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1010 Wien, Schulerstraße – Balkon-Zwillinge. Foto: Christian Chladek

- 6 EIN NEUES HAUS FÜR DIE LANDSCHAFT**
Stephanie Drlik *beantwortet folgende Fragen: Was ist das österreichische HAUS DER LANDSCHAFT? Wie ist es organisiert, was sind die Herausforderungen und die Pläne für die Zukunft?*
- 9 PODCASTS: A NEW FORM OF KNOWLEDGE TRANSFER**
Constanze Frech *and Sarah Kusché present a new form of science communication with its advantages and disadvantages.*
- 14 REANIMATED FOR FUTURE**
Simay Zwerger *stellt die „ReanimateurInnen Neubaus“, die nach dem Konzept des Urban Minings alte Mobilität neu denken, vor.*
- 18 RETROFIT OF POST-WAR HOUSING QUARTERS**
Anasztazia Hujvan *introduces the concept of retrofitting, based on a project by students of Vienna University of Technology.*
- 24 SHARING MOBILITY UND DER ÖFFENTLICHE RAUM**
Gregor Stratil-Sauer *geht auf neue Mobilitätslösungen und ihre Auswirkungen auf den öffentlichen Raum ein.*

- 29 #KOMMRAUS. INS LEBEN DEINER STADT**
Vom aktiven Erleben, Aneignen und Mitgestalten im Rahmen des #kommraus Forums berichtet Beatrice Stude.
- 35 ÖKOLOGISCH, SOLIDARISCH, UNVERKÄUFLICH**
Christoph Laimer und Elke Rauth geben Einblick in das Neubau-Projekt „Bikes and Rails“.
- 40 VOM HERZEIGEN VON WERTSCHÄTZUNG UND VON DER LOCKERHEIT IM WELTALLTAG**
Eine Kolumne von Isabel Stumfol über ihren Selbstversuch als Agentin der Freude
- 42 FOTOSTRECKE „FAC(AD)E OFF“**
Christian Chladek zeigt Fotografien von ungleichen Häuserpaaren und Häusern mit zwei Gesichtern.
- 49 DIE GRÄTZLGENOSSENSCHAFT**
Alexandra Syen stellt eine neue Form des nachbarschaftlichen Miteinanders vor.
- 53 WIEDER ZU HAUSE. NEUNERIMMO VERMITTELT LEISTBAREN WOHNRAUM**
Daniela Unterholzner berichtet über Wege aus der Wohnungslosigkeit in Wien.
- 57 BIOTOPE CITY WIENERBERG**
Florian Reinwald, Zita Ring und Doris Damyanovic stellen ein neuartiges städtebauliches Modell des zukunftsgerichteten urbanen Wohnens vor.
- 64 ARTENVERLUST SCHMÄLERT ÖKOSYSTEMLEISTUNGEN**
Sebastian Meyer und Nico Eisenhauer berichten über das Jena-Experiment und die Erkenntnisse daraus.
- 68 OBST IM SCHNEEBERGLAND**
Brigitte Hozang schreibt über eine regionale Obst-Initiative und Neupflanzungen von Obstbäumen in Niederösterreich.
- 73 AGROPHOTOVOLTAIK DURCH DIE UMWELTPSYCHOLOGISCHE BRILLE**
Das Netzwerk Psychologie und Umwelt zeigt verschiedene Blickwinkel auf die Technologie der Agrophotovoltaik.
- 77 GRUNDSÄTZLICH NACHHALTIG**
Bernhard Kastner schreibt über Bioökonomie und zeigt die Herausforderungen der Zukunft in Hinblick auf Umwelt und Wirtschaftlichkeit auf.
- 82 WIDER DIE PROFESSIONELLE GEDÄCHTNISLÜCKE**
Lilli Lička, Ulrike Krippner und Roland Tusch zeigen den Wert der systematischen Sicherung und Archivierung von Landschaftsarchitektur-Wissen im Rahmen des neuen Netzwerks „NELA“.
- 88 MASTERPLAN SHOVI**
Uschi Dorau, Agnes Feigl und Karlheinz Boiger erzählen von der Wiederbelegung eines ehemaligen Kurorts.
- 93 KOLUMNE „HERR MARTIN BERICHTET ÜBER ...“**
Herr Martins Kommentar zum Thema „neu“
- 94 BIBLIOTHEK**
zusammengestellt von Alfred Benesch

RETROfit of post-war housing quarters

The word "Retro" is used to describe something from the recent past that is currently in use. The first image that automatically comes to mind is an impressive retro car and elegantly dressed people in a nostalgic, old-fashioned style. But what about well developed post-war modernist neighborhoods? Can we apply the title of Retro to these areas, which were built backwards in the 20th century? **BY ANASZTAZIA HUIJVAN**

The post-war urban quarters development took place in a period of overwhelming demand for housing and dramatic living conditions, which resulted in a very urgent housing construction. They were built with a new modernity concept for well-being and healthy living in very often open, linear structures and spacious outdoor areas, which today have enormous potential for the whole city, but do not meet current living requirements.

This means that we have "retro" quarters that are currently in operation and need an update = retro-fit!

retrofitting aims at the technological improvement and is often used to describe a process of transforming the existing building into a more sustainable and energy efficient one. But the building is not the only actor in this process. Today, retrofitting in its various definitions is an important part of urban development. The European city is constantly changing, as are the needs of its inhabitants. Urban expansion and renewal became integral parts of future sustainable urban development. In STEP 2025, Urban Development Plan Vienna, retrofitting is identified as a significant potential for future urban improvement.

Through technological and social "injections" we can transform existing quarters into future-proof neighborhoods, improving quality of life of the residents, generating working environment and contributing to the creation of community and activating urban and green spaces.

Academic pursuit

During 5 months 24 students under the supervision of Prof. Andreas Hofer, Lektor Wolfgang Gerlich (plansinn.at) and Tutor Anasztazia Hujvan have worked on this relevant topic within the framework of an academic semester

Retrofit

Due to Merriam Webster Dictionary, the first concept of retrofitting was developed during the Second World War, when the pace of technological progress was so fast that by the end of the construction process a ship or plane was already obsolete and the only solution was to retrofit it with new technologies. The massive scale of retrofitting was during the oil crisis of the 1970s, when energy efficiency became an urgent issue.

Retrofit Today

When we think of retrofitting in the 21st century, it is all about renovation, improvement, adaptation, modernisation, revitalisation ... Unlike renovation,

project "Transformation and Renewal of Vienna's Post-War Settlements" or "Retrofit_20" at the Vienna University of Technology. The project has aroused great interest and support among local stakeholders: Municipal District Office Brigittenau, Wohnpartner-Team 1_2_8_9_20, Fairplay/"Backbone", VHS Brigittenau, Gebietsbetreuung 1, 2, 7, 8, 9 and 20, MA 17 Integration and Diversity, nonconform, IBA Wien, MA 18 Urban Development and Planning, MA 21 Neighbourhood Planning and Land Use.

The aim of the design was to understand the significance of retrofit itself, to explore the potentials and problems of the built environment in selected post-war modernist settlements in Brigittenau,

20th District of Vienna, and to find solutions in form of urban planning projects for a suitable transformation. A special focus is placed on the demands of adapting to climate change, resource conservation, demographic developments and new forms of housing.

International experience

Before we focus on Brigittenau, we take a short trip to Amsterdam, where the students had the opportunity to discover current developments and projects for the renewal of post-war urban quarters in Amsterdam, Netherlands. Univ.-Ass. DIⁱⁿ Andrea Überbacher had organized a research trip to Amsterdam for October 2019, which was considered to be a part of the preparatory research.

On the example of Bijlmermeer development, that is one of the neighbourhoods that form Amsterdam Zuidoost, we can evaluate the importance of retrofit, so far as success of a project does not always meet expectations. The large-scale project of Bijlmermeer was to become an embodiment of the ideas of modernism, but unfortunately dreams of the team came to naught. The Bijlmermeer became the largest slum in Europe during a wave of immigration from Suriname in 1975, and on top of that, an airplane crashed into the building in 1992. The accident became a powerful impulse for the search for new solutions for the transformation of the neighborhood.

In this case, retrofitting was carried out in a big scale: part of the Bijlmermeer was demolished, the roads were rebuilt to ground level, new functions were added, more expensive middle-rise housing was built to attract the attention of middle and upper class residents. The community centre was created to connect people and help foreign residents integrate.

The Kleiburt building, which was sold at an auction for \$ 1, has become an example of transformation with the following methods:



Fig. 1: "Intermediate critic at TU Vienna". Photo: Anasztazia Hujvan



Fig. 2: "Search for suitable design" – models. Photo: Anasztazia Hujvan

rearranging underpasses and creating new generous openings, moving storage spaces to the upper level, creating a friendly interface of ground floor with more interactive inhabitation with live/work possibilities, placing new elevators, rearranging of the floor plans, etc.

Retrofit_Brigittenau

The Brigittenau itself began its history in the 16th century and

became a densely populated district for industry workers shortly after the regulation of the Danube in 1870–1875. Its typical "Gründerzeit" block pattern was supplemented in the post-war period by "Gemeindebauten" with a new modernity concept, that have become the green lung of this densely built-up area. Today this is a multicultural district close to the city centre and the Danube river with

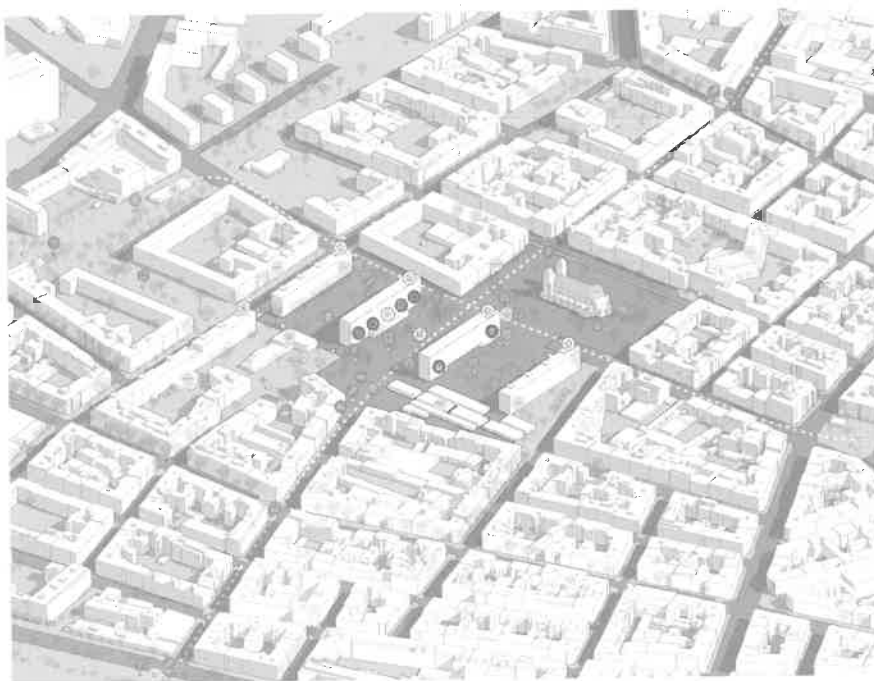


Fig. 3: "rotes Wien 2.0". Graphic: Cosima Sima, Laura Sauter and Victoria Frieda Fricker

good public transport connections.

The ensemble around the Municipal District Office Brigittenau, comprising Johann-Kaps-Hof, Karl-Michal-Hof, Anton-Schmid-Hof, Johann-Böhm housing estate and Pappenheimgasse 29, was chosen as the focus point for semester project. In groups of 2 or 3, the students had to choose a field of study to work on after a detailed analysis of the area.

Here we observe neighborhoods with 1,647 apartments, 47 % of which are single-person households. This is the first aspect: we

have more people living alone. Due to demographic change, there is also a need for age-appropriate housing as well as spaces for young people. The area is characterized by generous outdoor spaces and many trees. However, this great potential is full of limitations: "Enter or contaminate the green area is not allowed", "Cycling and playing football is not permitted", "No skateboarding and biking in residential complex" ... The results: empty unorganized green areas. The problem also lies in the technical deficits of the buildings

(noise protection, thermal insulation) which have become one of the reasons for social conflicts, 50 % of which are because of "noise". Need for renovation! Moreover, it leads to inefficient energy consumption and can create a critical environment during the hot summer months. Need to think about adaptation and mitigation to climate change.

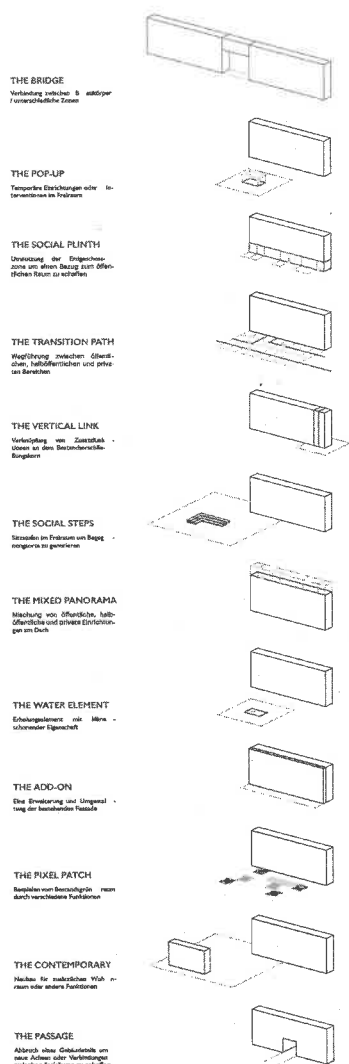
The entrances to the buildings are mostly narrow and dark and not barrier-free accessible. The passages through the courtyards are partially closed. On one hand there is an urgent need for renovation; on the other hand, rents will rise and will no longer be so accessible. There is also another social aspect: unemployment and the need for a suitable working environment. There is also a lot of potential in empty ground floor apartments and unused flat roof areas.

Each team set goals and worked on solutions for appropriate retrofit with a focus on both – building and outdoor area. As a result there are 10 projects with individual concepts. The design process was very intensive. The close cooperation with the stakeholders led to an even more serious and realistic process. This has given the students a great opportunity to develop new skills in project development under the supervision of experts from different depart-

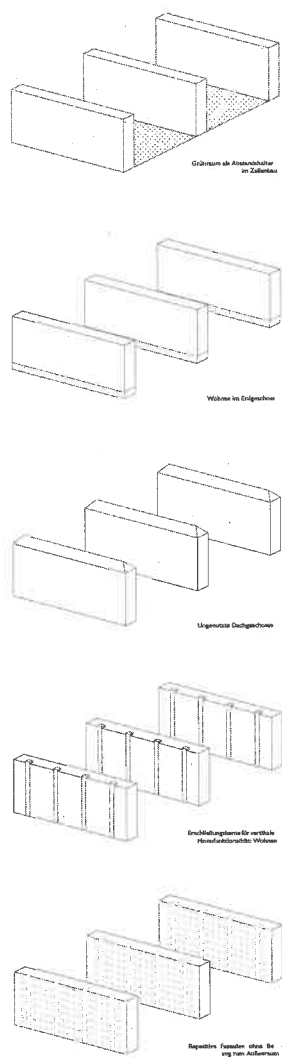


Fig. 4: "center 20". Graphic: Jenny Hùynh-Minh and Matthias J. F. Aigner

Retrofit Toolkit



Bestand Gemeindebau



Toolumsetzungsszenarien

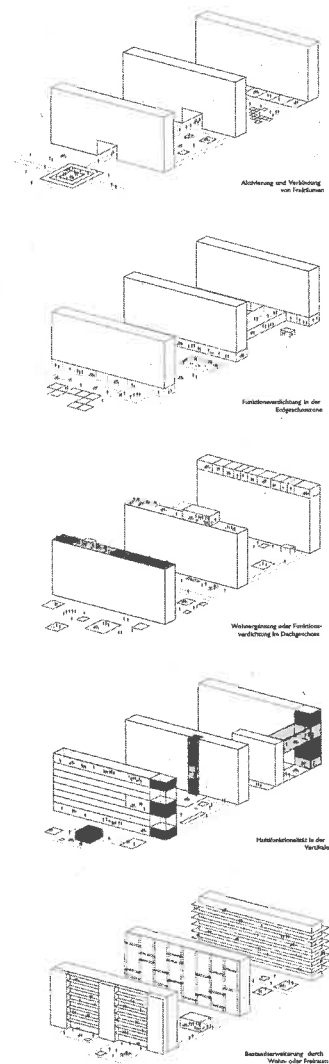


Fig. 5: "retro_active". Graphic: Ioana Morariu, Calin Talaba and Nikolaos Kouklakis

ments. In the first phase, the joint meeting was organized in the FairPlay-Team 20, "Back Bone" office in the 20th district of Vienna. The next exchange of ideas took place in Brigittenau Municipal District Office in the form of an open one-day workshop. In addition, the Vienna University of Technology welcomed guests for an intermediate critic at the end of January 2020 (Fig. 1). The final presentation of the results was planned for March 2020 again in the heart of the Brigittenau in Municipal District Office. A big advantage of the project was the possibility to work on the site. An important instrument for the design develop-

ment was the work with the model in different scales (Fig. 2).

Solutions and projects of the students

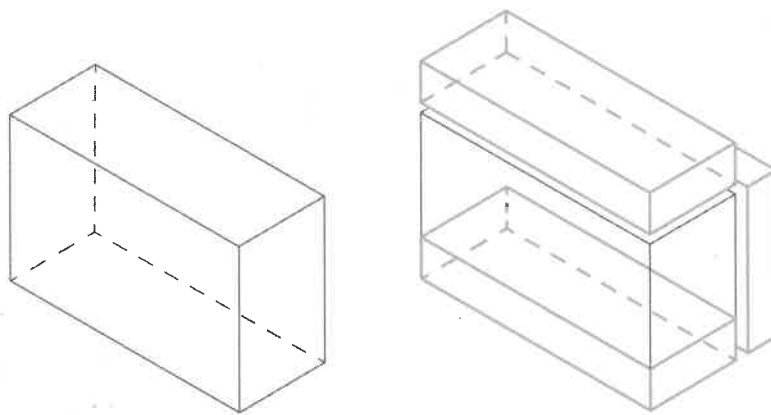
"rotes Wien 2.0"

A strong methodological approach of "rotes Wien 2.0" refers to the main issues of the original Red Vienna, social welfare, communal housing and school reform and transfers these to the present (Fig. 3). Changing requirements of the residents, more single households, and demographic change are at the centre of the concept. The project reacts to these problems with various structural

interventions: point interventions, open space, addition of stories, transformation and extension. The primary care centre is at the heart of the project. Transformation of the ground floor zone and the point interventions, in the form of modular pavilions fulfill the area with missing functions, work against the increasing isolation and create a sense of community in the neighborhood.

"center 20"

The "center 20" group has questioned the future of the District Office with the idea of adapting it to future requirements and accomplish a dominant centre



RETROFIT. Interventions to improve the quality of life of residents, community and urban space

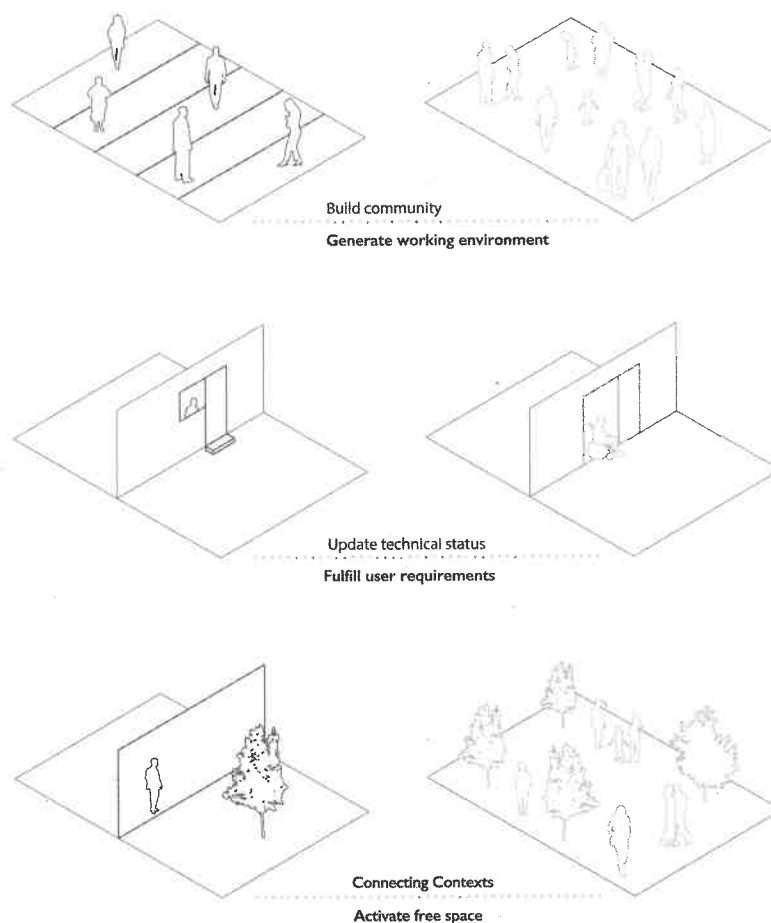


Fig. 6: Retrofit interventions. Graphic: Ioana Morariu, Calin Talaba and Nikolaos Kouklakis

for Brigittenau (Fig. 4). They are working on the Karl-Michal-Hof, which together with the district office, the Manfred-Ackerman-Hof and the House of Encounter forms a closed block in the middle of Brigittenau. The transformation of the structure creates an exciting

environment between the church and the municipal building, opens up the inner courtyard with pedestrian passages, and forms a link to the more open Johann-Böhm-Hof quarter. With the demolition of the obsolete multifunctional hall, the more spacious and greened inner

courtyard opens up to visitors and makes the area more attractive. The extension of the Karl-Michal-Hof building creates a new urban situation, transparent and flexible structure that can fulfill all contemporary functions.

“retro_active”

Retrofit Toolkit was developed on the basis of the main idea of creating new identity for “Gemeindebau”, where mono functional living can be combined with work and leisure. Series of tools for building and open space were worked out for the selected Johann-Böhm-Hof, but can also be used for other neighborhoods at different scales and in various combinations, which always have different affects. Additionally, there is division into three scenarios that alternately focus on main themes of Live, Work and Leisure Activities and increase impact intensity while using them in combination (Fig. 5).

Urban Density Lab Lviv 2019

The Institute of Urban Design and Landscape Architecture of Vienna University of Technology is constantly working on relevant topics. This is not the first time that the aspects of retrofit have been worked out. Last year, in terms of Urban Density Lab, the academic semester program in the summer term of 2019, title story was studied in Lviv, Ukraine.

The city of Lviv with approx. 40 % of post-war housing heritage has an urgent need for action in terms of renewal and retrofitting of existing structures. Unfortunately, the topic is still only under discussion. For development of new proposals 54 architecture students and 11 tutors from 4 universities in the Ukraine, Austria, Germany and Poland worked together with the Lviv Municipal Administration on two locations of post-war urban districts in Lviv. The workshop was organized within the framework of the academic partnership between Vienna University of Technology

and Lviv Polytechnic National University. Projects were developed in close cooperation with Chief Architect of Lviv. The results were presented in form of the exhibition in Architecture, Design and Urbanism Center "Gunpowder Tower" in Lviv (more information: www.vienna-lviv.info). It became an important impulse for further discussions in the city, giving new understanding of the topic and showing different possibilities for the transformation and improvement of living conditions in post-war domestic developments.

Retrofit works with the built environment and its qualities. It has an enormous significance for the future of housing estates. It takes into account social, ecological and technical aspects, works with buildings, outdoor facilities and people. Through technological and social "injections" we can transform existing quarters into future-proof neighborhoods, improving quality

of life of the residents, generating working environment and contributing to the creation of community and activating urban and green spaces (Fig. 6).

There are many examples of retrofitting in Europe and abroad, but much of the post-war building heritage is still untouched. Taking Brigittenau as an example, we can see how much potential there is in the residential quarters of the post-war period. With its renewal the city can gain many qualities in terms of adaptation and mitigation to climate change, better living conditions, more sustainable future development, densification. A coordinated, planned and strategic approach is needed at the city level.

"Retrofit_20" and "Urban Density Lab" are highly relevant academic approaches, that show the complexity, potentials and challenges of retrofit in post-war developments. ☉

Anasztazia Hujvan, tutor at the Institute of Urban Design and Landscape Architecture at TU Vienna, is at the end of her Master degree in Architecture. She has also worked on YoVA4 2019, "Urban Density Lab 2019" exhibition projects.

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abstract & keywords **R**emaking the built environment is one of the biggest challenges of our generation. Well-planned, post-war residential areas offer the greatest working environment for transformation to more sustainable urban development, adaptation to climate change in the city and to a better quality of life. Academic projects "Retrofit_20" and "Urban Density Lab Lviv 2019" open up new visions for the retro-fitting of post-war quarters in Vienna and Lviv. **Retrofit, sustainable urban development, post-war quarters, Brigittenau**