Cities of the Future

A Mobile and Sustainable Society

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Publication date
2023

Document Version
Final published version

Published in
City of the Future Graduation Lab

Important note
To cite this publication, please use the final published version (if applicable).
Please check the document version above.

City of the Future Graduation Lab

Experiences in Multidisciplinary Education

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Keywords

City, Future, Multidisciplinary, Multidisciplinarity, Design, Education, Engineering, Graduation Lab, Built Environment, Architecture, Urban Design, Management, Geomatics, Transport, Infrastructure, Logistics, Collaboration

Electronic version of this book is available at https://books.open.tudelft.nl/

As part of their graduation projects, some parts of the texts written by the former students can be found in the repository of the TU Delft.

Design and cover design

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Special thanks to:

Xiaodong Luo, Architectural Designer

TU Delft
BK Bouwkunde
Delft University of Technology
Faculty of Architecture and the Built Environment

TU Delft | Deltas, Infrastructures & Mobility Initiative

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Cities of the Future: A Mobile and Sustainable Society

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My research career started with a publication about externalities of mass motorization. Academic researchers are producing an endless stream of paper. Unfortunately, only a few of these publications have practical relevance. Even if they do, their recommendations are frequently butchered, mitigated or ignored in the political arena. Such experience can even turn a born optimist into a pessimist.

It was time for a career change. Lecturing, in particular in design courses, turned out to be an effective means of translating research results into implementable solutions for businesses and government agencies. It is interesting to explore some examples where this applies. This can also provide input for new research projects and education courses.

A modal shift policy in passenger transport means motivating individuals to use public transport or active modes like cycling or walking instead of a car. This motivation may come from congestion reduction, climate change mitigation, air pollution control or reducing space needed for roads and parking. Such a policy frequently fails due to factors such as like fixed behavioural patterns, household characteristics, trip length-motive-price, income level and equity, car ownership, and available public transport alternatives. It may succeed in special cases, in particular in high-density areas with sufficient transport alternatives, limited and high-cost parking space, short trips, low speed limits and widespread congestion.

A modal shift policy has also been a goal for freight transport. Road transport has again a dominant and growing market share. Some policymakers regard freight trains as a viable alternative; yet, a modal shift is rare. This can be explained by many factors: trucks and trains serve diferent markets; they provide very diferent transport capacities; rail infrastructure is less dense, hence less time and cost-eficient; and transhipping goods between rail and truck in terminals has extra cost. Still, there are examples where such a policy succeeds. This is because the initiators offer transport conditions that match the logistic requirements of the main players in the supply chain. The latter is usually the weak spot of generic modal shift policies.

Frequently, policymakers reasons suffer from tunnel vision, each seeing just a small part of reality, usually through blurred lenses. If a policymaker intends to change individual mobility or freight transport structurally, then, a holistic system approach is needed. Such an approach involves an interdisciplinary study of the social, economic, spatial, technical and other key parameters that condition and determine the decision-making of individual consumers, producers and other stakeholders.

Urban designers should treat infrastructure as a key ingredient in plans for area (re)development. Infrastructure is not something to be added after an area was designed. Any infrastructure link serves a certain purpose. Infrastructure cannot be easily adapted after construction. Therefore, the 'language' of infrastructure should be simplified. There are many examples of failures in this area:

- Spatial layout and route choice. Finding your way in the suburbs is frequently a drama without navigation software, leading to many unnecessary kilometres and emissions;

- When planning green areas in newly built areas make them twice as big, because parking norms tend to have a short life span;

- When designing road space geometry, take care of the dimensions of public transport. If a bus cannot use a roundabout, then the bus service may be diverted, making it necessary to use a car;

- Do not leave out freight transport in spatial designs. Freight transport is frequently treated as a nuisance, yet it offers essential services. Make its use more efficient.

Architects are designers of objects and their surrounding space. There is a tendency in urban areas to increase spatial density and to build higher. Open areas are regarded as waste. Yet, open areas serve a purpose in the social arena. They allow social activities, green and animal life. High buildings influence wind patterns and temperature. Higher densities go along with overheating. Overheating is also a problem in low-energy buildings. Architects should take care of these problems in their designs, if necessary on their own initiative.

A change in the way we think about mobility and infrastructure and the built environment, is not only necessary but also inevitable. Fortunately, there are (younger) people interested in this issue. They can provide the necessary changes in urban design and architecture.

The Cross Domain City of the Future Graduation Lab, situated in the Faculty of Architecture and the Built Environment at TU Delft, has been a pioneer in experimenting with a multidisciplinary approach to education on the built environment. Drawing upon this expertise over the past years, this book reflects on multidisciplinarity in the built environment and its implementation in education on the built environment. How should one approach multidisciplinarity in education and practice? What encompasses its core elements, benefits, and challenges?

By addressing these questions, the book aims to inform students and practitioners within the realm of the built environment by sharing insights from experiences in multidisciplinary education. It presents eight conclusions regarding the future of multidisciplinary education and, thereby, seeks to contribute to a more humane and sustainable future for cities:

I   Process is central to multidisciplinary collaboration. Negotiating positions, ensuring an environment of respect, balance and open-mindedness, and setting a common vocabulary.

II Multidisciplinarity can be a way to foster innovation. It triggers complementarity and confrontation. As with any innovation, there is potential for greater outcomes, but, at the same time, extra risks emerge. These need to be managed.

III Multidisciplinarity could be better integrated into organisational structures.

IV Disciplinarity and multidisciplinarity are in mutual coexistence. They are inseparable. They can complement and contradict each other.

V   Problem precedes solution, not the opposite. Framing the problem, or 'problematizing', is a considerable share of the actual solution. This is particularly applicable to multidisciplinarity.

VI Multidisciplinarity is by nature composed of fluid boundaries. Navigating through an enormous diversity of perspectives requires agility, flexibility, independence, spirit of adventure and embracing uncertainty.

VII Professionals should be trained as 'T-shape': grounded in their field while able to dialogue with other fields.

VIII Both generalists and specialists are needed. Education should provide opportunities for both.

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