



Project of the Cultural Centre in Raciborz, infill corner building Staszica - Opawska streets.  
Student Aleksandra Mazur (Architectural Studio Design, semester VI, 2017).

## Infill projects and sustainable land use in heritage zones: how to reconcile competing interest sets

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### ABSTRACT

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Sustainability and heritage are inextricably linked. Heritage conservation helps to build and maintain cultural identity and social cohesion of the city community, especially amongst indigenous residents. Heritage zones in European cities and towns over time have suffered destruction and undesirable urban transitions that alter or remove heritage urban fabric. While architecture and urban heritage aims are generally to promote infill development that retains the integrity of the original structure, communities tend to argue for social values that emphasise the retention of vacant land even if it was originally part of the heritage-built form. Hence, the aim of this paper is to identify city residents' aspirations in relation to such vacant land and spaces. The paper will investigate the case of Raciborz, a medium-sized city in Southern Poland. It will seek to answer the following questions: 1) Are heritage urban composition and principles of its protection antagonistic to the residents' aspirations? 2) What are the criteria for classifying and valorising vacant land within a heritage city centre? 3) What is the most appropriate way for city administrations to engage with communities to reconcile competing interest sets? What might be possible educational actions addressed to the communities? In the paper the procedure of identifying and evaluating empty sites in the heritage city centre will be presented as well as the results of survey presenting residents' ideas of optimal way of use of empty city spaces.

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### KEYWORDS

*infill projects, land use, heritage zones, sustainability, Raciborz*

## 1. INTRODUCTION

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This paper examines and explores options for redesigning and modernising heritage zones in cities to achieve sustainable outcomes. Sustainability can be considered as a new paradigm, which redefines the issues concerned with economics, politics, environment and culture (James, 2015). There are also significant ongoing social processes that stimulate and shape the mentioned above change.

Today cities are confronting the strongest tensions for implementing policies and programs for sustainable action. This involves the continuing challenge to provide secure and sustainable places to live in the face of intense development pressure, dynamic spatial and social change and a diverse range of possibilities and contradictions (James, 2015). Cities have an 80% share of world energy consumption and produce huge amounts of carbon and waste. Efforts to achieve sustainability are often in conflict with economic growth and effectiveness (Jabareen, 2006). Nevertheless, the aspiration and motivation to recreate more sustainable human settlements are strong in most cities across the world.

Cities contain significant heritage assets that are important elements of culture defining identity and a sense of place, which links the contemporary and the past. Heritage helps us understand social systems, diversity and the creation of cultural values (Heritage & Sustainability, 2005). Urban heritage, therefore, is important part of heterogeneous city structure and is usually subject to strict control. As indicated above, while the implementation of sustainable development in heritage cities is challenging it is critically important to recognise the residents of cities as important actors within this process.

Historical urban fabric is usually in poor technical condition. Technologies and materials used to construct buildings in past centuries do not meet current standards of efficiency for thermal insulation, heating, ventilation, water protection and many other services. Hence modernising heritage buildings and objects brings with it serious technical problems with additional costs compared to new developments (Wołoszyn, 2013). It also requires compromises where

the demands of sustainable urban and architectural heritage can often not be fully achieved. The future problems for creating sustainable cities are not restricted to environmental issues. They include the cultural values of tangible and nontangible heritage. From this perspective, heritage offers a significant potential: it can help individuals and societies raise their understanding of past cultural, social and political structures. This is fundamental to bring about a sustainable society (Woodcraft et al., 2011).

This paper draws on an analyse of the Raciborz Old Town (A medium-sized city in Southern Poland) in an attempt to propose the decision-making procedure to achieve optimal land use solutions and decision-making procedures for heritage areas. This process consists of the analysis of urban fabric and resident participation in the planning and design processes.

## 2. INVOLVING COMMUNITIES IN THE URBAN TRANSITION OF CITIES

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Urban analysis is widely used in preliminary studies for urban and architectural projects. Combining professional studies with individually shaped social participation procedures provides a highly valuable technical and general elaboration for the study area. This method incorporates residents and other city users into the process of municipal decisions on spatial issues concerning urban and architectural projects. It also allows for local initiatives and bottom-up actions to implement own projects. Urban communities, encouraged by the success of local initiatives already undertaken, propose spatial amendments for their neighborhoods, districts and a whole city (Idem, 2010). In the last two decades, social participation has become a valuable and permanent part of the spatial policy. In Poland, it is implemented through legally sanctioned activities such as:

1. Social participation at various stages of formulating the strategy of a city/district, an organization of architectural/urban contests: proposing conditions of competition, selecting and evaluating awarded works.
2. Citizen budgets (1% of the annual budget of a

commune), which already included 200 municipalities in Poland, proposing investment initiatives, e.g. establishing recreational areas, improving road infrastructure. Ideas gained through a competition that do not receive funding are still valuable auxiliary study material for the future masterplans (Żylski, 2018). In addition to the social activities already described, the pilot project "Warsaw Local Centres" deserves mention. In Warsaw an attempt was made to strengthen or supplement existing commercial, recreational or cultural functions. From a reported 253 sites, ten locations were selected through a multi-stage participatory process. The first stage of the analysis examined Warsaw's public space structure. It identified, as mentioned, over two hundred node areas that played an important role in the public space network. The second stage, based on information gathered during meetings with residents and city activists and through social media, places of local centre potential were identified and selected. By linking the results of both stages a clear correlation between urban and social criteria was revealed. The last step consisted of an on-site analysis and spatial

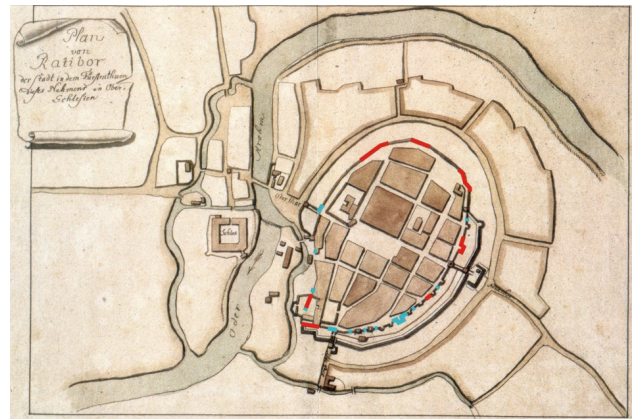
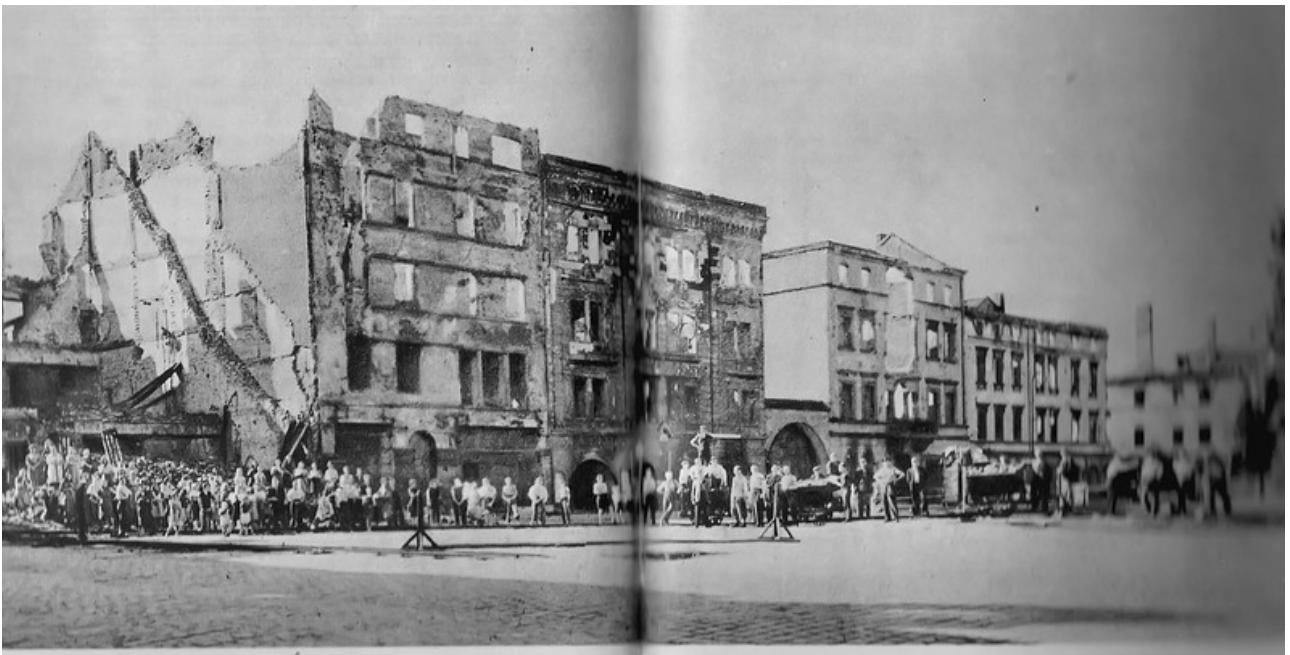


Figure 1  
Raciborz urban layout in 1300

Figure 2  
War damage in Raciborz Old Town



planning audit of all 253 sites. Ownership and legal issues were taken into consideration to decide on the final selection. The next phase of this project involved local communities as consultants for the detailed programs and design concepts (Warszawskie Centra Lokalne, 2015).

Another initiative worth mentioning is the "Acupuncture of the City" cyclically organised in Wrocław by the Polish Association of Architects. This long-term project aimed to search, "puncture" and then recover and "heal" spaces that have the potential to activate local communities where current use and spatial conditions prevent it. The series of projects aimed to create new, more valuable relationships in the city space. Each project undertaken as part

of the "Acupuncture" action consisted of field studies (sociological and functional-spatial analysis), student workshops, social consultations and urban-architectural competition. These actions formed the basis for the city's plans in relation to transforming the space covered by the "puncture" (Akupunktura Miasta, 2015).

A review of the forms of participation shows how complex and sophisticated the processes are in terms of transforming cities toward sustainable outcomes. It can be concluded that successful urban planning and architectural design can be effectively supported by social initiatives and participatory design.

Figure 3

*Old Town in Raciborz within the city walls:  
Chronological typology of development post  
WWII: construction and context*



### 3. CASE STUDY: RACIBORZ OLD TOWN LAND USE

#### 3.1 RACIBORZ URBAN LAYOUT HISTORY OVERVIEW

The Raciborz Old Town urban layout has its antecedents in the 13th century when the city and castle on the Oder River were established. At the heart of the medieval city was the Market Square with two large-scale gothic churches in close proximity. Important factors determining urban layout were commercial use of the public space, squares and streets (Newerla, 2008). While dense development within the city walls evolved, it always respected the main principles of the original layout.

Up to the start of WWII large-scale public buildings and tenant houses were located mostly within the Old Town and its nearby neighbourhood. War damage in 1945 seriously damaged the Old Town. Efforts to rebuild the city and especially its heritage were limited by the poor economic condition of Poland following large scale war destruction and damage. Nevertheless, a significant part of the urban fabric in the Old Town was rebuilt in 1950 and early 1960. It respected the original volumes and building lines. Prominent monuments such as the gothic churches were rebuilt according to the old plans and archival data. The rebuilt tenant buildings achieved a new,

simplified architectural form represented by two styles: Post-war eclecticism (1950) and modernism (1960). Since then, a few infill developments out of any context have appeared in the Old Town.

By analysing the Old Town map and comparing development in 1909 to that in 2018 (presenting only buildings without context) it can be seen that the building density over this period has significantly decreased (Stachura, 2016).

Even if Raciborz heritage centre transition has led to a "patchwork" structure, the city is still perceived by the users as a good, comfortable residential and business place. This can be considered a success and an optimistic scenario for revival after total destruction.

### 3.2 BUILDING TECHNOLOGIES

Raciborz is a typical Silesian city founded in the Middle Ages. Its regional significance and wealth provoked rapid development of the fabric within the city walls. Firstly wooden, townspeople's houses evolved into brick ones starting from the XIV-XV c. At that time in Raciborz, there were three types of objects made of brick: churches with the attached monasteries, city walls and gates, and residential houses around the main square. The brickwork was a two-stretcher bond. The excavations haven't recognised if the first town hall was located in the middle of the main square or within one of the frontages.

Preserved and archaeologically tested fragments of the Raciborz medieval fortifications have almost exclusively a brick structure. The sandstone blocks so were used only in the remnants of the city gates, the roundel bastions and the foundation walls of the Monastery. The frequent use of brick material in the Middle Ages is not surprising: in the vicinity of Raciborz clay suitable for the brick production is easily accessible.

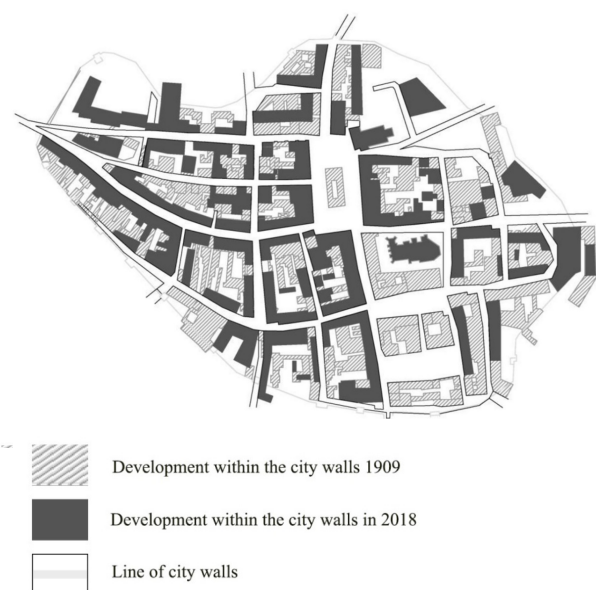
A brick used for the Raciborz fortifications weighted about 5.5 kg. Individual blocks were combined with a sand-lime mortar with the addition of egg protein and perhaps also milk or blood. The bricks were formed by hand and baked in kilns. During this firing, a material might achieve varying quality. In case of most of Raciborz medieval monuments, mainly well-burnt

bricks can be found. The opus emplectum technique was in everyday use: the interior (nucleus) of a wall was brick rubble mixed with sand and lime mortar and clay. The face of the wall was erected from bricks of the facility of diversified dimensions, most of which the blocks had a length of 26-28 cm, a width of 13-14 cm and a thickness of 8-9 cm.

Till about 1850 the area of the old town was growing within the city walls, but later it exceeded the fortifications. Residential and service buildings were of plastered brick with wooden, and then, concrete ceilings. In some of the cellars, brick and stone walls and vaults can be found. Frontages were decorated depending on the construction time, mainly around portals and windows.

WWII brought damage to 85% of buildings in Raciborz many having significant heritage values. The rebuilding process started in 1945 and generally respected the original city layout and the volumes.

**Figure 4**  
*Development density: 1909 and 2018*



Three phases of redevelopment can be distinguished:

1. post-war eclectism
2. low-cost prefabrication and,
3. multi-technology structures.

New development attempted to replace the heterogeneous architecture of the destroyed buildings in an eclectic style. The 'Socialist Realism' architectural style of the communist period was compulsory in Poland until 1955 when it was replaced with modernism. Poor economic conditions of Poland at that time together with the implementation of modernist doctrine for prefabricated housing resulted in ugly, mundane development in some of the most significant parts the city. At the same time, urban and architectural projects were initiated to restore heritage objects. These projects were based on studies on archival documents and old urban plans and brought very satisfactory results.

The original urban layout of Raciborz at different phases of development in contrast to the contemporary city structure illustrates the process of transition from an incremental urban growth pattern to a "patchwork" one. Heritage objects are mixed together with contemporary buildings and as well as those from 1950 - 1970.

### **3.3 IMPROVING RACIBORZ OLD TOWN SPACE TOWARD SUSTAINABILITY**

The Raciborz Old Town urban layout opens wide possibilities for various sustainable spatial improvements. Urban, architectural, functional and landscape interventions may help the local economy and improve the quality of living. In this paper, a method for diagnosing land use in heritage zones will be presented. This method will juxtapose professional urban historical analysis with resident opinion and preferences relating to the future use of important sites located in the Old Town. The procedure consists of the following steps:

1. Complex urban analysis
  - 1.1 Defining the area of elaboration
  - 1.2 Review of the Old Town area identifying sites to

be revalorised

- 1.3. Selecting sites for new infill proposals
- 1.4 Defining areas of complementary urban interventions
2. Examining resident preferences related to future spatial transitions in the Old Town
  - 2.1 Favourite zones and monuments for the respondents
  - 2.2 Residents' proposals for the future use of selected sites.

#### **3.3.1 Complex urban analysis**

##### **Defining the area of elaboration**

The boundaries of the Old Town are marked by the course of medieval city walls. Their remains are legible in the city plan with some fragments rebuilt after WWII. Thanks to archaeological excavations the area of medieval Raciborz has been precisely defined. Although the city has now spread over the 1900 Old Town borders, the spatial separateness of the city core is clear both in the plan and urban space layout. The area of elaboration for the case study coincides with the line of the old city walls, except the eastern, small fragment encompassing the area connecting the Old City to the railway station.

##### **Review of the Old Town area identifying sites to be revalorised**

Firstly, the urban building blocks of the original street alignments were defined. Each identified city quarter was studied according to property issues. This involved full photographic documentation of building exteriors, public and semi-public spaces, parking layout and context to surrounding zones. The criteria used to evaluate the data were urban composition, architecture/landscape aesthetics and quality of functional relationships. Respecting the heritage value of the Old Town and rules of heritage conservation a spatial composition was the most important criterion. This meant the improvement of spatial quality within the Old Town borders and specifically the restoration



**Figure 5**  
*Review Old Town urban space: areas for refurbishing/  
infill according to the land property boundaries*

of the original development density and street frontages. Such an approach meets the expectations of residents who accept infill development that even partly brings back the pre-war beauty of the Old Town. Based on the study findings the sites to be revalorised have been identified and integrated with the property borders.

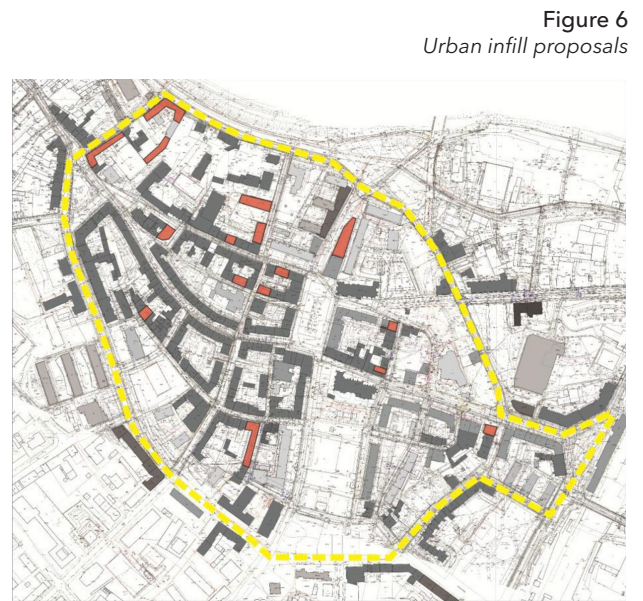
The map shows the location of zones of lower spatial quality. These are situated on the boundaries and in most cases in the eastern part of the study area.

It is important to note that the most prestigious areas of the Old Town (in the western part) were the first to rebuilt in the 1950s. The new architecture of that this time carefully followed the original building lines, architectural forms and volumes and even some of the facade detail. In the case of prominent streets and the Market Square frontages were almost fully completed. These zones function well and offer satisfactory living conditions. The eastern part of the Old Town that experienced extensive war destruction was rebuilt in the 1960s or later. Residential buildings in this area of "poor" modernist form reflect the difficult

economic situation of the time. Building lines and city quarter structure were not fully respected leading to perturbed scales and proportions (Stachura, 2017). It is likely that the differences in urban space structure of the eastern and western parts of the Old Town will see infill development evolve in different ways.

**Selecting sites for new infill proposals and defining areas of complementary urban interventions**

The next step for analysing the Old Town spatial potential was to evaluate infill development possibilities. This involved the elaboration of the Old Town using the map showing buildings preserved or rebuilt after WWII. It identified development reconstructed according to the original plans/photos, urban layout, volumes, architectural form and



**Figure 6**  
*Urban infill proposals*



development and contrast in architectural style. Also it showed infill development without any context. With this information in conjunction with the conclusion of a previous study on revalorised areas, sites for new infill development were proposed. In the central area of the Old Town - characterised by compact dense development - several small infill sites of significant importance can be identified. Receding from the central area toward the boundaries more serious interventions seem to be necessary. This refers to the missing frontages that close the squares/building blocks. In the eastern part, any possible urban interventions could be defined rather as "densification of development" than "infill". Regardless of these differences, however, the final diagnosis the greenery and public space analysis should be completed. Figure 7 presents the proposed parks, promenades

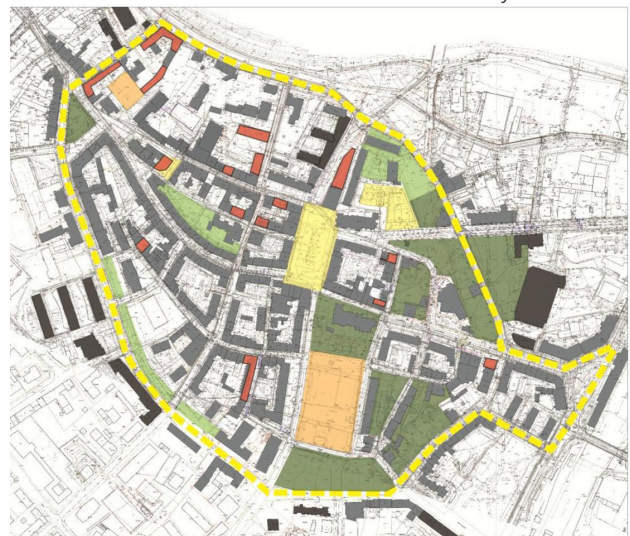
and squares. The conclusion of the urban study on the Old Town of Raciborz shows the aggregate urban and landscape analysis outcome (figure 8). The simplified form as presented on the next map (figure 9) clearly shows that after 70 years post the war damage and investments over decades have brought a dual urban structure to the Old Town being a higher density of development in the west and lower in the east. Urban planning decisions should respect this fact. Infill intervention and completion, therefore, must approach a sustainable urban form that underlines heritage assets by respecting past cultural values. This aim can help improve social life and local identity. Urban and social factors that will influence future decisions on the land use in the Old Town are: 1) vacant areas of city quarters that have not been rebuilt

**Figure 7**  
*Complementary urban interventions*



- Area of elaboration
- New greenery proposed
- Squares to be arranged

**Figure 8**  
*Aggregate urban and landscape analysis outcome*



- Area of elaboration
- Greenery proposed
- Existing development
- Main squares arranged
- Infill proposals
- Squares to be revalorised
- Existing greenery

and now have new uses accepted and appreciated by city users; 2) growing activity of city activists that puts pressure on local authorities to discuss and negotiate development plans with residents. Hence study results presented above must be considered only part of the final diagnosis for urban space improvement in Old Town in Raciborz.

### 3.3.2 Examining resident preferences related to future spatial transitions in the Old Town

#### Favourite zones and monuments for the respondents

It is very important to get resident opinion on the future use of the Raciborz Old Town at the outset. Therefore selected sites must be examined in a way to perceive and accept the heritage city core. One hundred and twenty respondents took part in a survey conducted in November 2017. Respondents were asked to indicate favourite sites (squares/streets) and buildings located in the Old Town and the neighbourhood. Outside the city walls only two objects were located: The Castle with its Gothic Chapel (No 1 on the map) and the Parish Church - an expressionistic rotunda with a large dome constructed in 1935 (No 9 on the map).

The most valuable and attractive object for residents were the Market Square (No 4 on the map), Długa Street (No 5 on the map) and Zborowa Street (No 7 on the map). Both Market Square and Długa Street are examples of successful post-war rebuilding while Zborowa Street represents one of very few original areas not destroyed in 1945. These preferences confirm the supposition that residents like and respect the dense city development and charming narrow streets, even if not renovated yet.

The choice of favourite buildings is not surprising: Winners are the City Court (No 8 on the map) and the City Museum (No 3 on the map) followed by the Castle Chapel (No 1 on the map). Besides the recently renovated Gothic Chapel, widely promoted by the media, two winning objects are the large-scale heritage public buildings located in the western part of the Old Town (a higher density area). In 1823 the famous architect Karl Friedrich Schinkel designed the

monumental building of the City Court in the style of late classicism. The City Museum is located in the rebuilt former Dominican church and monastery constructed in gothic style (Wawoczny, 2007).

#### Residents' proposals for the future use of selected two sites: Ofka Square and the Marketplace

Two important areas within the Old Town were selected for current land use evaluation and proposals formulated by residents. The aim was not to choose an undeveloped or vacant site for its own sake, but to examine a current location with a use accepted (or partly accepted) as satisfactory by authorities and city users. This approach has the capacity to test residents' creativity, social commitment and aspirations.

Figure 9  
Identification of main city zones



The first site is Ofka Square located in the western part of the Old Town in the middle of a densely developed heritage zone. One of the urban walls of this prestigious square is the former Dominican church (now the City Museum) with the other sides enclosed by 2-3-storey tenant buildings. The square now serves as a car park.

The area of lower density of development is represented by a site where the commercial function prevails. This area is characterised by a differentiated landform and heterogenous neighbourhoods. Being the biggest marketplace in the city, the area plays an important role in local trade. Both Ofka Square and Marketplace are appreciated by residents and other city users.

As mentioned above, the survey questionnaire asked residents to evaluate current land use and to suggest proposals (tables 1, 2).

The tables present the survey results. Some common observations that relate to both tables are listed below:

- The current use of both sites has been accepted by most respondents. Variant proposals for enriching the local functional program were formulated.
- Most of the proposals (including new infill development) received polarised assessment.
- Recreational areas and playgrounds for children did not attract residents with respect to the evaluated sites. It can be assumed that there are enough of these facilities in the Old Town.
- An innovative idea of arranging a multifunctional area of flexible use attracted an equal number of proponents and opponents among the respondents.

**Table 1**  
Resident opinion on possible use of Ofka Square

PROPOSED USE		Very good	Medium	Not at all	I have no idea
1	Existing	13	4	12	1
2	Recreational area with amenities, exercise equipment, sunbeds and benches	9	8	12	1
3	Playground for children	8	9	10	3
4	New development: residential or mixed use	12	3	14	1
5	Multifunctional area of flexible use: temporary local market and exchange area, homemade products exchange, season sales	11	5	13	1
6	Permanent photo exhibition of Raciborz and its area	13	7	8	2

**Table 2**  
Resident opinion on possible use of the Marketplace

PROPOSED USE		Very good	Medium	Not at all	I have no idea
1	Existing	18	8	2	2
2	Recreational area with amenities, exercise equipment, sunbeds and benches	8	3	18	1
3	Playground for children	7	4	18	1
4	New development: residential or mixed use	12	3	14	1
5	Multifunctional area of flexible use: temporary local market and exchange area, homemade products exchange, season sales	11	5	13	1
6	Permanent photo exhibition of Raciborz and its area	4	6	19	1

The findings show Ofka Square is perceived as a prestigious and elegant place. For this reason, many residents do not accept its current use for car parking. They do like the idea of organising permanent photo exhibitions (and even to intensify current development) that would help improve the city's identity and image. The Marketplace is recognised as a part of the "green Old Town" and is fully accepted with its current layout.

This small survey and findings show the potential for social discussion and participation. Residents appreciated being actively involved in their community life and willingly expressed opinions on the use of prominent sites. Very few respondents in the survey indicated the option "I have no idea".

This simple questionnaire method garnered rich information from resident opinion related to current and planned land use in the selected city fragments. On this basis more precise questions to residents including graphically illustrated proposals for evaluation relating to the assessed sites would help decision makers to proceed to the next step. Such research will need to be completed in sections to cover the entire Old Town area. This will allow the construction of a more elaborate matrix of expected land uses. The matrix of uses accepted/proposed and evaluated by residents superimposed on the urban and property analysis would be a complete and already negotiated document for guiding city spatial development.

#### 4. CONCLUSION

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Today infill development as a method for improving the quality of a city space attracts competing proposals. Perceived as providing a compact and unified urban and architectural structure, infill development since WWII is a significant tool for conserving heritage remnants, quarters and complexes. Heritage conservation experts and residents believe that infill development can restore urban fabric destroyed by war and help return a lost grandness and beauty. Generally, city authorities' experts and residents support economic returns from infill development

such as business growth and social resources. These aims are still ongoing.

The case study presented in the paper discusses urban interventions in the Old Town of Raciborz that suffered war destruction more than 70 years ago. After the war ended, the original urban layout of the Old Town was carefully protected. The heritage core of the city was partly rebuilt and infilled with new development of higher/lower value due to Poland's economic condition at the time.

There are still many challenges and possibilities to improve the urban structure and make it more sustainable. What is clear, however, is that future interventions cannot be undertaken without a holistic diagnosis of the current and future use of particular areas or sites. A procedure of classifying and evaluating urban fabric has been presented in this paper. It can be concluded that the Raciborz Old Town urban layout evolved over decades to split into two zones of higher and lower density development. And residents have intuitively perceived and accepted this division. This important statement opens up another level of study concerning resident participation.

Urban life has changed significantly in the past decades. Today residents see new social possibilities offered by a city. Social activists and informal neighbourhood groups better understand landlords and managers of their areas and districts. They propose actions and processes to make city life better with the benefit of feedback come from architects and the city authorities.

Finally, social participation is fundamental in the process of sustainable architectural and urban design. It also can help professionals to confirm/reject their assumptions. Some of these methods and tools can help capture social trends and changes in residential aspirations. Participation can also be a trap if used without professional expertise and aimed to transfer responsibility from the decision makers to citizens. This study shows that participation processes can be efficient and fruitful and may help professionals as well as educating residents. A well-designed scenario with clear divisions and stages with precise questions supported by sufficient data are crucial to success.

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Sources of Figures:

1. City Museum in Raciborz (a map)
2. City Museum in Raciborz (a post-card)
- 3 - 9. Author's own elaboration in collaboration with the students: Sonia Merkel and Barbara Jonak.