Untangling Stakeholder Dynamics in Circularity of the Built Environment

A Comics-Based Approach

Ellen Verbiest [1], **Julie Marin** [1], **Bruno De Meulder** [1], **Andrew Vande Moere** [1]

[1] *KU Leuven, Departement of Architecture, Leuven (Belgium)*

Abstract

Comics are a known method to visually link characters to context through time. This article explores the medium of comics to untangle stakeholder dynamics in the context of a complex theme such as circularity of the built environment.
Circularity of the built environment tailors concepts of circular economy to the field of construction and urban development. Relying mostly on optimization strategies, context-specific characteristics such as stakeholder agency and spatial preconditions are often disregarded as resources in the design of circularity projects. This results in one-size-fits all circularity instruments formalized in generic toolboxes.
Circularity instruments should additionally engage with stakeholders, recognizing complexity and surfacing the resourcefulness of the territory. This comics series follows the researcher from analysis to design hypothesis, clarifying complexity at hand from the researcher perspective, including stakeholder agendas, spatial conditions, barriers and opportunities.
Part of an ongoing action-research project, the self-reflective comics show parts of a researcher's journey untangling circularity in the built environment in its multiple stakeholder dimensions. It includes data sourced from mixed method research, such as ethnographic fieldwork, semi-structured interviews, and archival research on two Flemish industry parks, Kortrijk-Noord and Leuven-Haasrode.
These comics function as a narrative assemblage method for critical analysis, bringing together different data sources, and rendering our research process on circularity contextual and visual. Additionally, the comic allows us to communicate, challenge, and begin to design with (hidden) stakeholder agency.

Keywords

circular economy; site-specific dynamics; comics as research method; socio-spatial research; stakeholder perspectives

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1 Introduction

The circular economy (CE) presents an alternative model to the linear take-make-dispose system, aiming to close material and energy loops, reduce waste, and promote resource reuse and recycling (Prieto-Sandoval et al., 2018). Given the construction industry's impact on resource depletion and waste production, circularity has emerged as a solution in recent urban and architecture debates on sustainability. Consequently, various material assessment methods and circularity policies have been developed across different levels of operations. However, while voices increasingly advocate for a paradigm shift towards systems thinking and valuing the complexity and resourcefulness of the territory (Marin and De Meulder, 2018, Marin and De Meulder, 2021), there remains an underrepresentation of spatial, social, and historical knowledge (Schröder et al., 2020, Urbinati et al., 2017). Most of the contributions to the circularity debate are induced by top-down actors such as governmental institutions, formulating one-size-fits-all circularity goals. This creates a gap between the world of abstraction, using generic circularity-driven principles, and the complex world of terrain experimentation by local actors (Verga, 2022).

The need to move beyond abstract circularity measures towards a more contextualized, spatial, and actor-specific approach emerged through case-study research on two Flemish industrial sites, Leuven-Haasrode and Kortrijk-Noord. This visual essay explores the use of comics as a tool not only to represent but also to comprehend the site-specific dynamics of circularity in the built environment, uncovering the design potential inherent in often hidden stakeholder agency. The primary objective of this comic is to experiment with narrative forms through textual and visual storytelling practices, aiming to deconstruct prevailing discourses and integrate a myriad of data sources, stakeholders perspectives and their spatial context into the otherwise abstract discourse surrounding CE.

2 Comics as a Method in Built Environment Research

Comics have been extensively researched and recognized as a method for visual ethnography in the field of urban anthropology, facilitating the dissemination of academic knowledge in a visually engaging manner (Cancellieri and Peterle, 2021). Sociologists and geographers have also utilized comics to co-construct narratives amplifying the voices of underrepresented stakeholders (Barberis and Grüning, 2021). Moreover, comics have been described as a spatial language that visually links space to characters across time (Groensteen, 2007). Within superhero comic books, architecture consistently serves as a backdrop, with renowned architects such as Le Corbusier, Archigram, and Bjarke Ingels employing comic imagery to promote their work.

In this visual essay, however, an alternative approach is taken, highlighting comics as a research practice (Peterle, 2021). It investigates the use of comics as an assemblage method, allowing for the representation and conduct of socio-spatial research on two industry parks. Comics serve as a powerful tool to untangle contextual complexity, constructing meaning through the montage of seemingly disconnected elements and unrelated parts (Ditmmer, 2010). The arrangement of images and text in comics enables researchers to uncover, question, analyze, and potentially address imbalances in socio-spatial research on complex themes like circularity in the built environment (Fraser, 2019). Moreover, comics prove suitable for addressing the

challenge of assembling heterogeneous datasets when visualizing circularity, as relevant data spans from material knowledge to stakeholder's circularity agendas (Karasti et al., 2021; Calisto Friant et al., 2020).

The comic presented in this essay offers a highly explorative, subjective narrative that captures the ongoing research process (Law, 2004). Following in the footsteps of Philippe Squarzoni's "Climate Changed: A Personal Journey through the Science," the author of these comics also illustrates their own research (Squarzoni, 2012). The researcher-cartoonist's perspective and body become inherently entangled with the research output, allowing for transparency in terms of the researcher's positionality and thoughts.

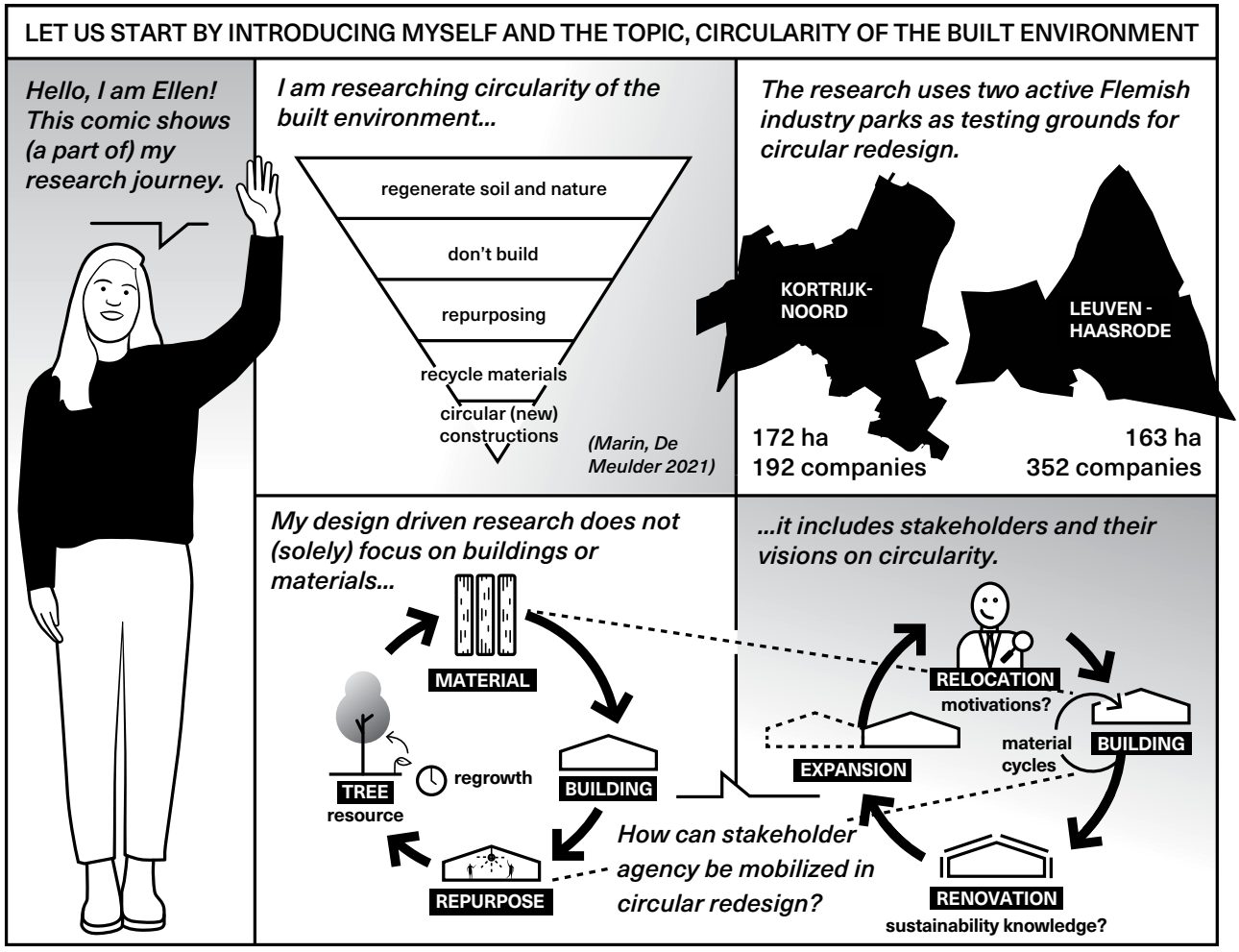
To demonstrate this approach, it is applied to the author's personal research journey within a specific design research project: Regenerating Flemish Industry parks (REFLIP), funded by KU Leuven (2020-2024) (KU Leuven Research Portal, 2020). REFLIP focuses on Flemish industry parks, requiring major spatial and infrastructural updates, and addresses the need to develop multi- and transdisciplinary methods to realize an integrated circular economy transition of the built environment.

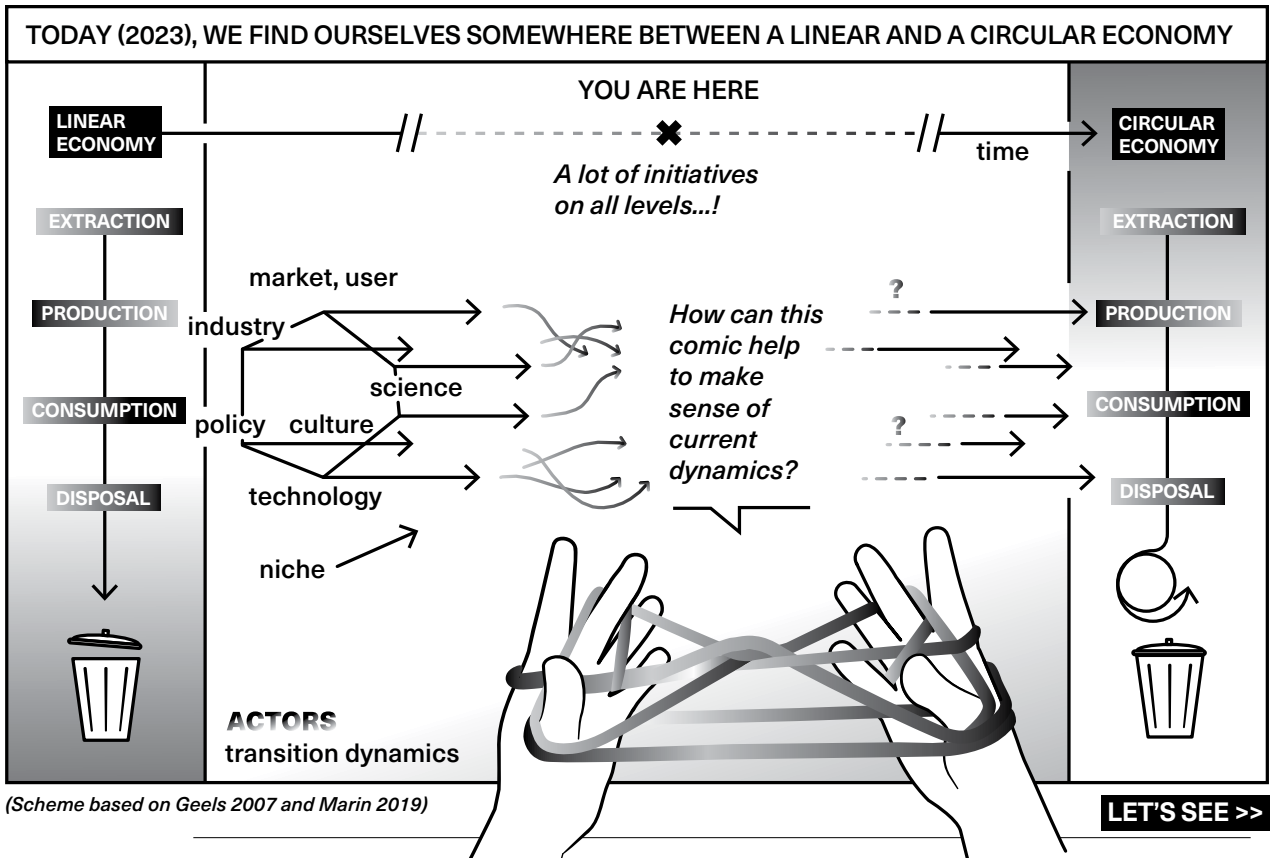
The first two comics, introduced after a research overview (p.76), visualize the (lack of) agency of policymakers and local companies in realizing circularity projects, identified during the analysis phase. "The Circular Toolbox: From Excitement to Disillusion" (p.77-78) problematizes generic sustainability measures and circularity studies formalized in toolboxes, unveiling smultiple barriers and lock-ins hindering the transition from ideas to realization. The second comic, "Redefining Circularity: A Question of Perspectives" (p.79-80), highlights the various interpretations and (mis)usage of the term "circularity." The final two comics, residing between design hypothesis and analysis, advocate for a site-specific approach to circular design processes. "Circularity in the Resourcefulness of the Territory" (p.81-82) complements the dominant material-centered view of circularity with a stakeholder-centered approach, emphasizing implicit circularity practices in family businesses at Kortrijk-Noord. The last comic delves into the archives and surfaces with a design hypothesis titled "Looking Back to Project Forward: Proto-Circularity" (p.83-84).

3 Conclusions

This article argues that comics as a method effectively address the lack of historical, social, and spatial dimensions in current circularity research for the built environment. By utilizing stories as tools to actualize different spatial meanings and formulate design hypotheses, comics activate new trajectories for spatial action. The comic functions as a bespoke visual research method, untangling stakeholder perspectives, defining research scope, and structuring data from multiple sources (semi-structured interviews, policy documents, company websites, fieldwork, archival research, theory...). In subsequent phases, these comics will be complemented by more nuanced accounts, fore fronting stakeholders as the protagonists. While the format of short comics may limit elaboration and carry the risk of caricaturing certain actors or policies, this series aims to synthesize complex stakeholder dynamics associated with circularity in the built environment. It recognizes and values current approaches to circularity on the industry parks, ultimately offering an additional layer of site-specificity to unlock abstract debates and kick-start the design process.

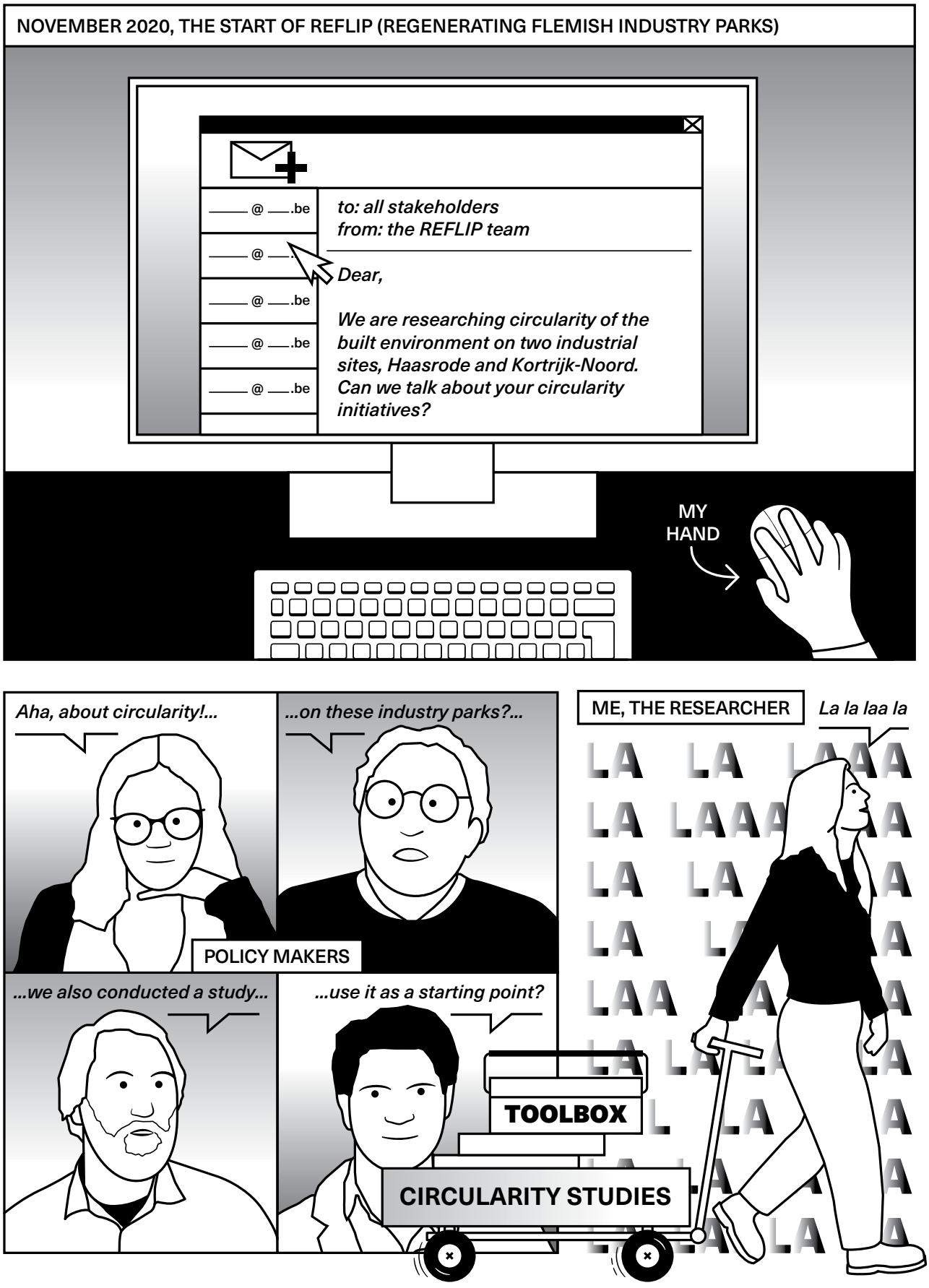
Through comics, the abstract discourse surrounding circularity in the built environment can be enriched with a deeper understanding of stakeholders and their spatial context. By harnessing the power of comics as a research method, this visual essay contributes to bridging the gap between abstract circularity principles and the complexities of the built environment, fostering new perspectives and trajectories for spatial action.

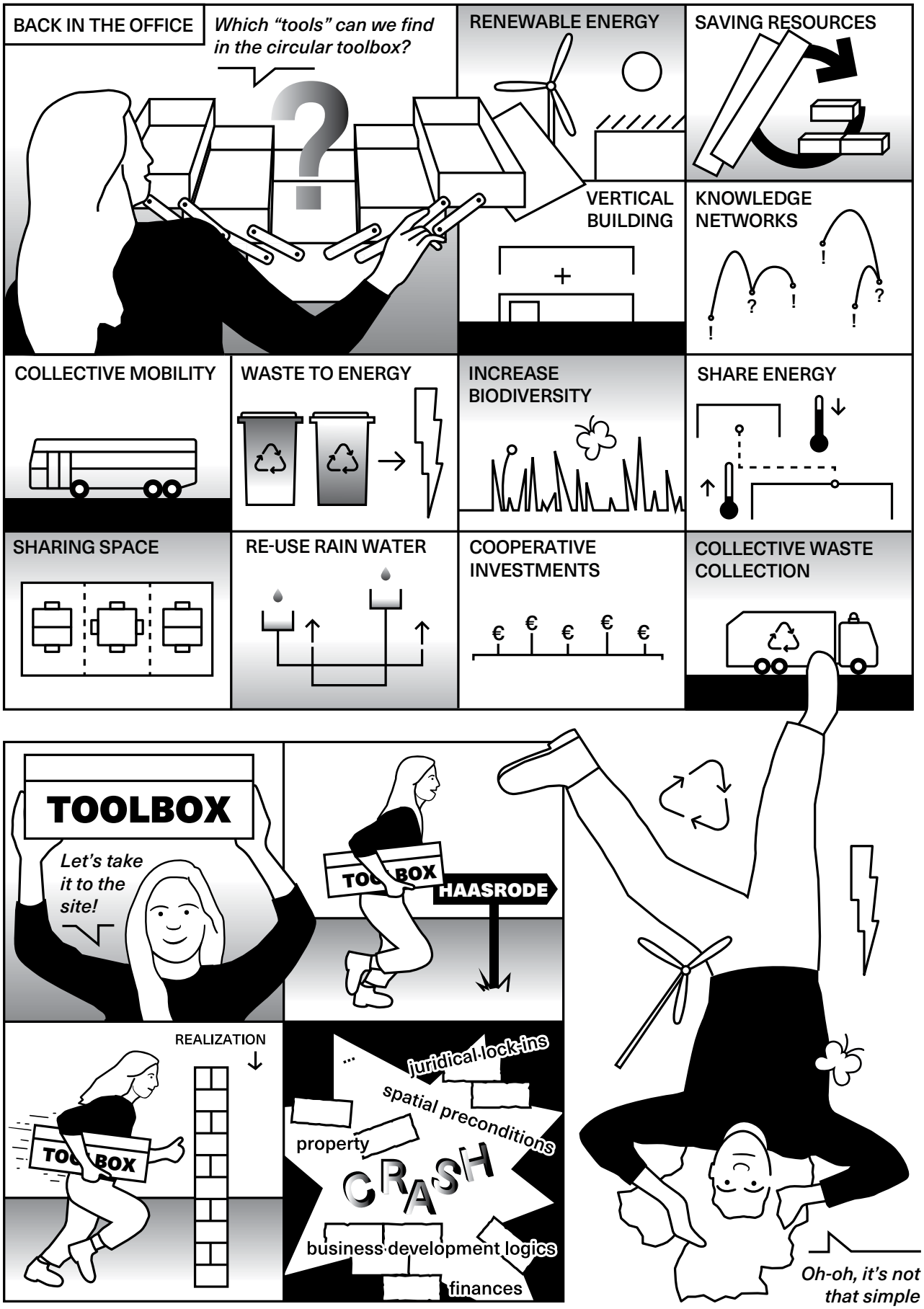




(Scheme based on Geels 2007 and Marin 2019)

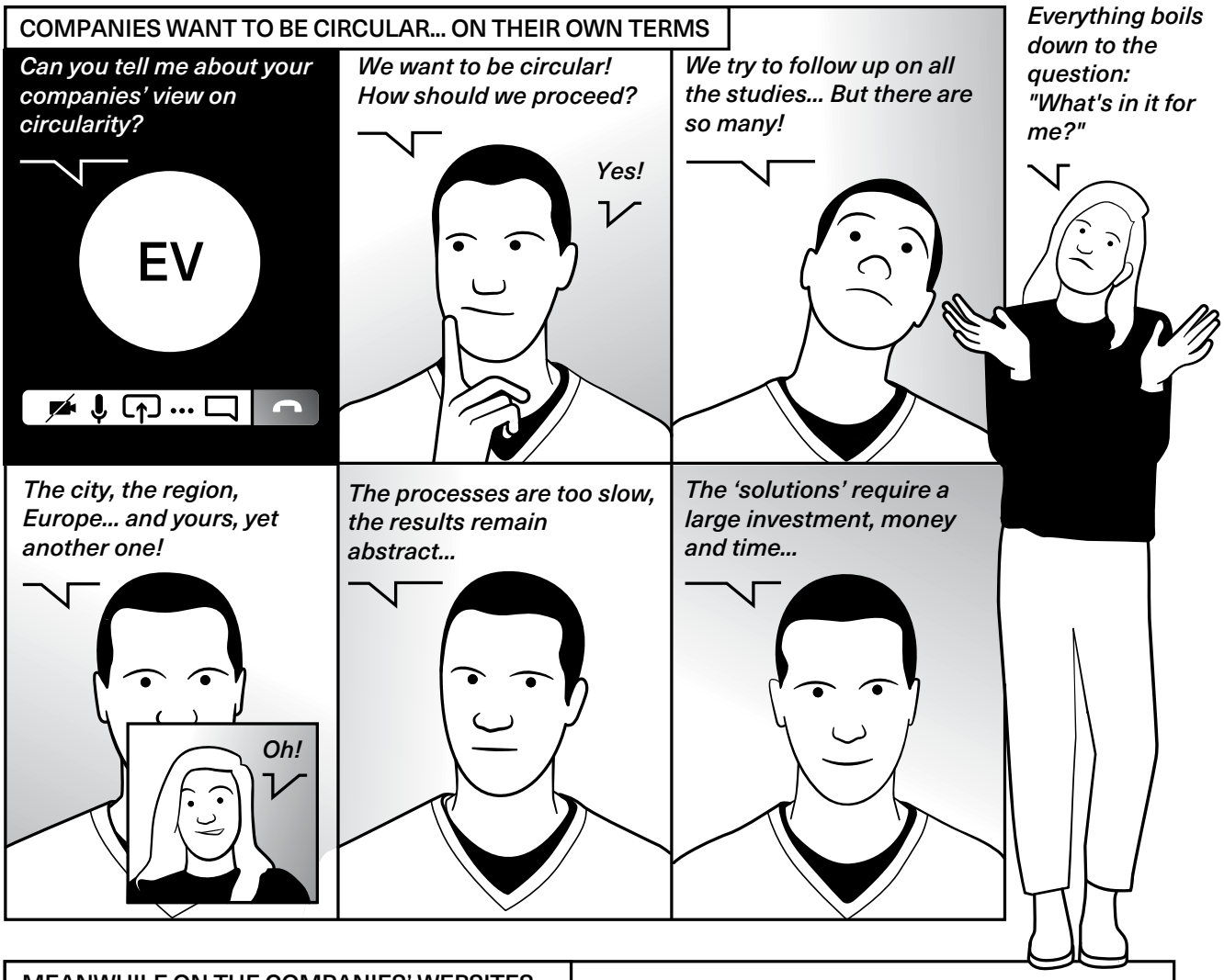
‘THE CIRCULAR TOOLBOX’, FROM EXCITEMENT TO DISILLUSION

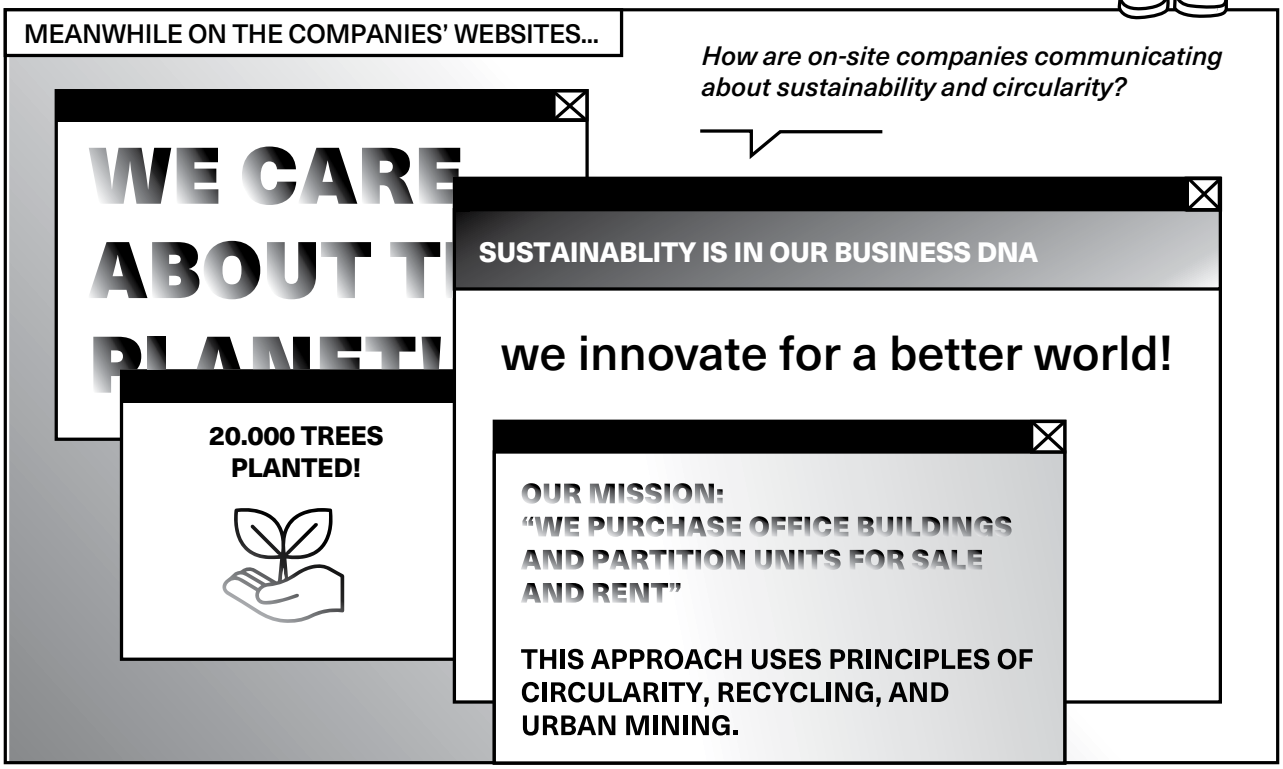




(based on CIRCULER, Interleuven 2021)

(RE)DEFINING CIRCULARITY: A QUESTION OF PERSPECTIVES





IN ANOTHER INTERVIEW...

Ah yes, circularity! We strive to be completely CO_2 neutral.

We own an unbuilt plot next to our building...

*We wanted to fill the plot with solar panels. This would make us 100% energy self-sufficient**

...but the city denied us the building permit. Unbelievable, right? After all their talk about cicularity!?

To: company
From: city admin

PERMIT DENIED

Unfortunately, we can not grant you the permit, due to lack of spatial efficiency of your proposal. The few empty plots, should be used for industrial activity!

**and independent from fluctuating energy prices*

Is this circularity? Hmm...? Maybe "circularity" does not mean the same thing to everyone...?

Circularity of the built environment is an abstract concept...

CIRCULARITY? CIRCULARI- WHAT?

Instead of only considering explicit circularity projects...

ARE YOU REALLY?

LOOK AT US, WE ARE CIRCULAR!

I realized circularity can be hidden, unknown, even to the ones practicing it...

CIRCULARITY

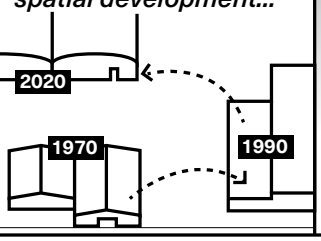
Instead of asking stakeholders explicitly about circularity...

REDUCE?
REUSE?
RECYCLE?

YES!*

***insert generic sustainability discourse**

I started interviewing companies about their spatial development...



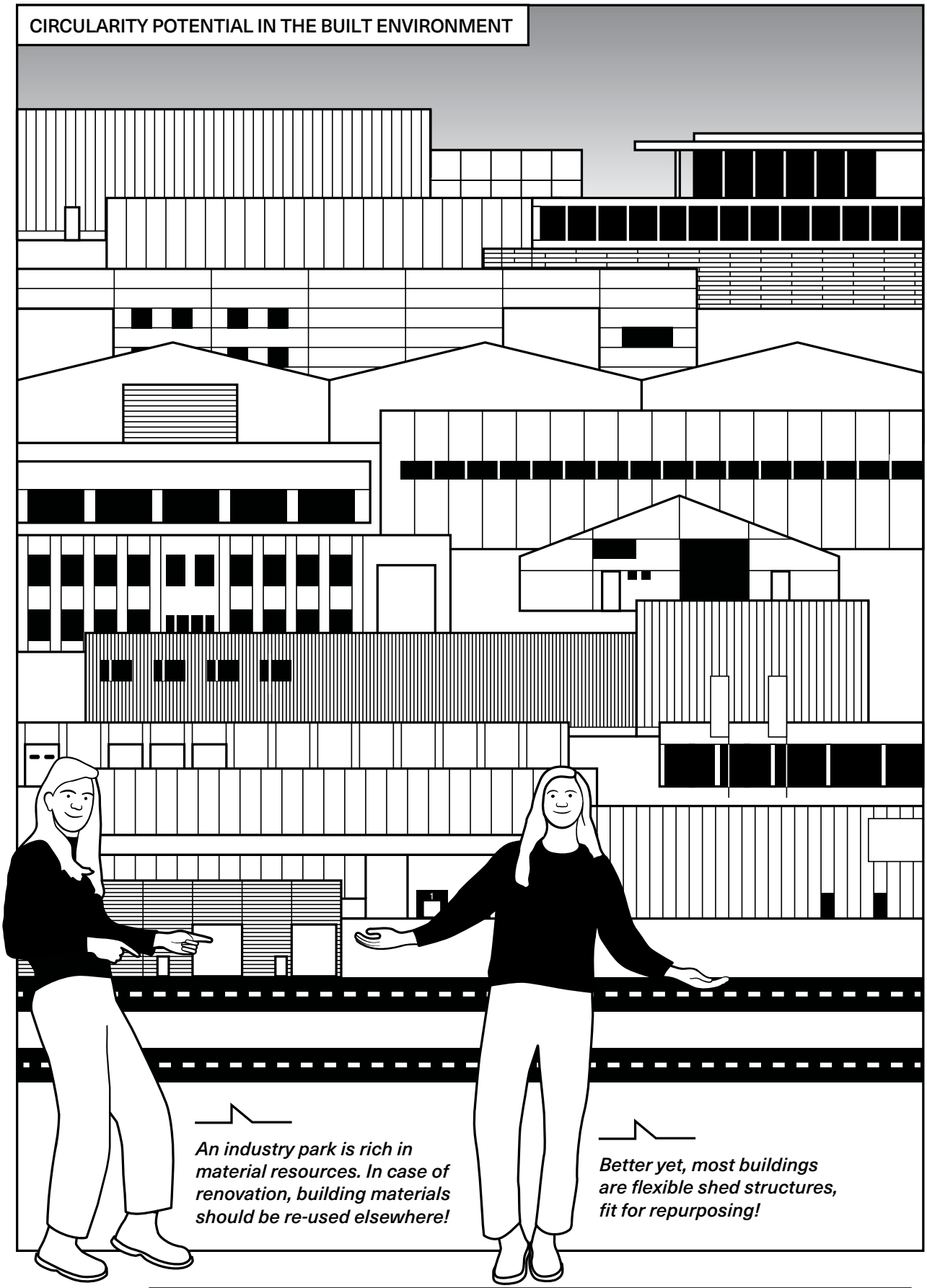
and incentives for renovation and expansion...

SPATIAL NEEDS?
SUBSIDIES?
ENERGY BILL?

and found more...

IMPLICIT CIRCULARITY PRACTICES!

CIRCULARITY IN THE RESOURCEFULNESS OF THE TERRITORY



FAMILY HISTORY IS TIED TO SPATIAL DEVELOPMENT

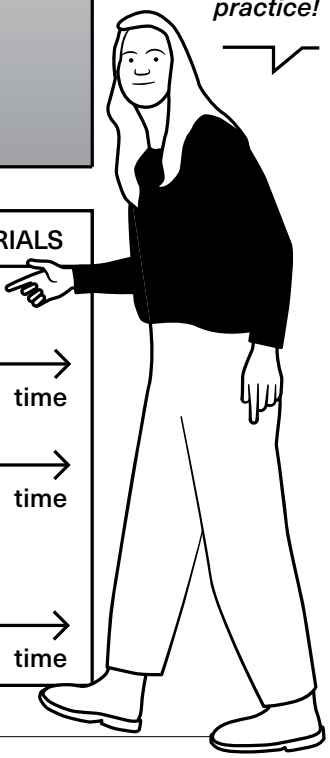
My grandfather built these buildings...

Sure, every generation wants to leave its mark, with respect to what was built before...

We came to the industry park in 1972

**where are the daughters, mothers, aunts...?*

Due to the care these families have towards their built heritage, they extend the life of their patrimony. A circular practice!

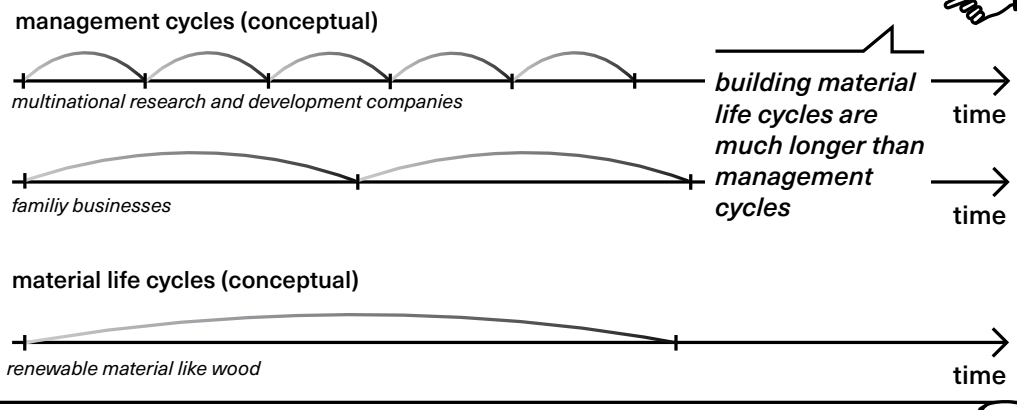


LOOK AT THE BUILDING, MEET THE FAMILY!*

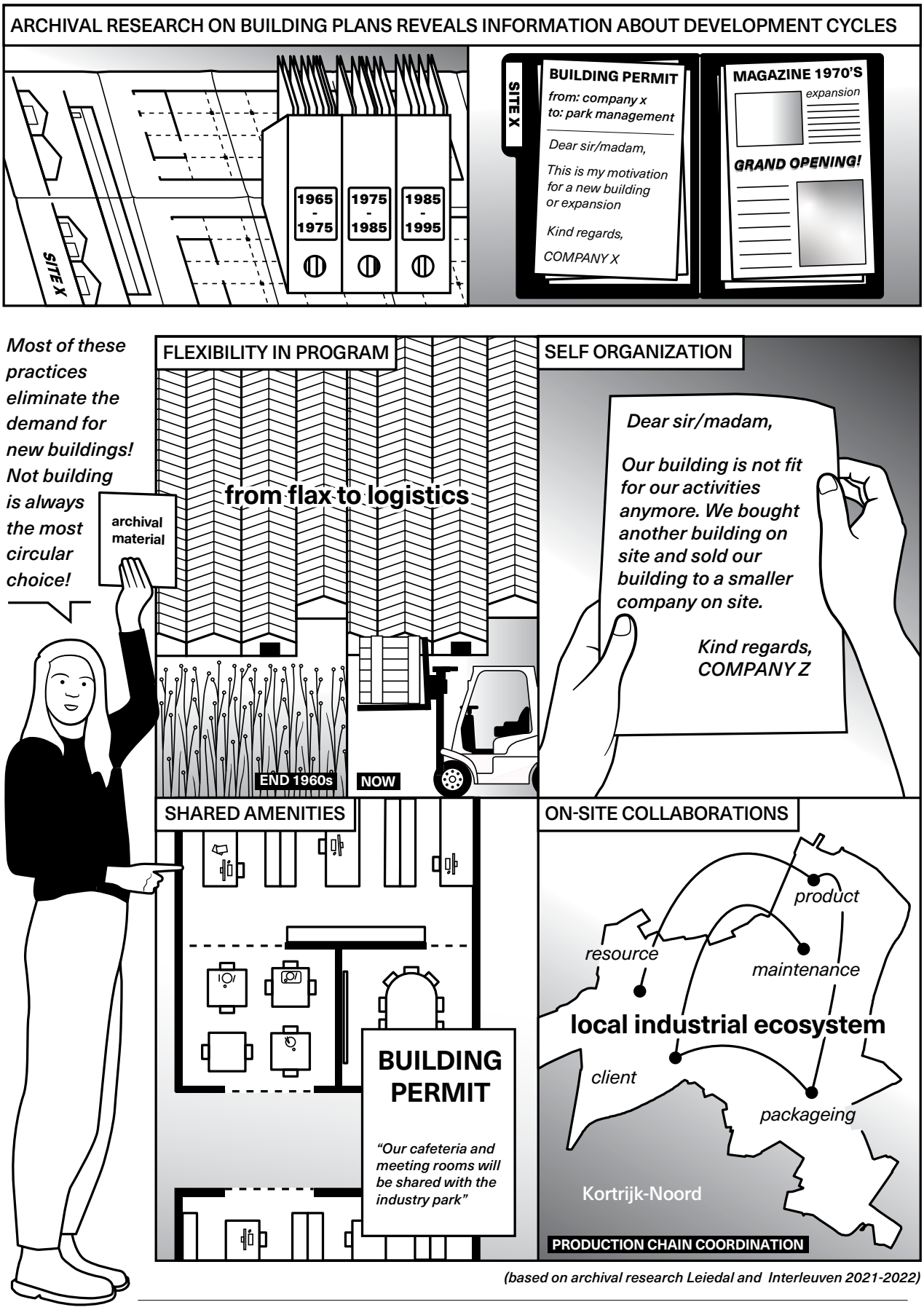
local development culture of incremental renovation and expansion

(based on archival research Leiedal + website info bossuyt.kitchen/nl/over-ons)

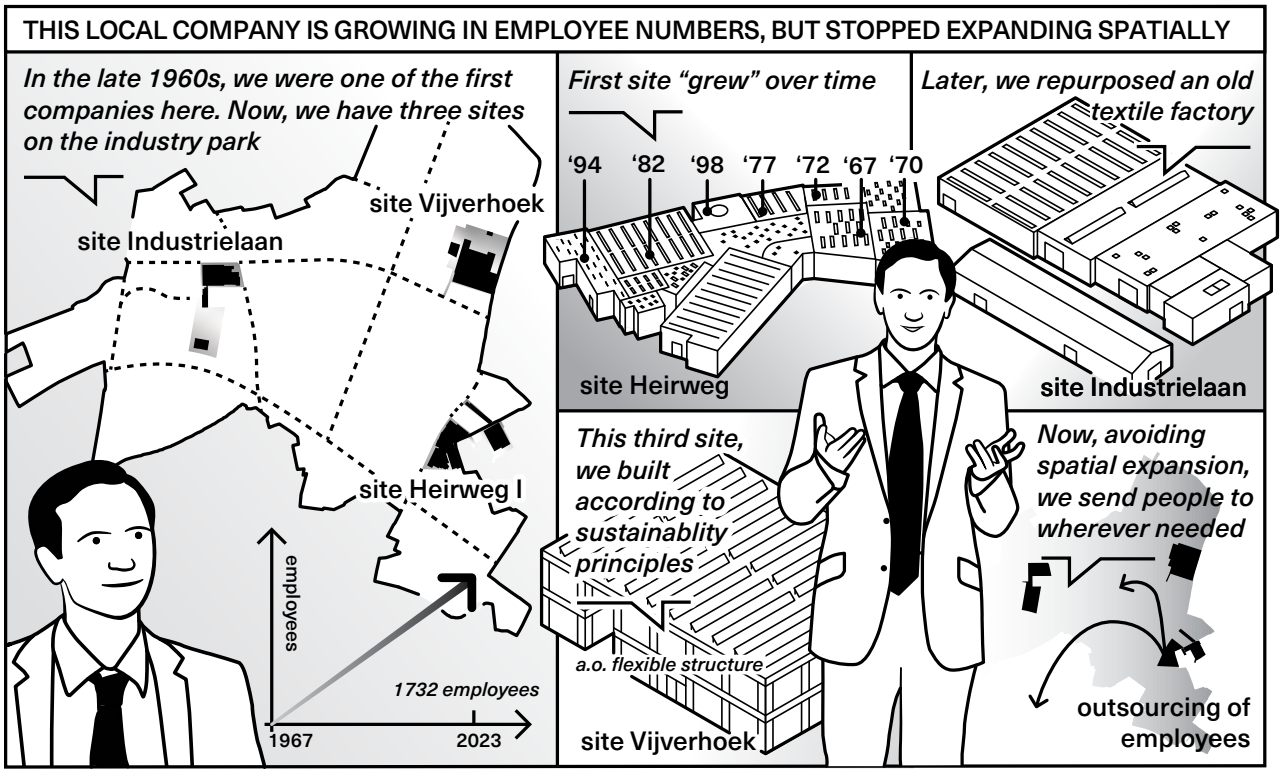
CONNECTION BETWEEN MANAGEMENT CYCLES AND LIFE CYCLES OF MATERIALS

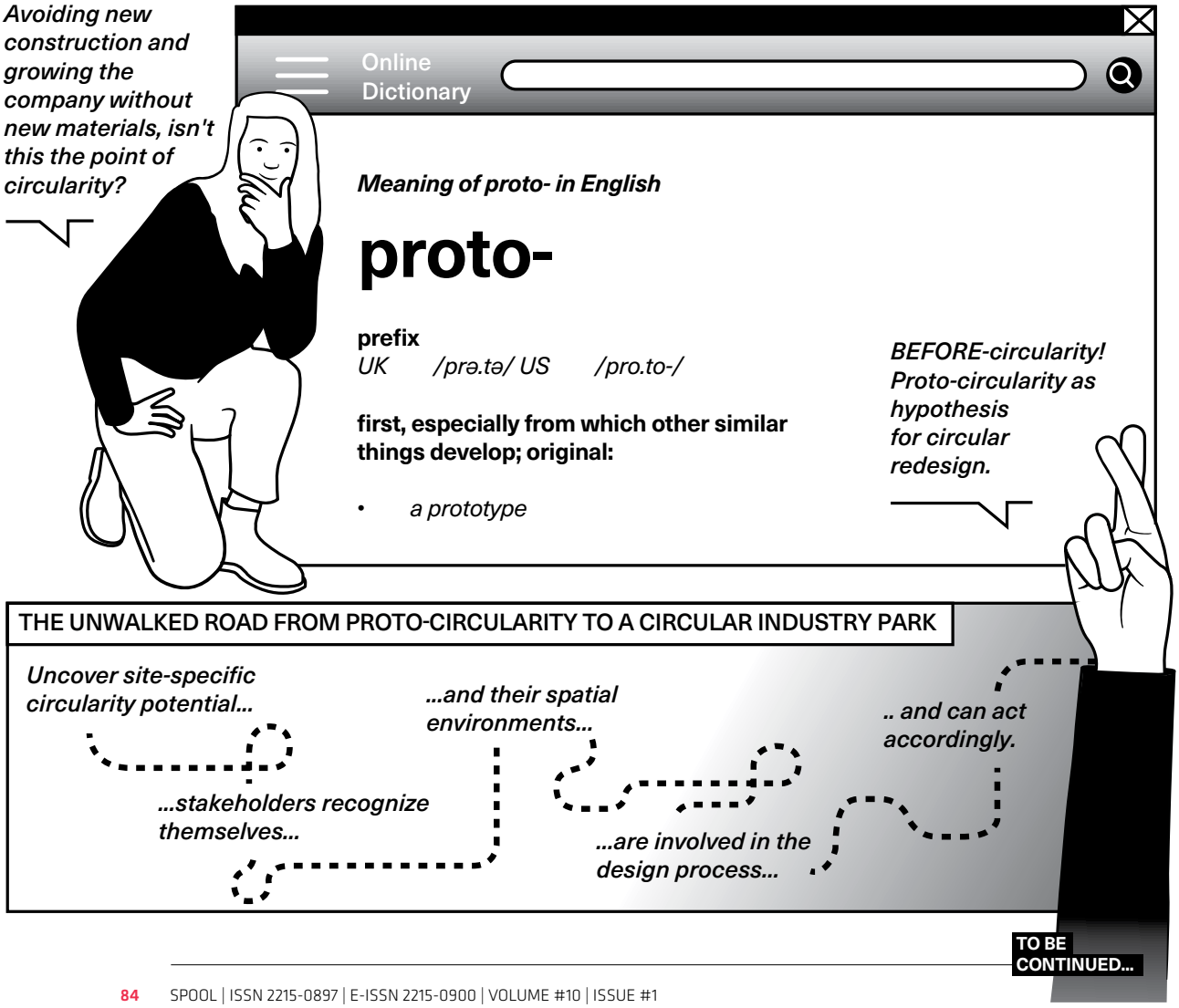


LOOKING BACK TO PROJECT FORWARD: PROTO-CIRCULARITY



(based on archival research Leiedal and Interleuven 2021-2022)


THIS LOCAL COMPANY IS GROWING IN EMPLOYEE NUMBERS, BUT STOPPED EXPANDING SPATIALLY
In the late 1960s, we were one of the first companies here. Now, we have three sites on the industry park
site Industrielaan
site Vijverhoek
site Heirweg I
employees
1732 employees
1967
2023
First site "grew" over time
'94 '82 '98 '77 '72 '67 '70
site Heirweg
Later, we repurposed an old textile factory
site Industrielaan
This third site, we built according to sustainablity principles
a.o. flexible structure
site Vijverhoek
Now, avoiding spatial expansion, we send people to wherever needed
outsourcing of employees


Avoiding new construction and growing the company without new materials, isn't this the point of circularity?
Online Dictionary
Meaning of proto- in English
proto-
prefix
UK /prəʊtə/ US /proʊtoʊ/
first, especially from which other similar things develop; original:
• a prototype
BEFORE-circularity! Proto-circularity as hypothesis for circular redesign.
THE UNWALKED ROAD FROM PROTO-CIRCULARITY TO A CIRCULAR INDUSTRY PARK
Uncover site-specific circularity potential...
...stakeholders recognize themselves...
...and their spatial environments...
...are involved in the design process...
.. and can act accordingly.
TO BE CONTINUED...

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This research is part of REFLIP, Regenerating Flemish Industry parks, funded by KU Leuven (KU Leuven Research Portal, 2020). REFLIP focuses on Flemish industry parks, mostly dating from the 1960s - and requiring major spatial and infrastructural updates. As construction and demolition waste constitutes about one fourth of all waste, integrated circularity transition of these built environments is key.

The REFLIP research project addresses the need to develop multi- and transdisciplinary methods to realize an integrated circular economy transition of the built environment. It examines how built environment transition processes can become (more) circular as a multidimensional 'wicked' problem. It mobilizes iterative design, life cycle environmental impact assessment, social impact analysis, operations research, and scenario thinking to bridge complementary disciplines and currently largely disconnected data-levels.

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