

Maxwell Roberts is convinced that curved lines make the complex Paris Metro diagram of 2000 (left) clearer and easier to understand.

Not just lines

Maxwell Roberts exhibits underground network diagrams at the Leibniz Centre in Dagstuhl Castle

“Are the old rules suitable for modern cities?” Maxwell Roberts addresses this question regarding underground diagrams. At the moment, his exhibition at Dagstuhl shows various diagrams and his own counter-proposals.

By SZ reporter Adrian Froschauer

Dagstuhl. “There is suddenly a circle at the centre”, surely most people think who see Maxwell Roberts’ counter-proposal to the Paris Metro diagramme of 2000. While the official map consists of a tangle of zig-zagging lines, a structure emanates from the new design: The circle surrounding the entire city from the stations “Charles de Gaulle-Étoile” and “Nation”, and the north-south orientation of most lines suddenly stands out clearly.

“On the 2000 map, the lines constantly change their direction, which makes them hard to follow”, says Roberts, Professor of Cognitive Psychology at the University of Essex in Great Britain. His design, which replaces the traditional straight lines and fixed angles with waves and arcs, has proven in many studies to be faster and easier to use. These ‘curvy maps’ have made Roberts very well-known among designers and map creators. He regards Paris as a particularly tough case: “The Metro network is extremely compact. There are many lines and intersections in a small space.” Particularly in the city centre the diagrams thus become cluttered, he reckons. Roberts therefore poses the question: “Are the traditional rules still suitable for modern, complex cities?”

On the occasion of a seminar on schematisation and visualisation, in which he participates, he presents his underground diagram exhibition “Underground Maps Unravelling” at Dagstuhl Castle. Roberts’ collection of historical, modern and self-designed underground diagrams is on display at the Leibniz Centre in Dagstuhl Castle until 17 december. With these, the psychologist and his curator Priscila Buschinelli want to explain the history and workings of schematic diagrams.

Scientists from various areas of expertise – from cartographers to mathematicians to psychologists – meet at the seminar at Dagstuhl. They want to find common ground, learn from each other and find new methods to visualise maps and networks. “Normally, such a seminar is a conference, where the participants present their results,” explains co-organiser Alexander Wolff. “In this case, we aim at some sort of workshop, where the participants work on problems and develop new ideas right here as a group.”

In the early days of underground railways, nobody spared a thought for the usability of the maps and diagrams. Stations and railway lines were simply superimposed on a geographically correct city map – which was not very clear even back then. Faced with today’s complex networks one would entirely lose orientation. “When creating network diagrams, it is not advisable to cling to geography slavishly,” Roberts explains. So with the 1931 Berlin S-Bahn diagramme, the first diagrammatical map appeared. Two years later, British designer Henry Beck published his “Tube Map”, the London Underground network diagram. The then radically new design approach set standards valid worldwide even today. Meanwhile the “Tube Map” stands for London in the same way as double-decker buses and black taxis.

However, considering the example of an old Madrid underground diagram Roberts explains that the city must remain recognizable despite the schematisation. The Spanish capital extends its metro network faster than any other city in the world. “For a designer, this is exciting and frustrating at the same time – you have to experiment quite a lot,” comments Roberts. The Madrid diagram only uses vertical and horizontal lines. The diagram wins in clarity, but the image of the city is heavily distorted. Finding your way around the city becomes impossible if you do not know the correct station names.

“This quickly causes aversion in the user and therefore makes it harder to read,” the psychologist explains. So not just clarity but also the subjective sentiments of the underground diagram reader determine the quality of a design. When faced with large, complex diagrams, some people panic, explains Roberts. “They then no longer want to concern themselves with the diagram, even if it is not really so difficult to understand. Professional diagram designers often do not understand this way of thinking. So numerous maps are created which, though theoretically perfect, are inadequate for their purpose.”

Therefore designers attempt more and more to design maps that are not only easy to understand but also pleasing on the eye. Some items in Roberts' collection demonstrate how aesthetically pleasing a supposedly plain underground diagram can be. One resembles an Art Nouveau piece from the early 20th century with its decoratively curved lines and floral ornaments. Another presents itself in Art Déco style, a design trend popular from 1920 to 1940, influencing the architecture of the Empire State Building in New York.

A good underground diagram must basically be adapted to the individual conditions of the city and the needs of the people, says Roberts. "For each city, a different approach may be appropriate," he explains. "Furthermore, one has to take into account what the people like. I would suggest to have pocket folders in different designs available. So everyone can choose the design best suited to them."

Visits

Visits can be arranged by calling (0 68 71) 90 50, monday to thursday, 9 am to 4 pm, friday, 9 am to 2 pm.

Internet:

www.dagstuhl.de

Maxwell Roberts and his colleague Priscila Buschinelli