GRÜNSPITZ GIESING – TO (RE)MAKE A PUBLIC PLACE SOUNDSCAPE AND SOUNDWALK – CONCEPTS AND METHODS TO EVALUATE USES OF A NOISE POLLUTED SITE

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ABSTRACT

The 'Grünspitz'/'Green Peak' is a triangular, approximately 1,500 m^2 site in an urban regeneration area in the borough of Giesing in Munich, Germany. The site was used by a second-hand car dealer for more than three decades, until the 'MGS – Münchner Gesellschaft für Stadterneuerung mbH' (municipal redevelopment agency) bought the property and commissioned 2014, in closed cooperation with the department of urban planning, the non profit association 'Green City e.V'. to accompany the residents of the borough to 'occupy' the site by innovative civic participation. The former beer garden is covered by old chestnut trees and located in the dense heart of the former independent village of Giesing. Nowadays it is the community and commercial centre with a catchment area of more than 30,000 people. The two to six floor high buildings in the area are positioned on small plots without much greenery. It has neither public park nor street accompanying green or trees. So public – especially green public – space is in high demand. The 'Green Peak' has a huge potential to meet this need. On they other hand, the site is squeezed between main roads – in the east with approximately 14,000 vehicles per day and in the west with about 30,000 vehicles per day. By this traffic congestion, the site is polluted by noise and exhaust fumes. This is the huge drawback of the site. The Questions for the next years will be:

- How could the conflict between recreation and traffic noise be solved?
- How could people relax and revive at a site blustered by 40,000 vehicles per day?
- How to tackle this problem?
- Structural solutions like noise-insulating walls, constructed in glass, bricks or concrete?
- Technical solutions like active noise control?
- Special uses or new perspectives?

Keywords: civic participation, community / commercial centre, noise exposure, open air activity, public space, recreation, soundscape, soundwalk, urban regeneration.

1 INTRODUCTION

In growing major cities, open space is becoming ever scarcer and an increasingly diverse range of utilisation demands is being made of the open space which remains. Given efforts towards denser development (densification) and the acquisition of further land for development, there must be simultaneous efforts to acquire a sufficient range of private and public areas. Amongst other things, areas surrounding heavily-used traffic routes are coming increasingly into focus as part of development efforts, and thus also for open space uses. Many still

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partially unused open spaces are located nearby to streets, and their residential qualities are thus very much marred by traffic noise. Buildings can be relatively easily protected via passive noise protection, for instance in the form of soundproofed glazing. In this respect, there are many years of experience, technical solutions and a detailed and tested set of regulations.

The many regulations which protect the public from traffic noise include the 16th Federal Immission Control Ordinance (16. BImSchV), the Guidelines for protection against traffic noise on federal highways in areas of federal public easement (VLärmSchR 97), the Guidelines for traffic law measures to protect the public from noise (Lärmschutz-Richtlinien-StV) and the standard DIN 18005 – Noise abatement in town planning; calculation methods; acoustic orientation values in town planning. Only DIN 18005 (with its Supplement 1) sets out city planning targets applying day and night of 55 dB(A) for cemeteries, allotment garden areas and parks.

Perception and or/evaluation of perceptions of noise are however always made subjectively and are dependent on personal biases, current activities and collective experiences. In the 1970s, Murray Schafer [1] used the idea of the soundscape to describe interplay between people and acoustic noise. Depending on individual criteria and conditions, acoustic noise is perceived and evaluated differently (cf. Schafer 1977).

In the case of Grünspitz, comparisons should be made between measurements, sound recordings and, at the same time, the ensuing perceptions of noise. Different kinds of uses and various time windows are to be identified, making possible attractive and pleasant use of this green open space.

2 RELATED WORK

In recent decades, a number of scientists have made use of the idea of soundscapes. In the recent past, this has increasingly included work which has put a stronger focus on the idea of the soundscape in urban open spaces [2]. This is how M. Rychtarikova, G. Vermeir und M. Domecka described their findings regarding quantitative and qualitative evaluation of acoustic noise in 'The Application of the Soundscape Approach in the Evaluation of the Urban Public Spaces' [3]. Taking the example of a central high street in particular, the variations in sound emissions at different times of day and on different weekdays show a set of shifting patters over time in the context of the city.

2.1 Example - Nauener Platz

The Nauener Platz in Wedding, Berlin is an inner-city square. Like many similar squares, this one suffers from the traffic noise of adjoining streets. Between 2006 and 2009, a project titled Nauener Platz - Transformation for Young and Old was implemented [4]. After an intensive round of civil participation with local residents and people who work in the area, and with support from the team of scientists around Professor Schulte-Fortkamp from the Technical University of Berlin's Institute of Fluid Mechanics and Technical Acoustics [5, 6], sound islands (benches and seating circles made according to special designs) were constructed, as were other features such as gabion walls with stone and plants. The gabion walls led to a reduction in noise levels of around 3 dB (A). Alongside these, other noise prevention-orientated measures included the planting of beds, gardens and the arrangement of play areas. Substantial use was made of these areas and the noises made by children playing positively masked the still-audible traffic noise. The project was funded as model scheme and formed part of the Experimental Residence and City Planning (ExWoSt) research programme.

3 SOUNDSCAPE AND SOUNDWALK – CONCEPTS AND METHODS TO GAIN MEASURES OF VALUE FUTURE USES OF A NOISE POLLUTED PUBLIC SPACE

3.1 Urban regeneration

'Grünspitz' (Green Peak) is a roughly triangular piece of land of around 1,500 m² in the urban regeneration area 'Tegernseer Landstraße / Chiemgaustraße' in the borough Giesing in the Bavarian state capital Munich, in Germany.

In this urban regeneration area, renewal projects have been conducted and realised since 2005 as part of the urban regeneration support programme Social City (Soziale Stadt). Urban regeneration goals include:

Living, Residential Environment, Noise Protection – Fields of Action (FoA): Securing healthy housing situations, increasing quality of life via construction and green planning measures; noise protection for homes and private open spaces in the city centre and other main streets; improving neighbourhoods and stabilising the structural composition of residents.

Public Space and the Public Green – FoA: Extending/upgrading/networking green and open spaces, upgrading public space; improving residential quality, noise protection, services for all age groups; improving pedestrian and cycle path networks.

Cityscape, City Structure, Traffic – FoA: Creating orientation spots in the quarter, developing a neighbourhood identity; improving the accessibility of retail sites and public amenities.

City Centre Structure and Local Amenities – FoA: Improving the Tegernseer Landstraße/ Tegernseer Platz area.

Social Infrastructure, Health – FoA: Special services such as for issues including health, environment, etc.; services especially for teenagers in the district.

Education and Leisure – FoA: Improving educational facilities and services and services for health, the environment, culture, etc.; improving leisure opportunities.

Social Coexistence in the Neighbourhood, Civil Participation – FoA: Strengthening civil coexistence of various population groups and cultures; strengthening neighbourhood identity and neighbourhood life; strengthening responsibility towards public space (mentoring, etc.); improving the image (internal and external perceptions).

Involvement of the Parties Concerned, Participation – FoA: Creating meeting points (private/public, commercial/non-commercial).

3.2 Pattern of the borough

The 'Grünspitz' area was used as a beer garden up until the 1930s and is thus gravelled and covered with chestnut trees, lying in the heart of the once independent village of Giesing.

This former village centre is today a neighbourhood centre according to the centre concept (Planning scheme – Centres and Subcentres) of the Bavarian state capital Munich, with a catchment area of around 30,000 people. The surrounding developments of two to six storey-high buildings are built on relatively small parcels of land with only a small number of courtyards and green areas. In the local vicinity, there are no public parks, and there are no trees or other green areas lining local roads. Public spaces are thus in real demand. Given these facts, 'Grünspitz' has enormous potential to meet these needs.

3.3 Traffic congestion

However, 'Grünspitz' is also subject to a major disadvantage. The area is boxed in by three streets: Martin Luther Straße to the west (around 28,000 vehicles per 24 h), Tegernseer Landstraße to the east (around 11,000 vehicles per 24 h at this stage) and Zehentbauernstraße to the north (small byroad). Furthermore, two tram lines and an express bus line are active on Tegernseer Landstraße, meaning that during rush hour, a tram passes by the area every 2 min.

3.4 Legally binding land-use plan

In 1994, the city council responsible for this area decided upon Legally binding Land-use Plan No. 46. This sets out the intention of introducing to plant greenery to the pocket of land, in addition to preservation work of trees and the planting of new trees.

The area had been used for more than three decades by a used car dealer, up until MGS (Munich Society for City Renovation mbH - the City Renovation Organiser) acquired the plot.

3.5 Accompanied occupation by residence

Since the middle of 2014, the area has been used and expanded by Green City e.V. on behalf of Social City Giesing in close consultation with MGS and the Department of Urban Planning and Building Regulation. An innovative approach has been taken to accompanying residents

Figure 1: Legally binding land-use plan No. 46, City of Munich, Department of Urban Planning and Building Regulation.

Figure 2: Advent Celebration at the 'Grünspitz' (Photo by Edward Beierle, MGS).

Figure 3: 'Grünspitz' areal perspective (Photo by Sébastien Godon, Green City e.V.).

in the 'occupation' of the plot. Green City e.V. is a non-profit organisation which campaigns, amongst other things, for the upgrading and greening of city areas in Munich.

3.6 How to tackle the noise

Due to the vast congestion, the location is marred by noise and fumes. This is the most significant disadvantage in the area. Currently, there is no data on noise pollution at this location except for those on the noise map created by the state capital Munich. Questions for the future of the 'Grünspitz' in Giesing will be:

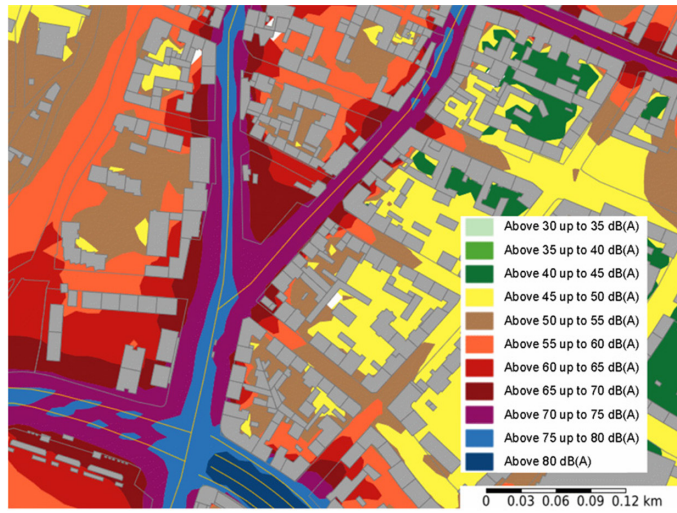

Figure 4: Noise map of the triangular site, commutation of noise: Acon GmbH commissioned by The City of Munich, Department of Health and the Environment.

- How can the conflict between recreation and traffic noise be solved?
- How can people relax in a location where around 40,000 vehicles rush past every day?
- What would solve this problem?
- Construction measures such as noise protection walls made from glass, brick or concrete?
- Technical solutions like Active Noise Reduction [ANR] or Active Noise Cancellation [ANC]?
- Special uses and/or new perspectives?

4 APPROACH TO THE QUESTIONS

Before we are able to find solutions to the problem, first we have to find out what we are discussing. How strong are the sound emissions in reality, and what does they mean for users? How do measured and perceived sound intensities differ...

- ...on one day?
- ...over the course of a week?
- ...and at different times of year (seasons and holiday periods, public and bank holidays, Christmas etc.)?

In order to evaluate the various views on the current noise situation, the situation must first be recorded in detail.

4.1 Measuring the acoustic noise situation

Microphones were install in two to four noise-afflicted positions on the grounds. Over the course of a week, the noise impact was continuously recorded using metrological systems and saved centrally in a logging unit.

Figure 5: Piano playing at the 'Grünspitz' (Photo by Irene Nitsch, Green City e.V.).

4.2 Users' assessments of the noise situation

As the same time as the measures described above, several groups of users, residents and local experts will observe and describe the situation. These activities will be supported by way of Green City e.V. and expert advisory services. For this, there will be a group which consciously looks into the noise situation, observing it – or rather, listening to it – and documenting their personal, subjective impressions. It is planned that a further group of observers will share its estimations of the situation and make a joint assessment of the acoustic noise situation. Further groups are to pursue various activities and document their observations in relation to them. These activities are intended to gather the complete spectrum of possible uses for open space, making it possible to draw conclusions about the long-term suitability of the activities suggested. Discussions on the actions and activities to be tried out and evaluated are to include the following, amongst others: reading, listening to music (classical, pop, others possibly including live performances and recording). Playing music is also to be considered. On the one hand, it should rather be physical games/and activities such as gardening, football, Frisbee, badminton that are tried out, but mental games such as chess or Sudoku should also be included. After the end of each respective activity, all participants are to hand in their impressions of the noise situation prevailing during their activities.

Once this investigative week is over, findings from the sound level recordings will be evaluated and linked up with the observations of the various groups and individuals described above, in order to identify parallels and divergences between measurements and personal/social perceptions and evaluations.

5 CONCLUSION – OPPORTUNITIES FOR OPEN SPACES

With potential users getting to grips with the influence that noise pollution has on usability of the open spaces, new perspectives and courses of action can be gained. In addition, the quality of utilisations can be markedly improved by targeted control of uses and, as the case may be, of noise-protection interventions. In this way, the 'Grünspitz' in Giesing can become a pilot project which shows how to make noise-afflicted open spaces more useable.

The references given below are examples of the following: (1) book; (2–3, 5–6) paper in a journal; (4) web site

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