. Barrel and Davis argue in 2008 that those types of crises "tend to be seen as surprising and unusual when they occur (...)", even though they are "so common that strong defenses should be built against them." (Barrel & Davis, 2008).

In addition to these aggressive pressures, the need for societal reflection in the built environment adds to that challenge. For instance, the Venice Biennale 2021 revolved around the issue and uncertainty of 'How will we live together?' as seen in figure 2, as an increasingly complex challenge.

Figure 5
Venice Biennale 2021



Beyond Sustainability

In search of possible solutions to the stated challenges, figure 6 on the right describes the different approaches to how whole systems can be set up.

The four terms Conventionality, Sustainability, Resilience, and Regeneration define the different approaches.

Conventionality as the first term will lead to a collapse of the systems under their own weight. It provides the future with too few resources, too high emissions, and too many destroyed ecosystems to continue life as we know it today. This is in many situations the current approach, even though "(...) we are uncomfortably aware that we are heading in the wrong direction" (Stockholm Resilience Center, 2014).

Sustainability, defined as sustaining or preserving the resources and ecosystems as we have them today, intends to keep the capacity of a system for the future.

The issue with that is two-fold. Firstly, Sustainability, if it would theoretically be implemented now "(...), does not fix what we have already broken. Perhaps Sustainability was sufficient in the past – before the climate started to change and the environment became degraded and the impact of climate injustice became unconscionable." (Casale, 2020)

And secondly, as discussed before, in times of in-

creasing pressures, many of which are uncertain, it does not provide enough stability. With time running out to reach climate goals, Sustainability "(...) is unachievable at the rate of 'improvement' we are making by means of incremental and fragmented efficiency. We are unlikely to make the changes needed quickly enough unless significant and radical change occurs." (Reed, 2007).

Resilience is an improvement to the above due to its effort for increased system capacities. "This is of critical importance considering future uncertainty and limited understanding of the vulnerability generated by human-induced change." (Stockholm Resilience Center, 2014). The coming pages contain a more detailed investigation of this approach.

This is, however, only understood as a step toward the long-term goal, *Regeneration*.

The Oxford English Dictionary defines this term as "the process of growing again". Regeneration would not only result in a stop to exceeding planetary boundaries but in reducing them. Moreover, in this approach, humans no longer do things to nature, but instead, as part of the natural systems. (Casale, 2020).

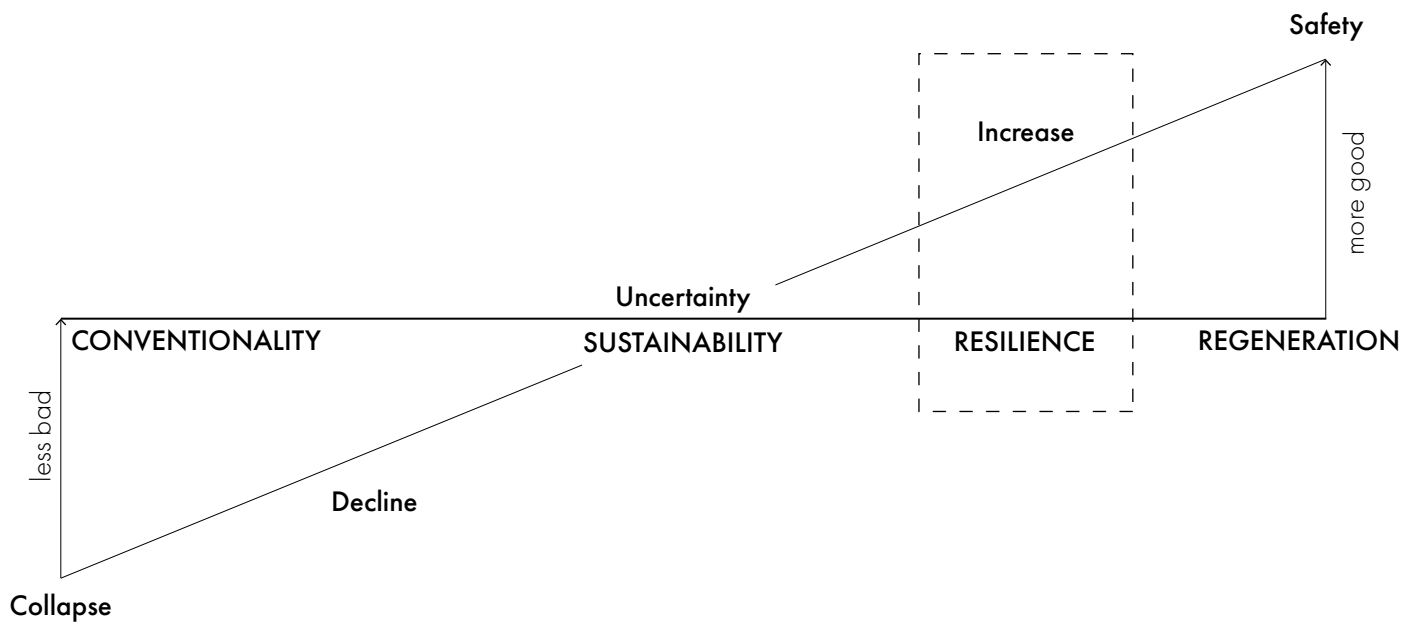


Figure 6

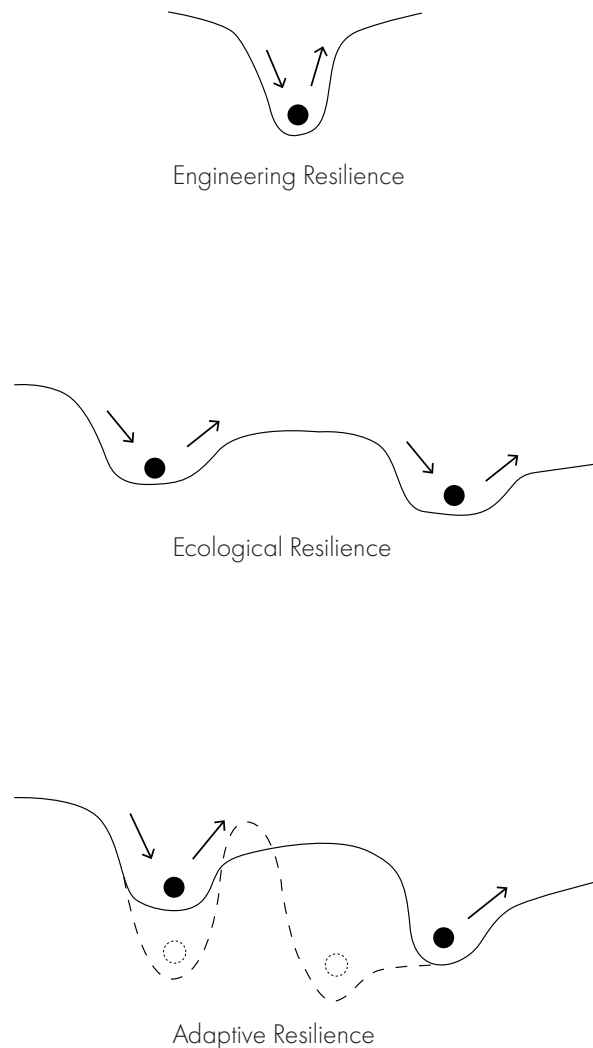
The Different Approaches

Adapted from Casale (2020) adapted from Reed (2007)

The four concepts can therefore be summarized as follows. Conventionality and, finally, collapse result from business as usual and the system's decline. Sustainability keeps the capacity of systems for the future. Therefore, it is neutral and neither creates a worse nor a better future. Due to future uncertainties, Resilience goes one step further and recognizes the need to improve the capacity to react to system pressures positively. Regeneration heals the planet and improves the relationship of humans with nature.

With the earlier described changes, uncertainties, risks, and crises in mind, this thesis acknowledges Regeneration as the ultimate goal but recognizes that the above challenges currently stand in the way of achieving safety. Resilience has therefore been set as the focus of this thesis. However, the concept still sees "Humans doing things to nature – assisting the evolution of Sub-Systems" instead of the ultimate goal of "Humans participating as nature – Co-evolution of the Whole System" (Reed, 2007), hence only providing a step towards Regeneration.

Resilience



The Stockholm Resilience Center (2014) defines the term as follows: “Resilience is the capacity of a system, be it an individual, a forest, a city or an economy, to deal with change and continue to develop. It is about the capacity to use shocks and disturbances like a financial crisis or climate change to spur renewal and innovative thinking”. This ability to react positively to change is the proposed solution to the former outlined challenges for this thesis.

This need for “generating increased knowledge of how we can strengthen the capacity to deal with the stresses caused by climate change and other aspects of global change (...)” (Stockholm Resilience Center, 2014) will be split up into different specific approaches to the general term of Resilience.

Figure 7 gives an overview of the different types of Resilience.

Engineering Resilience focuses on the capacity of a system to react in the short term: When facing pressure, it first tries to withstand it as long as possible, then tries to function as long as possible even after parts of the system have failed, and most importantly, thirdly tries to return to the ‘old normal’ as it was before the pressure as quickly as possible. (Bruneau et al., 2003, as cited in Laboy & Fannon, 2016).

This return to the old normal, while being one advantage of Resilience, also inherits a disadvantage. Many events that create pressure induce that “the “normal” static context no longer exists, and the system must jump to a new normal (...)” (Laboy & Fannon, 2016). To reconnect with the earlier investigations, Engineering Resilience applies to a solid modernity that tries to perfect the

system but fails to support a liquid modernity that itself is constantly changing.

As an improvement, *Ecological Resilience* consists of multiple equilibriums, which allows the return to the pre-event state of a system and also allows it to move to different set-up system states flexibly. It is not about the speed of return to the pre-event state but instead about the “width of the stability domain (how far away can it get before it flips into the cup of a new stability regime).” (Laboy & Fannon, 2016).

Similarly problematic, though, the focus of these two approaches lies on the reaction to events and the avoidance of changes to the previously set-up systems. “The focus on maintaining function, and/or rapidly returning to the status quo ante necessarily affords a narrow understanding of architecture and a limited view of the concept of resilience.” (Laboy & Fannon, 2016)

Resilience for future events and disasters in these approaches inherits the need to know their form to prepare a reaction. With the investigated uncertainties in mind, this cannot be guaranteed. In

Figure 7
Resilience Types
Adapted from Laboy & Fannon
(2016)

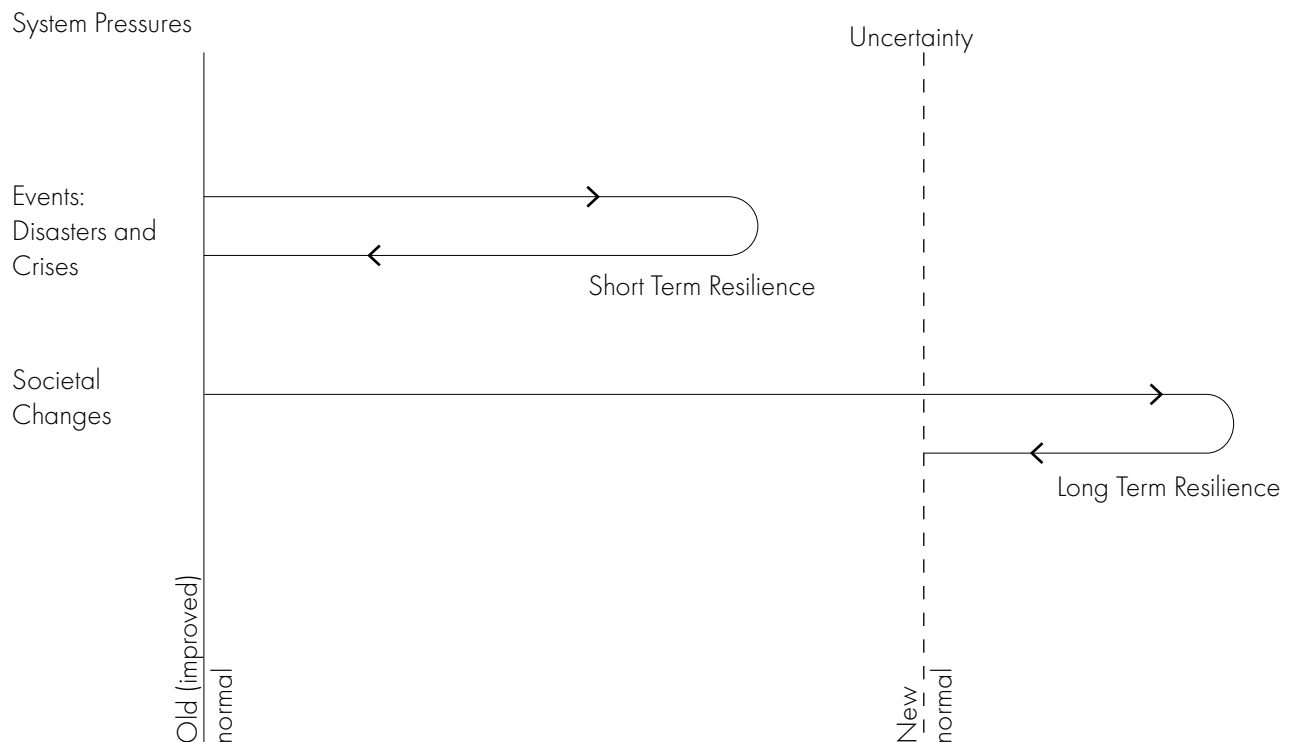


Figure 8

Reaction to Disturbances
Adapted from Laboy & Fannon (2016)

contrast, Laboy and Fannon argued in 2016 that "(...) the main focus of resilience must be to build adaptive capacity in the face of, and in response to, uncertainty."

As the third type, *Adaptive Resilience* includes the possibility to not only react to events by returning to an old or improved former state and the ability to shift to another state of the system but allows to change the different initial states of the system according to upcoming short as well as long term pressures. "(...) [A]daptive processes include learning, not merely the inherent lessons drawn from trial-and-error, but deliberate, considered reflection on choices and their consequences" (Gundreson, 2000, as cited in Laboy & Fannon, 2016).

In contrast to multiple static equilibriums, an Adaptive Resilience inherits dynamic equilibriums, ready to change in the face of pressure. (Laboy & Fannon, 2016). Architecturally, this gets enabled "not in spite of but rather because of a changing context." (Laboy & Fannon, 2016).

This idea of celebrating the instability of a system instead of trying to maintain the status quo reflects

a liquid modernity that abandoned the belief in a perfect state of things. Therefore, this shift from permanence to flexibility can be translated into the field of architecture.

Summary of Resilient Reactions

To summarize the previous theory, I argue for the following understanding of Resilience as an adaption of the three formerly discussed types:

In the face of short term events, such as disasters and crises, Resilience describes either the capability of the system to return to the pre-event state or an improved former state through learning from the pressure.

In the face of long term societal changes, Resilience is understood as the system's flexibility to allow a new normal beyond the present certainties.

Therefore, the later proposed concept and the investigated elements will be designed to react to such short and long term Resilience.

Permanent vs. Temporary



Figure 9
The Tower of Babel

Temporariness is the architectural method of translating flexible domains of systems, and therefore Resilience, into architecture. Before exploring those possibilities, a quick overview of Permanence in architectural planning and design helps identify the current system's flaws.

Permanence

According to the Oxford English Dictionary, Permanence is defined as "The action, fact, or state of lasting or remaining; continued or enduring existence or duration; continuation, persistence." Zooming in on architecture, Touw states that Permanence inherits the "ability of a building to endure, based on its own material strength and soundness of construction; often defying both nature's and time's deteriorating effects." (Vitruvius, as cited in Touw 2006).

This idea of creating a legacy is deeply rooted in the architectural world. "Western traditions before the nineteenth century associated architecture with monumental and permanent artifacts, represented by the perceived durability of solid mass structures" (Laboy & Fannon, 2016). The painting of the Tower of Babel above and the picture of the ruins of Babylon today underline that romanticized connection of architecture withstanding time. The above painting represents to many the idea of ancient 'permanent' cities.

As a first change in mindset, Laboy and Fannon (2016) later mentioned that "the last century proved architecture neither stable nor resilient, washed by tides of ecological deterioration, cultural devaluation and disinvestment."

Nevertheless, there are some advantages to an ever-changing, flexible system. One of the advantages of planning for Permanence is a less complex, shorter process that allows for a larger scale. The current planning processes are already complicated, with many stakeholders, time frames, phasing, and other factors. I argue that not including different end dates and resilient strategies for each physical element makes that process less complicated, leading to less complex financing and budgeting since more decisions can be made at once and in the present.

Moreover, the concept of permanent buildings and cities adds certainty since society will have the same ones in the future as now. "The notion of permanence brings a sense of security and hedge against risk and the winds of change." (Bishop & Williams, 2012, p. 11).

Nonetheless, it does not imply that those buildings will serve us well in the future since there will not be the same societies. It could be argued that nowadays, our western societies do not need to rely on Permanence as a safety concept, but there is a sense of fear about the loss of safety in



Figure 10

The Ruins of Babylon Today

case of stopped permanent planning. However, with the speed of planning and development of areas, Bishop and Williams (2012, p.19) criticize that “plans are often outdated before they are even published (...). This stems from a practice that encourages designers to plan for environments that do not change and remain stable and static as the surrounding of the design (Bishop & Williams, 2012).

Continuing on Permanence as an illusion of certainty, Laboy and Fannon argue that “architects want to control the future;” (Brand, 1994, as cited in Laboy & Fannon, 2016).

“Buildings are something started rather than finished. The notion of Permanence in architecture and the inertia it develops as both an object and a practice may be an obvious challenge to this notion of adaptability, and yet, because some forms of durability are pre-conditions to long-term adaptation, the interplay between degrees of Permanence and transformability are at the crux of a path to adaptive Resilience.” (Brand, 1994, as cited in Laboy & Fannon, 2016)

Summary

When reconnecting these points to the previously investigated approach of flexible equilibriums, I argue that planning and designing for Permanence cannot be a suitable system towards Resilience.

Temporariness

With Adaptive Resilience in mind as the overall goal, this thesis uses that support system to investigate Temporary (R)Urbanism and Architecture in contrast to the above-explained Permanence.

Bishop and Williams describe Temporariness as "a finite period of time with a defined beginning and end." (Bishop & Williams, 2012, p. 5). Furthermore, they state that "a use is not temporary until it has proved to be so, by disappearing." (Bishop & Williams, 2012, p. 5). Therefore the term is in this non-implemented work not used in its actual duration of existence but its intention to do so.

There are two main concepts in contrast to Permanence found in the investigated literature references.

Temporary as a 'meanwhile' space describes a duration of existence until the traditional, permanent space gets implemented. Since this is the primary use of the term temporary literature, it is often "(...) conceived as a mere substitute for the 'real thing' (Temel, as cited in Bishop & Williams, 2012, p.5). These spaces are often small-scale, bottom-up initiatives to solve short-term issues.

Temporary in this thesis does not describe those spaces. Although it can be argued that our cities need more of these spaces, this thesis focuses on temporary as a concept of continuous building life cycles with a planned ending, followed by more temporary building life cycles, creating an endless loop of Adaptation towards Resilience.

However, temporary uses are not a new concept. It is, in fact, as old as humanity "as in the shelters of early hunter-gatherers and nomads" (Bishop & Williams, 2012, p. 6). Once humans

started to move from the state of nomads and constant exploration of new food areas to stay in one place for farming and livestock, the idea of creating lasting shelters emerged. But even since then, "cities, towns and neighbourhoods have always been dynamic entities that rise and fall reflecting the great social economic and political movements of the time." (Bishop & Williams, 2012, p. 11).

The concept of permanent cities is not something to be found in human history, although there are countless examples of buildings exceeding generations, but they are "generally the grand buildings (arenas, stadia, and great religious buildings), or infrastructure (defensive city walls, roads and water supply) (...)" (Bishop & Williams, 2012, p. 13).

One popular counter-argument states that it might not be "(...) particularly sustainable simply because the term can imply a 'throw-away' attitude" (Bishop & Williams, 2012, p. 214) rather than creating durable, lasting objects. However, combined with the correct strategies, this thesis argues that the opposite is achievable.

The possibility of learning from mistakes and constant implementation of new knowledge is achievable in a (R)Urban Temporary. This "(...) considered reflection on choices and their consequences" (Laboy & Fannon, 2016) allows for a dynamic, improved urban environment that is not made up of past, outdated understanding of how we want to live. "In adaptive terms, learning enables long-term resilience in a dynamic world." (Laboy & Fannon, 2016) Instead of seeing new knowledge in urban planning as an obstacle and an effort to be implemented in a

permanent environment, it allows for a reactive environment and improved situations compared to the past ones.

Laboy and Fannon also draw on this idea of the 'new normal' as mentioned in the topic of Resilience earlier. The possibility of a new normal that emerges from disturbances to the system is much higher in an adaptable, transformable environment than in a stable, predictable one. "The proposition that a building persists through multiple futures or "new normals" suggests that durability and transformability, as opposed to static Permanence, are necessary qualities of an architecture that adapts to a changing context." (Laboy & Fannon, 2016)

This reactionary urban context "(...) informed by reasonably constructed (albeit uncertain) scenarios" (Laboy & Fannon, 2016) tries to be prepared, hence resilient, for possible disturbances. Well-designed temporary spaces can easily react to system disturbances by returning to the old normal. They can also improve the old normal after events by learning from mistakes. Additionally to that short-term Resilience, they can go through many new normal states and therefore lead to flexible equilibriums as long-term Resilience.

Summary

Drawing back to Resilience, planned and designed Temporariness can be a concept to "acknowledge[...] that many (...) assumptions will not remain valid for long, that conditions are changing at unpredictable rates and magnitudes, and models often fail to predict the complexity of dynamic interactions such as user behavior" (Laboy & Fannon, 2016).

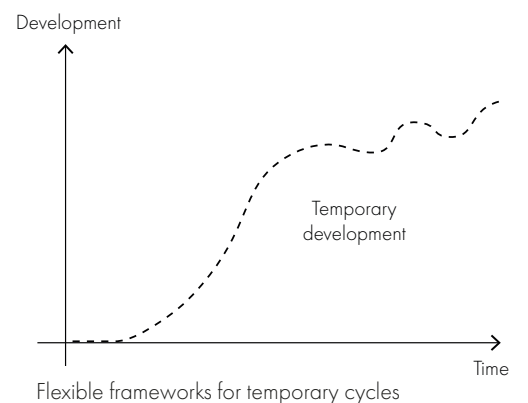
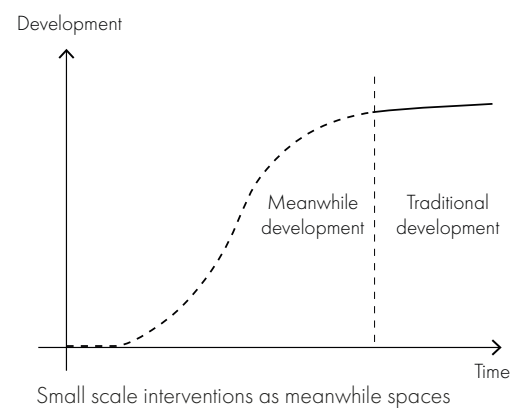
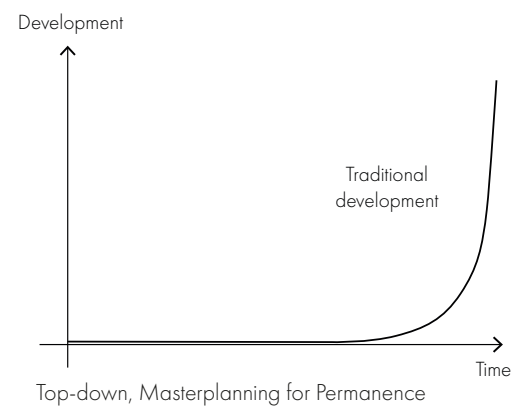
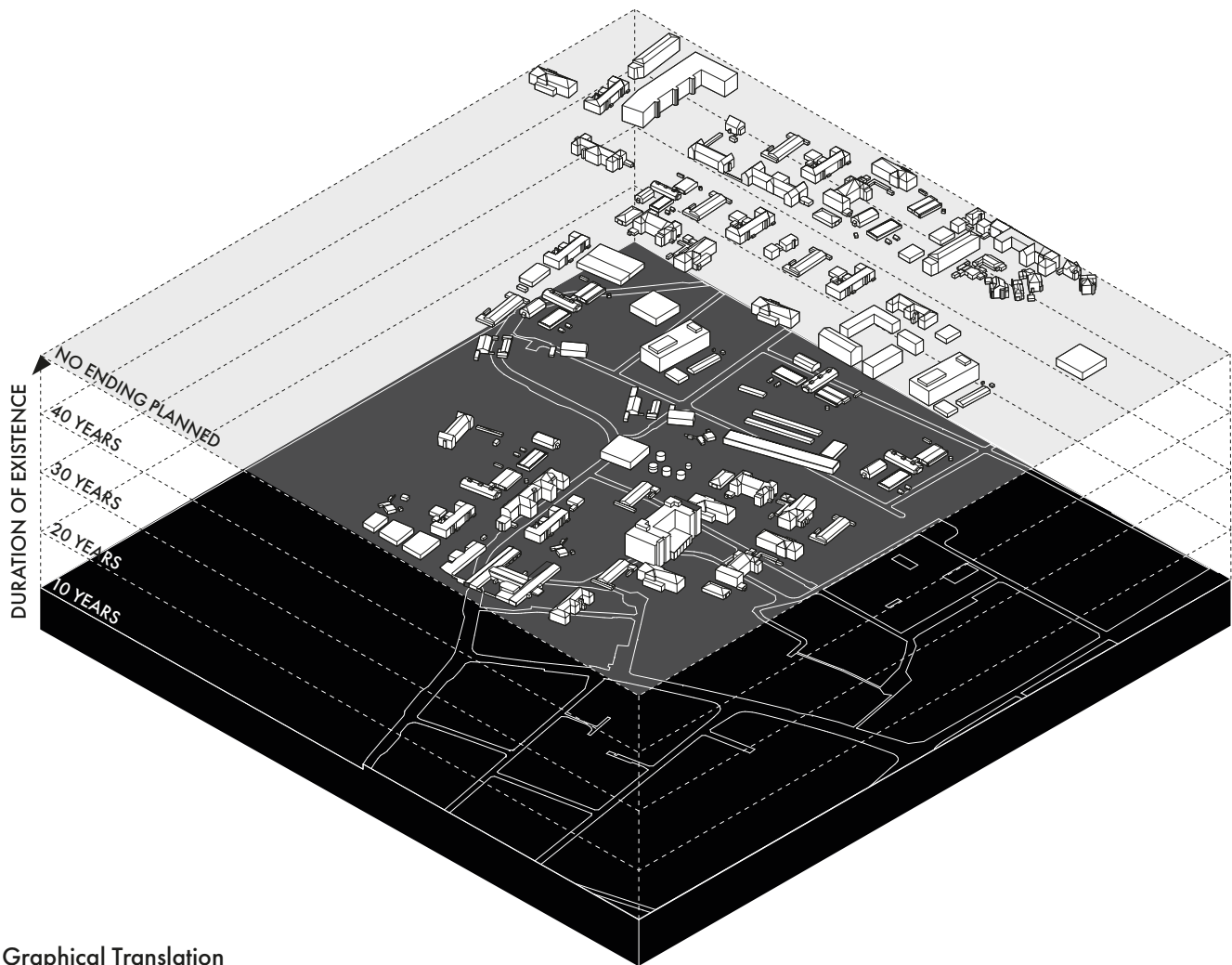


Figure 11

Types of Development

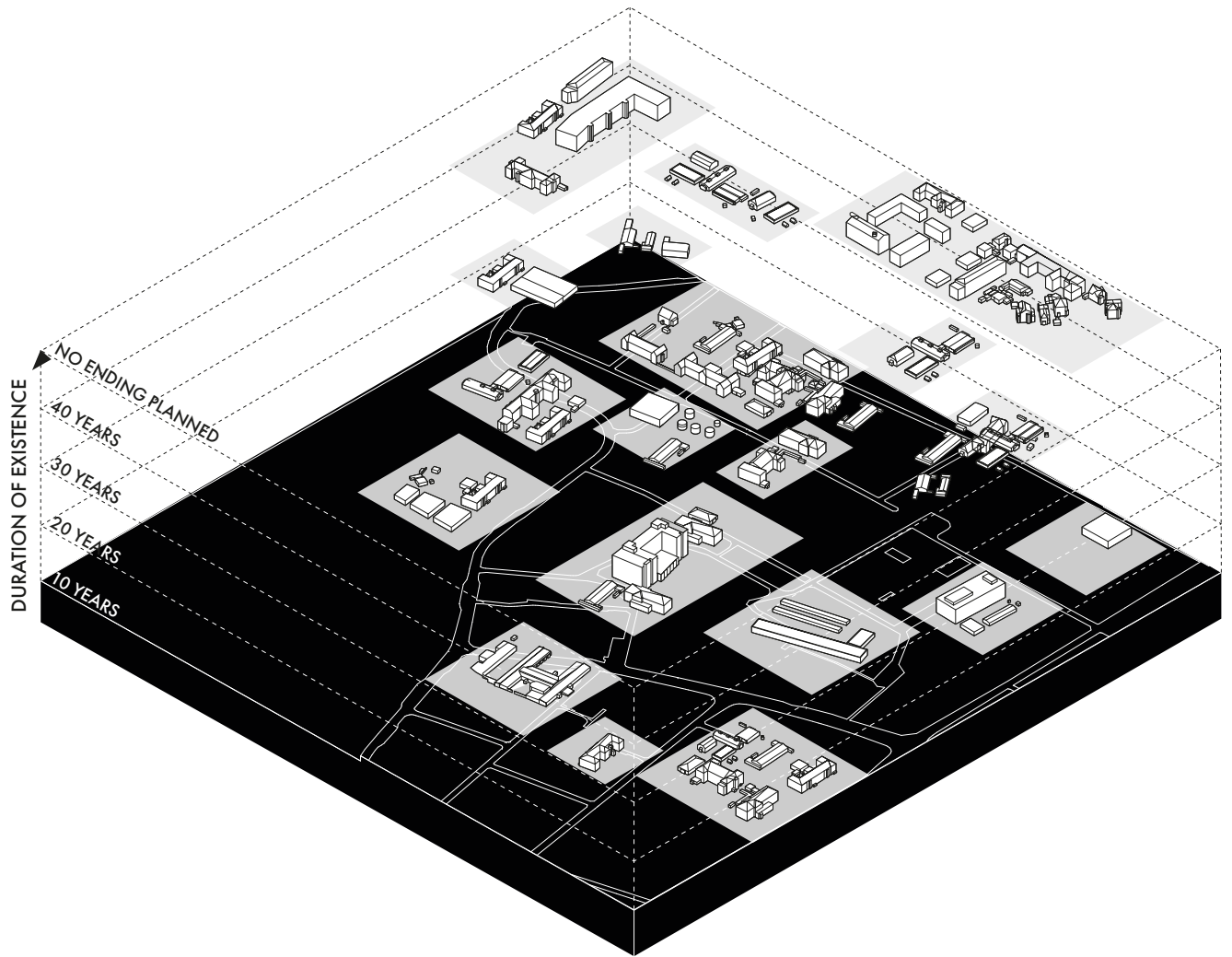


Graphical Translation of Permanent vs. Temporary

To conclude the theory chapter, this graphical comparison of a permanent city versus a temporary one displays the intention of both:

A fully permanent city starts construction to fill the gap between the existing building stock and societies' current additional needs.

A temporary city recognizes that these needs are only connected to society in its current state, and future societies will have different needs. It, therefore, constructs its building stock for a limited duration of existence.



3 - Concept

MANIFESTO FOR THE (R)URBAN TEMPORARY

This manifesto is the result of the theory explained earlier and my perspective on its adaption to architecture on the urban and rural scale. The case site for the following concept is rural, but I argue that it can also be applied to urban contexts.



1. Everything is temporary / Only change is here to stay

2. Stop thriving towards a perfect state of cities

3. Cities should not be an exhibition of past planning principles

4. Embrace change as a planning tool

5. Create transparent, participatory processes

6. No planning for a final state condition

7. Flexible frameworks instead of fixed masterplans

8. Temporary as the manifestation of our ever-changing societies

Temporary Categorisation

This thesis proposes the concept of time categories to set up the (r)urban environment when planning and designing. The categorization is the result of the investigation of theory and reference cases.

Before starting to plan and design, the involved parties conduct a life cycle prediction to identify how long society will need the specific architectural element.

By putting an element in a time category, the strategies of that time category can be used as a toolbox to support the predicted life cycle.

Time categories are simply an abstract way of reflecting societies in built structures. Attaching strategies to the structure does not lock it into that time frame. It instead frees up society to update or remove it later, making better efficiency of the function, material, finances, workload, and other resources. If the element turns out to be needed longer or shorter than expected, it can easily move to other categories.

More information on the definitions for each strategy and the reference cases of architectural projects can be found in the appendix.

1. Spaces for Events

The elements of this category are predicted to roughly last from a few days to several months. Example spaces could be music events, sports events, protests, performances, workshops, talks, shows, and others.

2. Short Term Spaces

The elements of this category are predicted to roughly last from a few months to 5 years. Example spaces could be pavilions, (r)urban farming, pop-up stores, urban furniture, seasonal structures, and many more small-scale elements.

3. Fast-Changing Spaces

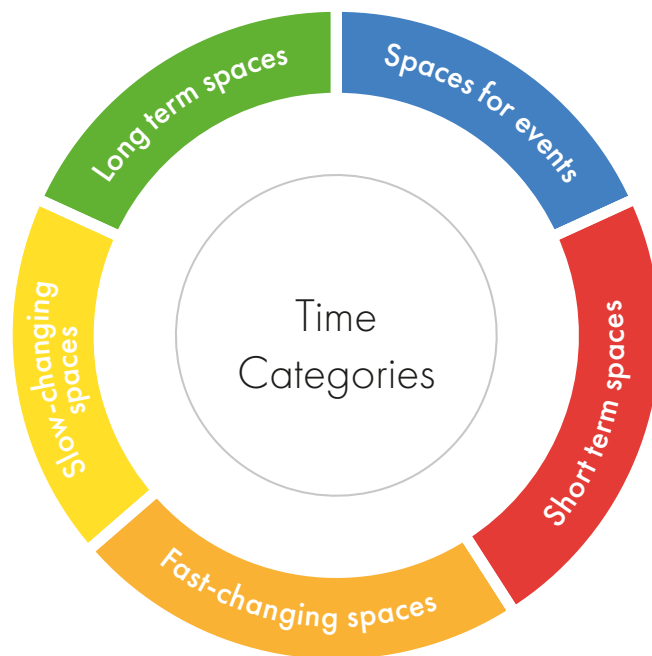
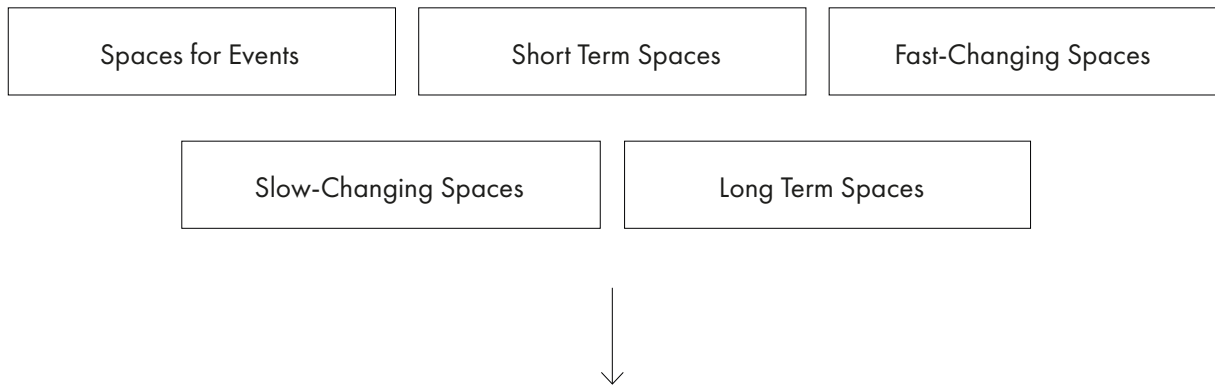
The elements of this category are predicted to roughly last from 5 to 15 years. Example spaces could be alternative housing, offices, stores, and other experimental structures to be tested before becoming less temporary.

4. Slow-Changing Spaces

The elements of this category are predicted to roughly last from 15 to 50 years. Example spaces could be housing, offices, healthcare, education, and more extended-lasting uses.

5. Long Term Spaces

The elements of this category are not planned with an end date. Example spaces could be structures with historical value, infrastructure like streets, supportive facilities for water, electricity, etc., and transportation such as metros.



Strategies

In order to plan and design within the proposed time categories of the (R)Urban Temporary, physical elements need to have qualities that enable them to be temporary.

The proposed strategies result from an investigation of literature and reference cases on temporary architecture (the detailed explanations and strategy glossary are in the appendix).

They are not a complete list but rather an outcome of experimenting and should be adapted and extended moving forward.

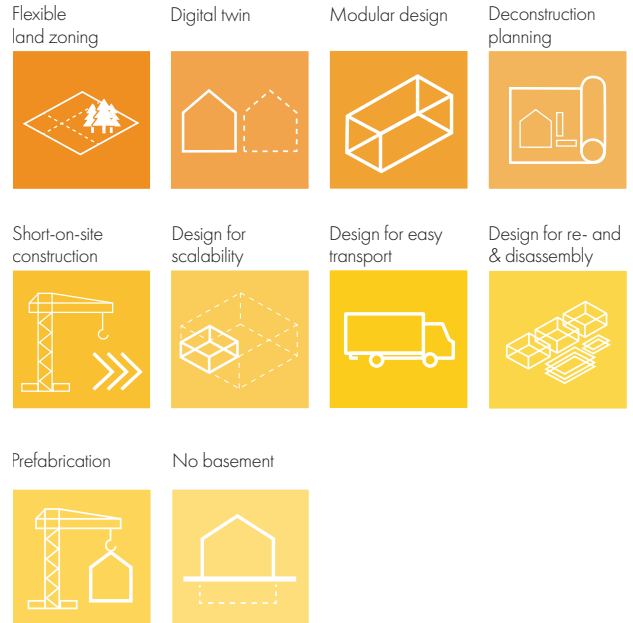
1. Spaces for Events



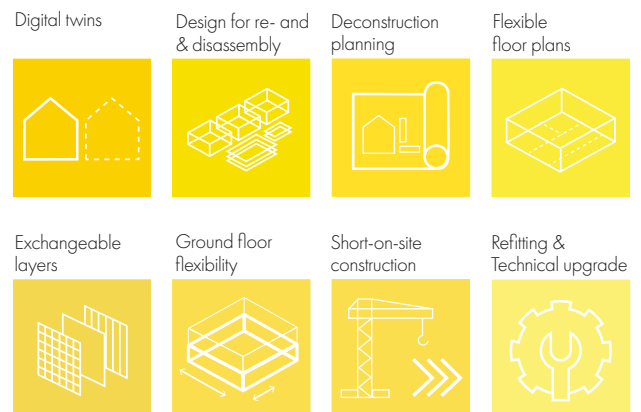
2. Short Term Spaces



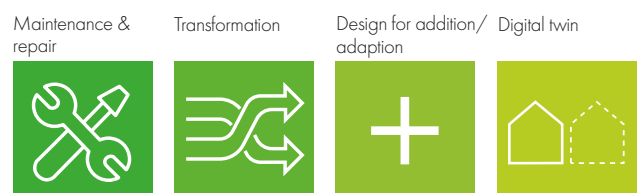
3. Fast-Changing Spaces

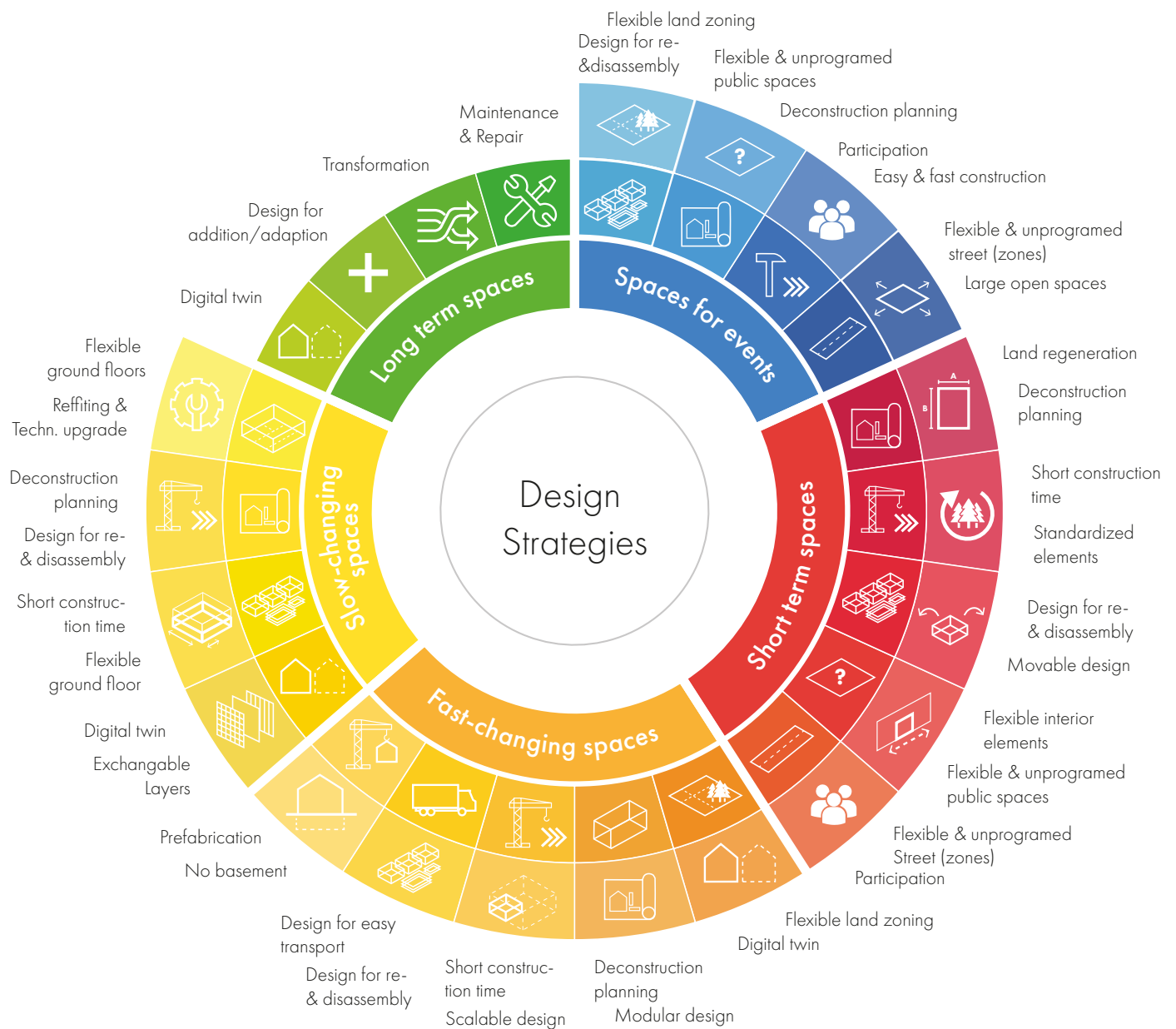
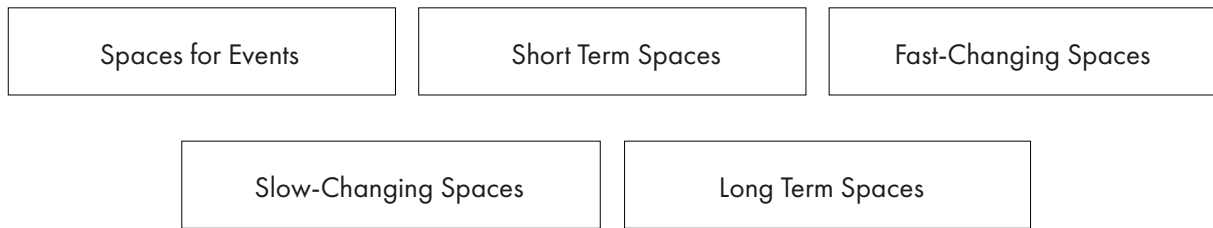


4. Slow-Changing Spaces



5. Long Term Spaces





4 - Application of Concept

This chapter translates the previous strategies for the (R)Urban Temporary into architectural elements, applied to a local context.

Approach

Following up on the Manifesto for the (R)Urban Temporary, the implementation of the strategies and elements will follow a “loose ‘vision’” on a “year-on year” (Bishop & Williams, 2012, p. 182) approach.

“It promotes looser visions rather than idealised end states; it aims to be implementable through having flexible phasing, an open time frame and a tactical approach that can respond to changing conditions” (Bishop & Williams, 2012, p. 189).

Ultimately, it will be necessary to have a detailed space planning process, which is needed to avoid urban chaos, even though it would be different from traditional master planning. However, this case implementation will solely focus on the rural environment with the elements from the previous chapter to showcase the (R)Urban Temporary.

“Discussion about the ultimate formal look of a city is not paramount here but, rather, the question of opportunities to activate the city and use the city.”

Misselwitz (2007) as cited in Bishop & Williams (2012 p. 187)

Localisation

Temporary Urbanism as the primary development strategy is not globally applicable. (Bishop & Williams, 2012). As previously mentioned, the concept of resilience applies to societies beyond sustainability. For regions still thriving towards sustainable development, it is hard to imagine an implementation of the proposed strategies with the few resources available. “In large parts of Africa, Asia and Latin America (...)” (Bishop & Williams, 2012), the focus can not be on the luxury elements designed and planned to disappear.

Therefore, this work applies to post-industrial economies that can afford to debate about how to live together beyond the need for shelter, community, and basic living conditions. Furthermore, this thesis focuses mainly on cities as well as rural fringes.

Concept

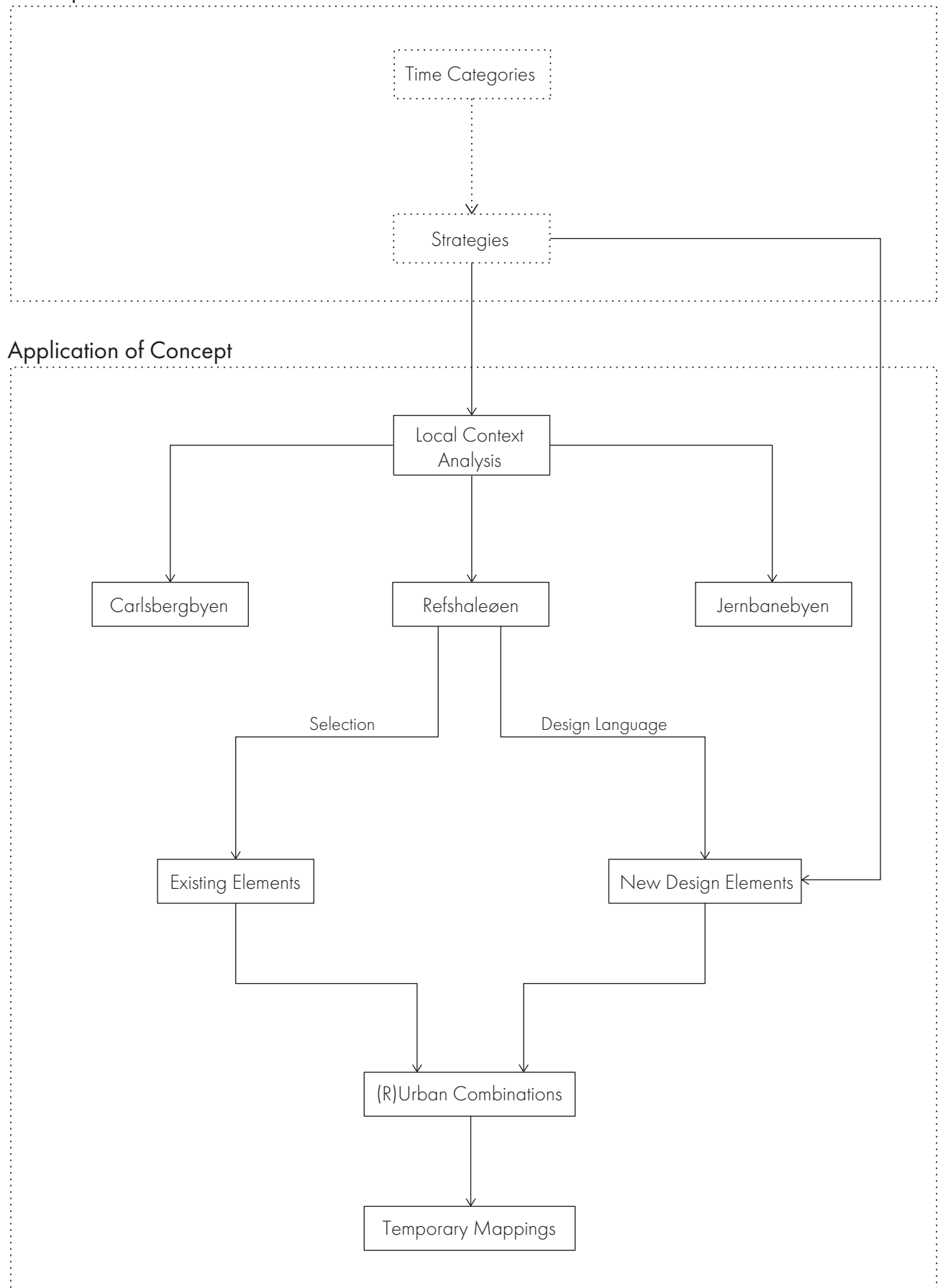


Figure 12

Process Overview

Selection of Copenhagen Areas Currently Planned for Permanence

The subsequent investigations of Copenhagen neighborhoods identify areas in development or with development planned in the near future. Three areas have been identified close to the city center of Copenhagen, two to the west and one in the east.



Figure 13
Overview map of the Analysed Copenhagen Development Areas

1. Development Plan for Jernbanebyen, Copenhagen

The development of the 'Railway City' takes place on the former railway area in the south-west of the city. Following an architectural masterplan competition, the area is currently in the planning process.

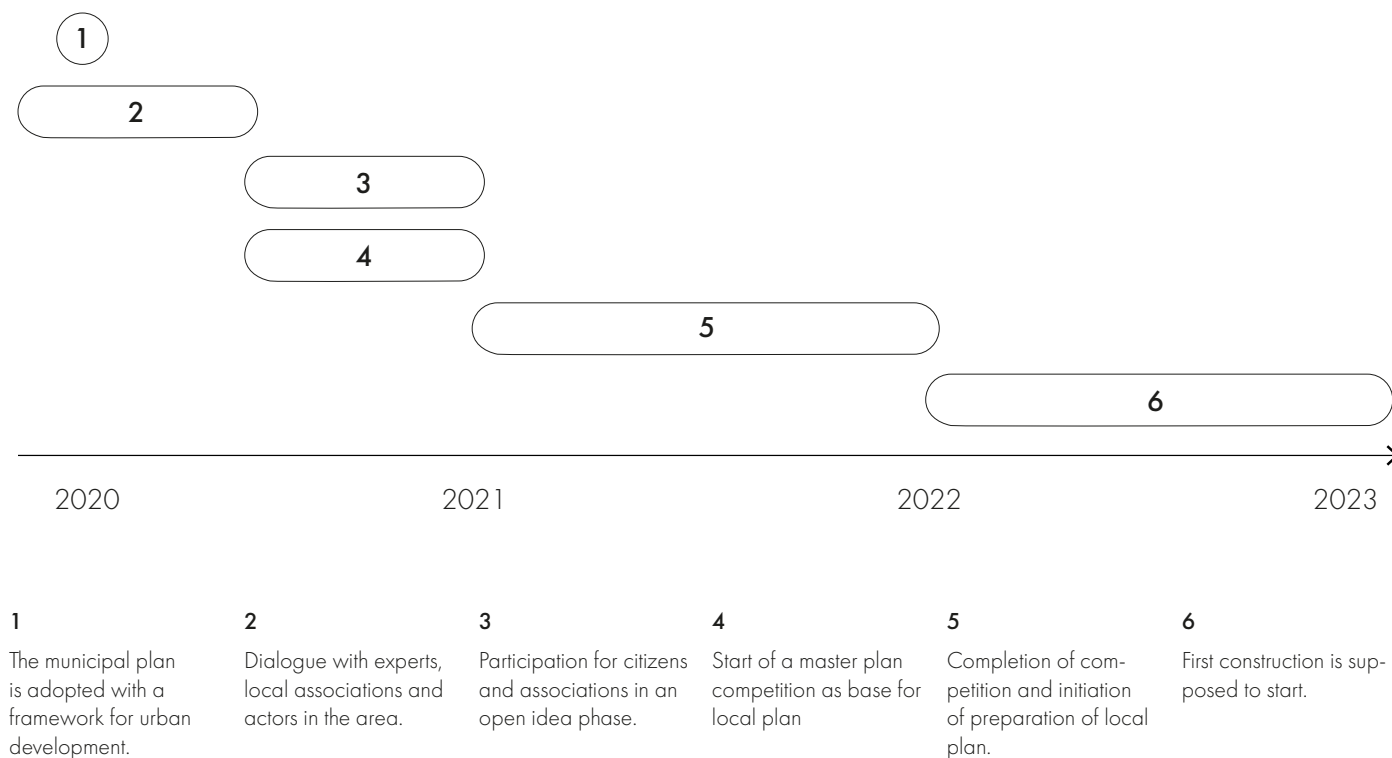


Figure 14

Planning Process for the Railway City
Adapted from www.jernbanebyen.dk/artikel/tidsplan-jernbanebyen

2. Information Website for Carlsbergbyen, Copenhagen

The 'Carlsberg City' development takes place in the former industrial brewery area for the beverage company with the same name. Several historic buildings are integrated into the new development, preserving the identity. Large parts of the neighborhood are finished, and a few more are currently under construction.



Figure 15

Development Overview of Carlsbergbyen

3. Historic/ Future Development of Refshaleøen, Copenhagen

This island is among the few last areas of Copenhagen awaiting development, and draws on a rich history of change and expansion.

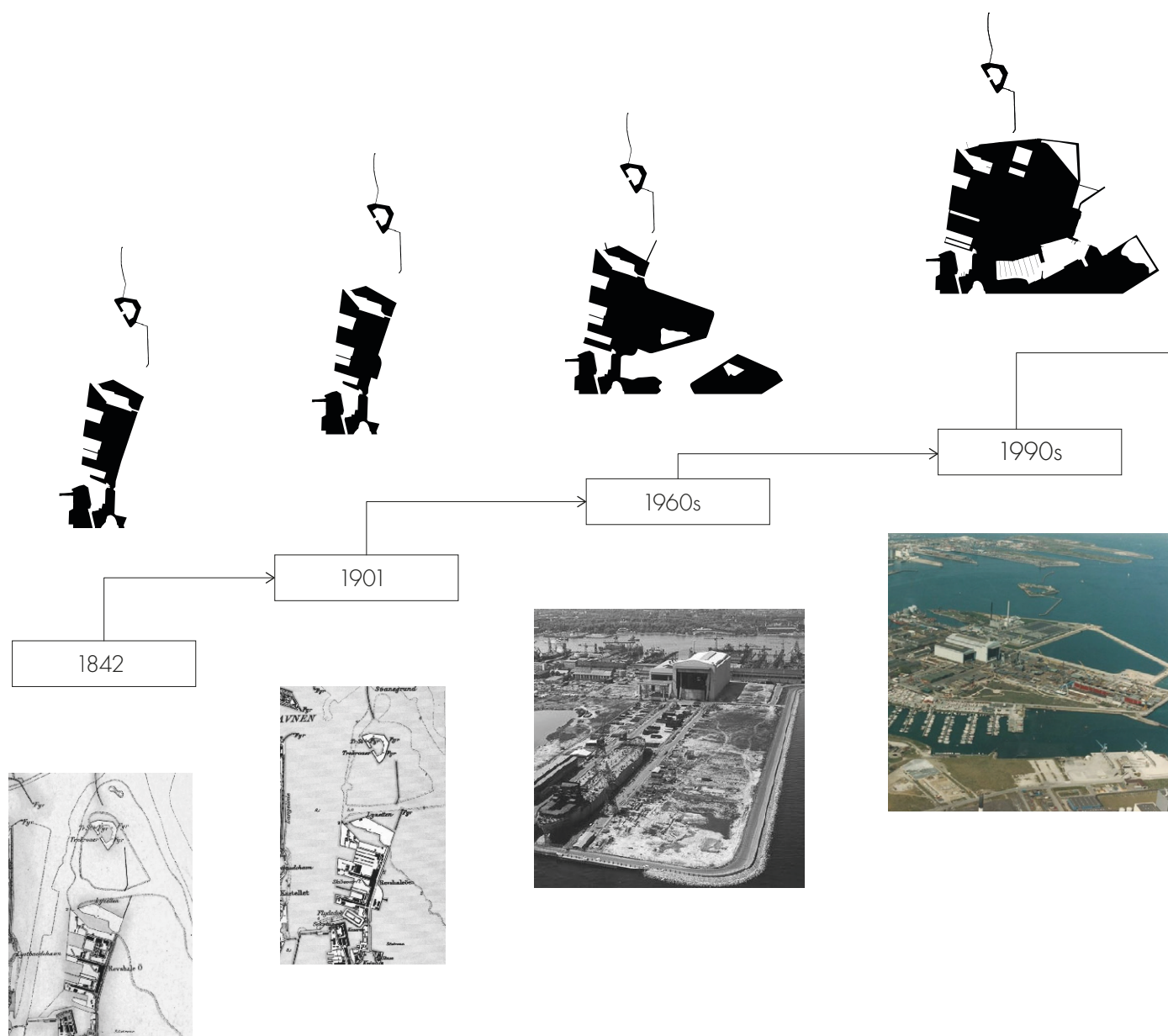
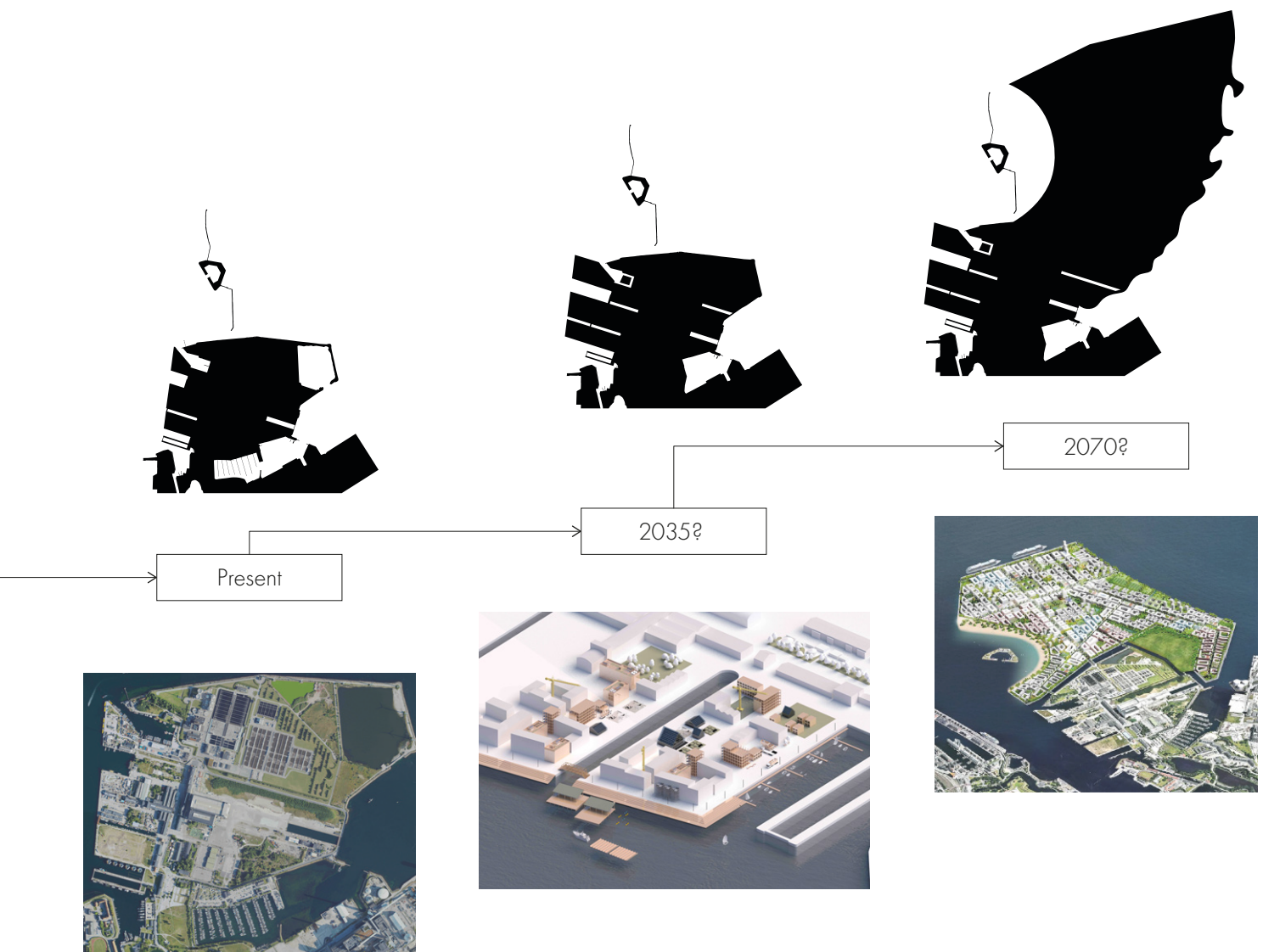


Figure 16
Historic Development of Refshaleøen



Reflection on Development Cases

1. The development for Jernbanebyen goes from framework to permanent masterplan in 2 1/2 years. Do we want the neighborhoods for decades and centuries to be planned in 2 1/2 years only with today's knowledge?

2. The development for Carlsbergbyen appears undemocratic, unparticipatory, untransparent, and provides an inaccessible form of information. Is this really how we want to find out about our new neighborhoods?

3. Since the island's development start in 1842, Refshaleøen was continuously changed and expanded. The above timeline shows how we can not be sure of what future planners have in mind. The initial urban planners surely did not know about the plans for the expansion in 2035, but they planned the island for permanence. Should we continue to plan this way?

In order to choose a local case site, the first two areas get ruled out since they are already substantially developed.

Thus, Refshaleøen is the chosen case study for implementing the (R)Urban Temporary. It serves as a fitting testbed for the following reasons:

It has a rich history as an industrial area with existing structures to be used as a starting point for its neighborhood identity.

The already ongoing 'meanwhile' development in alternative housing, creative businesses, a street food market, art spaces, and urban farming is a fantastic base for further development.

Furthermore, as figure 16 shows, the city is interested in developing and extending the island in the upcoming years.

Local Context - Refshaleøen

History

As seen earlier on the overview map, Refshaleøen is located in the eastern part of the municipality of Copenhagen and is considered part of the city's inner harbor.

The artificial island was built in the middle of the 19th century to start the production of ships, with the company Burmeister and Wain established in 1871 (Danish Design Review, 2017). With a peak of 8000 workers, the company "survived the war and seem to have been very successful through the 1950s and 60s but struggled through the economic challenges of the 1980s" (Danish Design Review, 2017). By 1996 the company had to shut down its business in the area due to economic pressures (Larsen, 2013) and left the island's structures to be demolished partly. This also means that essential parts of its history are lost, with some structures still preserved until today. For instance, the 'Sektionshaller' is a clear landmark from the city's waterfronts.

As the former industrial powerhouse, it is one of the last areas of Copenhagen that have yet to transform from an industrial city to a city of knowledge.



Refshaleøen Today

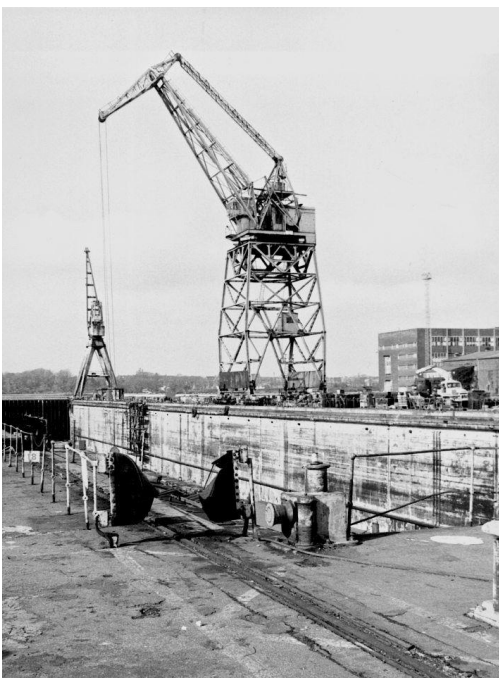
Nowadays, the area is located within the municipality of Copenhagen but situated at the edge of the city. Even though its proximity to the center could define it as urban, its current state of disconnect from the rest of the city describes a "lack of structural dialogue between the different [areas]" (Vanemtpen, 2009). Continuing that argument, rurbanity describes a "contemporary hybrid spatial situation (...) mixing rural, urban and natural structures and tissue" (Vanemtpen, 2009). This is also the case for this local context. Therefore, I argue for the need to "maintain their specific character and land uses and functions that do not fit in with urban nor rural areas." (Vanemtpen, 2009).

To support the concept of temporariness in rurban environments, Vanemtpen (2009) argues that "landscape is a medium capable of responding to temporal change, transformation, adaptation and succession" (Waldheim, as cited in Vanemtpen, 2009). Moreover, those landscapes are "far more flexible to deal with the transforming conditions of the rurban condition." (Vanautgaerden et al., 2006, as cited in Vanemtpen, 2009). This suggests that rurban areas are well suited to incorporate temporary architecture.

Refshaleøen today has high popularity among Copenhagen's citizens for its alternative atmosphere of creative businesses, waterside promenades, and recreational areas. Festivals, events, and exhibitions, among others, are part of the lively culture. The famous street food market Reffen attracts large crowds during the summer months. Refshaleøen is already a place of experimentation, as the following pages of analyzed

Figures 17-20

Historic Images of Refshaleøen



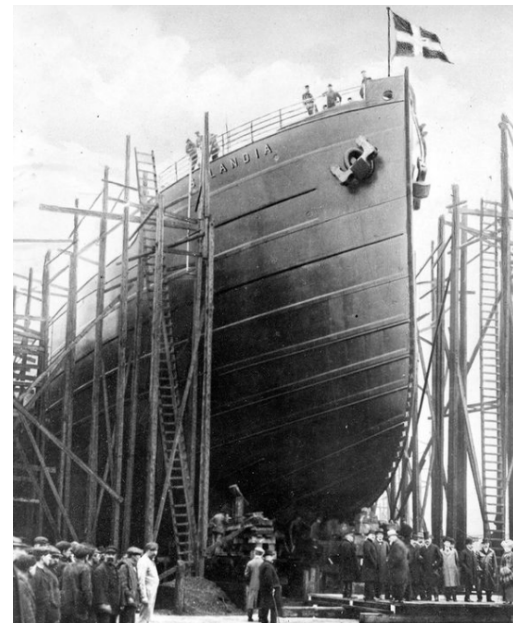
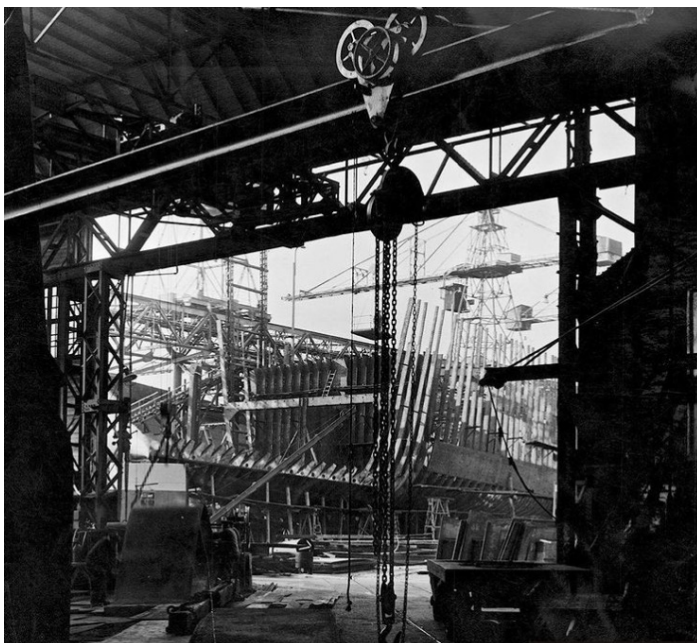
"We want to create urban districts (...) vibrant with life.
Neighbourhoods that are attractive to live in, and work in.
Also in fifty years' time. And in a hundred years' time."

Jens Kramer Mikkelsen
Former Lord Mayor of Copenhagen

existing elements show. Temporary uses such as events, small-scale tactical urbanism, and two alternative housing projects (CPH Village and Urban riggers) are found. Apart from those and some smaller housing, few people live here, resulting in the area being a destination rather than a neighborhood. This also leads to only seasonal life on the island. During fall, winter, and spring, the area can appear empty and lost, which is a vast contrast to the life during summer.

As previously shown in the development analysis, the municipality is planning to add an artificial island, Lynetteholm, in the northern part to extend the development possibilities of Copenhagen and serve as stormwater protection for the inner harbor. According to current plans, it is supposed to finish in 2070.

First ideas of a specifically rurban approach can be seen in the large open spaces and landscape areas in the following design. Moreover, the preservation of the existing building stock on the rurban site adds to that.



Architectural Language of the Context

As mentioned before, contextualization serves as an essential design parameter, translating the general rules of functions and strategies into a strong identity of the place.

Refshaleøen draws on a long and rich history of its industrial language, with steel and timber structures seen all over Europe during the industrial revolution.

Figures 17-20 are a selection of distinctive impressions of that architecture. Light steel and wood structures with thin horizontal and vertical columns and beams used to dominate the island's appearance. These structures' heavy and raw atmosphere is still visible today and makes the island distinctive compared to other Copenhagen neighborhoods. The unfinished and dirty atmosphere and the production vibe can be a great starting point for the visual identity of the development.

The water connection should be rediscovered in the upcoming years, even though it is now for recreation and leisure, in contrast to past production uses.

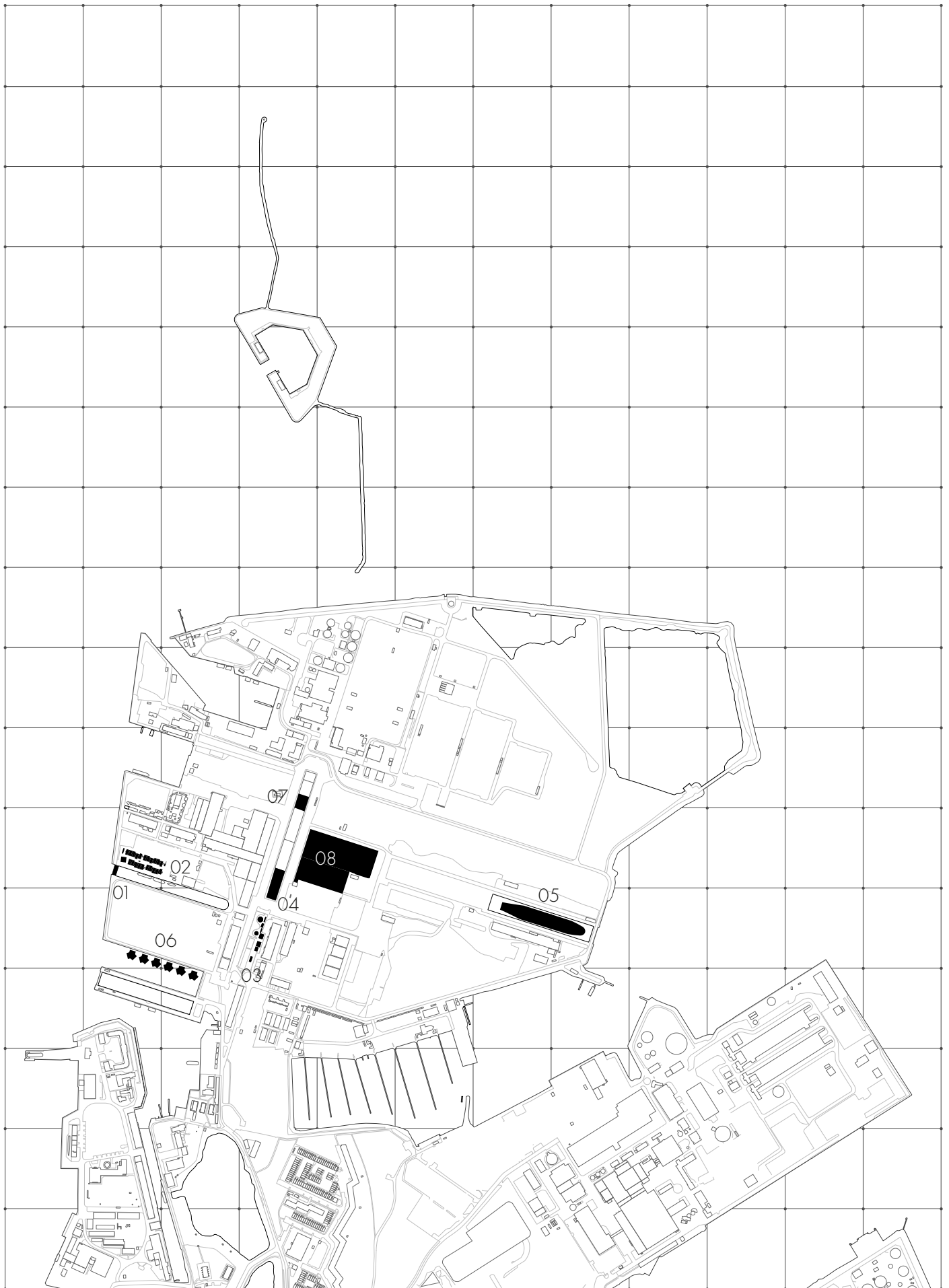


Figure 21
Site Plan with Locations of Existing Elements

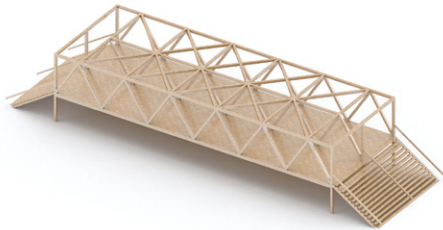
Analysis of Existing Elements

This overview is the outcome of an analysis of existing elements on Refshaleøen. This analysis aims to identify elements that are crucial to preserve due to their value connected with the identity of their history or the present atmosphere of the area.

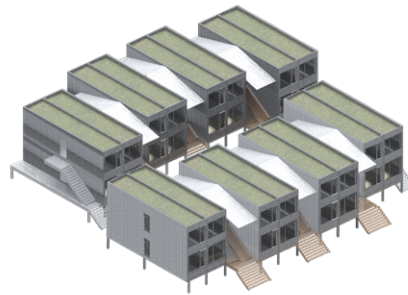
They form the backbone of the development since their preservation is vital in connection to social resilience. If they get renovated or maintained with strate-

gies connected to their predicted existence, they themselves can become more resilient and can also act as catalysts for resilience for the area as a whole. This can lead to choosing adequate design strategies according to their time category and a decision on which are further investigated, making them part of the first development phase.

01 Steel Bridge



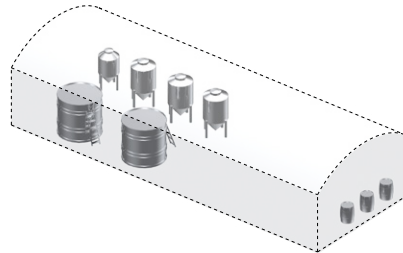
02 Student Housing



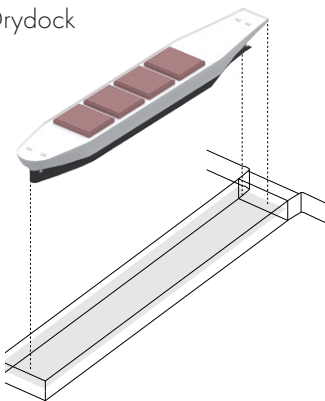
03 (R)Urban Farming



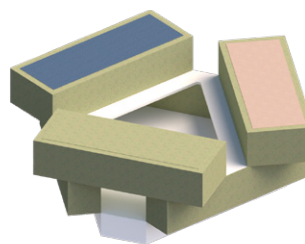
04 Empirical Brewery



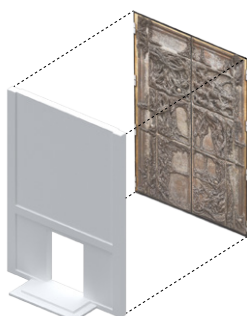
05 Drydock



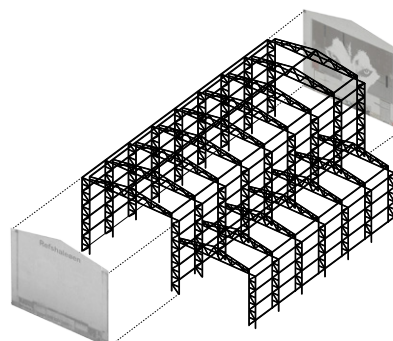
06 Floating Student Housing



07 Alchemist Restaurant



08 B&W Production Halls



New Design Elements

The new design elements complement the existing elements in the context and eventually form the larger part of the island. They are an architectural application of the strategies to the local context.

Figure 22 on the right shows how Adaptive Resilience is used as a design parameter during the iterative process.

The following pages show five design elements in detail. They do not show a final design. Instead, they showcase their respective design strategies and test a range of aesthetics, scales, and functions, and explore multiple possibilities over time.

Additionally to those detailed design iterations, several other elements have been briefly investigated to allow for a showcasing of a more complete (r)urban inventory in the later combinations and mappings. Although they are not as detailed as the former, information on them can be found in the appendix.

Adaptive Resilience

In the face of short-term events, such as disasters and crises, resilience describes either the capability of the system to return to the pre-event state or an improved former state through learning from the pressure.

In the face of long-term societal changes, resilience is understood as the system's flexibility to allow a new normal beyond the present certainties.

Resilient Example - Fast-Changing Element

The strategies of the development tower allow it to change according to the pressures that the overall system faces.

A short-term event such as a financial crisis allows it to be temporarily deconstructed and its material used elsewhere and then return to the old normal once that event is over.

A long-term change such as increasing digitalization and possibly no need for centralized offices allows it to be deconstructed altogether without wasting many resources.

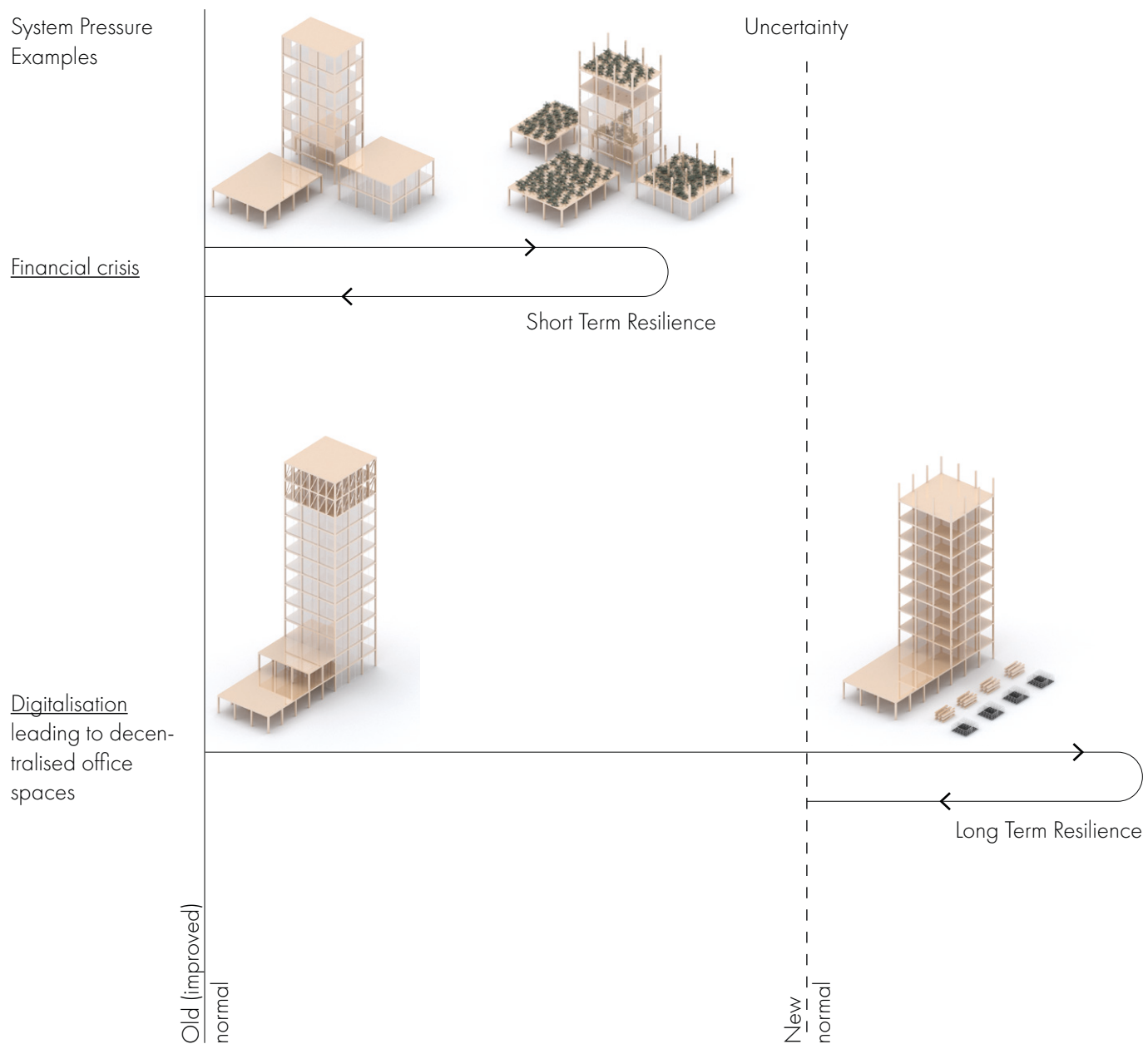
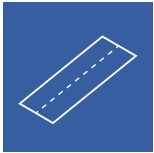
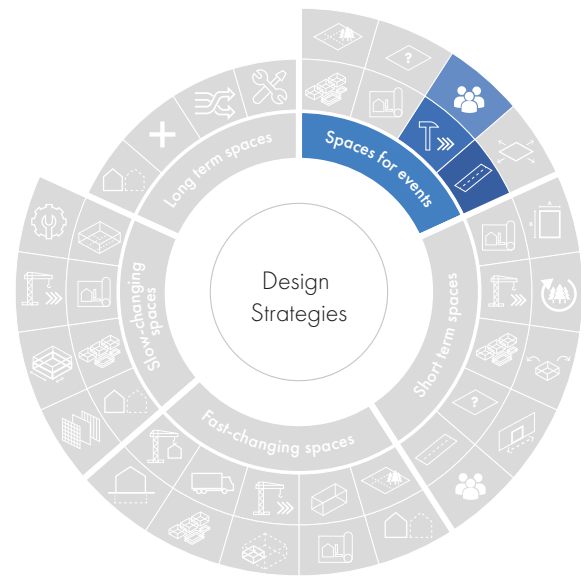


Figure 22
 Example of Resilient Reaction in Short and Long Term
 Adapted from Laboy & Fannon (2016)

Example 01: Space for Events Street Scape

A neighborhood street serves as the platform for multiple events such as leisure, sports events, and political events lasting for days to weeks.

The street itself has to be flexible and wide enough for different functions and have easily removable components.



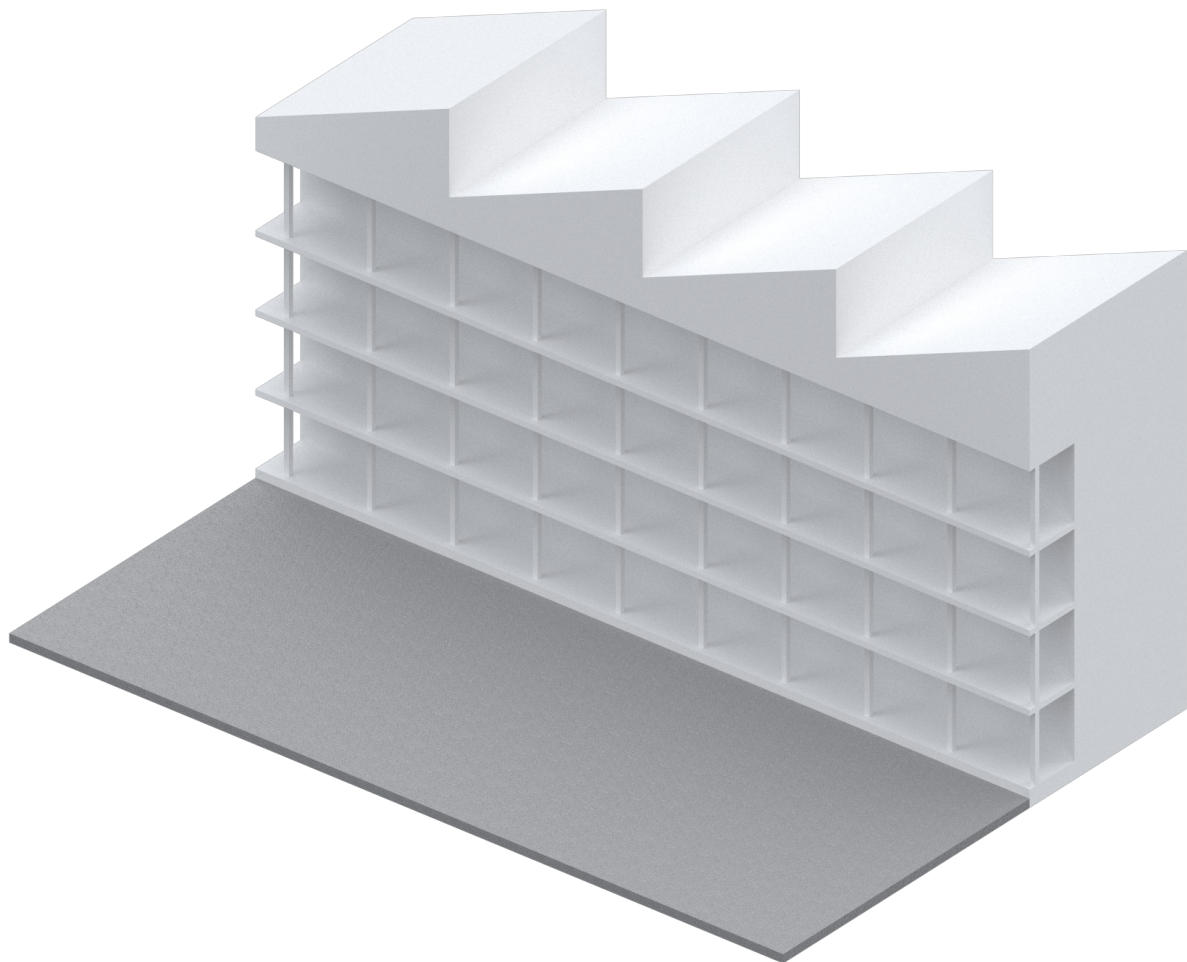
Flexible/unprogrammed streets



Easy & fast construction

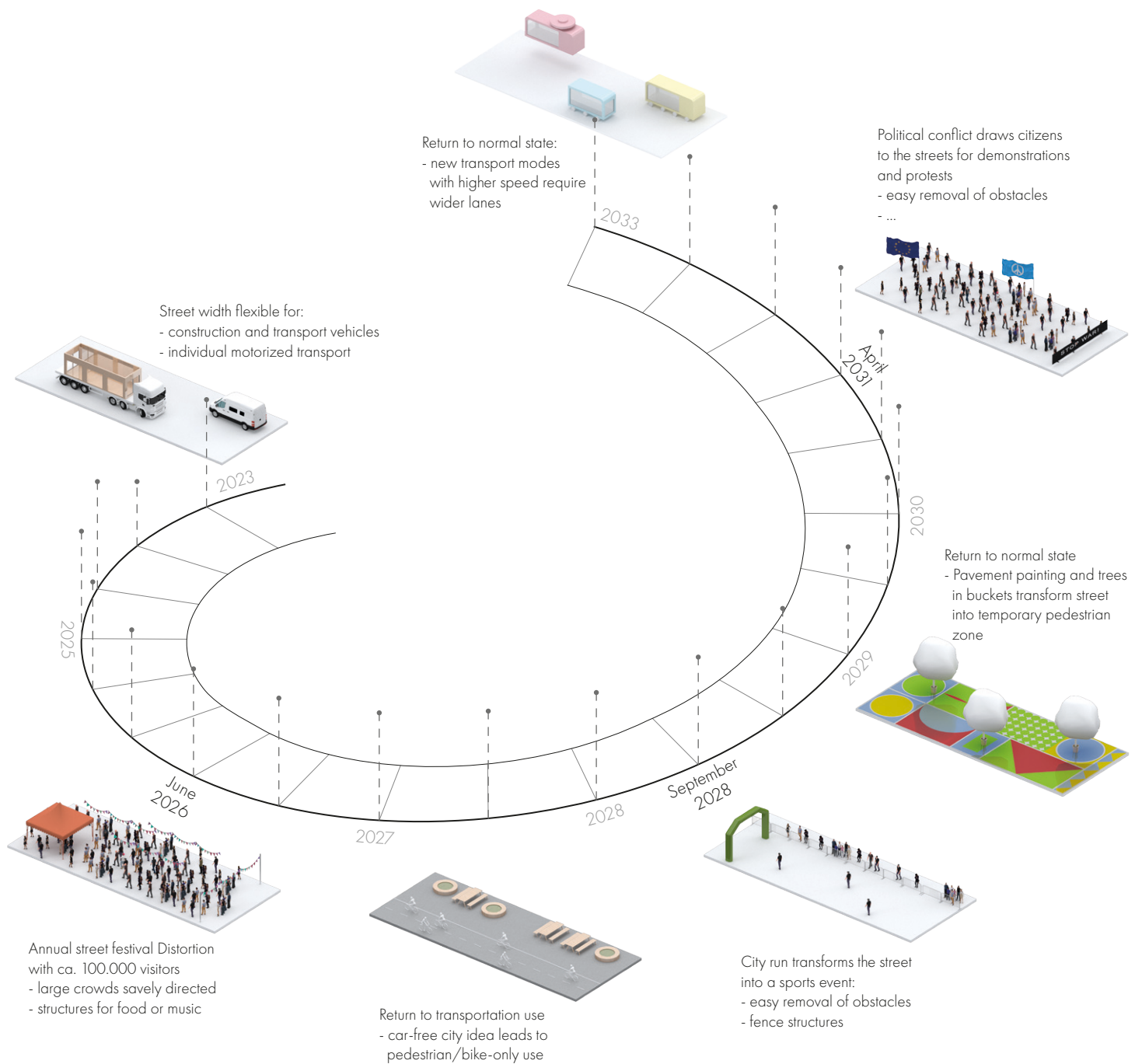


Participation

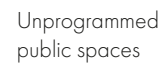
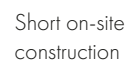
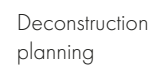
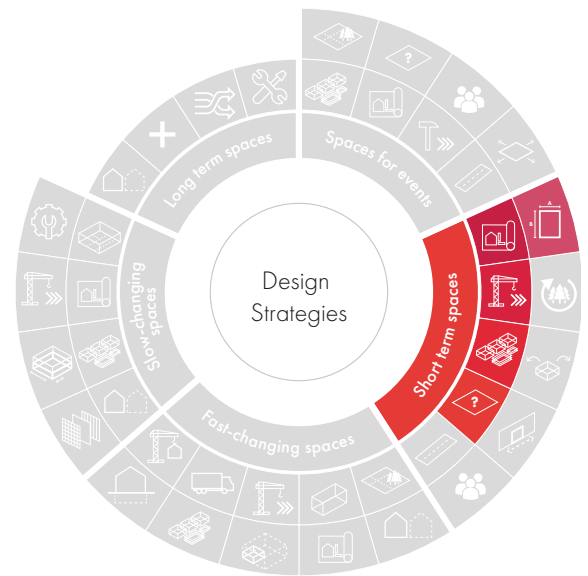


Timeline: What-if

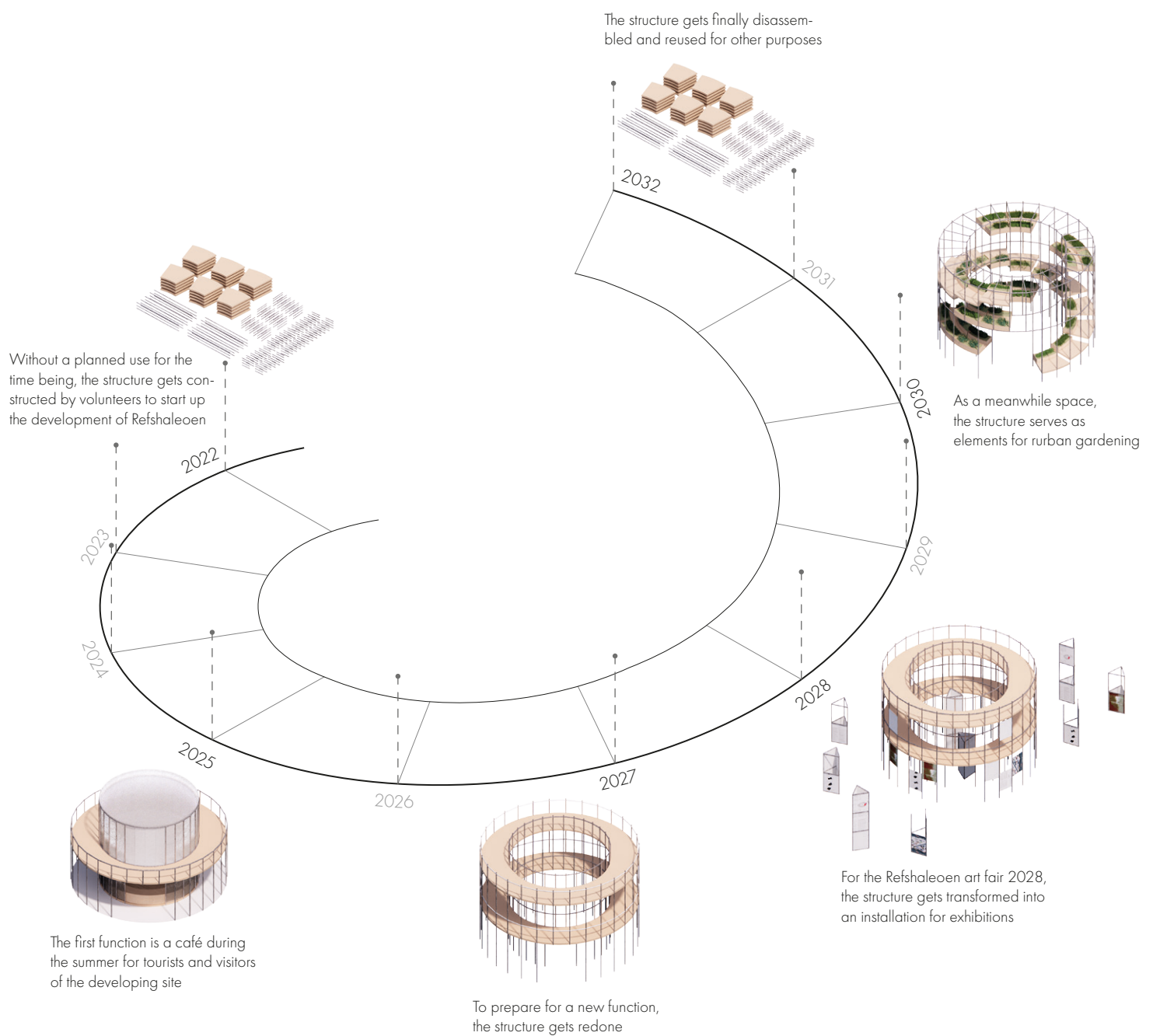
Showcasing Resilience in different scenarios at different time horizons through the adaptability of the design element.



The structure of this element is made from scaffolding pieces and is therefore easily (re)movable, also by non-professionals. This allows for many changes to its program and form through the years.

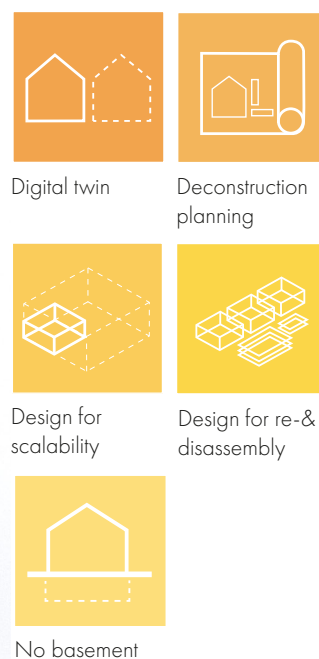
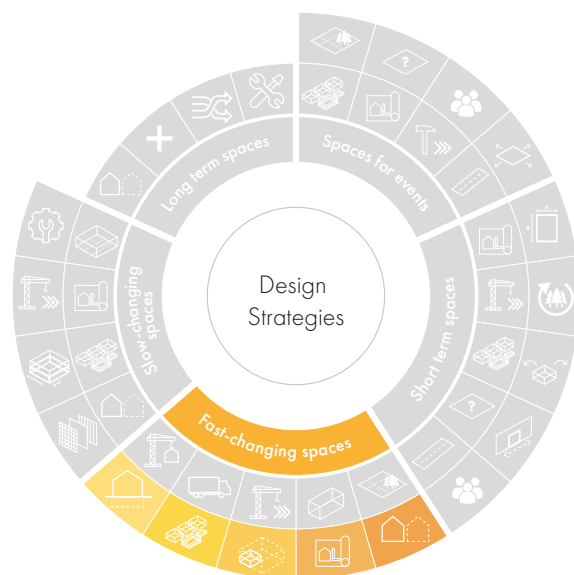


Timeline: What-if

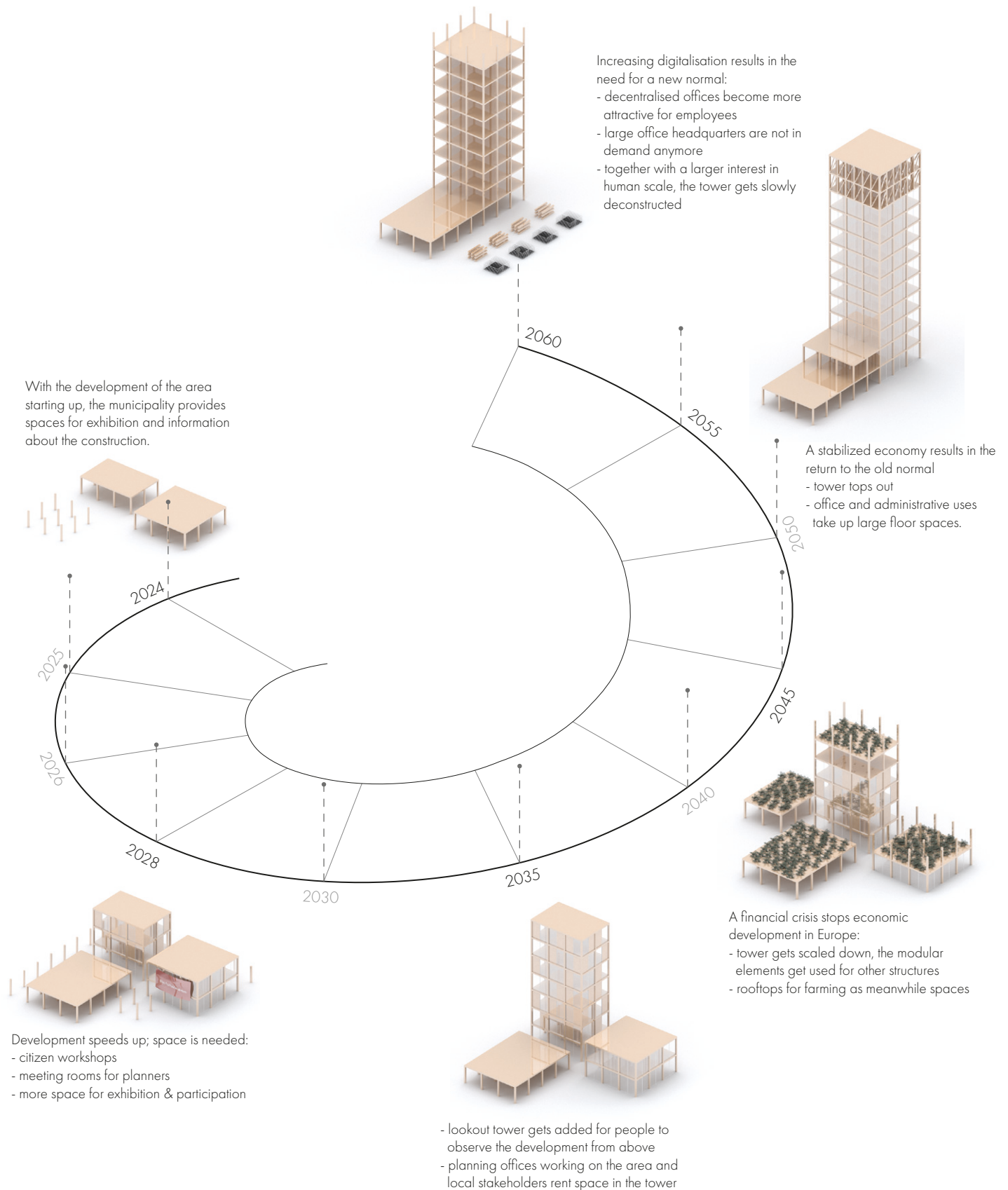


Example 03: Fast-Changing Space Development Tower

This element can serve as an exhibition space, e.g., for the ongoing process to empower the area's transparent and participative development. It furthermore includes meeting rooms for the city authorities, developers, clients, and citizens. Workshops allow for involvement in the process. The high point serves as a lookout point over the development, moving the nowadays mostly digital information on the ongoing development to a physical experience.



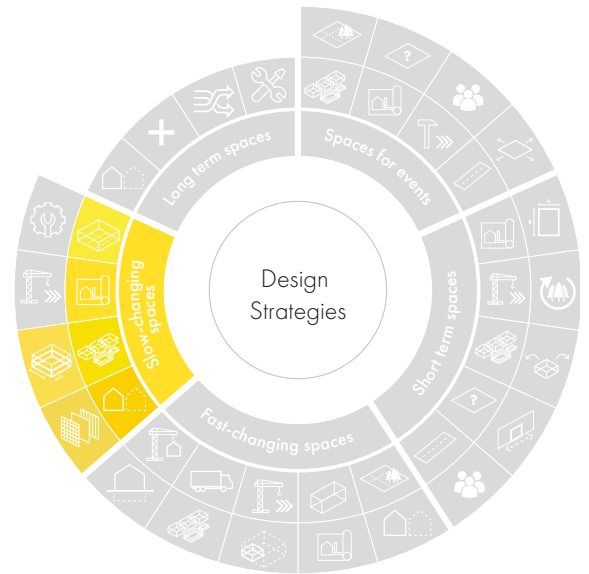
Timeline: What-if



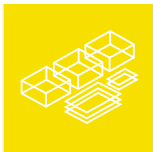
Example 04: Slow-Changing Space Neighborhood block

The starting point for the densification of the area is the already existing student housing projects. Complementing them with other housing elements forms the initial neighborhood blocks. After further densification and development, the modular student structures can slowly move to other locations as short-term start-up catalysts.

The ground floors of the neighborhood blocks contain other functions for community and public use, and the flexibility of the structures allows many different functions and forms over time.



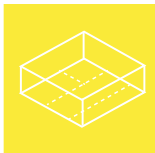
Digital twin



Design for re-
& disassembly



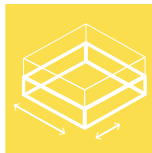
Deconstruction
planning



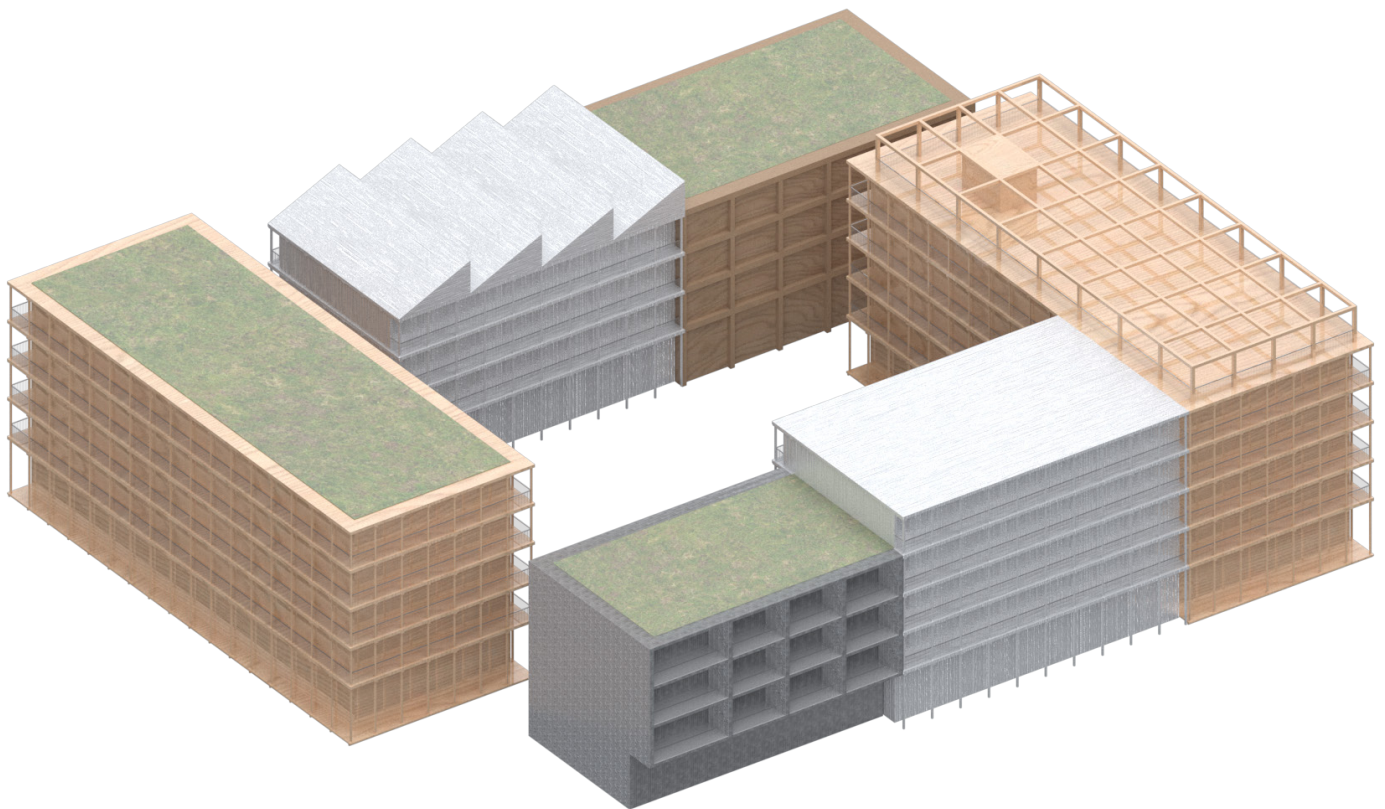
Flexible floor
plans



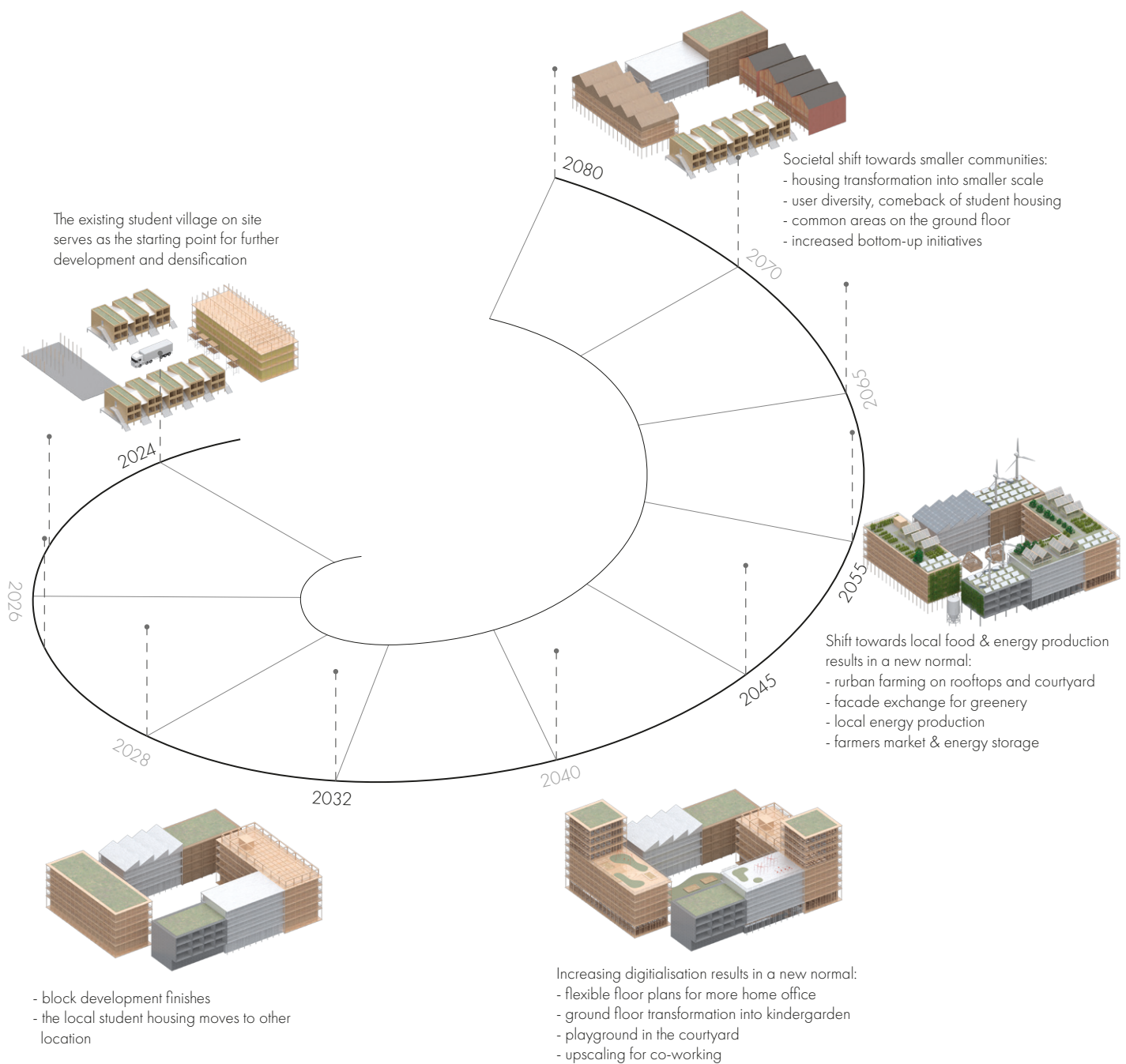
Exchangeable
layers



Flexible ground
floors



Timeline: What-if

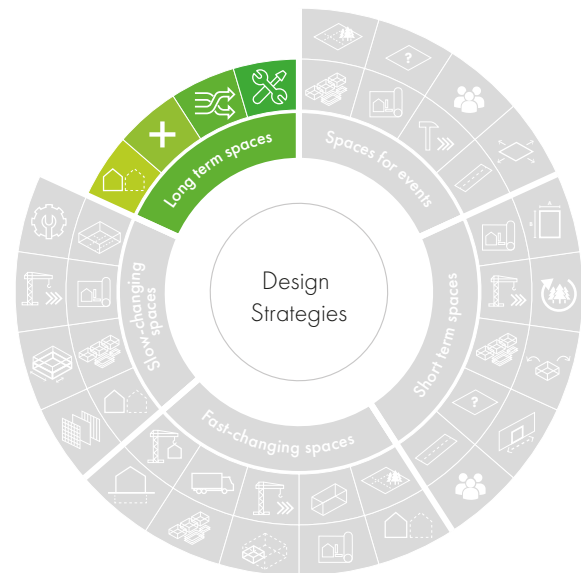


Example 05: Long Term Space

Historic Production Hall

This existing element has historically been used as a production hall for the ships in the area and is nowadays characteristic due to its height, the prominent wolf painting on one facade, and the 'Refshaleøen' lettering on the other.

Transforming it into a museum gives it the cultural significance it deserves, and maintenance over the decades keeps its historical value over time.



Repair & Maintenance



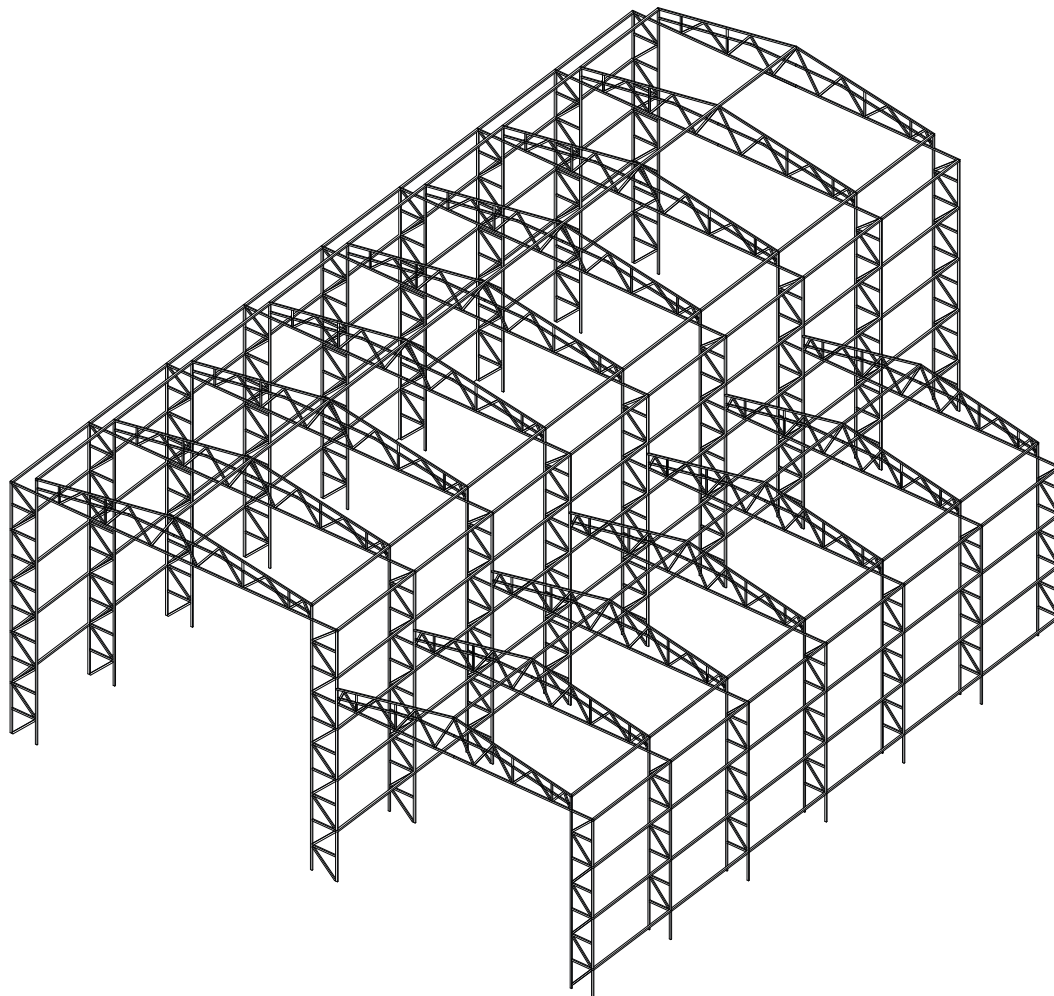
Transformation



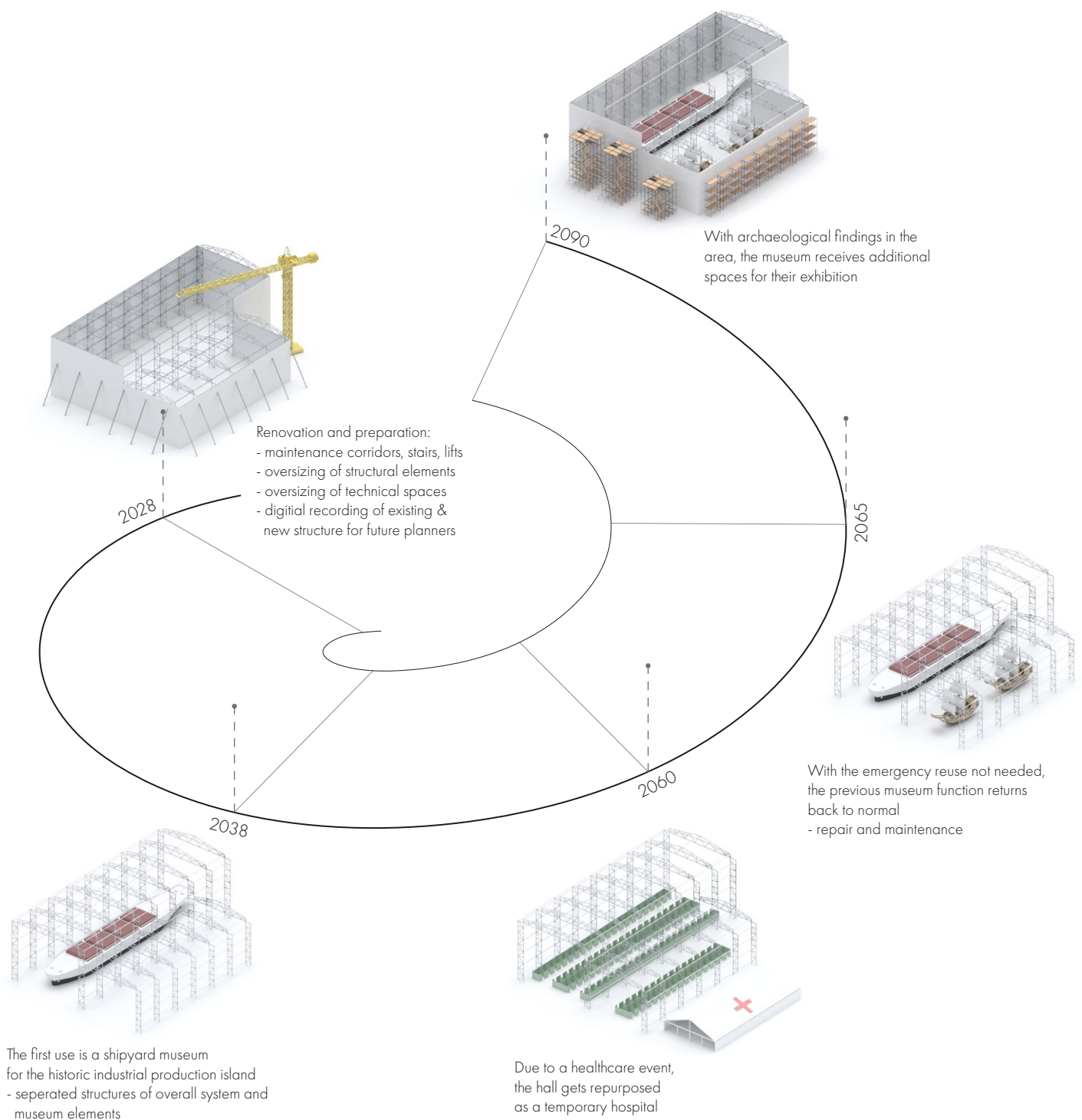
Design for Addition



Digital Twin



Timeline: What-if



Spatial Summary of Existing and New Design Elements

This drawing summarizes the process from time categories to their respective strategies and finally the existing and new design elements.

Categories

Strategies

Elements (existing & new)

Spaces for Events

Typically changing within days to months

Flexible & unprogrammed streets	Large open spaces	Easy & fast construction	Participation
Deconstruction planning	Flexible & unprogrammed public spaces	Design for re- & disassembly	Flexible land zoning

Short Term Spaces

Typically changing from months to 5 years

Deconstruction planning	Short-on-site construction	Design for re- and disassembly	Flexible & Unprogrammed public spaces
Standardized elements	Land regeneration	Design for movability	Flexible interior elements
Flexible & unprogrammed streets	Participation		

Fast-Change

Typically changing within days to months

Flexible land zoning	Digital twin
Short-on-site construction	Design for scalability
Prefabrication	No basement

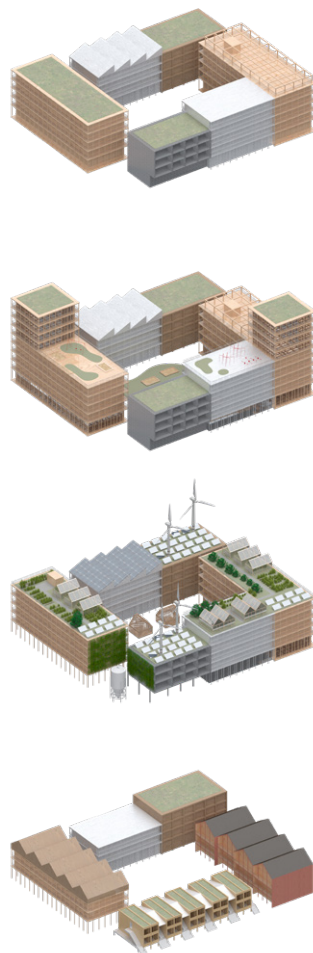
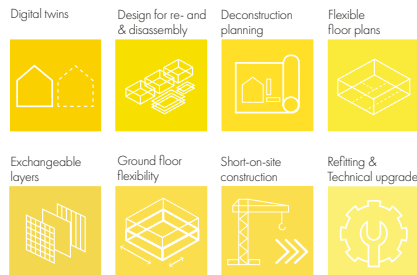
Changing Spaces

Typically changing from 5 to 15 years



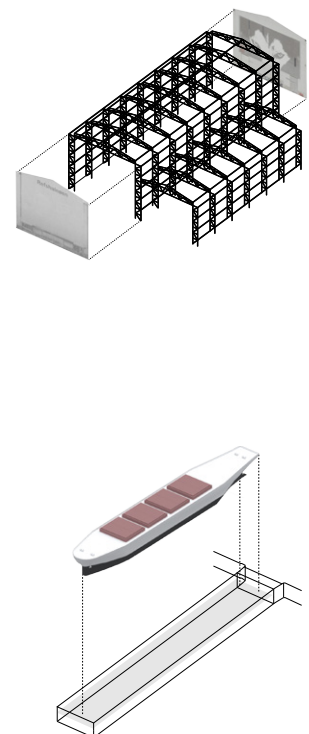
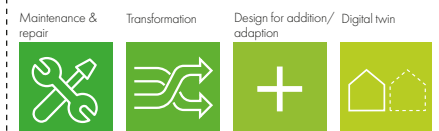
Slow-Changing Spaces

Typically changing from 15 to 50 years



Long Term Spaces

No planned ending



Rurban Combinations

Here, the new and existing elements on site combine with each other in the (r)urban environment. This also leads to a combination of the conceptual strategies. The ones visible in each combination are highlighted in the wheels on the right.

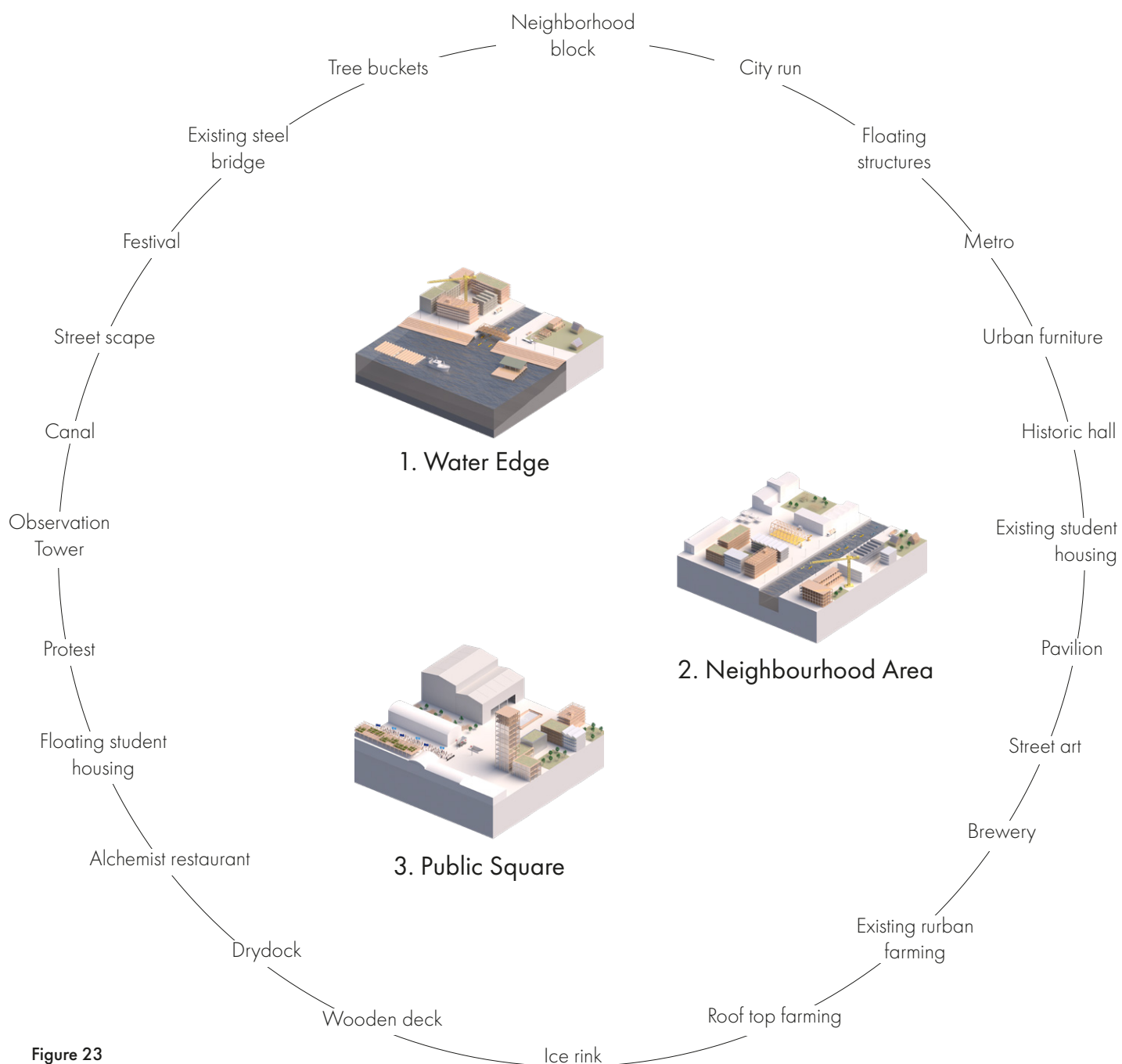
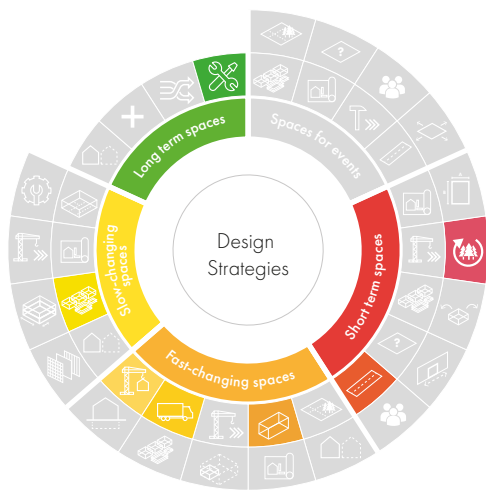
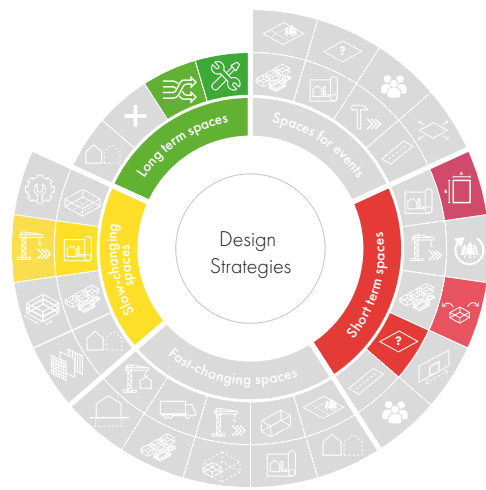


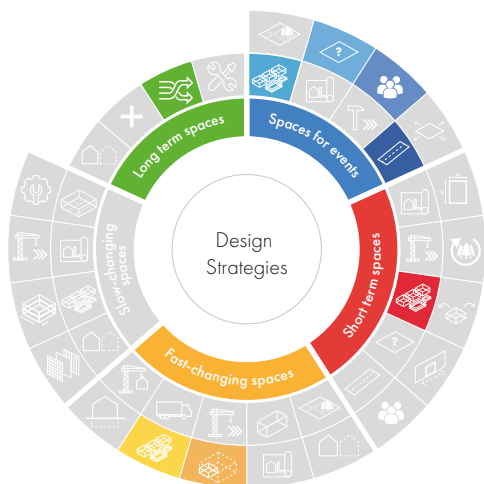
Figure 23
Three Rurban Areas as Combinations
of the Isolated Elements



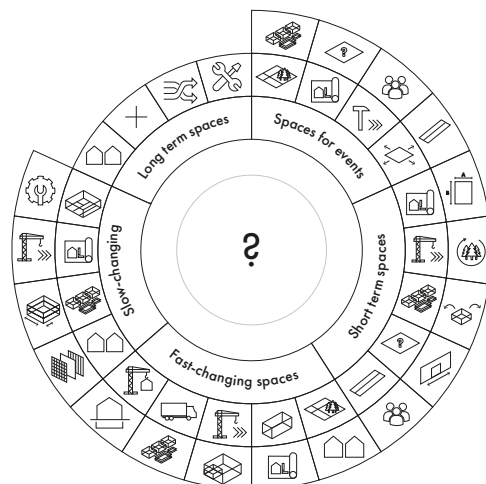
1. Location: Water Edge



2. Location: Neighborhood Area



3. Location: Public Square



Unlimited possibilities

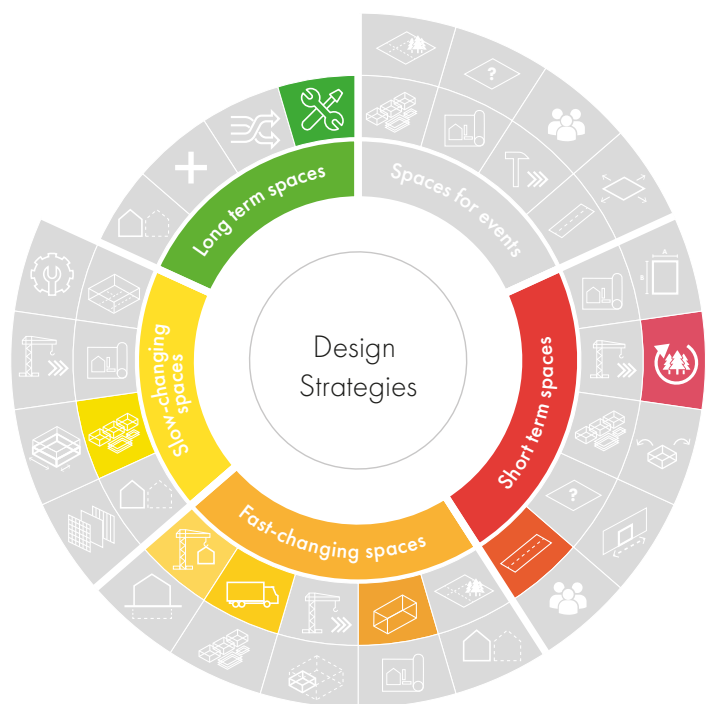
Rurban Combo 01

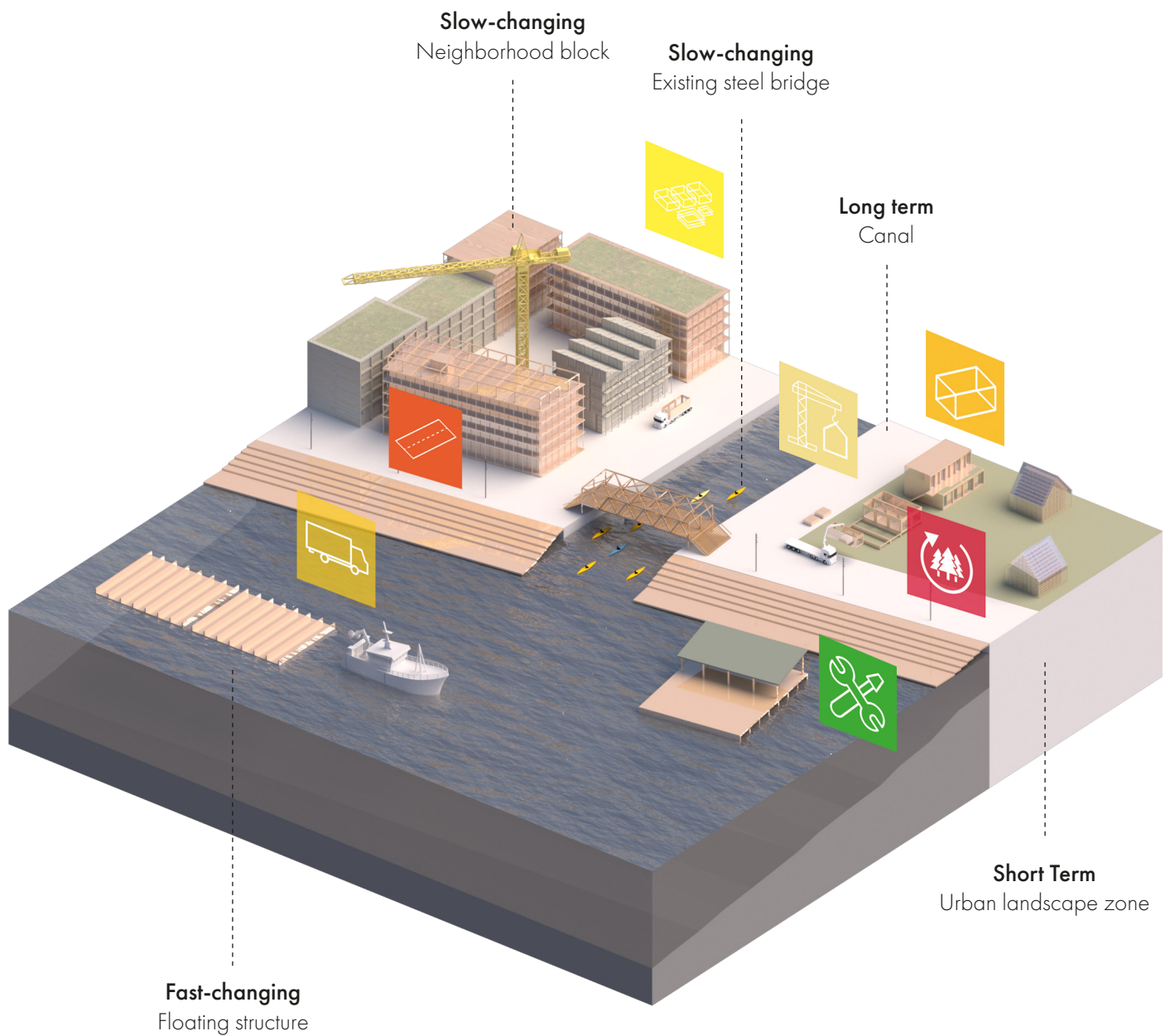
Water Edge

The western side of Refshaleøen faces the inner harbor and the center of Copenhagen. On the opposite side, the existing promenades of the city are visible. Therefore, a promenade gets placed on the island, with wooden decks facing the water for leisure and floating structures providing space for events, saunas, and other functions.

The existing steel bridge connects two parts of Refshaleøen, and the long-term canal in between gets extended into the island.

The development meets the water with a neighborhood block. On the other side, the soil is currently in regeneration from previous construction; hence, greenhouses and short-term student housing modules stand on top.





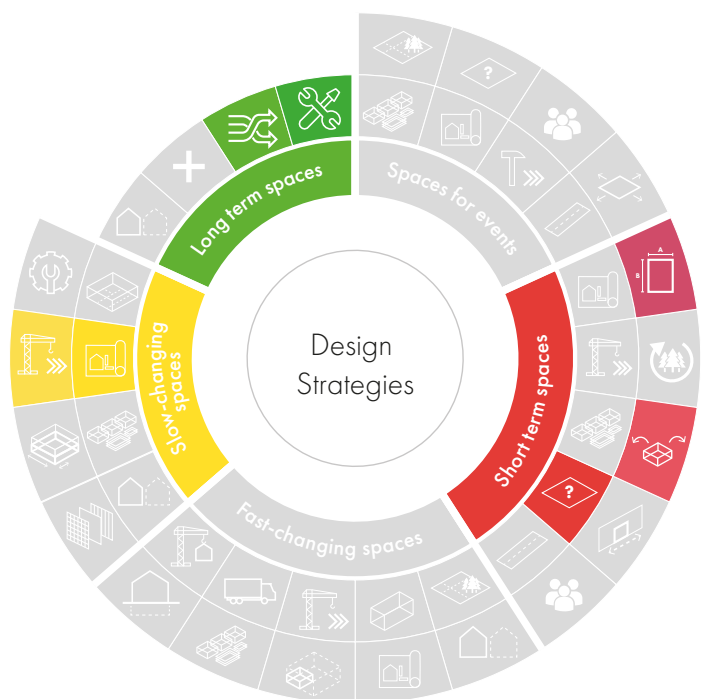
Rurban Combo 02 Neighborhood Area

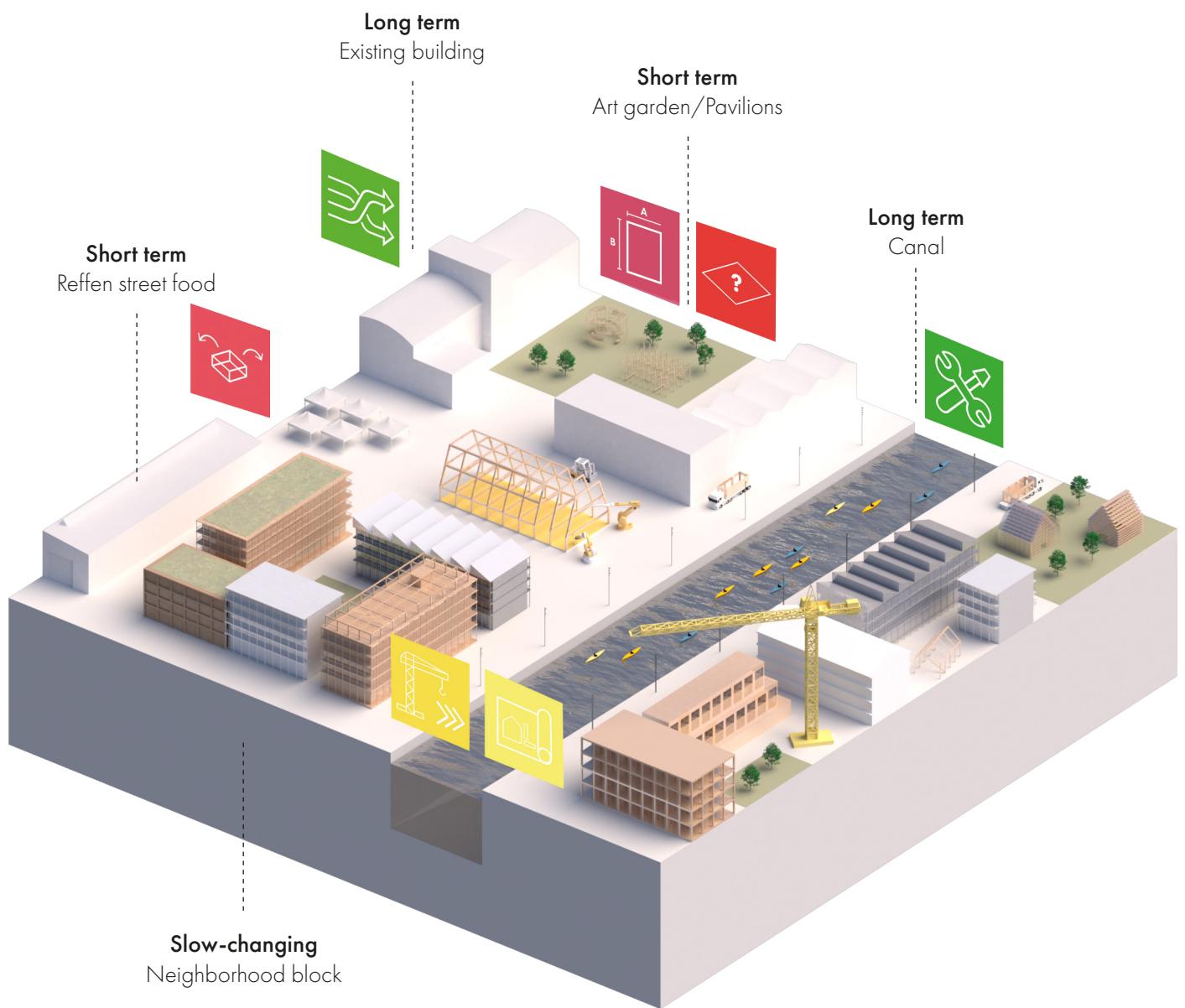
Further into the island, the canal divides it into different areas populated by neighborhood blocks and other functions.

On the right, housing blocks get constructed as well as deconstructed.

The existing Reffen street food market meets the new development on the left. On the upper edge, an existing building provides a courtyard with artistic and other functions in an art garden.

Between the two blocks, a community center gets constructed.





Rurban Combo 03

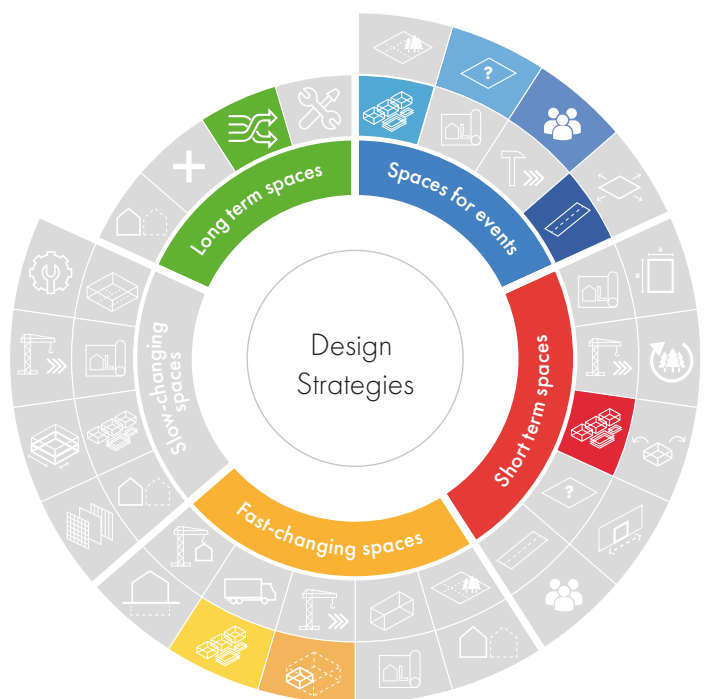
Public Square

In the center of Refshaleøen, the area around the existing historic production hall gets transformed into a new central square. The current program for the coming winter months is an ice rink for the public.

On the other side of the square, the observation tower gets combined with a housing block and public activity on the ground levels.

The main street towards the west is currently occupied by a demonstration. In between, the metro now connects the neighborhood with the rest of the city.

On the opposite side of the street, the existing buildings get extended vertically by rooftop farming, providing local production food for the area.





Temporary Map

This overview map serves as an example to show the city in transition: Not only combining the elements and their strategies with each other but how they influence the ever-changing built environment when it has transitioned to a (r)urban temporary as an utopia, reaching its liquid modernity.

The axonometry is used as a medium of representing the urban scale without requiring a detailed planning investigation.



2026

2045



5 - Reflection

The thesis does not answer all the initial questions but serves as a starting ground for further discussion.

Connecting back to the first research questions, I believe that Design and Planning for Temporariness is a necessary step toward Social Resilience. The investigated strategies and their translation into elements show clear possibilities of setting up rural and urban environments to adapt to societies' changing needs over time.

As for the second research question, it became apparent that the elements can be implemented in the local context of Refshaleøen but that there is a requirement for a more detailed investigation of the existing context and its unique atmosphere, history, and language.

The danger of developing the island into a generic neighborhood rather than celebrating its

particular identity has to be avoided. Rurbanity also requires an investigation of "the need to work with multidisciplinary teams when operating in rural space." (Vanempen, 2009). Therefore, this thesis can only be the starting point for the later involvement of many parties in the development process. With such a comprehensive process, Refshaleøen could become a testbed for reconnecting society with the built environment.

The investigated temporariness in this thesis would also have to be extended beyond the building scale, and therefore include flexibility in the current way of masterplanning as has been mentioned throughout the booklet.

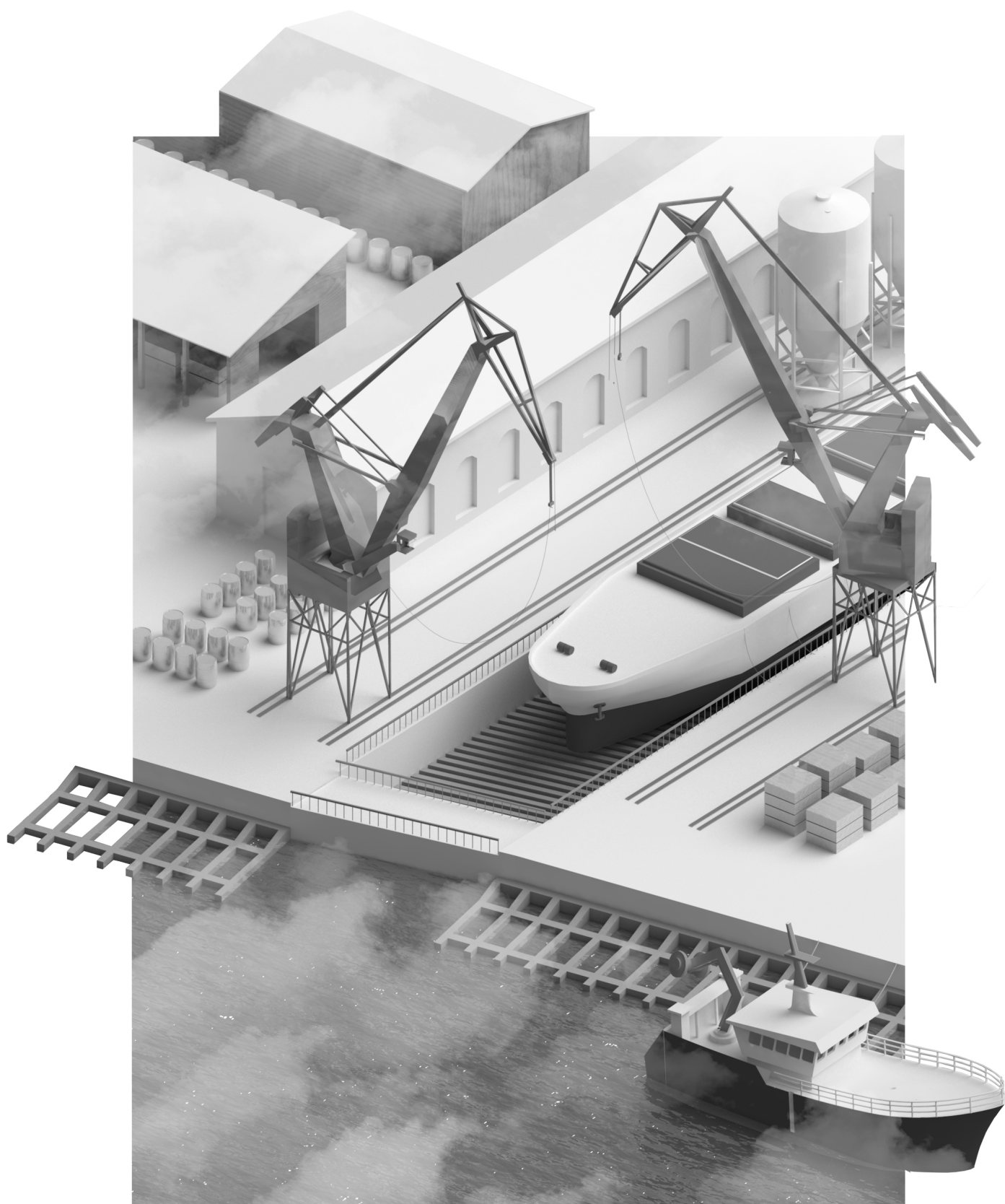
To add additional points of discussion, the following pages show thoughts and reflections on the three topics of History, Construction, and Uncertainty, that came up during my work.

1

History

The relationship of humans with their settlements is always also a relationship with the past. Former traditions, cultures, and events get manifested in the city through physical spaces and experiences. There would be no collective history of physical spaces by proposing disappearing as the exclusive concept.

It would be interesting to investigate the role of objects in preserving values and identity over time and the factors in that selection process. For example, is the proposed category of 'Long term spaces' with no planned ending enough for historical objects? Or is an imposed, top-down strategy for selected elements restrictive for societies?



The Past at Refshaleøen

2

Construction

Another interesting topic to explore further is the role of construction in our cities. When shifting towards temporariness, change and construction become a more significant part of our cities. Today's culture of dirty, loud, and polluting construction sites would have to change and instead become a celebration of altering the built environment to a changing society. The investigated strategies touch on more pleasant construction methods such as design for movability or prefabrication, but there is much more to explore.



Construction in a Temporary Environment

3

Uncertainty

As discussed during the theoretical chapter, one of the advantages of planning and designing for permanence is the sense of security and safety connected to knowing what will happen in the built environment.

Although I believe that this significantly weakens future societies' representation in the built environment, it should not be neglected that a feeling of certainty is important.

A constantly updating city reflects the current trend of always changing societies better, but is that the point of cities? Or should they be an opposite pole to the rapid speed, stress, decreasing attention span, and superficiality? And isn't the point of uncertainties that we do not know about them, so how can we ultimately prepare for the unknown?



Uncertain Future

Author Background



Academic

2019-2022	MSc Architecture and Urban Design Chalmers University of Technology Göteborg, Sweden
2020-2021	Exchange Studies Faculdade de Arquitetura Universidade de Lisboa, Portugal
2014-2018	BA Bachelor in Architecture University of Applied Sciences Augsburg, Germany

Professional

2021-2022	Internship Effekt, Denmark
2021	Internship Cobe, Denmark
2018-2019	Internship Pure Gruppe Architekten, Germany

Acknowledgements

I would first like to thank my supervisor Marco for the great teamwork on this thesis. It was a pleasure to work with you on this topic and your inspiration and support pushed it to a new level.

I would also like to thank my examiner Kristina for the support and feedback during the process.

And finally a huge thanks to my friends, family and everybody that contributed with their feedback, opinion and warm words during the last few months. It would have not been possible without you.

Bibliography

Books

Bishop, P., Williams, L. (2012). *The Temporary City*. Routledge.

Jacobs, J. (1961). *The Death and Life of Great American Cities*. Random House.

Ibañez, D., Hutton, J., Moe, K. (2019). *Wood Urbanism - from the Molecular to the Territorial*. Actar Publishers.

Bauman, Z. (2012). *Liquid Modernity*. Polity.

Papers, articles & reports

Laboy, M., Fannon, D. (2016). "Resilience Theory and Praxis: a Critical Framework for Architecture." *Enquiry* 13 (1): 39-52. <http://dx.doi.org/10.17831/enq:arcc.v13i2.405>.

Asara, V., Otero, I., Demaria, F. et al. (2015). Socially sustainable degrowth as a social-ecological transformation: repoliticizing sustainability.

The Port & City Development Corporation (2008). *Urban development - in Orestad and in the harbour areas of Copenhagen*.

The City of Copenhagen (2012). *CPH 2025 Climate plan*.

Soetmann, M. (2019). Development of The Port of Copenhagen. <http://www.sou.gov.se/wp-content/uploads/2019/02/Presentationer-fr%C3%A5n-By-och-Havn-3-oktober.pdf>

Adelfio, M., Aguiar, U. N., Fertner C., Brandão, E. (2021). Translating 'New Compactism', circulation of knowledge and local mutations: Copenhagen's Sydhavn as a case study, *International Planning Studies*.

Danish Design Review (2017). *Refshaleøen*. <http://danishdesignreview.com/kbhnotes/2017/5/5/refshaleen>.

Larsen, J. (2013). *Porten til fremtiden*. Berlingske. <https://www.berlingske.dk/kultur/porten-til-fremtiden>. Roughly translated by Google Translator.

GXN (2018). *Building a circular future*. <http://grafisk.3xn.dk/CAC/Building-a-Circular-Future-3-3.pdf>

Stockholm Resilience Center (2014). *What is resilience? An introduction to social-ecological research*.

Van Toorn, R. (2014). *No More Dreams? The Passion for Reality in Recent Dutch Architecture . . . and Its Limitations*.

Urban, F. (2019). *Copenhagen's "Return to the Inner City" 1990-2010*.

Barrie, D. (2010). *'Open Source' Place-Making*.

<https://www.scribd.com/document/41008414/Open-Source-Place-making>

Reed, B. (2007) 'Shifting from 'sustainability' to regeneration', *Building Research & Information*, 35:6, 674 – 680

Casale, R. (2020). *Beyond Sustainability*. <https://carboncopy.eco/blog/beyond-sustainability>

Malter, A., Rindfleisch, A. (2019). *Transitioning to a Digital World*. DOI: 10.1108/S1548-643520190000016001

García, L., Molina, J. A. (2017): *The household structure: recent international evolution*.

United Nations, Department of Economic and Social Affairs, Population Division (2018). *World Urbanization Prospects: The 2018 Revision*, custom data acquired via website.

Barrell, R., Davis, E. P. (2008). *The Evolution of the Financial Crisis of 2007–8*. *National Institute Economic Review*, 206(1), 5–14. <https://doi.org/10.1177/0027950108099838>

Vanempten, E. (2009). *Challenging urbanism: the urban reality of the Brussels metropolitan area*.

Thesis'

Manohar, S. (2017). *Translating with optimism - Exploring Flexibility in Design for a Positive Future*. Chalmers School of Architecture.

Prats, V. (2017). *Södertälje - A gateway to degrowth*. Chalmers School of Architecture.

Grmela, V. (2020). *Towards zero-waste buildings*. Chalmers School of Architecture.

Fagerholt, A. (2020). *In between typologies - The future challenges at Refshaleøen*. Aarhus School of Architecture.

Touw, K. (2006). *Firmitas re-visited: Permanence in Contemporary Architecture*. University of Waterloo.

Definitions

Permanence: *The Oxford English Dictionary* (2022). <https://www.oed.com/view/Entry/141182?redirectedFrom=permanence>

Regeneration: *The Oxford English Dictionary* (2022). <https://www.oed.com/view/Entry/161223?redirectedFrom=regeneration>

Figures

All figures not listed are produced by the author.

Figure 4: Author unknown. Flood in a German Town 2021. VOA News. https://gdb.voanews.com/d5ee5ed6-08ae-4262-8f7d-2438622caf0f_w1597_n_r1_st_s.jpg

Figure 5: Hjortshøj, R. (2021). Venice Biennale 2021. Project by Effekt Arkitekter. https://images.squarespace-cdn.com/content/v1/51819b9fe4b03000ce6f03ea/1621593400273-DH57HU7BCWEKV4RSC8FY/r_hjortshoj+-+biennale+effekt+press+web-32.jpeg?format=2500w

Figure 6: The Different Approaches. Adapted from Casale (2020) adapted from Reed (2007). Casale, R. (2020). Beyond Sustainability. <https://carboncopy.eco/blog/beyond-sustainability>

Figure 7: Resilience Types. Adapted from Laboy Michelle and David Fannon. 2016. "Resilience Theory and Praxis: a Critical Framework for Architecture." *Enquiry* 13 (1): 39-52. [Http://dx.doi.org/10.17831/enq:arcc.v13i2.405](http://dx.doi.org/10.17831/enq:arcc.v13i2.405)

Figure 8: Reaction to Disturbances. Adapted from Laboy Michelle and David Fannon. 2016. "Resilience Theory and Praxis: a Critical Framework for Architecture." *Enquiry* 13 (1): 39-52. [Http://dx.doi.org/10.17831/enq:arcc.v13i2.405](http://dx.doi.org/10.17831/enq:arcc.v13i2.405)

Figure 9: Brueghel, P. (1563). The Tower of Babel [Painting]. Kunsthistorisches Museum, Vienna, Austria. https://upload.wikimedia.org/wikipedia/commons/f/fc/Pieter_Bruegel_the_Elder_-_The_Tower_of_Babel_%28Vienna%29_-_Google_Art_Project_-_edited.jpg

Figure 10: Sarm, O. (2016). The Ruins of Babylon Today. https://upload.wikimedia.org/wikipedia/commons/7/76/Ancient_Remains_in_Babylon.jpg

Figure 14: Planning Process for the Railway City. Adapted from www.jernbanebyen.dk/artikel/tidsplan-jernbanebyen

Figure 15: Development Overview of Carlsbergbyen. Screenshot from www.carlsbergbyen.dk

Figure 16: Produced by the author with images from:

Styrelsen for Dataforsyning og Effektivisering. <https://download.kortforsyningen.dk/>

Soetmann, M. (2019). Development of The Port of Copenhagen. <http://www.sou.gov.se/wp-content/uploads/2019/02/Presentationer-fr%C3%A5n-By-och-Havn-3-oktober.pdf>

Figure 17: Unknown (ca. 1980). Burmeister & Wain Beskrivelse - Skibsværft. <https://kbhbilleder.dk/kbh-museum/91097>

Figure 18: Ronnow, J. (1976). Burmeister & Wain Skibsværft - Arbejder på kajen. <https://kbhbilleder.dk/kbh-museum/91838>

Figure 19: Unknown, Alfred G. Hassings Forlag (ca. 1948 - 1950). Burmeister & Wain Skibsværft Beskrivelse - Udsigt gennem port i Pladeværkstedet. <https://kbhbilleder.dk/kbh-museum/91815>

Figure 20: Unknown. (Possibly 1912) MS Selandia, the world's first large ocean-going diesel-powered ship, build at B&W in 1912. <https://www.snesejler.dk/bill84.htm>

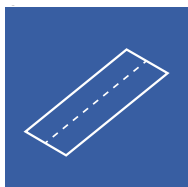
Figure 22: Example of Resilient Reaction in Short and Long Term. Adapted from Laboy Michelle and David Fannon. 2016. "Resilience Theory and Praxis: a Critical Framework for Architecture." *Enquiry* 13 (1): 39-52. [Http://dx.doi.org/10.17831/enq:arcc.v13i2.405](http://dx.doi.org/10.17831/enq:arcc.v13i2.405)

Appendix 1:

Strategy Glossary

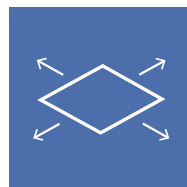
This glossary contains the conceptual strategies with their definitions concluded from the reference cases.

Flexible & unprogrammed streets/ street zones



Little number of predefining elements and constraints. Services such as access to water and electricity provided.

Large open spaces



Empty spaces for large crowds and uses in central and decentral locations for a diverse and vibrant urban life.

Easy & fast construction



With only a few days or months of life prediction, the elements are easily erected by non-professionals with little construction experience in a short time.

Participation



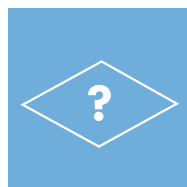
Inclusion of multiple interest groups as well as non-professionals in the planning, designing, decision making, construction, use and running of structures. Often bottom up for a more democratic and transparent urbanism.

Deconstruction planning



Give information to future planners on how to remove and disassemble the parts and their possible alternative life or afterlife.

Flexible & unprogrammed public spaces



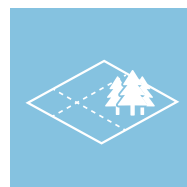
Little number of predefining elements and constraints. Services such as access to water and electricity provided.

Design for re- & disassembly



Elements and joints to be layered and organized for easy accessibility and reversibility. Durable joint materials to allow multiple (de)construction processes.

Flexible land zoning



More freedom of site functions to allow for constant change of uses and typologies according to society needs.

Deconstruction planning



Give information to future planners on how to remove and disassemble the parts and their possible alternative life or afterlife.

Short on-site construction



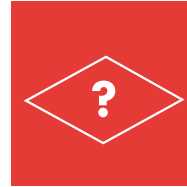
Minimized construction at the final location for less disturbance of the context.

Design for re- & disassembly



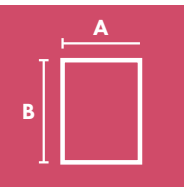
With only a few days or months of life prediction, the elements are easily erected by non-professionals with little construction experience in a short time.

Flexible & unprogrammed public spaces



Little number of predefining elements and constraints. Services such as access to water and electricity provided.

Standardized elements



Use of industry standards in elements allows universal usage and increases the possibilities of likely future viability.

Land regeneration



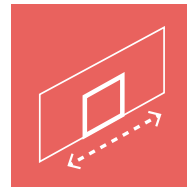
Planned cycles of sites with and without buildings to allow soil healing and biodiversity healing after harmful use.

Design for movability



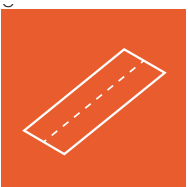
Planned to change locations. Can be done through compact or tight modules to be moved as a whole instead of disassembly. Technical elements for loading and unloading with cranes.

Flexible interior elements



(Re)movable, rotatable elements, or plug-in systems for different uses.

Flexible & unprogrammed streets/ street zones



Little number of predefining elements and constraints. Services such as access to water and electricity provided.

Participation



Inclusion of multiple interest groups as well as non-professionals in the planning, designing, decision making, construction, use and running of structures. Often bottom up for a more democratic and transparent urbanism.

Flexible land zoning



Higher legislative freedom of site functions to allow easy change of uses and typologies.

Digital twin



Digital information model as a copy of the physical one. Material library of parts and details to allow future planners to change, remove or reuse the structure. Can include information on how it reacts to different scenarios.

Modular design



Structure built up of multiple identical modules that allow for easy replication, resource, cost, and time saving and large flexibility and adaption to context, users, and use.

Deconstruction planning



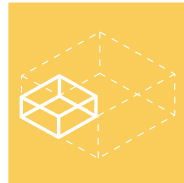
Give information to future planners on how to remove and disassemble the parts and their possible alternative life or afterlife.

Short-on-site construction



Minimized construction at the final location for less disturbance of the context.

Design for scalability



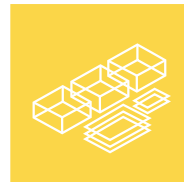
Easy increase in structure size. For example through joint systems, post and beam structures or others.

Design for easy transport



Easy handling of elements due to their material choice, weight, and geometry. Optimised dimensions for standard transport vehicles.

Design for re- and & disassembly



Elements and joints to be layered and organized for easy accessibility and reversibility. Durable joint materials to allow multiple (de)construction processes.

Prefabrication



Large percentage of final construction to be done in factory to minimize construction on site. Large automation to save time and increase precision.

No basement



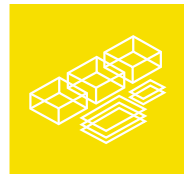
Technical uses, storage and parking above ground to minimize on site construction and irreversible spaces. Minimizes loud, dirty, and polluting construction methods.

Digital twins



Digital information model as a copy of the physical one. Material library of parts and details to allow future planners to change, remove or reuse the structure. Can include information on how it reacts to different scenarios.

Design for re- and & disassembly



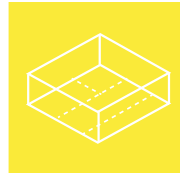
Elements and joints to be layered and organized for easy accessibility and reversibility. Durable joint materials to allow multiple (de)construction processes.

Deconstruction planning



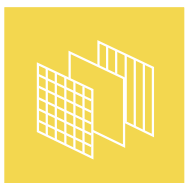
Give information to future planners on how to remove and disassemble the parts and their possible alternative life or afterlife.

Flexible floor plans



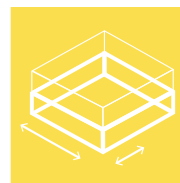
Alternative options of space uses.

Exchangeable layers



Easily accessible construction elements to be updated or changed.

Ground floor flexibility



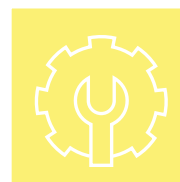
Standardized dimensions and minimal structural obstacles for multiple functions over time. Easily removable additional layers and elements such as furniture. Increased heights for flexibility. Openness towards streets and nearby public spaces.

Short-on-site construction



Minimized construction at the final location for less disturbance of the context.

Refitting & technical upgrade



Separate technical systems easily removable for future updates, independent from construction systems.

Maintenance & Repair



Allows easy access to keep elements updated and working. Makes sure that long lasting materials can be checked, repaired, or replaced easily and includes planned corridors for renovation.

Transformation



Makes it easy to redesign long term spaces into alternative uses, therefore keeping them relevant over time. Can be achieved through accessible joints and elements. Flexibility in spaces and exchangeable elements.

Design for addition/adaption



Future possibilities of extension and change. For example can be achieved through accessible joints and elements. Bearing elements can be oversized for future add-ons.

Digital twin



Digital information model as a copy of the physical one. Material library of parts and details to allow future planners to change, remove or reuse the structure. Can include information on how it reacts to different scenarios.

Appendix 2:

Strategy Reference Cases

This collection of reference cases from the field of architecture serves as the base for the proposed strategies.

Flexible & unprogrammed streets

Philadelphia 30th Street Station (Gehl).
<https://gehlpeople.com/projects/porch-swings-at-30th-street-2/>



Large open spaces

Existing Festival Ground on Site.
Google Earth



Participation

Existing rural farming on site (Øens have).
<https://www.instagram.com/p/CWBc9JprD9a/>



Flexible & unprogrammed public spaces

Flying grass carpet (HUNC, Studio ID Eddy).
<https://medium.com/@megukoyama/can-temporary-urbanism-be-a-permanent-solution-urban-spaces-in-liquid-times-643d423ae4fc>



Digital twin

The Plus Vestre (BIG). Photo by Einar Aslaksen.
<https://www.theplus.no/en/timeline>



Design for re- & disassembly

Floating house (Powerhouse Company).
<https://www.archdaily.com/957325/the-challenges-of-designing-a-reusable-floating-wooden-building>



Modular design

Gibraltar Guest House (Bornstein Lyckefors).
<https://bornsteinlyckefors.se/project/gibraltar-guesthouse/>



Design for scalability

CPH Village (Vandkunsten Tengstue).
<https://cphvillage.com/press>



Standardized elements

Level Up (Mahon, B., Parviainen, J., Tulshan, S., Sett, S.).
<https://www.archdaily.com/911991/level-up-brett-mahon>



Land regeneration

Existing rural farming on site (Øens have).
<https://www.instagram.com/p/CWBc9JprD9a/>



Design for movability

CPH Village (Vandkunsten Tengstue).
<https://cphvillage.com/press>



Flexible interior elements

11-1 studio (Yosuke SAGOSHI Atelier).
<https://www.archdaily.com/978274/11-1-studio-yosuke-sagoshi-atelier>



Design for easy transport

Home.earth (EFFEKT).
<https://www.effekt.dk/homeearth>



Prefabrication

Gibraltar Guest House (Bornstein Lyckefors).
<https://bornsteinlyckefors.se/project/gibraltar-guesthouse/>



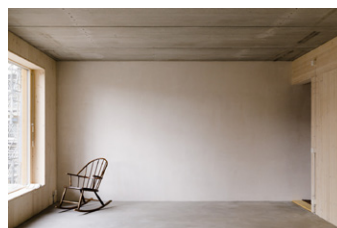
No basement

Gibraltar Guest House (Bornstein Lyckefors).
<https://bornsteinlyckefors.se/project/gibraltar-guesthouse/>



Flexible floor plans

Abakus Co-Housing (Stereo Architektur).
<https://www.archdaily.com/977308/abakus-co-housing-stereo-architektur>



No basement

Gibraltar Guest House (Bornstein Lyckefors).
<https://bornsteinlyckefors.se/project/gibraltar-guesthouse/>



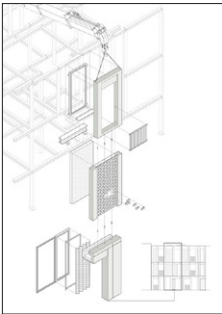
Maintenance & Repair

Renovation Neue Nationalgalerie (David Chipperfield).
<https://www.dezeen.com/2021/04/29/neue-nationalgalerie-overhaul-david-chipperfield-mies-van-der-rohe/>



Exchangeable layers

Rosemoor Studios (Haptic architects).
<https://hapticarchitects.com/rosemoor-studios/>



Refitting & technical upgrade

Corona Treatment Centre Berlin (Heinle, Wischer und Partner).
<https://www.archdaily.com/940802/corona-treatment-centre-berlin-heinle-wischer-und-partner>



Transformation

Bogen 131 Bicycle Shop (Fink architects).
<https://www.archdaily.com/963960/bogen-131-bicycle-shop-david-fink-plus-lukas-fink-plus-tobias-fink>



Design for addition/adaption

Gjuteriet (Kjellander & Sjöberg).
<https://kjellandersjoberg.se/en/projects/project/gjuteriet/>



Ground floor flexibility

11-1 studio (Yosuke SAGOSHI Atelier).
<https://www.archdaily.com/978274/11-1-studio-yosuke-sagoshi-atelier>



Design for re- & disassembly

The Braunstein Taphouse (Adept).
<https://www.adept.dk/project/the-braunstein-taphouse>

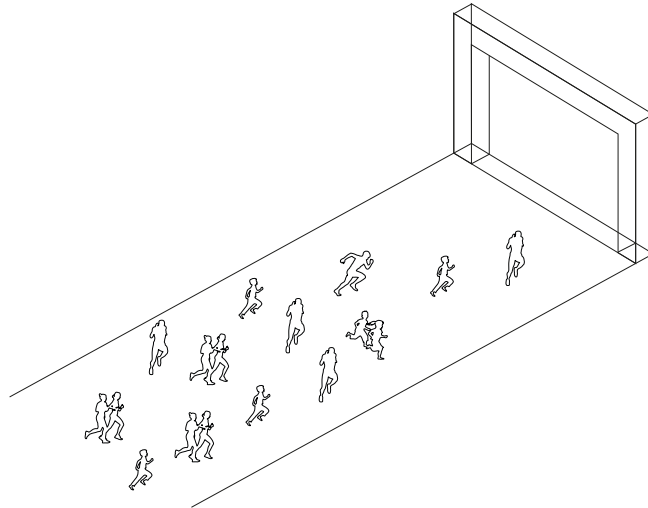


Appendix 3: Additional Design Elements

These design elements did not get investigated in detail about their strategies of transformation over time, but were still important either in their role as existing catalysts for the local context or by getting combined with other elements.

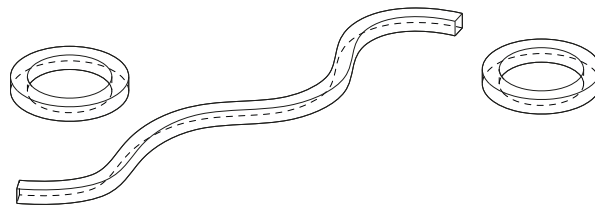
Event: Run

City runs can easily be hosted on Refshaleøens flexible streets.



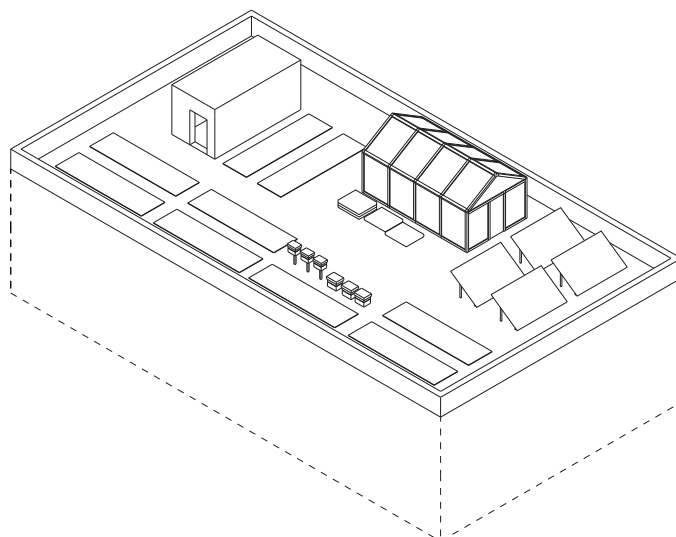
Urban Furniture

Flexible short-term elements can increase the unique local atmosphere of the island. Due to the strategies, easy assembly and disassembly as well as easy construction methods make them temporary.



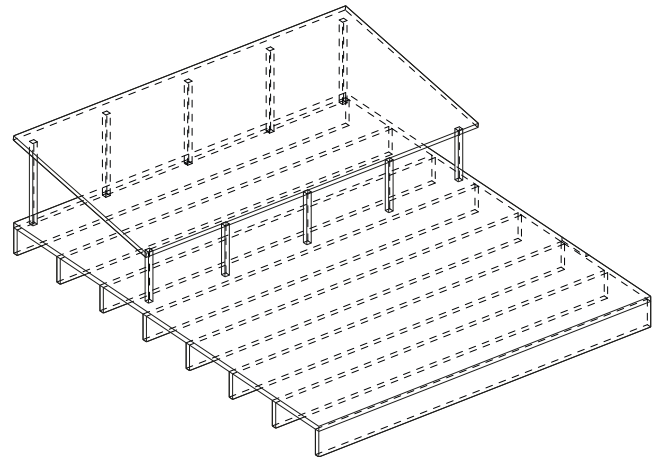
Rooftop Farming

To improve local food production, local climate, local energy production as well as community participation, movable farming spaces or gardens can get placed on top of roofs or building



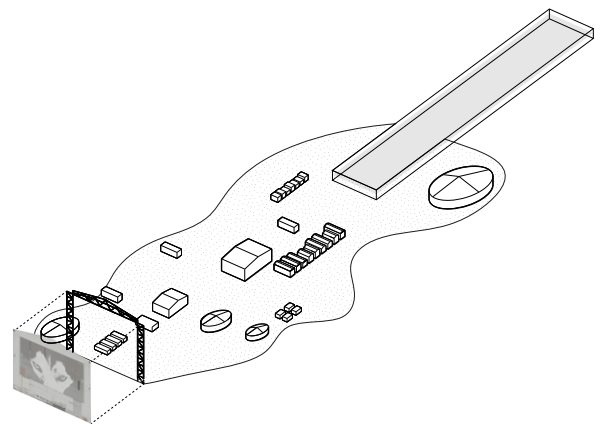
Floating Structure

This flexible element extends the islands life into the inner harbor and can house a wide range of functions from saunas and swimming facilities, to leisure and entertainment spaces or could in the future be updated to housing, office or other functions.



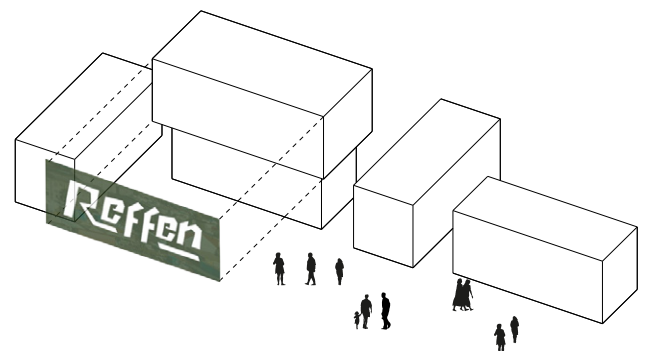
Copenhell Festival - existing

The existing annual metal festival enjoys great attention from music fans and transforms the islands into a vibrant cultural hotspot for a week every summer.



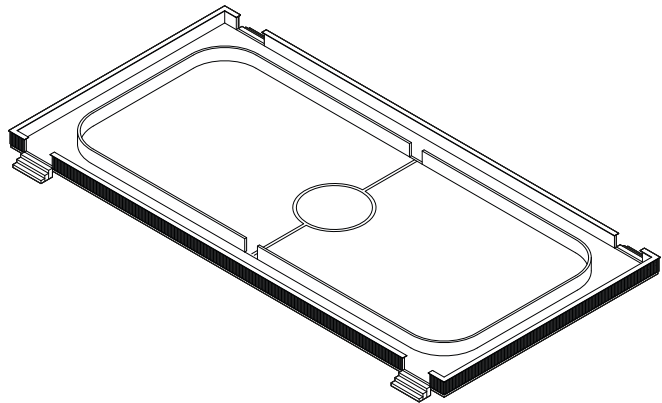
Reffen Street Food Market - existing

The existing street food market on the island brings large crowds during the summer months and plays a significant role in Refshaleøens current atmosphere.



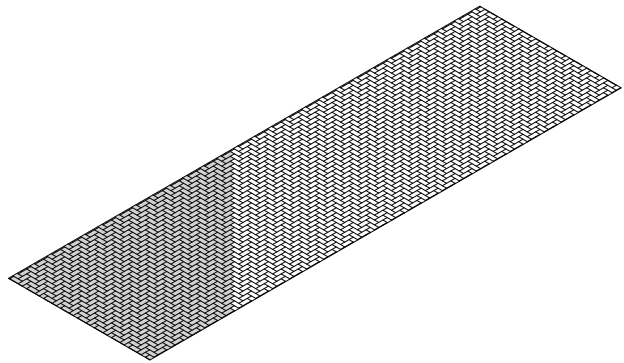
Ice Rink

As a seasonal event, this ice rink is disassemblable and due to its standardized elements can also get reused in different other structures.



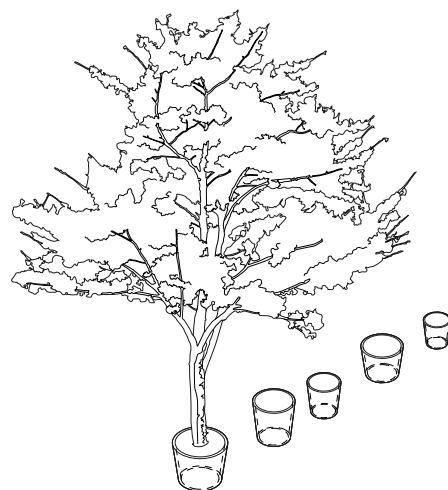
Pavement Paint

This event can enhance participation in the public realm and promote change.



Tree Buckets

By keeping trees in movable buckets, a street scape can remain temporary. At the same time, landscape regeneration can act as a life cycle for the urban environment.



“Temporary activity represents a reaction to a world where the future is more uncertain and less secure, and a response to rapid economic, societal and technological changes that are shortening the present into smaller and smaller time frames.”

Bishop & Williams (2012, p. 5)

