

City without barriers

Many people do not feel at ease moving through their city. Martin Knöll and his team from the department of architecture are developing new approaches to urban planning. The various needs of pedestrians are the focus.

— By Boris Hänßler

Leo is in his mid-20s and is studying history at TU Darmstadt. He has a physical disability, and as he speaks about his everyday life to architects and students, you can hear a pin drop. He says that he repeatedly missed the train at Luisenplatz in Darmstadt because, for example, a mother with a pushchair got in and there was no time for him to catch up. A mother with a child should have an easy time getting on a train, but so should Leo.

What does a complicated everyday life look like; how does it feel? A few TU students visit a blind group of friends to find out how blind people make their way around the city. Others put on an age simulator, a weighted suit with which they must drag themselves through the streets. ‘We want every student to experience this,’ says Martin Knöll, Assistant Professor and head of the Urban Health Games Research Group. ‘That can be a huge boost of motivation for future architects and planners to also consider the needs of less mobile people.’

The health and well-being of people depends to a large extent on their spatial environment – for example, the road network, the building typology, their exercise habits or the pollutant concentration in the air. How important each of these factors is and how they work together is highlighted by Knöll and his team. ‘From the three cornerstones of mobility, pedestrian accessibility and health, we derive universal designs for public spaces,’ says Knöll. ‘People should be able to feel good, move freely and stay healthy – everyone, with or without disabilities.’

City planners are interested in spatial design, surfaces, lighting, orientation, safety, freedom of movement and much more. There is no single standard for public space – every space requires a location-specific solution. However, planners can learn to

look at it from the perspective of people with varying needs. At TU Darmstadt, this is an integral part of the curriculum and a focus of research. This may well make the TU institute of urban planning unique in Germany.

This is also why the organizers of the Frankfurt Book Fair came to Prof. Knöll two years ago. The fair attracts over 285,000 visitors annually. The exhibition area covers 366,000 square meters, distributed over ten halls. Visitors stream from the station on the first level and then spread out in all directions. The stands are assembled in blocks, surrounded by a grid of horizontal and vertical corridors, with cafés on the circumference. But visitors to the fair do not feel comfortable. It is difficult for them to move, they become lost, it is crowded, the air is of poor quality, there is nowhere to sit for people who need a break. So, it is a challenge – especially for those who are dependent on a wheelchair or a blind man’s stick, for example.

Researchers initially focused on the needs of families with children and people with walking and visual impairment. This resulted in a concept that gradually included other groups. The procedure is a common ‘Darmstadt principle’: Every semester, students can focus on groups, for example seniors, wheelchair users, short people, children, refugees or people with depression. The guiding question: How do these people perceive spaces? ‘Seniors, for example, need half an hour to cover a distance that young people can cover in a few minutes,’ says Professor Sabine Hopp, Head of the project ‘Smart and Inclusive City’ within the research group. ‘We understand this view only through a change of perspective – both through self-experiments and the involvement of those affected.’



Good accessibility and broad usability of public spaces at a glance: Sabine Hopp, Marianne Halblaub Miranda, Martin Knöll (from left to right)

The approach pays off: Four TU students, for example, designed a guidance system for visually impaired people for Darmstadt Luisenplatz. It consists of a tactile model and indentations embedded in the floor. Blind people can guide their canes along these indentations and navigate safely across the space traversed by railroad tracks. The students were awarded the ‘Hessian State Prize for Universal Design 2018’. The book fair also benefited from the ideas of the TU researchers – roads were widened, hall numbers were printed on easy-to-see signs in large black letters on a white background. Each hall was given its own key colour and additional rest zones. A homogeneously illuminated walkway passed all the stands. In each hall there were information booths, information pillars and stations for people with restricted mobility skills. Haptic modules provided information for blind visitors.

‘The fair is a city on a small scale,’ says Knöll. ‘Its problems are transferable to public space – there, too, accessibility, room to manoeuvre and health play a subordinate role’. There are standards that make public buildings accessible to wheelchair users, but few for urban spaces. This was demonstrated, for example, in the implementation of a law according to which stations in Germany must be barrier-free by 2022. Urban space, say critics, has simply been disregarded in legislation. ‘It does not help much if the station is barrier-free, but people cannot get there easily’, says Knöll. He calls for more participa-

tion and knowledge transfer. Amongst other things, he organized the conference ‘Accessible Hubs’ with researcher Marianne Halblaub Miranda, bringing together international experts in urban planning, product design, geography, economics and environmental psychology in Darmstadt. The conference title was the programme: A city needs central hubs that are accessible to all.

Knöll’s research group includes scientists from urban planning, architecture, psychology, sociology and sports science as well as a computer scientist from the Multimedia Communications Lab (KOM) to collect and analyse data. ‘As urban planners, we must study exactly how people use the space,’ says Knöll. ‘For that we need data to show us what interventions have which effects. Not lastly, we must communicate the results to people and make it easy for them to become involved in planning.’ For example, the app ‘MoMe’ developed by Marianne Halblaub Miranda makes it possible to individually assess urban spaces, highlight areas and elements of public space that are perceived as stressful or relaxing, and record these personal perceptions and behavioural patterns.

The author is a technology journalist.

Further information:

The research group of Professor Martin Knöll also studied how urban design can contribute to more sustainable mobility systems – including participatory design. He coordinates research in ‘Urban Design and Mobility’ as part of the multidisciplinary LO-EWE research cluster ‘Infrastructure - Design - Society’ supported by the state of Hesse with 3.5 million euros.

www.project-mo.de

Article on Inclusive Urban Design: <https://tuprints.ulb.tu-darmstadt.de/8333>

Video documentation of conference Accessible Hubs: www.stadtspiele.tu-darmstadt.de/hubs

Research cooperation with the Frankfurt Book Fair: www.stadtspiele.tu-darmstadt.de/buchmesse

Article on the application MoMe@school: www.urbandesignmentalhealth.com/journal-3---mome.html

Information

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