



 **Urban Systems**

Contact Information

Competence
Fields

Masters Program

ARUS International
Doctoral Studies
Program

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Introduction

Selected Fields
of Research

Focus Areas in the
Masters Program

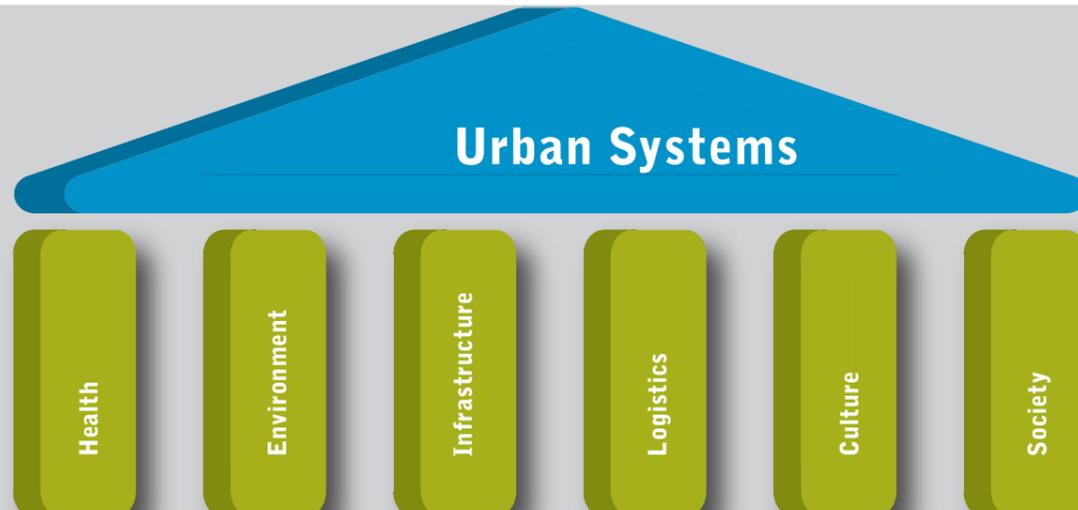
Collaboration
and Prospects

Worldwide, the number of rampantly growing mega-cities is rapidly increasing. Shenzhen, a Chinese city on the outskirts of Hong Kong, is virtually growing non-stop; while in 1979 the city had a population of 30,000, today it is a mega-city with a population of 14 million. The global level of urbanization reached the 50% mark in 2008 and for the first time in history, more people were living in cities than in rural areas. The United Nations projects that global urbanization will increase by a further 20% in the next two decades. For some time now, urbanists have been observing architectural and urban-spatial developments in cities with great concern, including the social, ecological and economic impacts of these developments.

The University of Duisburg-Essen believes that the trend toward massive urbanization is a crucial social challenge and has responded to the increasing significance of issues related to large-scale urbanization by establishing the Main Research Area "Urban Systems". The expressed goal of this program is to develop holistic solutions, an aspiration that the university has concretized by establishing international and interdisciplinary approaches to research and teaching. To this aim, the diverse activities of the university in this broad field have been organized in six core competence fields. Dependent on specific research questions, approaches and objects of study, the know-how of each distinct field will be integrated in interdisciplinary work. Further, in the winter term 2011/12, the university launched a Masters program, which addresses the complex issues of living in large urban agglomerations; this new program and the breadth and depth of its course offerings are one-of-a-kind in Germany.

An important focal point of this research is the Greater Rhine-Ruhr Metropolitan Region. Because the University of Duisburg-Essen is located at the heart of the Greater Ruhr Region, a large urban area that is facing a number of challenges, this course of studies is particularly attractive and forward-looking. This is particularly true for prospective students: during the course of their studies, they will be offered various opportunities to apply their knowledge through on-site practical activities. This also applies to people active in the local business sector, politics and administration: they will have greater recourse to scientific know-how for projects and questions related to regional development than they have previously had. The university has proven itself time and again as an attractive partner for ground-breaking joint projects, whether we consider the excellence cluster competition "EfficiencyCluster LogisticsRuhr", the "Electromobility Model Region" program, or projects on adapting urban spaces to climate change. Cooperative projects of this caliber are to be intensified on both the regional and international level. An international doctoral studies program also underscores the university's aspiration to establish itself as an international center of metropolis research with the "Urban Systems" programs.

J. Alexander Schmidt / Jens Martin Gurr
Spokesmen of the Main Research Area "Urban Systems"



Through the Main Research Area “Urban Systems”, the University of Duisburg-Essen has brought together more than 70 researchers from all eleven faculties and departments in six core competence fields: “Health”, “Environment”, “Infrastructure”, “Logistics”, “Culture”, and “Society, Education, and Social Policy”. Resources and knowledge in these six fields have been pooled with a focus on application-oriented research on metropolises.

These competence fields mirror the central challenges urban agglomerations are facing today and will face in the future. Some of these major challenges include: increasing levels of CO₂ emissions while natural resources are dwindling and becoming more expensive; increasing mobility needs to supply commercial goods and transport industrial goods; a general shift in types of labor on the job market; the potential of social conflict in multi-cultural, multi-ethnic communities; the development of cultures of urban poverty; and the health burden of climate change and dangerous environmental conditions.

Researchers cooperate within these competence fields under the umbrella of “Urban Systems”; the researchers enter flexible interdisciplinary collaborations dependent on the specific urban issues addressed. The Main Research Area has already brought together scientists, researchers and research groups in combinations unprecedented at any other German university.

The guiding principle behind establishing this interdisciplinary research platform is that truly innovative, sustainable and politically practicable solutions for urban agglomerations require integrated approaches to urban research. In this way, previous findings of research from discrete academic disciplines can be used as building blocks for creating new, holistic approaches to solutions.

In addition to exploring built environments and their technological infrastructures, these holistic approaches also include analyzing and describing the political, social, cultural, economic, and ecological aspects of urban life. In the future, the Main Research Area “Urban Systems” will focus on developing such holistic approaches to solving problems that arise as a result of urban growth and shrinking processes. This integrated approach to urban research is as of yet unprecedented in Germany. As a result, the University of Duisburg-Essen can offer opportunities unique in Germany to young and aspirant researchers in the field of urban studies, a field with great prospects as global demand for urban research increases. At the same time, the university has the chance to position itself at the forefront of the field of urban and metropolis research internationally.



A problem-oriented approach to research based on concrete questions is a significant component of the Main Research Area “Urban Systems”. As a result, researchers and research groups work on selected topics in different and flexible teams.

Based on the results of previous collaborations, the most exciting research questions, the most productive research approaches, and the most convincing results and findings have arisen in particular at the points of contact where different academic disciplines overlap and interface.

The thematic complexes “Mobility, Logistics, and Transportation”, “Water in Urban Systems”, and “The City and Climate Change” belong to the central fields of research in the Main Research Area “Urban Systems”. Scientists and researchers from various faculties and departments at the university are working in these areas, including: biologists, geographers, urban planners and designers, chemists, and physicists, as well as work groups from the faculties of engineering and medicine, the humanities educational and social sciences. Further research concentrations include: Urban and Terrain Climatology, Water Ecology, Drinking Water Treatment and Supply, and Environmental Toxicology and Chemistry. Our researchers in these fields have outstanding expertise in the Ruhr Region and their departments have a long, established teaching and research tradition at the University of Duisburg-Essen. But the scope of the Main Research Area also includes numerous other areas in the fields of urban research. Currently, projects are being carried out primarily in the following areas:

- *Climate change in the city*
- *Energy-efficient urban planning and mobility*
- *Mobility and traffic management*
- *Logistical optimization*
- *Sustainable urban energy concepts*
- *Process and planning research in logistics and traffic*
- *Urban water supply and waste water treatment (technologies, ecology and health)*
- *Sustainable land use in urban agglomerations*
- *Healthy city development*
- *Ultra-fine particulates and health*
- *Urban communication and concepts of urbanity*
- *Urban culture as a vital component of urban systems*

Contact
Information

Competence
Fields

Masters Program

ARUS International
Doctoral Studies
Program

The “Urban Systems” Masters program at the University of Duisburg-Essen has been running since the winter term 2011/12. The international Masters program is part of an integrated program that includes Bachelors and Doctoral programs and focuses on issues and problems central to urban systems worldwide. English is the predominant language of instruction.

Our Masters program is decidedly different in its objectives and course offerings from programs at other universities. While most courses at other universities in urban studies tend to focus on discreet disciplines (whether technology and natural sciences, cultural studies and social sciences, or arts and design), the “Urban Systems” Masters program is the first to offer an integrated, interdisciplinary and praxis-oriented education to its students.

From the outset, this holistic process trains students to develop contextualized solutions. Our course offerings prepare students for work in a complex and dynamic field, where diverse demands have to be prioritized and addressed. Learning interdisciplinary collaboration and systematic thinking and acting (in addition to gaining expertise in particular fields) also serves to prepare our students for their prospective professional work.

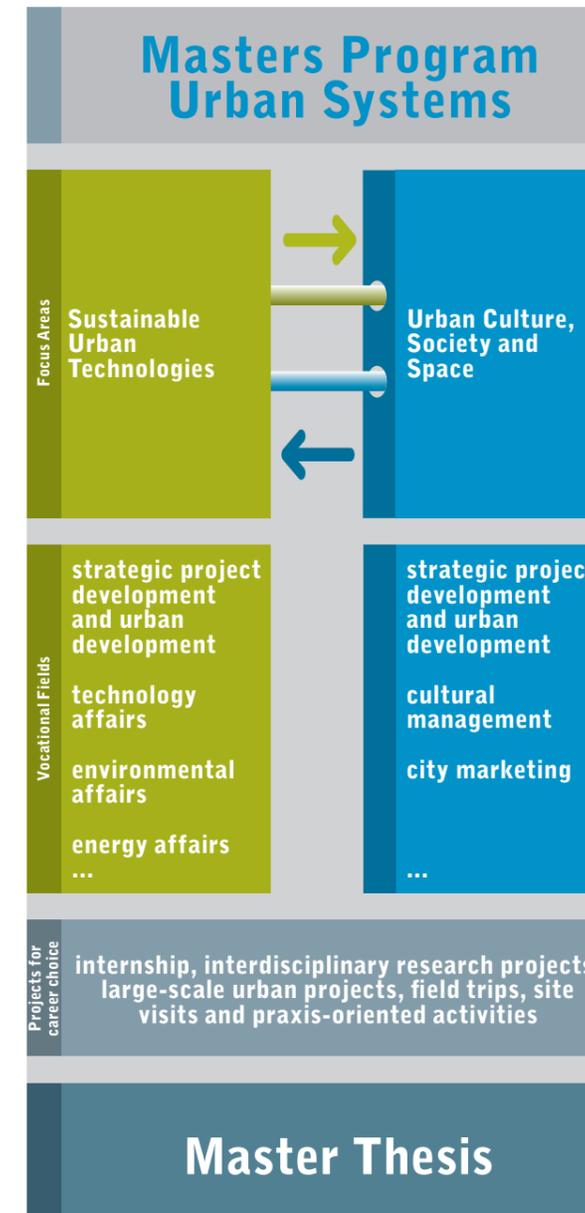
After completing our innovative Masters program, our students will be experts in urban systems and thus internationally sought-after specialists with excellent prospects on the job market.

Introduction

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Focus Areas in the
Masters Program

Collaboration
and Prospects



The course of studies in the “Urban Systems” Masters program is divided into two focus areas: “Sustainable Urban Technologies” and “Urban Culture, Society and Space”. However, students do not have to decide in favor of or against a particular focus area, but rather acquire knowledge and competencies from both focus areas in variable amounts.

This allows students to gain insight into other disciplines and learn their codes, points of view, and central issues and approaches. Thus, our aspiring urbanists will be able to describe challenges facing urban agglomerations from different points of view and draw praxis-oriented conclusions. The ability to view things from various angles is a sought-after trait on the job market, since it is more attuned to the real demands of professional work ‘on the ground’ than the limited viewpoints of ‘overspecialized’ academics.

The two focus areas are aimed at two different professional fields. Graduates with a concentration in “Sustainable Urban Technologies” (M.Sc.) will be particularly qualified for specialist tasks and managerial functions in the areas of technology, energy, and environmental affairs. On the other hand, graduates with a concentration in “Urban Culture, Society, and Space” (M.A.) will have the know-how requisite for carrying out strategic project development and urban development but will also be prepared for work in cultural management or as ‘moderators’ of social processes in public institutions and major companies. During the course of studies, students will be able to develop their prospective career choices through an internship, interdisciplinary research projects and praxis-oriented activities. In cooperation with the Main Research Area of the University of Duisburg-Essen, regional and international companies will also offer internships for large-scale urban projects, field trips, and the opportunity to do on-site research for Masters Theses. In addition, guest speakers from the private business sector and public administration will be invited to provide our students with necessary practical knowledge.

Further informationen:

http://www.uni-due.de/urbane-systeme/us_master_urban-systems_en.shtml



For graduates with backgrounds in:

- engineering,
- planning,
- social sciences,
- humanities,
- natural sciences
- ...

Prep Studies
(only if needed)



2 semesters

Doctoral Studies Program



6 semesters



ARUS (Advanced Research in Urban Systems) is a bilingual international program funded by the German Academic Exchange Service (DAAD) and aimed at graduates with backgrounds in engineering, planning, educational, social sciences and humanities who intend to carry out research projects in the context of urban studies. ARUS is a three-year program and includes course offerings on specific topics in a range of selected fields, interdisciplinary courses as well as intensive dissertation advising. Doctoral students in the program can be supported through complex urban issues, scholarships and travel funds.

The objective of the program is to train students to become experts in developing urban spaces that are sustainable in ecological, social, economic and cultural terms. Our graduates will be able to investigate complex urban problems with a high level of accountability, to competently supervise solutions processes and to contribute on the whole to improving the living conditions of a continuously growing population. Alongside the Masters Program, the Doctoral Studies Program is a key component of the Main Research Area, which serves to identify innovative interdisciplinary research questions at an early stage, to support and foster young researchers, and to generally create an exciting, enriching and productive research environment.

The scientists and researchers of the Main Research Area “Urban Systems” work in close collaboration with numerous prestigious institutes, research institutions, companies and organizations in the Ruhr Region, North-Rhine Westphalia and worldwide. The Main Research Area is linked to leading players in the field of urban research through a number of collaborative projects and intensive contacts in the field. To ensure the up-to-date knowledge transfer of recent findings, our researchers regularly take part in congresses and conferences and also plan and host academic conferences. We view maintaining and continuously expanding collaborative projects between the university and community organizations and businesses as a prerequisite for establishing the University of Duisburg-Essen as a leading academic institution in the field of integrated research in urban systems. The faculties and departments participating in the “Urban Systems” program have already collaborated to complete an array of projects related to urban issues; a number of projects are also currently in progress. The spectrum of projects currently spans a range of over 50 research projects which have received funding from the German Research Foundation and various Federal Ministries. Further funding has been secured from the EU Research Framework Program, other institutions, and private clients.

Currently, more than 25 new research projects are in preparation; all of these projects are devoted to addressing concrete urban challenges and their results will be relevant to creating models that can be applied to other urban areas.

Further Information:
www.uni-due.de/arus

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www.uni-due.de/urbane-systeme

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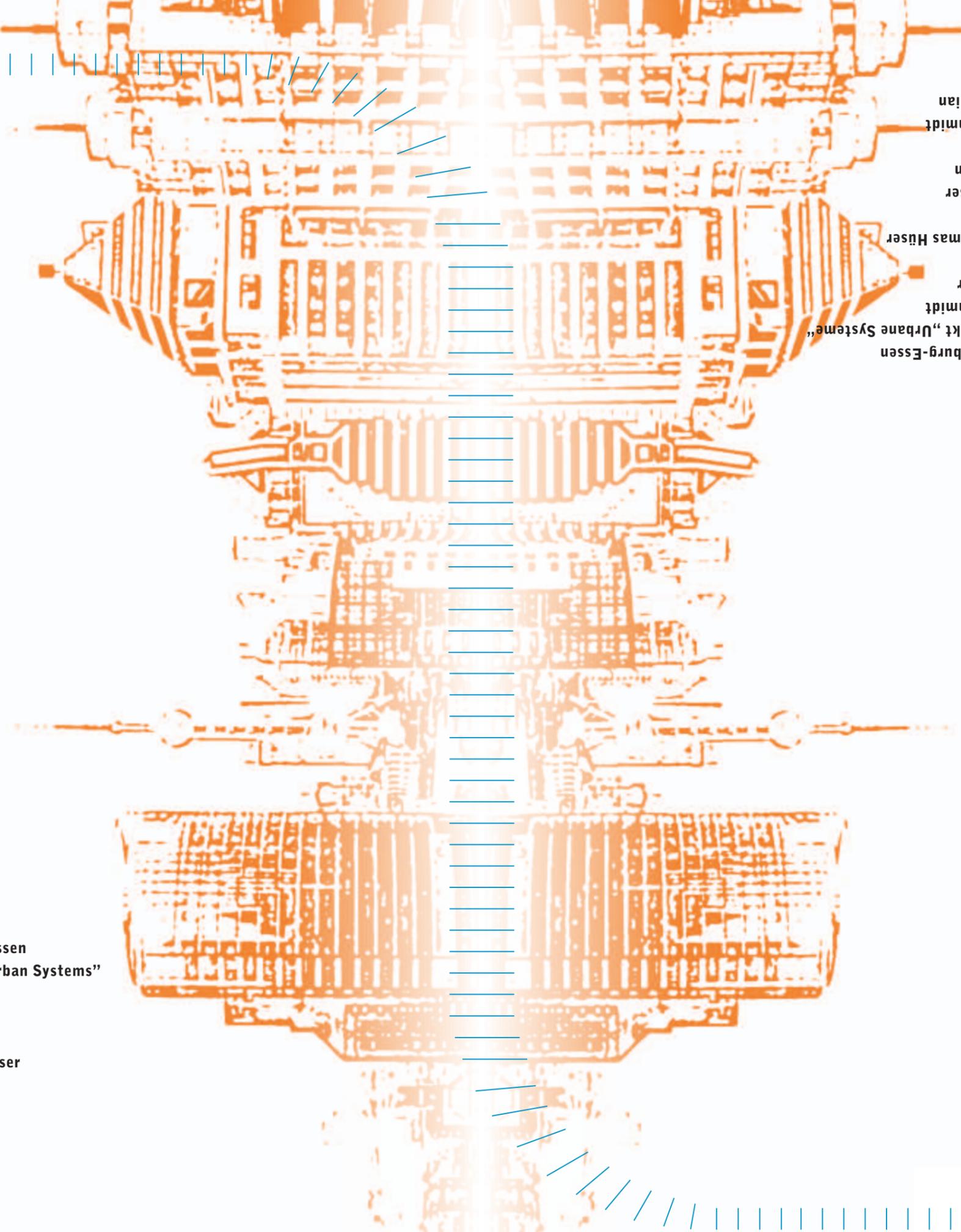
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