

## **Popping Up Public Streets – Not for Cars, but for People by Transformative Approaches**

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### **1 ABSTRACT**

The topic of "living in the city" has been discussed for a long time. Many authors have commented on it, such as the well-known Lefebvre (1996) and Harvey (2008). Our study focuses exactly on this topic "how to make life in a city more livable". In the project "Pop-up Piazza" we have the possibility to implement transformative ideas with explorative methods. For this purpose, the project uses the instrument "tactical urbanism". The goal of the project is to test new ideas and try them out with the help of new prototypes. We focus on small selective interventions or actions like parklets, which are also combined with larger actions. In this way, we discuss whether our approaches are well received by the population before we embark on large-scale, cost-intensive changes.

Public street spaces are mostly dominated by motorized individual traffic. Our pop-up piazza transformations enable a perception of car-free space and its potential to make public space more people-friendly. Small simple and low-cost interventions should enable applications for many cities. In this project, we have developed cargo bike-based prototypes (called StreetFormators) and are now testing them in the urban spaces of Graz and Vienna. Following the principle of opensource, we also provide the StreetFormator construction plans to the public if other cities, organizations and communities want to use them. In addition to development and testing, we have focused on impact evaluation of the implementations. From this, recommendations are generated for urban planners, administrative authorities, and policy makers that indicate the benefits and desires of the public. The case studies in Graz and Vienna show that the framework conditions strongly contribute to the success of the measures. The temporary redesigns of public street space create more space for social interaction and thus fulfill an important function for neighborhoods and increasing the quality of life in cities.

Other companies and institutes are involved in the project, namely AIT (Austrian Institute of Technology GmbH), DieFahrBar, Mobilitätsagentur Wien GmbH (mobility agency) and the University of Graz (Institute of Geography and Regional Sciences). Experts from FGM-AMOR GmbH (Austrian Mobility Research) are also involved. The research project is funded by the FFG (Österreichische Forschungsförderungsgesellschaft) in the field of industrial research.

Keywords: urban development, urban design, public space, tactical urbanism, city planning

### **2 INTRODUCTION**

Cities are growing all over the world. People are drawn to cities because of the wide range of activities and jobs available. As a result, various challenges are becoming more apparent. Deteriorating air quality, noise pollution, and higher temperatures in cities are just examples of the many other challenges facing urban planners and developers (Detzlhofer 2020). The importance and urgency of the issue are underscored by the OECD (2015) report "The Century of Metropolises."

Sustainable and environmentally friendly approaches should ensure that the city presents itself as more livable again. This includes adapted administrative structures that can better respond to the needs of the population. Traffic and land use planning must be adapted to the needs, so that ordinances or laws create a balance between green spaces and new developments. Regarding transportation planning, it is necessary that planning evolve away from the automobile. Growth pressures on existing land mean that wasting space with the automobile is no longer contemporary (Detzlhofer 2020). Much more attention should be paid to the quality of public transportation while providing incentives for micro-mobility. This would reduce air pollution and the associated illnesses, as well as reduce the warming of the city by the waste heat from the engine (OECD 2015).

While in the early days of the automobile all road users were more or less equal, since the 1970s a trend set in which people were pushed to the margins and road space became too much for private motorized traffic. However, street space fulfills more needs than just getting around. Important functions such as social

interaction, trading place, playground and recreational activities are more and more challenged. As a result, more and more voices are being raised that the use of the street in urban space should partly change, moving away from the automobile towards attractive mobility and thus bringing about a transformation of public spaces. The car-free city will remain a utopia in the near future, but hybrid forms of use are being sought. The vision is to open "streets for people" so that they can be used as recreational spaces, places of social interaction and playgrounds. The entirely under the motto "together and not against each other"(Harvey 2008, Holden 2019, Lefebvre 1996, Lydon 2015, Norton 2015).

The Mariahilfer Strasse in Vienna (Fruchtlehner and Lička 2017) and the Sonnenfelsplatz in Graz ("shared space") are first experiences Austria is gaining in this field. There are also some school and residential streets where traffic calming measures are implemented. Nevertheless, public space is dominated by motorized individual traffic. The cityscape also suffers from the sight of parked cars. Here is the example of stationary traffic from Graz:

	Land requirement (in %)
Bicycle parking facilities	2
Pedestrian areas	3
Areas for public transport	3
Car parking space	92

Table 1: Spatial distribution of stationary traffic in Graz (source: Austrian Mobility Research 2016, based on data from the City of Graz)

Table 1 shows how the public space in Graz is divided. From this it can be deduced that a large proportion of the space is available for car parking. The ratios of the space requirements favor the car unilaterally. This shows the potential for conflict and the relevance of the topic for the city's inhabitants.

### 3 THEORETICAL CONTEXT

The basis of the project is the appropriation of space. When looking at the city, you can see that there are many different spaces. Here the question arises of their affiliation and thus also their right of use. A very simple division of the city into different spaces could be the following: Living space, movement space, leisure space, recreation space, shopping space and working space. From this simple listing, the demands and conflicts of the most diverse spaces can already be guessed.

This research deals with the public space and in particular with the street. City dwellers also make demands on a street, such as leisure space, transit space, recreation space, play space and so on. In many European cities, however, the street is mostly seen only as a transit space. Especially for the city of Graz and partly also for Vienna it is true that the street is available for the motorized individual traffic and other demands are secondary.

In order to give a voice to the other stakeholders and to create an opportunity for participation, tactical urbanism developed. This involves interventions that are low-budget and localized. These small interventions in public space are intended to create a more livable environment in cities. Synonyms for this are "pop-up" and "guerrilla" urbanism (Lydon 2012, Talen 2014).

The prefaces of urbanism describe their nature. Tactical, suggests precise planning, pop-up describes the way the intervention takes place, namely quickly and for a limited time. Guerrilla again describes the action itself, namely that it is not quite legal, thus in conflict with the law. Not only the kind of intervention is described in this way, but also the people behind it. These are usually driven by a desire to transform the city into a more pleasant environment.

The goal of tactical urbanism is to achieve a great effect with little risk. A wide audience should be made aware of the action in order to give an idea of a change and to create the desire of the inhabitants for more. Thus, it also aims to create the experience that city life can be colorful, safe and simple, and not only characterized by gray, stress and danger.

Interventions can range from coloring bike lanes to transforming parking lots into recreational platforms, for escapes from the daily stresses of the vibrant city. The success of tactical urbanism occurs when residents or groups get involved in urban planning and demand change (Lefebvre 1996, Lydon 2012, Webb 2017, Silva 2016).

Guerrilla urbanism has existed for a long time. Again, and again, cities have to face various challenges and, for example, have to adapt to new economic systems, as Lefebvre mentions in his book "writings on the

city". Urban planning is usually left to intellectuals, who are supposed to take into account every possible aspect (Lefebvre 1996, Harvey 2008). Urban planners focus mainly on securing the development of settlements, the use of building land and the design of traffic areas. The planners try to satisfy the economy and only what makes a profit is interesting. Thus, the needs of ordinary people are not considered or are considered only last. It is assumed that everybody wants to move to the city anyway and therefore there is a permanent demand for living space in the city. The well-being of people living along a busy street is not taken into account. Nor is any thought given to the wishes of elderly people on their daily walks, such as benches for resting. The fact that children who live along a busy road would also like to play outside is also overlooked, as are the previous concerns. This is because the city's planning is based primarily on economic needs. (Lefebvre 1996)

To make their needs known, pop-up urbanisms are a simple means for city dwellers. Although this approach may be classified as civil disobedience, it still achieves its goals. According to Silva (2016), processes that lead to further development are always accompanied by continuous and intense confrontations between those who carry the claims of legitimacy and those who are responsible for their sanctions. Furthermore, legitimate actions that have enough impact, i.e., continuity or relevance, lead to these short-term interventions being later recognized and incorporated by official bodies. An example of this is "urban gardening". What was once illegal in Berlin became a normal phenomenon due to widespread support from residents (Biedermann and Ripperger 2017, Prinzessinnengärten 2021). The same is true of the "walk [your city]" movement. The city of Raleigh in the USA prohibited the project and classified it as illegal. Due to the high media attention and the support of the population, the city changed its attitude and integrated the interventions as a pilot project (Tomasulo 2013).

Projects that are classified as "guerilla urbanism" can be found in many cities. For example, Rotterdam and Copenhagen are considering new functions for the streets, such as surface rainwater management for the whole city. Rotterdam and Copenhagen are pioneers in opening the streets to bicycles and pedestrians. Individual experiments are also taking place in Austria, such as the "cool streets - cool streets". For this, a heat map was used to select places in the city where the heat stress for the population is particularly high in summer. At these places the streets will be closed for car traffic, mobile plants, benches and water sprinklers will be placed. In this way, the streets will become a meeting place and children will be able to play in the streets (Mobilitätsagentur Wien 2021).

The initiative "Grätzloase" so-called neighborhood oases have a similar goal. Based on usage plans, areas are designated where the population is to be shown how life can return to the streets. Parklets are used for this purpose - the use of car parking spaces as lounges.

Building on this idea from Vienna, we want to use new tools to develop and test simple and inexpensive pop-up transformations (Lokale Agenda 21 Wien 2021).

#### **4 APPLIED PROJECT POP-UP PIAZZA**

Temporary transformations are usually simple and quick to implement, are inexpensive, and have tremendous hidden value for both civil society and urban administrative and planning levels. The focus is on reclaiming public street space and opening it up to a variety of uses. This project therefore combines different use cases of temporary transformation to conceptualize temporary appropriation as part of the social urban landscape and as an emerging product of bottom-up initiatives, the digitalization of administrative processes, and the present legal and organizational framework.

Temporarily freeing traffic areas from cars and transforming them into public spaces, offers a "low-cost", "low-time" and "high gain" opportunity to reduce the obstacles associated with the transformation of urban structures towards new traffic concepts and paradigms. The principle is to temporarily test a measure before the cost-intensive detailed planning and implementation of construction measures. A wide variety of temporary transformations is to be developed as an efficient, potentially widely used planning and implementation tool for sustainable, permanent solutions.

Pop-up Piazza aims to make the temporary transformation of streets and squares much easier and faster to implement and to make it easier for other cities to apply (Forschungsgesellschaft Mobilität FGM-AMOR 2017).

These are the main objectives of the project "Pop-up Piazza" (Forschungsgesellschaft Mobilität FGM-AMOR 2017):

- Development and testing of cargo bike-based research prototypes, which – as mobile "StreetFormators" – will enable fast pop-up transformations.
- Further development and testing of a digital citizens' tool, which is suitable for the broad employment on different topics all over Austria.
- The respective "testing" is about the validation of the functionalities – how the respective solution is proven or not proven in the real laboratory environment.
- State of the art analysis and analysis of the legal and organizational framework conditions.
- Evaluation and recommendations for policy, administration, planners and developers.
- Efficient dissemination of research results, open-source access for prototypes and the citizens' tool.

#### 4.1 Procedure

After the initial analysis of the status quo regarding temporary freeing of roads from motor vehicle traffic and pop-up techniques in public road space, it was first of all of high importance to also sound out the legal and organizational framework conditions. The next major step was to develop the prototypes. These are based on cargo bicycles and have different possible uses. As mobile "StreetFormators", they are intended to enable rapid pop-up transformations. The designs were developed on the basis of an ideas workshop with various stakeholders. In parallel, a digital citizen tool was developed. This should quickly show the potential for such transformations based on maps.

The current step is the testing of the research prototypes. This involves validating the functionalities - whether or not the tool proves itself in the real-lab situation. Some pilot implementations have already been carried out and evaluated in Vienna and Graz. Methodologically, observations were primarily used for the impact evaluation. These were combined with traffic counts and surveys (digital and analogue). Furthermore, it is planned to use an interactive voting tool. This paper will report results and experiences from the impact evaluation so far.

#### 4.2 Project experience

A central point of the project are the interventions, i.e., the testing of the StreetFormators in different settings and the evaluation of the impact. The goal is to conduct 20 and 10 interventions in the cities of Vienna and Graz, respectively. Due to the changed situation caused by Covid, there was a delay in the completion of the prototypes. Therefore, the existing "Raumwandler" (in English: "space-transformers") from the previous project Metamorphosis were also used (in Graz). One ready-built StreetFormator – a cargo bike equipped with games, fun and sports equipment – was already in use in Vienna (figure 1). Since spring 2021, the two new StreetFormators have also been ready for use. The findings from the first test phase were incorporated into the design of the StreetFormators, which were then still under construction: In the case of the "Meet & Greet Bike" (figure 2), seating is attached directly to the cargo bike so that it can be used directly. In addition, different add-ons, that can be installed flexibly, depending on the purpose/location are utilized (figure 3).

In addition to the different transformation tools that were used, they were also applied in different contexts. While one focus was a host system, it was also carried out in the context of events. The second means that the StreetFormators are used, for example, at street festivals. Mostly it is then an official closure of the street or street section - the StreetFormator then additionally upgrades the space that has been freed up, alongside the other activities.

The host system on the other hand is designed in such a way that the used space is provided by third party hosts such as stores. Usually in these cases the street was used "normally" for traffic and the StreetFormator temporarily converted an existing car parking space.

Another difference in the method of use is that of "active placement". On the one hand, it is possible to actively play and support the StreetFormator. In this way, passers-by are directly invited to use it. Barriers can be broken down in this way. On the other hand, we also wanted to test how it works when the StreetFormator is "left out in the wild", i.e., simply standing in a parking lot without supervision.



Figure 1: The new StreetFormator called "playing-bike" and the existing space-transformers (photo credits: xyz cargo 2020; metamorphosis 2020).



Figure 2: Planning sketch of the StreetFormator named "Meet & Greet Bike" (photo credits: xyz cargo 2020) and the finished StreetFormator in use (photo credits: Bergschaf 2021).



Figure 3: Different uses of the StreetFormator by means of add-ons: music, lighting, board games, table tennis, ... (photo credits: Irene Stockinger 2021, Bergschaf 2021).

The Graz deployments were conducted in a "modified bottom-up" framework. Specifically, this means that the selection of the sites themselves was not a top-down measure on the part of authorities or administrative units. Nor have citizens themselves had any direct influence on the location of the deployed space-transformers yet. Instead, cooperative partnerships were formed in which the location was jointly fixed. In addition to the project partners, non-profit organizations, local companies and associations were represented in such partnerships (Bafaro, Senger and Giesch 2020).

Along the way, a space-transformer (the so-called "garden bike" with seating and plant boxes) was hosted for a time each by a local store and by a neighborhood center in Graz. By means of interviews with the hosts, the experiences were documented and analyzed. The results are summarized below.

The general perception of the space-transformer by the hosts was consistently positive. Both the visual perception and the transformation of the space were perceived positively. The seating in particular added value here. In both cases, much takes place in front of the hosts' premises - particularly the social interactions. Especially in pandemic times, where distances have to be kept, but also at normal times, the space-transformer therefore offers a good extension. A reassessment of the distribution of space can definitely be seen as a success here. The special feature of a host system is the security and trust aspect: someone takes care of the space-transformer and always keeps an eye on it, so on the one hand vandalism can be prevented. In addition, trust is created and passers-by know that this is a safe place to sit or let their children play on it. The host also provides a contact person who can be used for all kinds of concerns. The hosts in Graz have often had the experience of receiving complaints from residents and drivers, almost exclusively because of the loss of parking space. In the case of the neighborhood center, the complaints have subsided over time. Now everyone seems to have gotten used to it. In the case of the small store in a district of Graz, the host has observed aggressive behavior by motorists towards the space-transformer from time to time (e.g., deliberately hitting it when parking). He also had to engage in heated discussions time and again. However, it should also be said that a lot of positive feedback has been received. In general, one can speak of a high level of interest, as many passers-by cast interested glances at the previously unusual street scene. In addition, many passers-by have also asked what it is about. The reactions to the transformations were then mostly joyful.

In both cases, there were many different user groups: First and foremost, families with children use the space-transformer. But senior citizens also benefited from the additional seating and groups of young people were also able to meet there. There was almost daily use in front of the store - especially during opening hours. The use of the space-transformer in front of the district center, on the other hand, is much more closely oriented to opening hours. Then it is always in use and very popular. In both cases, the space-transformer provides the necessary additional space for the otherwise rather limited physical premises and primarily assumes a function of social exchange. An important result of the experience of popularity with children is to separate the space-transformer from passing motorized traffic in order to create additional safety. A structural boundary or a natural wall of plants is suitable for this purpose.

At this point it should be noted that the two locations are different: The store is located in an inner district, in a busy, hip neighborhood close to many other stores and gastro venues. The neighborhood center, on the other hand, is located in an outer district and is characterized by its location on a busy state road. Despite the traffic rushing by (along with the noise pollution), however, the space-transformer is used actively and also gladly, thus enhancing this space all the more.

The host system has also proven to be good at reducing barriers. This is because many passers-by do not perceive the space-transformer as a public space and do not know that they are allowed to use it without further ado. Good experiences have therefore been made especially when the cargo bike transforms car parking spaces into recreational areas in cooperation with district centers or neighborhood offices. These can actively use the space as part of their activities. Since the temporary transformations should generally draw attention to the usability of public space (especially the reclamation of public street space), it is recommended to provide information in addition to the transformation tool. For example, the shop windows could be creatively played with it (Host1 2021 and Host2 2021).

Another focus in Graz has so far been the coordination of temporary play streets and residential streets with the space-transformer. In Austria, in declared residential streets, walking on the roadway and playing is expressly permitted. Driving is only permitted for the purpose of access and departure. Pedestrians and cyclists must not be hindered or endangered in the process. The pilot tests in the residential streets have shown how important it is to draw attention to this issue. In both survey periods, there were numerous violations of the road traffic regulations. The results of the traffic count show this clearly (table 2).

One can even speak of a vicious circle here, since this traffic in turn creates an unsafe environment and as a result children of residents are not allowed to play on the street at all (Bafaro, Senger and Giesch 2020).

Based on the experience of the pilot tests in residential streets in Graz, it can be concluded that the Pop-up Piazza project can make an important contribution towards raising awareness. The drivers could be made aware of their misconduct through the campaign and above all through the targeted playing on the street - which led to the traffic being slowed down further. Here, with a little support, the street space was reclaimed by children. In addition, the residents were able to enjoy the benefits of the traffic-calmed area and were made aware of it. In addition to a lot of positive feedback from neighbors about the created "living room in front of their door", there were, however, some complaints from motorists who felt robbed of their parking space.

Survey	25 July 2020 (4-5pm) (before intervention)	22 September 2020 (4-5pm) (during intervention)
Traffic participants		
Passenger cars (of which passed through)	15 (7)	37 (23)
Pedestrians	72	123
Cyclists	36	150
Motorcycles	0	6 (5)
Skateboarders	2	3

Table 2: Traffic count results of the pre-survey and the survey during the intervention in the residential street (Muchargasse) in Graz.

The implementations in Vienna took place mainly within the framework of organized events. During the summer months, 18 street(-sections) in Vienna were temporarily transformed into so-called "CooleStraßen" ("cool streets") - as a heat adaptation measure. The street space, which is normally occupied to a very large extent by stationary traffic, was opened up to people. The StreetFormator, in this case the playing bike, was also used for the "cool street". It brought various toys and sports equipment to the "place of action" and thus took over an important supplementary function for temporary traffic relief. The positive feedback from the supervisors and the results of the observations show that the playing bike primarily fulfills a transport function. In addition to the shady function of the integrated sunshade, the cargo bike itself is occasionally used for climbing attempts by younger children, its table proved practical, e.g., for painting, but the greatest attention was focused on the toys brought along, which were very well received. The bike itself was in the background during use. In this case, it is "only" a means to an end, which is limited here, as previously mentioned, to the transport of toys. It transforms the space only indirectly. However, the fact that the street section is officially closed contributes to the transformation much more. In this case, the StreetFormator as a cargo bike that brings the games is a good complement to the road closure to make the most of it (Bafaro, Senger and Giesch 2020).

From the evaluation and the interim results so far, both from the surveys in Graz and in Vienna, the conclusion can be drawn that overall, the advantages of the additional public space outweigh the disadvantages. The majority of the people involved (both active users and passers-by) reacted positively to the StreetFormators. Only a few people expressed rather negative opinions about the action. It has been shown that the topic of parking space reduction is a very emotional issue. Here it is particularly important to "pick up" these people, i.e., to involve them from the beginning and to raise their awareness. This is because in many cases the desire is expressed for longer-term traffic calming, greening and reuse of the street space. It has been shown that the campaign gives people a way to use public space and this also has a social impact. The StreetFormators bring people together in their neighborhoods and offer them the opportunity to compensate for the lack of private or semi-public open spaces and to use the street as a meeting place, playground and communication space.

However, an obstacle to the implementation of temporary interventions in the street space can be the legal framework. It is essential to check the legalities and specifications of the city before implementation. These can be handled very individually. If one refers to the current Austrian legal situation, bicycles may be parked in public parking spaces. For this reason, bicycle-based transformation tools are being tested in the pop-up piazza project. Nevertheless, it is advisable to inform the responsible authority about the project in as much detail as possible in order to have the need for a permit officially clarified for the further course of the project.

## 5 CONCLUSION

As stated in chapter four, the majority of the local residents appreciates the "guerrilla interventions". The StreetFormator allows people to rest and have a gathering place. This creates new opportunities for social interaction and new acquaintances are formed. We observed that especially the host system, where local stores "take care" of the StreetFormator, proved to be most successful. Neighborhood centers and stores that also have a social function were able to upgrade the public space.

Many drivers are afraid that they will lose their parking space because of the StreetFormator. These potential conflicts combined with the theory from chapter three show that we are on the right track to make a difference. The emotions about street space mentioned in Chapter four consider also the city restrictions and their legal positions. It is important that not only tactical urbanism is pushed through, but that opponents are also heard and a common basis is sought. Legal framework and municipal requirements have to be integrated too. We have received a lot of positive feedback from locals. So, we believe that we have correctly assessed the needs and have found a promising path on which we will continue to go forward.

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