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## **F: VISION WORKSHOP: MOBILITY AND TRANSPORT OF THE FUTURE**

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**The workshop format presented here is useful for grappling with politically and societally meaningful topics and for developing consistent visions of the future in a complex subject area. Carrying it out with homogeneous groups, takes several hours.**

**The participants should have practical knowledge relating to the subject, and an affinity for the topic.**

**Anyone who has visions should go the doctor.  
(Helmut Schmidt)**

**We are all interested in the future, for that is  
where you and I are going to spend the rest of our  
lives. (Woody Allen)**

**The best way to predict the future is to shape it.  
(Willy Brandt)**

## INTRODUCTION

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How might mobility and transport look in the future? Will we have more or less automobile traffic? Will automated vehicles and efficient carsharing systems lead us to using cars even more often? Can ridesharing systems be integrated into public transport in such a way that we have less car traffic in the cities? Do cars even bother us anymore, if they are all guaranteed to be zero emissions, quiet, and safe? Can we better manage delivery traffic with freight trams or underground delivery systems than with delivery vans and lorries? Will homes receive deliveries via cargo bike or drones? Are cable cars and air taxis a solution for passenger transport? Or do we need stronger regulations on traffic and transport with road tolls, bans, and stringent enforcement of rules against parking on sidewalks and against speeding? A new transport future won't simply come about on its own. How traffic and transport will look in the future will be the result of developments that we can influence today. We will get the transport that we want and that means we need to know what we want. Different actors (residents, employers, businesses, tradespeople) have different preferences and their willingness to compromise is limited. But given that compromises are always necessary when it comes to urban transport and traffic, we need as strong a consensus possible on traffic and transport planning guidelines—across all political parties. However, transport planning is not a special request show. It is easy to make proposals that people agree with. Expanding public transport is desirable, and free public transport holds broad appeal. But it is more difficult to define rules about when parking spaces should be eliminated for a cycle lane. And the expectation that digitization and artificial intelligence will finally make traffic lights intelligent and eliminate traffic jams can't be fulfilled; even the cars of the future will take up space.

The idea of the vision workshop is to turn stakeholders, each with their own visions of a desirable future, into experts in traffic and transport planning. Through the workshop, the participants develop a consistent vision of the future that consists not only of goals, but also the measures that can be used to achieve them. That is an ambitious task, given the variety of measures available and the three to four-hour length of the workshop. This publication reports on the approach and a few results.

## MOBILITY AND TRANSPORT

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A general definition of mobility describes it as the ability to move, or as a “change of one or more individuals between the defined units of a system”.<sup>1</sup> This definition includes all changes, i.e., not only spatial mobility but also mental and social mobility. In the case of spatial mobility, a distinction can be made between migratory mobility and transport mobility.

Transport mobility describes changes in the location of people and the transport of goods. People change locations in the course of their everyday activities when a subsequent activity cannot take place at the location of the previous activity. Examples of such activities include living, working, education, shopping, leisure, bringing, and fetching. Traffic is the sum of the movements of all people and goods that are performed via the transport network. Thus, traffic is the result of the mobility of people and goods, which can be observed in the transport network in the form of pedestrians and vehicles.

## SOURCES OF MOBILITY AND TRANSPORT

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Our human needs shape our behaviour. These needs range from physiological (food, drink, sleep, sex), security needs (structures and stability), needs for belonging (contacts, love), and from a need for recognition to needs for self-realisation.<sup>2</sup> Our efforts to meet our needs lead to concrete activities. The results of these

<sup>1</sup> Mackensen, R., Vanberg M., Krämer K. 1975: Probleme regionaler Mobilität: Ergebnisse und Lücken der Forschung zur gegenwärtigen Situation in der Bundesrepublik Deutschland, Berlin (West), Band 19 von Schriften, Schwartz Verlag.

<sup>2</sup> Maslow A. H. 2005, Erstausgabe 1954: Motivation und Persönlichkeit, Rowohlt Verlag.

activities are the desirable effects of meeting our needs. However, there are often also less desirable “side effects” that can be quantified using indicators such as energy demand, raw material requirements, land consumption and emissions.

In most cases, however, human behaviour is not determined by needs alone, but also by the individual constraints of the person and by general constraints of the social and natural environment. Depending on the constraints, people have not only one option for satisfying their needs, but a set of options. These options are the result of, for example:

- the characteristics of the person (values, experience, financial means) and the obligations that the person has to fulfil,
- the natural conditions (climate, geography),
- the available mobility options (technology, transport options),
- knowledge of the options available,
- the costs of using the options available.

If we understand traffic as the result of people’s decisions driven by their needs, and if we assume that the goal of transport planning cannot be to influence people’s needs, then the main areas of action for influencing traffic are the shaping of constraints under which people make traffic-relevant decisions. However, it also means that forecasts about the future development of mobility and traffic depend on assumptions about the constraints.

## TRANSDISCIPLINARY WORKSHOPS

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We are all experts about our own mobility. Consequently, everyone can use experiential knowledge to make decisions in everyday life or, for example, for a mobility transformation. This inclusion of different bodies of knowledge is inherent to transdisciplinary research. In contrast to interdisciplinary work, which brings together different academic disciplines, transdisciplinarity includes people from outside academia.<sup>3</sup> Trans-

<sup>3</sup> Defila, R., Di Giulio, A. 2015: Methodische Gestaltung transdisziplinärer Workshops. In: Niederberger, M.; Wassermann, S. (Eds.): Methoden der Experten- und Stakeholdereinbindung in der sozialwissenschaftlichen Forschung, Wiesbaden, Springer VS, 69-94, p. 69f.

**6** disciplinary workshops are great for building networks and promoting understanding between academics and practitioners, with both actively contributing to the success of the project.<sup>4</sup>

Transdisciplinary research deals with topics that are (socially) complex and often contentious, with the research area of mobility and transport being no exception. Visions describe socially desirable states or goals for the future. They contain intuitive knowledge based on personal experience.<sup>5</sup> However, this rather qualitative methodological approach sometimes neglects potential conflicts and unintended consequences.<sup>6</sup> A more quantitatively oriented approach helps to provide information that makes it possible to assess decisions and their consequences.<sup>7</sup> Visions can be complimented by quantitative scenarios to test their strengths and weaknesses.<sup>8</sup> Such a process can advance local discourses, potentially leading existing visions to evolve while facilitating the decision-making process within the municipality.<sup>9</sup>

The Real-World Laboratory for Sustainable Mobility Culture (Reallabor für nachhaltige Mobilitätskultur) conducted a transdisciplinary vision workshop in Stuttgart on the topic of mobility in October and December 2016 that was open to residents.<sup>10</sup> The workshop had three overall goals: to encourage a

<sup>4</sup> *ibid.*, 75; 91.

<sup>5</sup> Trutnevyte, E., Stauffacher, M., Scholz, R. W. 2011: Unterstützung von Energieinitiativen in kleinen Gemeinden durch die Verknüpfung von Visionen mit Energieszenarien und multikriterieller Bewertung. In: *Energy Policy*, 39, 7884–7895, p. 7894.

<sup>6</sup> Trutnevyte, E. 2014: The allure of energy visions: Are some visions better than others? In: *Energy Strategy Reviews*, 2, 211–219, p. 211.

<sup>7</sup> The authors of the above-mentioned sources modelled the qualitative visions of stakeholders in municipalities using quantitatively calculated scenarios, and then discussed the results with the stakeholders.

<sup>8</sup> Trutnevyte 2013: 218.

<sup>9</sup> Trutnevyte et al. 2011: 7894.

<sup>10</sup> Lindner, D., Alcántara, S., Arnold, A., Busch, S., Dietz, R., Friedrich, M., Ritz, C., Sonnberger, M. o. J.: *Mobilitätsvisionen für Stuttgart: Ein transdisziplinärer Workshop in Kooperation mit der VHS Stuttgart. Reallabor für nachhaltige Mobilitätskultur (Eds.)*,

**7** process of transformation, to gain knowledge for this transformation from experts, complimented by the desires and knowledge of the residents, and mutual learning among all involved.<sup>11</sup> The workshop aimed to develop a mobility vision for the year 2030 in larger groups. These visions were then modelled using transport science methods and visualised in terms of urban planning, so that the resulting scenarios could again be presented to the same residents for discussion.

The vision workshops described in this paper, which took place between April 2019 and February 2020, were aimed at stakeholder groups with existing knowledge and expertise in the area of mobility.

It was assumed that, as such, they would tend to have more uniform views about future mobility. The aim was therefore for a rather homogeneous group to agree on a vision of the future in the area of transport and mobility in 2050, and to take appropriate measures to achieve the desired goals. Because the entire workshop took place on one evening in the span of three to four hours, the procedure had to be standardised and the format had to be tailored to the goals at hand (for more, see the section *Reflections on the Methods*).

### Personal motivation

„I regularly receive requests for presentations on the topic of mobility and transport of the future. In my perception, the audience often has the expectation that I will present them a wishful solution. The vision workshop is an opportunity to actively engage with the topic. This is a possible way to make clear that there are conflicting goals in the transport sector. The mindset that something like an optimal solution exists, is not realistic, because we have to define what is optimal. Science can only do that to a limited extent. Defining targets is a task for politics and society.“

(Prof. Friedrich, Head of Chair of Transport Planning and Traffic Engineering at the University of Stuttgart)

available online: [http://www.r-n-m.net/wp-content/uploads/2018/03/Zukunftslabore\\_web.pdf](http://www.r-n-m.net/wp-content/uploads/2018/03/Zukunftslabore_web.pdf)

<sup>11</sup> Alcántara, S., Arnold, A., Lindner, D., Busch, S., Dietz, R., Friedrich, M., Ritz, C., Sonnberger, M. 2018: *Zwischen Wunsch und Wirkung – ein transdisziplinärer Visionsworkshop mit Bürgerinnen und Bürgern*. In: Defila, R., Di Giulio, A. (Hrsg.): *Transdisziplinär und transformativ forschen: Eine Methodensammlung*, Wiesbaden, Springer VS, 269–300.

## Target Groups

The workshop is designed for 10 to 20 participants and a time frame of three to four hours. The groups should be assembled so that the participants have as many goals and opinions in common as possible. In the workshop, the groups are divided into two to four smaller working groups of about four to seven people. This is the only way to develop a coordinated vision in the short time available. The workshop is suitable for political groupings (“Our party programme in three hours”), for stakeholders and public administrations in the transport sector, as well as for courses of study with a transport connection.

The Real-World Laboratory conducted six workshops:

- Students of social sciences (1 working group)
- Students of transport engineering (3 working groups)
- Württembergischer Automobilclub e.V. (4 working groups)
- Real-world laboratory project team for sustainable mobility culture (2 working groups)
- Verkehrsclub Deutschland, Kreisverband Stuttgart (2 working groups)
- Political party: Die Stadtisten Stuttgart (2 working groups)

## WORKSHOP GOALS

- To develop and compare visions: The actual result of the workshop is the vision. How do the visions differ? Is a vision realistic or does it contain measures that are technically difficult to implement (e.g., air taxis to relieve road traffic) or that require voluntary behavioural changes (e.g., we all slow down our lives)?
- To encourage people to grapple with the topic: For the political and societal discussion it is important that politicians, stakeholders, and residents recognise the conflicting goals and better understand the interrelationships. In this sense, the workshops are an educational event with a concrete result.
- To understand how decisions are made: Groups of people develop a vision with goals and corresponding measures. From a scientific perspective, it is important to observe how groups make decisions, how they deal with conflicting goals, and what decisions they agree on.

## WORKSHOP PROCESS

The participants were invited to take part in an online survey about a week before the workshop. In addition to personal

information about their own mobility behaviour, the participants were asked how they rate their own place of residence in terms of well-being and accessibility, which goals, instruments and measures they would prefer in transport planning, and how they would like to see mobility and transport in the year 2050.

After a short greeting to the participants and a introduction to the Reallabor-project, the workshop started with an input presentation from Prof. Friedrich.

This input included a discussion of the interrelationships relevant to transport planning, as well as the results and insights gained from the online questionnaire.

Afterwards, the working groups had the task, to develop an idea of how they would like personal mobility and transport to look in 2050. This did not necessarily involve probable developments, but rather wishful thinking oriented towards the real possibilities of the target year. This meant, for example, that teleportation was excluded. They were challenged to develop a comprehensive scenario. The participants had to come up with goals and measures for achieving their vision. For this purpose, the groups were provided with goal-measure cards, each of which contained a goal and various possible measures. They also received blank cards for designating new goals. These cards were then attached to a wall and sorted by priority.

After two hours the working groups had to present their scenarios in the plenum. The others had the possibility to ask or discuss about the visions of the future. Finally, to each scenario a conclusion was drawn.

# EXEMPLARY RESULTS

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## RESULTS

Participants from six different groups, subdivided into 14 working groups, came together to develop their visions.

The working groups were homogenous, but the participants come from different interest groups, which lead us to expect different views on the “mobility of the future”.

Most of the participants live in Stuttgart or the surrounding area and, compared to the German population as a whole, travel more by public transport and less by car.

In developing their visions for the year 2050, the working groups were able to draw on predefined goals or develop their own goals. Even though the participants came from a wide variety of professional backgrounds and the results do not claim to be representative, we can derive certain insights from the scenarios. The top ten goals developed via the workshops are, in order of assigned importance:

1. Better public transport options
2. Less automobile traffic via fees
3. Better options for pedestrians
4. More low-emissions vehicles
5. Better conditions for public transport (i.e., dedicated lanes, rights of way etc.)
6. Better options for cycling
7. Increasing the share of electric vehicles
8. Reducing vehicular miles travelled
9. Increasing traffic safety
10. Introducing new transport options

### INTERPRETING THE RESULTS

The online survey already showed that the expansion of public transport was particularly important to many of the participants. This is in line with other surveys on this topic. In particular, new lines and higher capacities on railway lines are suggested as suitable measures.

For about half of the working groups, the vision includes a future with less car traffic, with charges or fees in the form of a mileage-based toll or a city toll mentioned as measures. More people working from home was also raised as a way to reduce vehicle miles travelled.

Densification and mixed-use development also have a role to play. Where use of a private vehicle is unavoidable, low-emissions vehicles should be used.

In addition to improvements in public transport, better offers for walking and cycling were named as important goals. Those in favour wanted more pedestrian-friendly streetscapes and an expansion of the cycle lane network. The participants were not

in agreement on whether this could be combined with the elimination of parking spaces and vehicle lanes.

Many working groups were in favour of a CO2 price as part of their vision, although very different prices were named within the working groups. However, there was agreement that CO2 prices would have to be increased at regular intervals.

Feedback from participants included:

- Transport planning is more complex than expected.
- The interdependencies are not always clear.
- There are many small things that have to be taken into account.
- It is not possible to please everyone.
- It is important to exchange ideas with like-minded people on the “mobility of the future”. Although a group may share similar goals, there is a need to coordinate when concretising the goals and measures.

## REFLECTING ON THE METHODS

We now want to reflect on the success of the workshops in reaching the goals we set for them in practice. In doing so, we consider both the perspective of the Real-World Laboratory team (academia) and that of the participants, taking into account the following questions:

- To what extent is the workshop concept suitable (methodologically and practically) for developing desirable visions of the future by stakeholders (from given and self-formulated elements)?
- Was it possible to develop a consistent vision of the future which, in addition to the goals, also contains corresponding measures for achieving those goals?
- To what extent could a learning and reflection process be initiated among the participants?

The participants were faced with a challenging task of agreeing on a desirable, consistent vision of the future on a complex topic. This required a high degree of self-organisation, as they carried out this task without moderation. Each small group found (its own) good ways and presented consistent results at the end.

The participants already had a certain expertise and affinity to the topic through their involvement in the invited groups. In addition, the participants have extensive everyday experience and knowledge in the field of mobility (see the section



*Transdisciplinary Workshops*). This, coupled with the assumption that learning interests can be derived from life interests, allowed the discussants to successfully develop and flesh out a vision in the limited time frame. Individual participants formulated it as a challenge to evaluate certain measures due to lack of information about complex interrelations. In particular, the participants reflected on their own assessment of the feasibility and effects, such as potential rebound effects.<sup>12</sup>

One challenge was the degree to which it was necessary to *structure the discussions* in the working groups, i.e., both the prepared material and the moderation. This was necessary given the complexity of the topics and the time constraints. The participants made use of the aids provided and supplemented them with their own goals and measures.

*Agreeing on a shared position* in the group was another challenge. In retrospect, the diversity of the individual, rather homogeneous, groupings as well as the respective group sizes<sup>13</sup> proved successful. Similar interests and (political) attitudes within each participating group facilitated consensus on basic positions<sup>14</sup> while producing diverging visions in the overall result. Nevertheless, reaching a consensus was more difficult when ethical questions (for example, in the context of autonomous driving) were involved.

Up to four working groups worked on one vision per workshop before all came together to share and discuss their results. This allowed the participants to reflect upon their own results and gain new insights. This is also methodologically valuable as a

<sup>12</sup> A rebound effect is the “difference between the theoretically expected savings from an efficiency measure and the actual savings achieved”. Golde, M. 2016: Rebound-Effekte: Empirische Ergebnisse und Handlungsstrategien. Umweltbundesamt (hrsg.), online verfügbar unter: [https://www.umweltbundesamt.de/sites/default/files/medien/367/publikationen/rebound-effekte\\_empirische\\_ergebnisse\\_und\\_handlungsstrategien\\_hintergrundpapier.pdf](https://www.umweltbundesamt.de/sites/default/files/medien/367/publikationen/rebound-effekte_empirische_ergebnisse_und_handlungsstrategien_hintergrundpapier.pdf)

<sup>13</sup> 8–16 participants in each workshop; max. three working groups with four to seven discussants.

<sup>14</sup> Nevertheless, it must be noted that in a relatively homogeneous group, opinions can vary significantly and reaching agreement within the group can be a major challenge. The groups found their own solutions, e.g. by voting.

form of double communicative validation of the results of both the working groups and the carrying out of the workshop.<sup>15</sup>

Last but not least, the pragmatically necessary *time limitations of the workshop* to three or four hours were also a challenge. However, the survey showed that about two thirds of the participants felt that the duration of the event was “just right” and that the time for group discussion was sufficient. The online survey prepared the participants for the topic and provided them with an initial orientation for the workshop of where their fellow discussants stand in the field of mobility.

As part of a further methodological development of the workshop format, transport models created using the visions were presented for discussion at a follow-up event, such as the visions workshop with residents. The working groups were not moderated, so as not to interfere with the group dynamics and the course of the discussion. Moderation of the group discussion might be advisable for further events, depending on the target group, for example to restrain opinion leaders or to prevent the discussion from getting bogged down in fundamental ethical issues.

In addition to the possible further development of the workshop format already discussed, a scientific evaluation of the workshop objectives and the effects on the participants is worth considering. It is difficult to assess the extent to which the vision workshop has triggered a sustainable learning process among the participants and the extent to which the discussion triggered may have an impact beyond the individual participants and their organisations. The workshop format can also be used for other target groups, such as in schools and university teaching. The format can be used for other topic areas, such as mobility in rural areas or the energy and health sectors.

<sup>15</sup> In qualitative social research, communicative validation is understood as a “methodological procedure to ensure the validity of an interpretation by establishing agreement on the interpretation between interviewee and interpreter” (Klüver, J.: Kommunikative Validierung. In: Heinze, Th. (ed.): Lebensweltanalyse von Fernstudenten. Hagen. 1979. 68–84).

## REACTIONS FROM THE PARTICIPANTS

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### Statement: Students of Transport Engineering

"I took part in the workshop as part of a roundtable event for my degree programme.

In the group, we were able to quickly agree on basic goals for future transport, and the proposed categories were very helpful. A bigger challenge was agreeing on the associated measures, especially when it came to restrictive interventions. Everyone had their own idea of how much restriction was appropriate, which led to lively discussions. In this way, the time went by very quickly.

Overall, I especially enjoyed the discussions with other students. In addition, the workshop made me realise how many different fields of action there are in the transport sector and that one's own ideas on the subject of transport often only play out in one sub-area."

### Statement: Participants in the Real-World Laboratory for Sustainable Mobility Culture (1)

"In the group of social scientists, we were able to easily agree on common overall goals.

It seemed important to all of us to reduce CO2 emissions and, to this end, to limit private motorised transport, to regulate the weight, size, and CO2 emissions of vehicles, to bundle mobility (e.g., through ridesharing services) and also to reduce it, as well as to improve the atmosphere within cities.

However, we have also made the experience that transport planning requires weighing up a wide variety of instruments and measures, whose effects, side effects and interactions with regard to goals and overall objectives are not easy to assess for non-experts in transport planning."

"The format of the workshop was both exciting and challenging for me. By discussing the various measures together with different academic disciplines, I was able to adopt new perspectives and reflect on my own position. However, this was also the greatest challenge, because the discussion often got lost in the "nitty-gritty" and it was particularly difficult to reach a final consensus. The controversial evaluation of desired effects and unintended side effects showed me once again that there can be no simple solutions when it comes to mobility."

### Statement: VCD Participant

"The question of what a mobility vision for 2050 should look like triggered a heated discussion in advance of the workshop. Although there are internally undisputed targets regarding climate neutrality by 2050 (and certainly even earlier), how much private vehicle traffic should still be allowed and for whom, and how to differentiate between urban and rural areas raises issues that are answered differently within the VCD. However, the discussion within the group also showed that the goal of "climate neutrality" sets a clear standard, and that detailed questions are subordinate to this goal. The vision workshop has also strongly stimulated the discussion about our transport future within the VCD."

### Statement: Participants in the Real-World Laboratory for Sustainable Mobility Culture (2)

"The task of the workshop was more difficult than initially thought.

I think all participants in our group had a clear idea of a desirable future at the beginning. In these visions of the future, there was a broad consensus that the mobility of the future should be sustainable. However, there was less agreement on the second component, which is the daily business of transport policy that has to be weighed up against the goal of sustainability, namely the entitlement to mobility of each individual. This led to a lively discussion about the proposed measures, the effects of which were difficult to grasp due to obvious interactions, even for those of us who deal with the topic of mobility and transport on a daily basis. The unpredictability of future framework conditions - especially technological ones - made it even more difficult to decide on a concrete set of measures. In the end, the limited time forced us to reach a compromise that was acceptable to the majority of the participants.

What remains for me is the realisation that there is no single ideal path to a desirable transport world in the year 2050, as I thought I had in mind before the workshop. At the same time, it was confirmed that the common denominator of all our wishes can only be achieved through targeted and ambitious steering mechanisms. In this respect, it now seems all the more important to me to test measures, to record their effects and, if necessary, to have the courage to adapt them to changing framework conditions, if this proves to be sensible. If the workshops succeeded in bringing about such a mental process in other groups of participants, the event can be considered a great success in my view.



**Statement: Participants from the political party “Die Stadtisten Stuttgart”**

“The evening was inspiring and exciting for us as a local political voters’ association. It’s a great option for interested groups, who wish to find a common position. We especially liked the input we got: Figures, statistics, research results. You don’t get that in such a condensed form otherwise. If we had one wish, we would wish for more in-depth information on transport policy measures and their effects. This would be better as an input than as group work. What was most useful to us was the subsequent discussion with Prof. Dr. Friedrich, as we then had the opportunity to address our concrete questions to an expert, which in the other group discussions had only led to speculation.”

WE WOULD LIKE TO THANK ALL PARTICIPANTS OF THE VISION WORKSHOPS FOR SUCCESSFULLY DEVELOPING THE EXCITING AND EXTENSIVE SCENARIOS.

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Publisher: Real-World Laboratory for Sustainable Mobility Culture,  
University of Stuttgart (ed.)

Zine concept: Sebastian Klawiter, Hanna Noller

Translation: Andy Tarrant

Design concept, layout, typesetting: Studio Panorama

Printed in the European Union.

Bibliographic information of the German National Library. The German National Library lists this publication in the German National Bibliography; detailed bibliographic data are available online at <http://dnb.d-nb.de>.

Publication on the follow-up funding of the Future City Lab—Reallabor für nachhaltige Mobilitätskultur (RNM) funded by the Ministry of Science, Research and the Arts Baden-Württemberg.