

## Wheels as part of future garbage handling

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In social housing, the architecture often poses an inconvenience when residents assort and handle their garbage. This prevents the correct sorting and recycling of large quantities of garbage. A solution proposed is the incorporation of wheels.

This policy brief describes a successful local praxis of using shopping trollies for garbage handling and suggests that the wheeled mobility of garbage is important for future garbage handling.



### Assorting private waste in Denmark

Denmark is the country that produces the most private waste in kilos per person within the European Union. Measured in 2018, 766kg per person every year or approximately 15kg per person per week was produced. Following the EU's ambition for reducing national carbon footprints, Denmark has a goal to reduce CO2 emissions by 70% in 2030 (kefm.dk). One of the primary targets for reducing CO2 emissions in Denmark is the reuse of garbage in circular resource systems; this process includes assorting, collecting, and reusing garbage.

The responsibility of assorting private waste falls upon the individual citizens. But for many people, garbage handling does not stop there. In social housing, after sorting in the home, garbage also has to be transported to centralized assorting facilities. This transportation from home to central facilities is not easily undertaken by large groups of the population especially the elderly and disabled.



### Inconvenience in social housing

Assorting garbage puts increased pressure on private space. Residents have to make room for the many assorting bins and have to store waste indoors before it is taken to outdoor centralized assorting facilities or recycle stations. Often the process of getting rid of waste involves many people helping each other. For example, family members, home nurses, and estate caretakers help elderly people get rid of waste. In the chain of helping hands often waste is left outside or assorted wrong (picture of garbage left outside).

In social housing estates, the circumvention of traffic means that residents will have to transport their waste from their homes to the centralized assorting facilities or recycling stations. For some residents, this task is difficult; and residents end up abandoning garbage outside or misusing the ordinary bins in the area. This has led to increased social tensions within the estates.



# Local informal solutions

Local problem-solving models focused on transporting garbage; have been developed informally amongst residents. One successful model in place is the use of shopping trollies to transport heavy loads of garbage. The design of the trollies makes them easy to handle even for elderly people who normally use a walker. Trollies are also used by residents with gardens to collect garbage during the week before bringing it to estate recycle stations.



## Not a problem, but a solution

Since their beginnings, the usability of trollies for transporting things other than groceries means that supermarkets have had to deal with the theft of trollies. This also means that estate caretakers suffer from the littering of trollies. In addition to their daily work, caretakers must also spend time collecting trollies, coordinating their return to supermarkets, or in many cases simply throwing them out.

A way to control the problem of littered trollies, and at the same time facilitate more manageable garbage handling for residents, might be to incorporate trollies into the estate garbage handling system. This plan would employ discarded trollies as a resource for more efficient and convenient garbage handling.

The local model of using shopping trollies shows the resource and potential of local communities to propose solutions to their own problems. Local models may become models for broader development in the garbage handling system that can benefit urban areas with similar challenges.



Trollies are ergonomically designed to give a smooth shopping experience. They are meant for anyone to handle heavy loads and large amounts of items without much effort. Some of their main qualities (in terms of garbage handling) proven by residents are:

- The cubic space inside, which allows the safe transport of waste and the prevention of waste from blowing away on a windy day.
- The handlebar, which can be used to lean on for a walking aid
- Its solidity, which allows for very heavy loads like discarded furniture to be placed on top of the trollies.
- Its lower cavity gives space for additional elements.
- The type of metal with which it is made, resists any impact from rain or liquids.
- The wheels are wide and agile enough to make maneuvering effortless.
- They can be used for both storage and transportation

The convenience of the trollies for garbage handling has led to hundreds of shopping carts invading social housing estates. Residents store them privately or know where to find them at informal storage spots. Streets, backyards, and public areas host several of these convenient metal structures, regardless of their conditions.

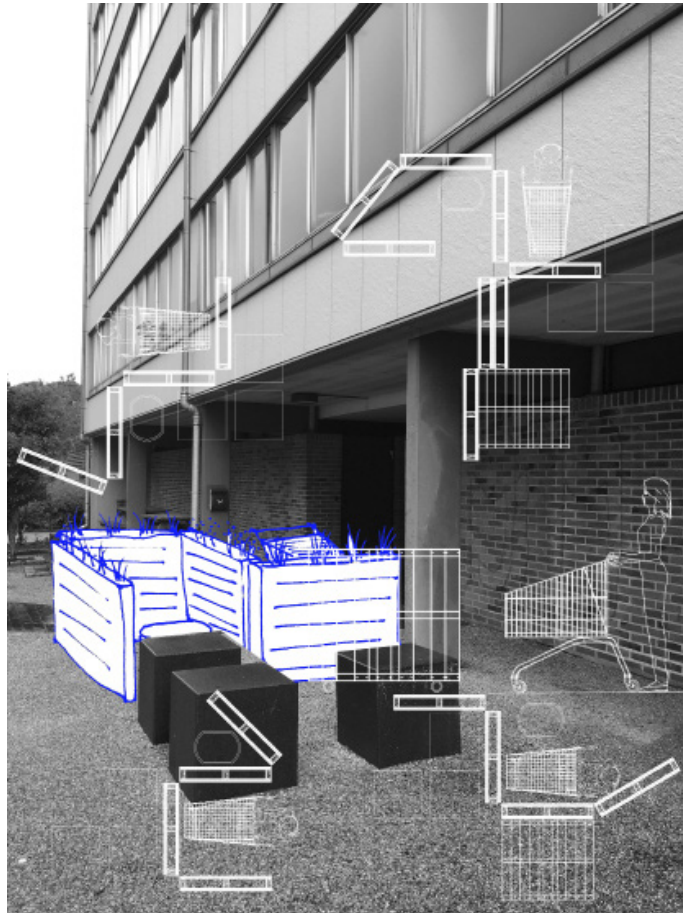
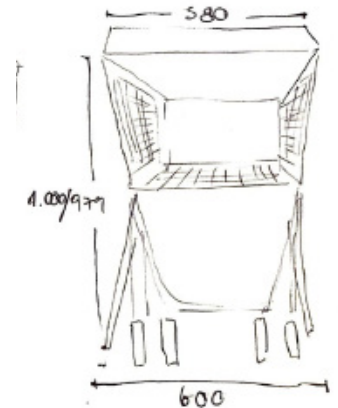
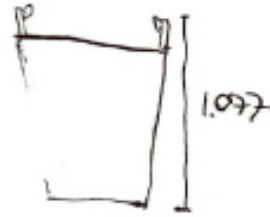


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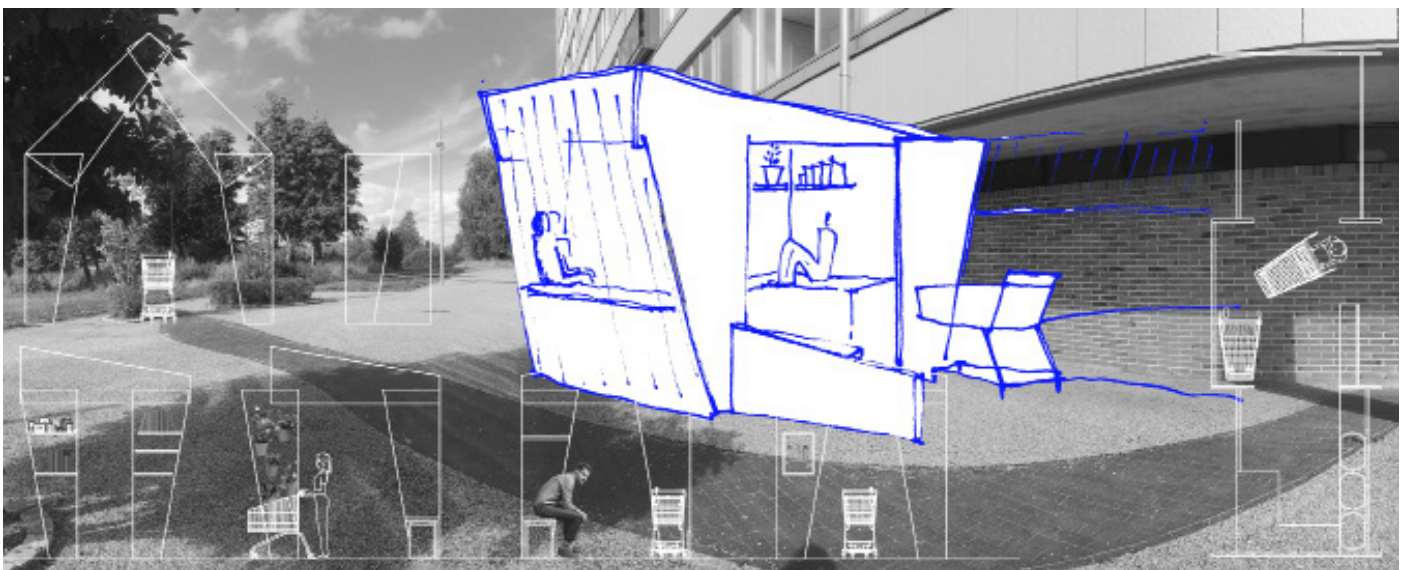
Francisca studied architecture and arts in Chile and Milan and urbanism in Roskilde, Tromsø, and Malmø. Since arriving from south Chile, Patagonia, she has focused on buildings and settlements in cold weather. This is the reason behind her decision to come to Nordic countries; to investigate new construction systems and to analyse how design contributes to the wellness and life quality of cities.

Her contribution at SUMO focused on documenting through interviews and visual graphics, the social issues around garbage management within Grantofthen. The main goal of the project is the co-creation of a prototype that can contribute to the correct handling of waste, and promote the exchange of non-used elements within the area. Therefore, Francisca has been in close contact with local stakeholders (caretakers, housing council, and residents) to design a model with unique perspectives on the issue.



*"When studying a community, what excites me the most is the different ways people approach daily spaces and elements. I am looking forward to seeing how residents will interpret the prototypes' use and how they will adapt it to meet their needs".*

The prototypes studied at SUMO harbour enough flexibility to allow people to use them in different ways. Francisca translated the data collected through interviews and observations into sketches, architectural drawings, and scale models. They were again presented to the residents in a workshop to get some feedback and discuss any further solutions.



# Flexible Communities

One of the largest challenges of our time is the generation and implication of sustainable urban development. Especially challenging to urban planners, developers and researchers is the question of what it takes to create sustainable city development for growing populations. Populations progressively challenge the social fabric of cities as well as their infrastructures.

The challenge is to develop cities in a way that considers both architectural and technological challenges. This is compounded by the need to incorporate the massive social resources for sustainability that are immanent in citizens' self-organizations, initiatives, and local knowledge. Dealing with this challenge requires knowledge of both technologically and socially sustainable ways of living in urban environments.

So far, there is no established tradition of integrated interdisciplinary collaboration in city development. Thus, new robust methodologies must be developed that combine cultural history and architecture to establish fundamental knowledge about the relations between social life and the built environment. In a collaboration between the Aarhus School of Architecture and the National Museum of Denmark, *Fleksible Fællesskaber* explores how this can be realized in praxis.



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