TECHNICAL TRANSACTIONS
CZASOPISMO TECHNICZNE

ARCHITECTURE
ARCHITEKTURA

ISSUE 4-A (9)
ZESZYT 4-A (9)

YEAR 2014 (111)
ROK 2014 (111)

WYDAWNICTWO POLITECHNIKI KRAKOWSKIEJ

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Pierwotną wersją każdego Czasopisma Technicznego jest wersja on-line
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Architecture Series
vol. 4-A/2014

Editorial Board

TECHNICAL TRANSACTIONS | CZASOPISMO TECHNICZNE
ARCHITECTURE | ARCHITEKTURA
4-A/2014

ELŻBIETA WĘCŁAWOWICZ-BILSKA*

GREEN CITIES

MIASTA ZIELONE

A b s t r a c t

The changes in the system of urbanization, initiated by research and the resulting designs at the turn of the 19th and 20th centuries, consisted 'consisted' implies there were no either kinds of changes, if you don't mean that, use 'included' and take out 'of' of increasing the share not sure what you mean by share in this context, might 'proportion' be better? of green areas in urban spaces. Actions aimed at improving the human urbanized living environment, induced by the U'Thant's report and subsequent international documents, now seem to have been a permanent development trend. Simultaneously, other actions may be observed, relating to the introduction of smart technology solutions into the urban area aimed primarily at focusing on the maximized use of urban space and additionally at sustainable development. Sometimes, the need for contact with the natural environment is the reason for seeking the direct experience of large areas of attractive natural environment. Hence, more and more often, the latest urban creations boast high quality spaces featuring perfectly organized and developed green areas.

Keywords: city, urban areas, area of organized greenery, natural environment

S t r e s z c z e n i e

Zapoczątkowane badaniami i projektami z przełomu XIX i XX wieku zmiany w systemie urbanizacji polegały na zwiększeniu udziału terenów zieleni w przestrzeniach zurbanizowanych. Wywołane raportami U'Thanta i późniejszymi dokumentami międzynarodowymi działania na rzecz poprawy zurbanizowanego środowiska życia człowieka na Ziemi wydaje się być już trwałym trendem rozwojowym. Równolegle obserwuje się inne działania związane z wprowadzaniem rozwiązań inteligentnych technologicznie w przestrzeń miasta, które, zmierzając do równoważenia rozwoju z jednej strony, zwracają uwagę przede wszystkim na oszczędność przestrzeni urbanizowanej, kiedy indziej potrzeba kontaktu z naturalnym środowiskiem jest przyczyną poszukiwań bezpośrednich relacji z dużymi powierzchniami atrakcyjnymi przyrodniczo. Stąd coraz częściej mamy możliwość obserwowania, w najnowszych kreacjach urbanistycznych, wysokiej jakości przestrzeni opartych na perfekcyjnie urządzonych i zagospodarowanych terenach zieleni.

Słowa kluczowe: miasto, tereny zurbanizowane, tereny zieleni urządzonej, środowisko przyrodnicze

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1. Introduction

Research carried out in Poland in the 70s into towns requiring special ecological protection, 'the green towns', was focusing on spa resorts or towns with the dominant recreational function[1]. At the same time in Europe, new towns or cities were being created that were characteristically designed to feature large proportions of green areas[2]. The efforts to improve the living conditions in big cities resulted in a significant increase in the proportion of organized green areas (mostly parks) in the subsequent plans drawn for big European cities in the 90s[3].

Research and analysis to improve the quality of human living space, initiated at the turn of the 19th and 20th centuries, was continued in later years. International documents published at the beginning of the 70s[4], were the basis for the further development of cities and their regions in compliance with the ideas of sustainable development and environment conservation.

At present, the trend of pro-ecological city creation and transformation also refers to the places which are striving not only to expand their green areas but also to apply the latest technologies for producing energy from natural sources, such as the wind or the sun, and introducing 'smart' solutions of various kinds in order to save energy. It seems therefore that the trend of environmentally friendly city growth is also strongly related to improving the quality of life in urban areas. All the time, newer and more technologically advanced designs of environmentally friendly and smart cities, where the inhabitants' living conditions are of primary importance, indicate new trends in the creation of towns and cities of various sizes in many parts of the world. Realizations of cities or urban complexes based on the latest technologies improving the quality of life in the city are often priority projects in which a city or region's authorities are involved financially and politically, and are also within the framework of public-private partnerships. The objects are subsequently used for marketing purposes.

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[1] For example, within the framework of the project C CPBP 04.10.11.02.05 Spatial conditions of natural environment protection and transformation as well as principles of functioning and spatial management in typical urban structures on the example of South-Eastern Poland. In the research into a group of towns requiring special ecological protection led by prof. Wanda Pencakowska, the author was studying the problems of Krynica, other towns that were also subjects of the research included Szczawnica and Zakopane.

[2] The towns in question are mostly the new towns in the Paris suburbia, such as: Melun Senart, Saint Quentin en Yvelin or Cergy Pontoise, the centre of the last one – in the bend of the Oise river – comprises huge areas of natural and organized greenery, and also the new city of Milton Keynes erected half-way between London and Birmingham. Milton Keynes is not half-way between London and Bristol.

[3] The author refers here first of all to the design of the city and region of Madrid of 1993, in which the area of municipal parks and other urban green areas have been extended, owing to which the ratio of green areas that was obtained equaled 49 m^2/one inhabitant.

[4] Those were the U'Thant's Report of the 26th May 1969, The problems of human environment, resolution no 2390, as well as the subsequent UN conferences, e.g. (just to name the most important ones) Human Environment of 1972, and starting from 1976 – Habitat conferences, the Gro Harlem Brundtland's Report Our Common Future, until the Rio declaration of 1992 and other ones, which were its continuations. This doesn't seem to make sense.

2. The origins of research into green areas in cities

In his first research works[5] from the turn of the 19th and 20th centuries, Jean Claude Nicolas Forestier compiled a list in which he quoted how many inhabitants there were on average in various big cities per 1 hectare of park areas, comparing American and European cities.

The presented figures were as follows

Name of the city	Number of inhabitants per 1 hectare of park	The area of parks per 1 inhabitant in m^2
Los Angeles	64.8	154.3
Boston	94.7	105.6
Saint Paul	202.7	49.3
Washington	206.4	48.5
San Francisco	214	46.7
Vienna	400	25.0
Saint Louis	575	17.4
Detroit	663.4	15.1
Philadelphia	799.7	12.5
Baltimore	872.1	11.4
New York	943.6	10.6
London	1031.5	9.7

After: J.C.N. Forestier, *op. cit.*, prepared by the author

In American cities, created mostly in the 19th century, green areas were considerably larger than in European cities, which had been developed from densely built-up Gothic cities and restricted in their territorial expansion by later fortifications.

According to research done in the centre of Cracow[6], relating to selected towns and cities of various sizes in Małopolska, in the 19th century the area of parks per one inhabitant ranged from 1.36 m^2 to 21 m^2, and was on average 5.3 m^2.

Works undertaken in cities with the objective to improve their inhabitants' living standards resulted from criticism, voiced towards the end of the 19th century and directed at the way cities of that time had been developed. The criticism emphasized the poor hygienic conditions in the densely built-up urban areas, including the insufficient amount of greenery.

New ideas for building cities, initiated towards the end of the 19th century, resulted both from the critical review of the contemporary city (too densely built-up, with a poor transportation network and an insufficient number of parks or gardens that would be open for the public and an equally insufficient amount of sports areas and playgrounds for children)

[5] J.C.N. Forestier, *Grandes villes et systèmes des parcs*, Hachette, Paris 1908.

[6] After: B. Bartkowicz, *Wpływ funkcji wypoczynku na kształtowanie przestrzeni miast*, Kraków 1985, 99.

and from the newly emerging socialist ideas[7]. In the designs of modernist cities, one of the important changes was the introduction of large green areas into the structure of the city[8].

The problem of green areas in the city and its environs, considered as areas of recreational function, found a prominent place in the Athens Charter[9] – an international document developed by architects of socialist sympathies, which in the 2nd part of the 20th century, lay at the root of numerous urban solutions.

3. The sizes of arranged green areas in selected European cities in the first half of the 20th century

In the discussion on the sizes of green areas in larger European cities in the first half of the 20th century, it is worthwhile comparing these areas in some selected European cities.

In most cities in Germany, the sizes of green areas divided by the number of inhabitants gave the indicators ranging from 20.5 m^2 per one inhabitant to 30 m^2 per one inhabitant[10].

According to J.C. Forestier, the size of green areas in a city with a population of around 1 million should be on average 50 m^2 per inhabitant, including 30 m^2 in the midtown area and the remaining part (20 m^2) in the areas beyond the city centre.

The concept of Greater London provided for 28 m^2 of green areas per person[11], and the concept of Manchester of 1946 stipulated the following:

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[7] The concept of a linear city by Soria y Mata, Teoria de las ciudades lineales, published in El Progresso – a daily newspaper in Madrid in 1882, and Ebenezer Howard's idea of a garden city, which came out in 1898 as Tomorrow: a Peaceful Path to Real Reforms; starting from 1902 the subsequent editions of this publication were entitled Garden-cities of To-morrow. One of the principles of the aforementioned concepts was combining the living conditions in the country, characterized by access to pristine nature, with living in the city.

[8] In his designs of a contemporary city, Le Corbusier adopted the principle of Cité-jardin vertical. In theoretical sketches of cities from 1923–1924, the plan Voisin and plan Radieuse provided for at least 50% of undeveloped areas appropriated for greenery.

[9] Some of the recorded postulates stated that in each city district, (there should be) a green space of appropriate size, with a playground and a sports area for children and adults, and have open-air swimming pools (...). Green areas should be used for establishing kindergartens and gardens for children, erecting schools and other public utility buildings (...). The city should provide a sufficient amount of green areas appropriated for generally accessible places of recreation in the form of parks, squares, sports stadiums, beaches etc. Suitable natural conditions should be made use of by arranging those places for the purposes of recreation.

[10] E.g. in 1939 there were 32.9 m^2 per one inhabitant in Breslau. After: A. Ptaszycka, *Przestrzenie zielone w miastach*, Poznań 1950.

[11] The concept authored by Sir Patrick Abercrombie and J.F. Foeshaw, which was passed in 1955, stipulated breaking down these areas in the following way: 16 m^2 per inhabitant in the LCC area and the remaining 12 m^2 in the suburban area of Greater London. Finally, in the approved plan, 10 m^2/inhabitant was stipulated, yet the objective of 16 m^2 per inhabitant was still preserved and remained an aspiration.

– 22.4 m^2 per inhabitant in newly designed districts,
– 14.4 m^2 per inhabitant in the existing development of medium density,
– 10.4 m^2 per inhabitant in the existing development of high density.

At the same time, the ratio of 32 m^2 per inhabitant was adopted in the "unit neighbourhood" and 16 m^2 per inhabitant in the city composed of five neighbourhood units.

European analyses of the years 1930–1950 stipulated that there should be from 9% to 35% of the city area appropriated for open spaces depending on the size of the city, and in France, it was at least 25%, following the research by Forestier.

The figures quoted by Polish researchers at that time were almost uniform and remained in the range of around 30 m^2 per inhabitant. Minimum figures, however, did not take into account all kinds of green areas[12].

The sizes of green areas partly depended on the size and function of the city. In the development plan for Warsaw of 1938[13], the size of green areas stipulated per one inhabitant was 32.7 m^2, while in the existing conditions, the area was 6.78 m^2 per one inhabitant – the city had 1 261 000 inhabitants.

In other Polish big cities, the sizes of green areas were as follows

Name of the city	Year	Number of inhabitants	Green areas ration
Łódź	1938	665 000	10.58 m^2 per inhabitant
Poznań	1939	250 000	68.00 m^2 per inhabitant[1]
Białystok	1939	100 000	20.00 m^2 per inhabitant

After the Second World War, in the city plan of 1949 drawn at the Capital Reconstruction Office, following the Soviet standards, the ratios in Poland were as follows:
– 47 m^2 of green areas per inhabitant on the scale of the whole city,
– 30 m^2 per inhabitant on the scale of a housing estate.

In subsequent years, the urban planning standard in our country was subject to several changes and modifications, and on each occasion, the green area ratio was reduced[14].

4. First European city designs and realizations with a high proportion of biologically active areas

Towards the end of the 60s, there was a growing awareness that it is necessary to introduce more green areas into European cities. The first such designs were created even before the

[12] The following types of areas were differentiated for urban settlements: physical education areas (e.g. gardens with play areas for children and shooting parks); allotment gardens; recreational units, such as parks and plazas of the area of 3 m^2 per inhabitant; suburban forests – 13 m^2 per inhabitant; cemeteries – 4 m^2 per inhabitant.

[13] After: T. Tołwiński, Urbanistyka, Warsaw 1963.

[14] In the 50s, the green area ratio was, according to Polish standards, 15.5–25 m^2 of arranged greenery in a city per one inhabitant, in the 60s the ratio was only 11 m^2 of biologically active area per inhabitant, including a minimum of 6 m^2 of compact greenery per inhabitant and 3.5 m^2 of park greenery per inhabitant.

well-known U'Thant's reports came out. One of the first cities constructed from the beginning as a complex with a high proportion of green areas is Milton Keynes, a city situated at equal distances from the capital of the country, Birmingham, Leicester, Oxford and Cambridge – it is over 77 km to the north-west of London[15].

The town was initially planned for a population of 50 thousand[16], and the planners used the layout of grid squares with sides approximately 0.7 km long, and all the intersections were built in the form of small roundabouts. One of the town's primary design principles was the absence of a hierarchical system of services, which were to be distributed evenly throughout the whole complex – hence there is no urban services centre. Another guideline was a complete segregation of pedestrian and vehicle traffic, 200 km of cycling lanes and pedestrian walkways had been designed in the town to achieve this objective. The town was built as an environmentally friendly complex, and approximately 1.116 ha were initially appropriated for green areas. At present, open green areas cover approximately 3.000 ha of land[17]. The height of the buildings was also restricted – they were not to be taller than the tallest trees[18]. Closing some of the collision-free pedestrian crossings has also been observed, and there are suggestions to increase the development density.

At the same time, the design of five sub-Parisian towns started to be realized within the framework of the Paris development, where the amount of green areas was to be considerably higher than in the centre of the metropolis[19]. From this point of view, the town of Cergy Pointoise turned out to be the most characteristic. Located in the bend of the river Oise, the central parts of the town are green areas accompanying the water reservoirs, mostly of a recreation function.

The first technological city, Sophia-Antipolis[20], built in the years 1970–1984 in the south of France, between Cannes and Nice, is populated by approximately 30 thousand inhabitants. The International Technology Park Valbonnes Sophia-Antipolis was created here at the beginning of the 70s. At the beginning of the 90s, a new territorial unit was formed, the Sophia-Antipolis Agglomeration, which comprised fourteen little neighbouring historic towns[21]. Complexes of the new amorphous development were inserted into the partly developed and partly arranged natural stone pine forest[22]. The standard for green areas

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[15] The decision to build the city was taken at the beginning of 1967 – it was to be situated in rural areas, where the population at that time was a little over 20 thousand. The design stipulated for the city to be inhabited by 250 thousand people in an area of almost 90 km^2.

[16] In 2007, the population was 228 thousand, and it is prognosticated that in the course of the next 25–30 years, the number will rise to 370 thousand. After: Milton Keynes Open Space Strategy 2007.

[17] In 2007, open spaces covered 1.200 ha, parks – 1.800 ha, forests open to the public – 250 ha, and additionally, the town has 60 km of trails along rivers and streams, 200 km of walkways and cycling lanes. After: *Ibidem*, 7-9.

[18] In the first decade of the 21st century, the original restriction was lifted due to the pressure exerted by various entities, and two high-rise buildings were admitted.

[19] The ratio of green areas in midtown Paris at that time was approximately 10% of the city area, while in the sub-Parisian towns, the minimum amount of green areas was 33% of the total area of the town.

[20] Of the area of approximately 25 km^2, equal to 1/4 of the area of Paris, the town has 1260 businesses in operation, employing 25 911 people (data as of January 2011), Université de Nice-Sophia Antipolis, seated here, employs 1440 faculty staff and provides education for 26 thousand students.

[21] After: M. Wdowiarz-Bilska, *Technopolia w mieście – nowe modele urbanizacji*, Technical Journal, issue 7/A/2007.

[22] After: M. Wdowiarz-Bilska, *Ekologiczne aspekty funkcjonowania parków technologicznych*, Technical Journal, issue 2/A/2004, 199-204.

was determined in compliance with the Minister of the Environment Charter and stipulated preservation of 2/3 of the protected green areas and maintenance of the development in the areas appropriated for that purpose at the level of 30%[23].

On the other hand, in Aix-en-Provence, the capital of Provence, at present one of the largest French technopolises, the ratio of green areas only of park character is 11.25 m^2 per inhabitant[24].

5. Contemporary designs and realizations of green cities and green areas in cities

Since the end of the 20th century, works have been carried out in many European cities with the objective of increasing biologically active areas or arranged green areas.

Numerous plans of enlarging the existing green areas have been prepared for many of them.

The actions that have been undertaken with a view to achieving this aim may be classified in the following ways:

– enlarging park areas and arranged green areas in the city or in its environs,
– surrounding intensely urbanized areas with a strand of arranged green areas,
– introducing green areas to brownfield land, in the vicinity or over railway areas,
– using all possible surfaces in the city for the purpose of developing green areas,
– creating new cities with heightened ratios of green areas.

As a result of those diverse actions, the amount of land developed as green areas has significantly increased in many big cities in Europe and elsewhere in the world.

Enlarging park areas and arranged green areas in the city or in its environs

Towards the end of the 20th century, Madrid has witnessed a significant increase in the amount of arranged green areas. The city plan provisions[25] stipulated that the number of parks in the area exceeding one hectare was to grow from three to seventeen, reaching a ratio of 11% of the total city area. At the same time, areas under legal protection in the metropolitan area were extended from 94.000 ha to 158.000 ha, which meant that they would constitute approximately 20% of the total area of the metropolis, and forested areas – up to approximately 53%[26]. Putting these plans into practice resulted in obtaining one of the highest ratios of arranged green areas per inhabitant in a big city, which is now 49.30 m^2, and led to the declaration of Madrid as the greenest capital in Europe[27].

The last 40 years in Paris on the other hand, have been marked by a rapid increase in the amount of green areas open to the public as gardens or parks. Approximately 40 new

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[23] The appropriation of the town area is as follows: 150 ha for residential development for approximately 12 thousand people, 650 ha for services and industry for 26 thousand of employees, 1.500 ha – the arranged green areas – the Green Crown.

[24] It refers to parks of the area ranging from 5 ha to 180 ha.

[25] Plan regional de estrategia territorial Madrid (ed. J.H.E. Dominiquez), Comunidad de Madrid, Consjeria de Politica Territorial, Madrid 1995.

[26] Madrid Region Metropolitana. Estrategia Territorial y Actuaciones. Comunidad de Madrid 1991.

[27] The total amount of park areas in Madrid equals 3.300 ha. *Ibidem*.

complexes of greenery have been established during that period, half of them in the last 20 years. The areas of individual complexes range from a few hectares to a few ares[28].

Surrounding intensely urbanized areas with a strand of arranged green areas

Actions of this type are more and more popular in many cities. A green belt around urbanized areas gives their inhabitants an opportunity of relatively easy and direct contact with areas of natural greenery. In the late 60s, there was a concept of this kind for the Upper Silesian Industrial Region (*Górnośląski Okręg Przemysłowy)*. The regional plan design marked out a forested protective belt around a group of more than ten Silesian cities[29]. The primary objective of the outlined strand was to create a buffer zone limiting the dispersion of air contamination created by industry in the agglomeration centre. The development design adapted the area for the purposes of recreation.

A completely different concept was the plan to create a green belt around Frankfurt am Main, created in 1989[30]. The designed area encompassed the parks and forests of the spa resorts located around Frankfurt, such as Bad Soden, Bad Vitbel and Bad Homburg, and fragments of the already arranged areas of NaturParken situated in the vicinity of the city. Joining these complexes by compact recreational green areas is of significant importance, not only from the point of view of recreation, but also for improving the climate and health conditions existing in Frankfurt.

Introducing green areas to brownfield land, in the vicinity or over railway areas

Introducing arranged green areas into brownfield sites in large cities is best known from examples of successful realizations in Paris, where Parc La Villette, Parc de Bercy and Parc André Citroën have all been created on brownfield land. Nevertheless, in Paris as well, post-railway areas and areas over railway stations are used for creating complexes of greenery, for example Jardin Atlantique over the Montparnasse railway station lobby and platforms[31] or the several-kilometres long complex of La Promenade Plantée, situated along the route of the now defunct railway line from the Place de la Bastille to the Vincent woods[32], just to name a few.

An interesting solution is the latest decision of the Berlin authorities pertaining to the development of the Tempelhof airport[33]. Due to the construction of a big airport, Berlin-Brandenburg[34], the airports that are now situated in the midtown zone, must take up some other functions. The Gatow airport, closed as the first, has been turned into a museum of

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[28] 9 new complexes of the total area of 120 ha have been established in the area of midtown Paris since the 70s of the 20th century.

[29] The concept for developing a recreational forested protective belt around the USIR /GOP/, years 1968–1969; the authors: architects A. Armata, A. Dołhun, M. Dołhun, R. Jerga, and M.S. Skowronek. After: Architektura 11-12/1983, 35.

[30] The design Grün Gürtel – authors: Peter Lanz, Peter Lieser, Walter Prigge and Manfred Hegger, 1990/1991. After: U. Weilacher, Syntax of Landscape, Basel–Boston–Berlin 2008, 168-169.

[31] Jardin Atlantique, of the area of 3.4 ha, was designed by a team of architects: Brun, Penna and Schnizler, and opened for the public in 1994.

[32] La Promenade Plantée, 4.5 km long, was realized according to the plan by architect P. Mathieux and landscape architect J. Vergely.

[33] The Tempelhof airport was built in 1923 at a distance of 4 kilometres from the city centre. The airport building is a very beautiful example of modernist art of the 20s.

[34] The opening of the International Airport Berlin-Brandenburg is scheduled for October 2013.

aviation. The next one situated closest to the centre was the Tempelhof airport, which remained in operation until the end of October 2008. Several options for its use, especially types of development, prepared and presented in architectural contests, have not been accepted by the residents of the neighbouring districts, who started using the airfield for recreational purposes immediately after the airport had ceased its operations. The discussion on the Tempelhof final function engaged wide circles of the Berlin community, who decided in a referendum that the whole area of the airport should be turned into a recreational area.

In conclusion, the city authorities decided in 2010 to create a municipal park on a significant part of the airfield, which would be accessible around the clock free of charge[35]. The park will be the biggest green area in Berlin, bigger even than the currently existing Tiergarten.

Creating new cities with heightened ratios of green areas

This activity refers to new cities designed and realized in regions developed on the basis of industries using advanced technologies and dedicated for a highly qualified workforce employed in those areas. Another reason for creating new settlements of heightened standards of green areas is prestige and the possibility of displaying the investors' financial capabilities. Such complexes are sometimes created for the purposes of recreation and relaxation.

Among the cities that have been erected for the needs of employees working in the sector of advanced technologies are, for example, the Shanghai satellite city, Lingang, planned for 800 thousand inhabitants, or the Korean city situated on the Yellow Sea coast, Songdo City in Incheon, whose erection was to bring prestige connected with its location in a region developed on the basis of advanced technologies. Realization of towns on artificial islands of various shapes along the coast of the United Arab Emirates has also been motivated by the issue of prestige. The towns have achieved a high ratio of green areas owing to artificial vegetation planting.

The construction of the Songdo New City, located at a distance of 35 km from Seoul, was started in the middle of the 90s. It was planned not only as an international trade centre and a site for knowledge-based technologies, but also as an environment-friendly centre of urban life. The area appropriated for the city construction had been in part, a restored contaminated land and partly an artificial island reclaimed from the sea, the latter has the area of 6 km^2.

The construction of the city is scheduled to be completed in 2020 and its area is to be 53.26 km^2. The city will accommodate 252 000 people, and 40% of its area is covered by parks. The largest of them, with the area of 0.4 km^2, is modelled on New York's Central Park[36].

The Shanghai satellite town of Lingang[37], situated at a distance of 60 km from the metropolis, was initially planned for 300 thousand people, but in subsequent plans, the number grew and finally reached 800 thousand. The city was built at the tip of the peninsula between the rivers Yangtze and Qiantang on the Hangzhou Bay. A part of the city is situated on a polder reclaimed from the East China sea. The concept for the city plan makes direct references to Ebenezer Howard's garden city diagrams, whose inspiration is not repudiated by its authors. The concentric layout was focused on the round artificial lake with a circumference of 3 kilometres, surrounded by a promenade and beaches 9 kilometres long.

[35] The area of the park is to be 250 ha. However, the total area of the airport is 368 ha.

[36] Seok Chul Kim Urban Dreams, Seoul 2007, 254-311.

[37] Design of 2002, authored by von Gerkan, Marg and Partner.

The islands created on the lake have been designated for cultural and recreational functions. Services, administration and office developments are concentrated around the promenade, and they are separated from residential areas by another circle of park greenery 500 m wide and approximately 10 km long. Residential development complexes placed radially around the circumference are separated by triangular areas of arranged and natural greenery performing the functions of recreation and relaxation.

The total amount of green area accounts for 75% of the city area.

6. The latest concepts of green cities or significant projects involving green areas in city centres

The cities of the latest generation are characterized by a high proportion of green areas, they are cities of sustainable development, where not only are healthy living conditions propagated but where it is common to use the latest environmentally friendly solutions for providing electricity, clean water and heating.

Sometimes, large amounts of green areas result from the fact that they are used for the location of equipment serving the purpose of environmentally friendly energy production.

The best example to illustrate this kind of solution is the currently realized Logroño-Montecorvo Eco City situated in the Spanish province of La Rioja[38]. The city occupies an area of 56 ha and is situated on two hills. Its residential development is to comprise 3000 flats, and together with the whole urban infrastructure, it will cover 10% of the area appropriated for the city. The remaining area will stay biologically active and is to be used for the needs of recreation as well as for energy production. The area of over 40 ha, i.e. 73% of the total city area, has been appropriated in the design for an eco-park, where recreational areas are interspersed with equipment for obtaining solar and wind energy, such as wind farms situated on the hill or solar farms with panels placed on the southern hill slopes.

Another city of the new generation which is to be realized in Europe is the Portuguese city PlanIT[39], situated in the area called PlanIT Valley as a reference to Silicon Valley, approximately 30 km to the east of Porto, in the valley of the Sousa river. It is planned that the city will accommodate a population of approximately 220 thousand and will be built in a series of phases. The city plan has the shape of a 10-kilometre strand and is developed over the line of an underground railway. It is going to be made accessible from the outside by the existing railway line and the A4 motorway, to which the city is to be linked by the expressway A41.

A large number of sensors are planned to be installed, which will control various processes in the city, such as heating and ventilation in buildings, humidity, energy consumption etc. The information will be sent to the control centre in order to activate photovoltaic cells or wind turbines, supply utility and drinking water etc. All buildings will have roofs covered by vegetation for limiting heat loss and filtrating rainwater. Buildings of a hexagonal plan will

[38] The design by the Dutch company MVRDV and the Spanish architectural studio Gras won the first prize in the 2008 contest for the design of this city. The whole project is to cost 388 euros, 40 million of which are to be invested in renewable energy technologies.

[39] The author of this design is Steven Lewis, a computer programmer formerly employed by Apple company.

be prefabricated in order to reduce the cost of their production. The park areas will feature a series of lagoons overgrown with bamboo, reeds and other plants, which will perform the function of natural filters filtrating sewage in order to obtain 'grey water' used to flush toilets and for irrigation. The plants are to be replaced periodically, and the deposed vegetation, together with waste products, will be used as biomass for heating. In practice, the amount of green areas is to be completely balanced owing to the fact that all flat surfaces will be covered with vegetation and the amount of paved roads will be significantly limited.

Such solutions are considerably more numerous outside Europe. The most universally known is the city of Masdar built in the desert in the United Arab Emirates[40], which houses a technology park established for solving important technical problems connected with city functioning, first of all with producing energy from renewable sources, water desalination, building zero-energy houses etc. The city was planned for 40–50 thousand inhabitants and additionally 60 thousand users of its spaces commuting daily from outside. Green areas established in the city and around it are both areas used for obtaining energy from biomass and vast plantations of trees used as primary building material.

Designed by the same team[41], the Incheon new city, self-sufficient in terms of energy, will be the epicentre for the development of green technologies in South Korea.

The development will be home to over 320 000 residents, and the residential areas will be centered around a spine of transportation and the advanced technologies industry area. Therefore the spatial layout design of the city, which is to become the research and development centre for next-generation green technologies, uses the strand concept. The area designated for the development is now of agricultural character, and for minimizing the loss of agricultural space, all buildings will have green roofs so as to make hydroponic farming possible. According to the designers' plan, the amount of green areas will not change. Buildings are to be heated using energy generated from biomass or hydrogen fuel cells. The height of the buildings should not exceed 50 m. The construction process is scheduled for the next 10–15 years.

35 km to the south of Seoul, another development is being built, the Gwanggyo Power Centre designed by the MVRDV studio, which was supposed to have been ready in 2011. It is a complex of pyramids covered with vegetation, which house offices, flats, cinemas, shops, schools, hospitals and car parks. Owing to the compact structure of the buildings, the prognosticated 77 thousand inhabitants are to be squeezed on an area of 64 ha, and the terrace arrangement of buildings will provide access to light and air for everybody.

Concepts of significant extension of green areas in the city supply an important argument in the on-going discussion on improving the living conditions in the city. It seems that the best example of such actions is the contest of 2008 known as Paris 2030. 10 well-known architects or architectural teams were invited to participate in the contest[42]. One of

[40] The city, designed by Norman Foster's architectural studio (Foster & Partners), is being built on the initiative undertaken in 2006 by Emir Abu Zabi. After: MIT. Abu Dhabi Future Energy Company sign cooperative agreement. MIT.com News Office, 26th February 2007. Retrieved 10th May 2008.

[41] Foster & Partners, after: Eco Factor: Sustainable City to be developed by Foster + Partners; http://www.ecofriend.com.

[42] Sir Richard Rogers with his team, Yves Lion with the Descartes Group, Djamel Klouche with the AUC team, Christian de Potzamparc with his team, Antoine Grumbach with his team, Jean Nouvel with his team, Michel Cantal-Dupart/Jean M. Duthilleul, Bernardo Secchi with his team, Roland Castro with his team, Winy Maas and MVRDV.

the principles of the contest was to increase the ratio of green areas in the city to minimum of 30%. Many designs proposed various options for obtaining biologically active areas both on the surface of the ground and on the horizontal as well as the vertical surfaces of buildings. Even now, the solution of covering vertical elevations of residential buildings with vegetation has been used in the revitalized district of Massy on the Seine or at the rebuilding of the Austerlitz railway station. In its contest entry design, Richard Roger's team proposed an interesting concept of creating 'green boulevards' on the roofs of Paris, thus obtaining 400 km^2 of arranged green areas.

Using all possible surfaces in the city for the purpose of developing green areas

Improving the living conditions in many cities is related to increasing the amount of biologically active areas, especially midtown arranged green areas. More and more ideas relate to this issue, mostly due to the new technological and structural possibilities.

A redevelopment plan for Garak-dong[43], the largest food market in Seoul, envisions covering the whole market area with a landscaped roof that would form a municipal park connected to the ground level by a series of green ramps. Several storeys of car parks and retail areas will be accommodated under the roof.

A similar principle guided the design of the transit bus station roof in San Francisco[44]. The design envisions a glass tower connected with the surface of the terminal roof landscaped as a municipal park of an area equal to five and a half hectares. The aim of the design is to combine the function of transportation with the valuable social space of the park. The design is considered futuristic in terms of technology. Both buildings, the tower and the railway terminal, will be equipped with facilities for collecting rainwater and recycling grey water, wind turbines and geothermal heating and cooling. The essence of the design is its educational aspect for the strategy of sustainable development and ecology for everyone. The completion of the project is scheduled for 2014.

A very interesting design is one of the latest solutions for the centre of the Chongqing city in China[45]. The design for developing the city[46] was awarded at the Venice Biennale in 2006. The design proposes to create a whole city centre, called the Magic Mountains, composed of buildings of various sizes, with glass facades and multi-storey roofs sloping at different angles. These objects will create a mountainous landscape resembling the natural topography of the area. The green 'roofs' will feature parks, walkways and cycling lanes. High peaks are to indicate the dense urban development, and the buildings will gradually become lower as they approach the peripheries, where the population density is lower, until they disperse completely in the green valleys, characteristic for this region.

Open green areas on building roofs will be the places where energy is generated, and they will also be equipped with waste water treatment systems. The designers claim that the

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[43] The Garak Market in Seoul was opened in 1985 in the Songpa-Gu district. It has the area of over 54 ha (543.451 m^2).

[44] The design for Green San Francisco Transbay Terminal was created by the Pelli Clarke Pelli Architects team in 2007.

[45] The Chongqing municipality, the largest in the world, is undergoing rapid urban development. Every year, the floor area is extended by 50.000.000 m^2, 500 km of motorways are built and the city accommodates 1 200 000 new inhabitants and urban space users.

[46] Authored by the Danish team MVRDV and CEBO/Chongqing University team (Danish/Chinese collaboration).

energy-efficient structure of the mountain may reduce the total energy consumption by 22% and substitute at least 11% of conventionally generated energy with energy from renewable sources.

7. Conclusions

The efforts aimed at improving the quality of life in the city, which have been undertaken for over a century now, have become more and more important when viewed from the perspective of demographic prognoses claiming that in less than 40 years 75% of the world's population will live in urban environments. What is more, improving the hygienic and sanitary conditions in cities, which involves increasing the amount of green areas, is becoming a priority which is perfectly understood not only by experts and designers, but also by urban communities.

Various kinds of legislative initiatives, implemented by international assemblies and organizations since the 70s, have permanently introduced the issues of sustainable development and natural environment conservation into the orbit of political, urban planning and design activities.

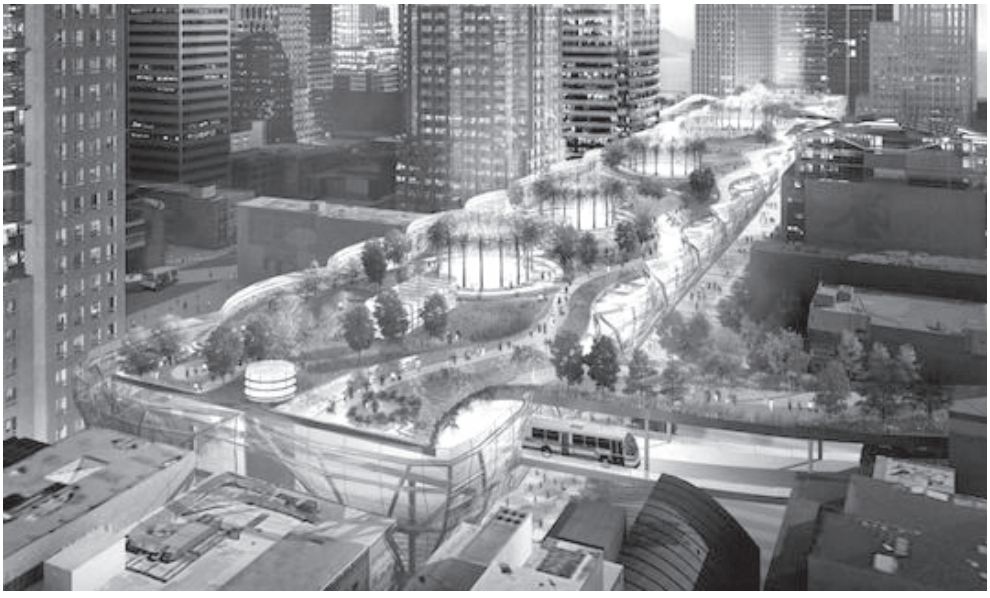
Numerous concepts tested and implemented in design solutions give evidence to the technical capabilities of creating biologically active areas in highly urbanized areas. Such designs very often apply cutting-edge technological solutions resulting from specialist research.

The number of design teams that are vividly interested in working on the so-called environment-friendly projects is visibly growing, and introducing green areas into urban spaces is increasingly perceived as creative and conceptual work. Hence, a lot of solutions related to green area design not only make use of the latest technological achievements, but they also present high intellectual and artistic values. Frequently, they become very attractive public spaces used for marketing purposes by the companies who supplied the equipment that has been used in the project as well as by the city authorities.

Simultaneously, the social awareness of the need for direct contact with natural or the arranged green environment is visibly growing.

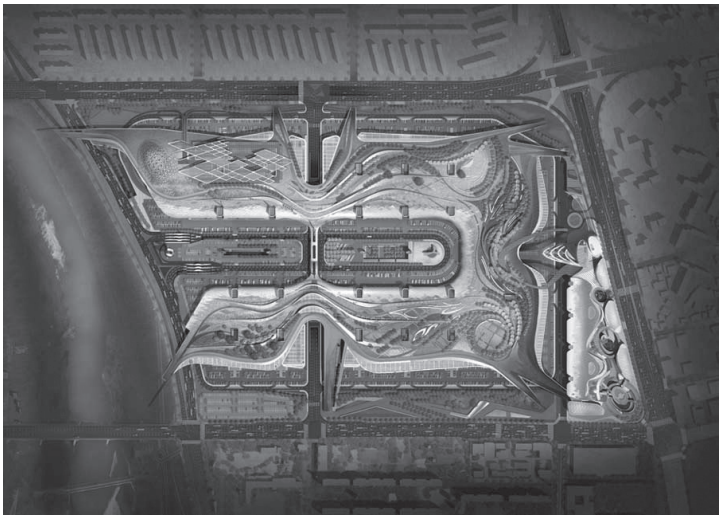
It may seem surprising that the ideograms of cities from a hundred years ago, e.g. Ebenezer Howard's garden city and Arturo Soria y Mata's strand layout, have retained their appeal and do not feel outdated. It may not necessarily be a sign of their timeless value, but rather of the contemporary inclination to make references to experiences associated with environment conservation.

Ill. 1. Project of City Center in Chongqing in China by Danish Team MVRDV and Cebo-Chongqing University Team (source: www.hetpublikationer.dk/UM/)

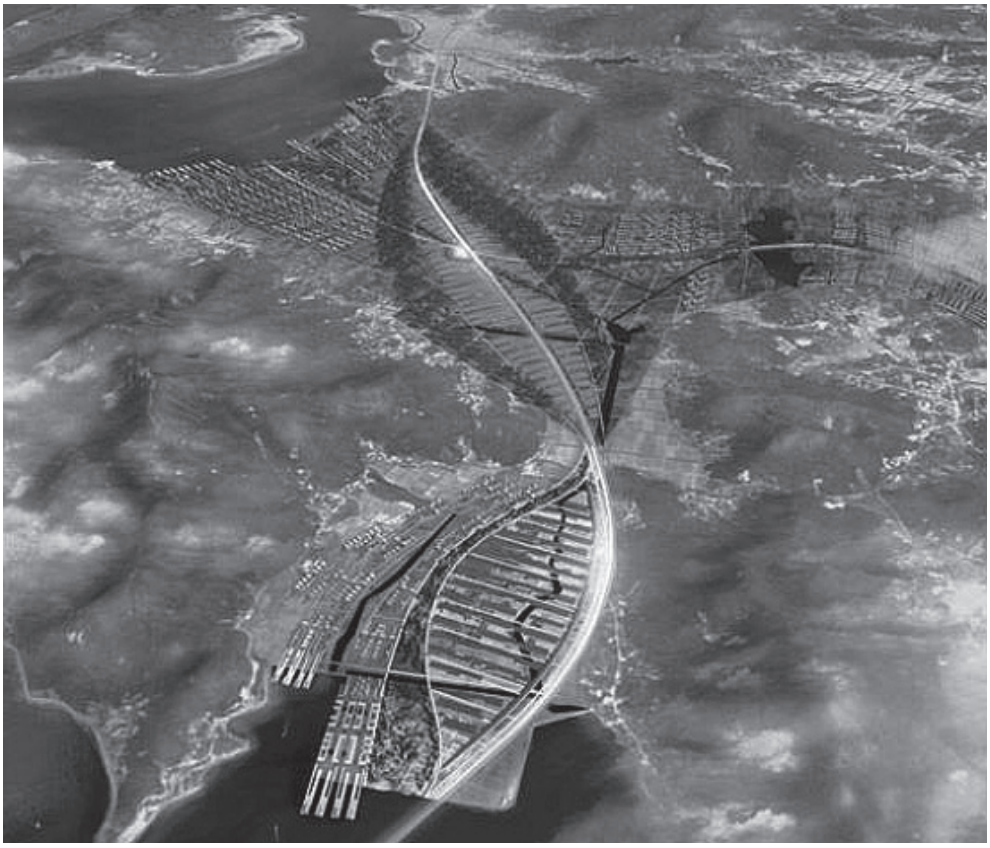


Ill. 2. Transbay Terminal in San Francisco projected by Pelli Clarke Pelli Architects TEAM-2007. (source: ad009cdnb.archdaily.net)

Ill. 3. Project by Danish Team MVRDV near Kwangju, South Korea
(source: www.bryla.pl/bryla/1,85298,8079311,Eko_miasta)



Ill. 4. Garak Market in Seul. Designed by Samoo Architects&Engineers
(source: inhabitat.com/garak-ed05/)



Ill. 5. Masterplan of Dubled Incheon projected by Foster+Partners and Pain&Mobility-Chain 2009 (source: www.archicentral.com)

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4-A/2014

TOMASZ BAJWOLUK*

CHANCES OF IMPROVING URBAN SPACES APPEAL ON SELECTED EXAMPLES

SZANSE WZROSTU ATRAKCYJNOŚCI PRZESTRZENI MIEJSKIEJ NA WYBRANYCH PRZYKŁADACH

Abstract

The dynamics of changes in urban spaces vary due to diverse local conditions and growth potential of individual urban settlements. The actions undertaken in order to improve the appeal of towns concern first of all improving the quality of public spaces, but they may also be of a broader range and aim at general growth based on the local natural environment conditions.
Interesting examples of urban space transformations are presented by urban settlements with a well-defined leading function meaning unclear. Among such towns are those whose development was based on natural spa and curative characteristics stemming from the existing natural resources and specific climate conditions. The aforementioned resources – documented and used for a long time – need services of continuously improving quality, given the changing market situation and which is connected, this doesn't work here but I'm not sure it's needed anyway the accompanying high quality space.

Keywords: spatial and functional structure, town, spa resort, space

Streszczenie

Dynamika przemian w przestrzeni miejskiej jest zróżnicowana ze względu na lokalne uwarunkowania i możliwości rozwojowe poszczególnych ośrodków. Podejmowane działania wzrostu atrakcyjności miast dotyczą przede wszystkim poprawy jakości przestrzeni publicznych, ale także mogą mieć szerszy zasięg, którego celem jest rozwój w oparciu o lokalne uwarunkowania środowiska naturalnego. Interesującym przykładem przemian przestrzeni są ośrodki o zdefiniowanej wiodącej funkcji. Do takich miast możemy zaliczyć te, których rozwój nastąpił w oparciu o naturalne czynniki uzdrowiskowo lecznicze w związku z występującymi zasobami naturalnymi i specyficznymi warunkami klimatycznymi. Te od dawna wykorzystywane i udokumentowane zasoby przy zmieniających się uwarunkowaniach rynkowych wymagają stałego podnoszenia jakości świadczonych usług i, co z tym związane, poprawy przestrzeni im towarzyszącej.

Słowa kluczowe: struktura funkcjonalno przestrzenna, miasto, uzdrowisko, przestrzeń publiczna

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1. Introduction

During the last ten years, we have been observing a considerable increase in the interest in urban space quality in Poland, especially after Poland's accession to the structures of the European Union. This has meant Poland getting access to pro-growth programmes and the accompanying financial resources, towns have seen their chance to complement and modernise their technical infrastructure as well as to change their image. It has an important influence on the broadly understood quality of life in a given town and also on the improvement of its role and significance in the region.

Urban settlements, in many cases after years of investment stagnation, are now striving to seize the chance to implement the existing plans of development, especially in the public sphere. A precise and well prepared strategy of development, staged over time and focused on the appropriate objectives and priorities, has chances to deliver the expected results.

Therefore, using local conditions is one of the most important factors for creating a new "concept" for a town, its functioning, scale of growth and potential for change. Another factor important for the success of the transformation is the local community, its structure and openness to new ideas, suggestions and values, and also the level of acceptance for the changes in the town space and structure expressed by various groups of residents. Their involvement in improving the environment, also around their own properties, considerably affects and complements the actions undertaken in public spaces. The changes of urban structures take place in settlements of various sizes, they are also characterised by various dynamics. It depends on the town's financial capabilities, accessibility of external sources of funding, including the EU programmes, and the effectiveness in their securing, but also on the determination of the town authorities and their subordinate institutions. An important factor is perseverance in the realisation of planned investment projects and continuity of the initiated transformation process in spite of the periodic change of town authorities. An essential element for getting positive results is the appropriate and detailed preparation of individual project tasks and working out the schedule of project implementation, including staging the works and defining the sources of funding for each budget year of a town or commune.

The whole of the undertaken tasks and their gradual implementation may, with time, build a new quality image of a town. Nevertheless, only the most spectacular ideas put to practice in public spaces give a chance to boost the appeal of a broadly understood urban space. First of all I have in mind here those activities which are undertaken in the most exposed urban spaces and the zones which may in the future become strategically important areas of growth for the town. It is therefore very important to see a town as a whole and to select the areas that are most likely to bring about its transformation. No less important is an analysis of the local conditions and a rational assessment of their growth potential.

Interesting examples of urban space transformations are urban settlements with a well-defined leading function. Among such towns are those whose development was based on natural spa and curative characteristics stemming from the existing natural resources, e.g. mineral water springs, and specific climate conditions[1]. The aforementioned resources,

[1] The status of a spa resort or an area of spa protection is granted by the Council of Ministers by way of an ordinance upon a motion issued by a given commune. The ordinance defines the borders and

documented and used for a long time, need services of continuously improving quality, given the changing market situation.

2. Local conditions

As tourism has been seen recently as one of the most important spheres of economic activity in numerous cities and regions in Poland, it would seem relevant to analyse the scale of spatial transformations in selected urban settlements where the development of services for tourists, especially the ones connected with using the potential of the natural spa and curative conditions, plays the leading role in their functioning and growth. Streaming the investment projects in the right directions in such towns seems all the more important from the point of view of their general appeal since on the one hand, it affects improving the urban space quality in the eyes of visitors, but on the other hand, it serves the local community. This provides chances for new employment, and also a more focused spatial development.

Activities undertaken in those towns are subordinate to the superior function, but they also result from a number of formal and legal conditions existing in such areas. Urban settlements with the existing spa function require special treatment and a compromise between protection and modernisation of the spa zones on the one hand, and the need of the town itself and its environs to grow as well on the other.

There are 44 spa resorts in Poland – they are situated in various parts of the country. They are of different sizes, and the spa infrastructure they can offer are on different scales[2]. It would appear that the future use of their potential, regardless of their legal personality or ownership transformations, will increase due to an ageing society, lengthened life expectancy as well as the slow change in perception of this leisure form not only as medical treatment but also as a form of short-term vital forces regeneration[3].

Integrating various leisure forms and attractions and offering them together with the spa function may become an interesting option of developing the leading spa function in the future. It would allow spa towns to complement their existing services and develop their tourist infrastructure.

The dynamics of space transformations varies due to diverse local conditions and the growth potential of individual urban settlements. The actions undertaken in order to improve the appeal of urban spaces pertain first of all to improving the quality of public spaces, but they may also be of a more extensive character and aim to develop tourist infrastructure on the basis of the local natural environment conditions. The above refers *inter alia* to towns located in mountainous areas.

Krynica-Zdrój, situated in the Beskid Sądecki, is an interesting urban settlement with a long-lasting tradition of spa medical treatment. It is called ‘the pearl’ of the Polish spa

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the curative recommendations of a given area. Detailed information may be found in J. of L. of 2005, No. 167, item 1399, art. 2. The status of a spa resort may be granted to places or areas which have documented deposits of curative resources.

[2] The data come from the Chamber of Commerce Polish Spa Resorts.

[3] The prognosis of demographic change was presented by S. Golinowska in: *Wyzwania Małopolski w kontekście starzenia się społeczeństwa. Podejście strategiczne* [1].

resorts owing to the long tradition of using its natural potential. The spa resort is situated in the central part of the town – its beginnings go back to the 18th and 19th centuries and are connected with the discovery of mineral waters and their subsequent use for medical treatment.

Due to its location in the mountain ranges of the Beskid Sądecki in the valley of the Kryniczanka stream together with its mountain tributaries, since the nineties, the town has been developing its skiing infrastructure on the slopes of Słotwiny and the Jaworzyna Krynicka range. It has given the town an impulse to grow dynamically in connection with the modernization of the tourist infrastructure, focusing on providing services to skiers as a complementary function for the leading spa function. Those actions, far-reaching and promising from the point of view of securing steady growth for the town and using its natural environment conditions for generating profit, contributed with time to an exacerbation of functional and spatial problems in the town. On the one hand, Krynica was striving to create comfortable and cosy conditions for medical treatment visitors, and on the other, it had to provide a slightly different, more dynamic characteristics for winter sports tourists, and it also had to develop the accompanying functions. We should also mention the plans to return to the town's pre-war sports traditions and build a new luge track on Parkowa Mountain and to modernise the hockey infrastructure.

Two other places: Busko-Zdrój and Solec-Zdrój are characterised by slightly different conditions, although their development is also connected with the use of the existing spa infrastructure. Their expansion took place in the 19th century and was the consequence of the discovery of natural sulphide springs in Busko and brine and sulphide springs in Solec, only 18 kilometers away[4].

These spa resorts, well known in Poland, are situated away from major traffic routes, in the lowland areas of the so-called *Ponidzie* – valuable from the point of view of landscape and natural assets[5]. The distant location from large cities and the agricultural character of the environment additionally promotes relaxation, therapy and recreation with the use of natural resources of unique value. However, there is a threat that the spa function may become excessively dominant thus jeopardizing other aspects of the town growth. The reputation these places enjoy and their attractive locations together create a unique climate, which makes it still possible for them to use their potential for further development in spite of the decrease in the number of inhabitants and limited demographic growth[6].

However, the undertaken actions should not be aimed solely at improving the quality of the offered services in the spa resort, but they should first of all strive to boost the appeal of the urban space of the whole town, thus giving it a chance to create unique places for relaxing, living and working.

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[4] Busko has 17,024 inhabitants, Krynica 11,085. Solec is an exceptionally small settlement with only approx. 1000 inhabitants, and it has the status of a spa village.

[5] Busko is situated approx. 80 kilometres to the east of Kraków and approx. 50 kilometres to the south of Kielce.

[6] The data come from demographic and economic prognoses presented in Local Strategies for Development [8].

3. Functional and spatial structure

The functional and spatial structures of the selected urban settlements vary in respect to character and quality. One common feature is similar development in the spa zone and its representational character and style. After many years, it still remains a relic of past splendour and testifies to the significance that was attached to spa facilities and infrastructure design from the very beginning of their existence. Even in the present day, it is a symbol speaking of the old traditions of these places, their exceptional style and unique climate.

In the case of Krynica, the spa resort occupies the central part of the town constituting the most attractive public space. Its spatial form results from the natural conditions and land configuration, these factors allowed the whole spatial arrangement to retain its cosy and intimate scale. The main compositional element is the pedestrian promenade lined with old sanatorium and guest-house buildings as well as spa facilities, which until this day bears traces of former splendour and history of this place (Ill. 1). A unique feature of this spa resort is using Parkowa Mountain for the purpose of recreation – with numerous pedestrian routes providing alternative links between the southern and eastern parts of the town.

Ill. 1. Krynica – the representational promenade in the centre of the spa resort lined with sanatorium and services developments (photo by the author, 2012)

In the period of its post-war growth, especially in the 60s and 70s, Krynica extended its tourist and sanatorium infrastructure, mostly located in the surroundings of the historic centre and also along the main streets, which were also outbound roads in the direction of Nowy Sącz, Tylicz and Muszyna. The development took different architectural forms, complementing the existing dense urban fabric, often of guest-house character. These structures in their majority

were not adjusted in their scale or style to the existing development, and since they were erected on plots of limited size and with a large difference in altitudes, they created a medley of development, often of aggressive, domineering architectural forms.

Multi-family development complexes also appeared in the 70s and 80s at the foot of Parkowa Mountain, at the inbound road from Nowy Sącz, and in Czarny Potok (*Black Stream*) – all of them in very exposed locations and built without any care for architectural detail or any attempt at harmonising them with the context of the town (Ill. 2). The 90s brought in-fills into the development, new hotel facilities and modernisation of the existing ones, often connected with the change of owners resulting from the social and economic transformations and with the creation of a new ski centre in the area of Jaworzyna Krynicka and Czarny Potok, which until then had been a distant and rather peripheral area of the town (Ill. 6).

Ill. 2. Krynica, multi-family development in Czarny Potok. The layout and architectural form do not comply with the local conditions (photo by the author, 2012)

In Busko and Solec, the spa zones are situated in the southern parts of the towns. Due to the small spatial scale, they constitute integral parts compositionally bound with the remaining urban fabric. These distinctive bonds seem to be part of a very clear layout of the whole urban settlement, which in both cases gives a chance for their proper display.

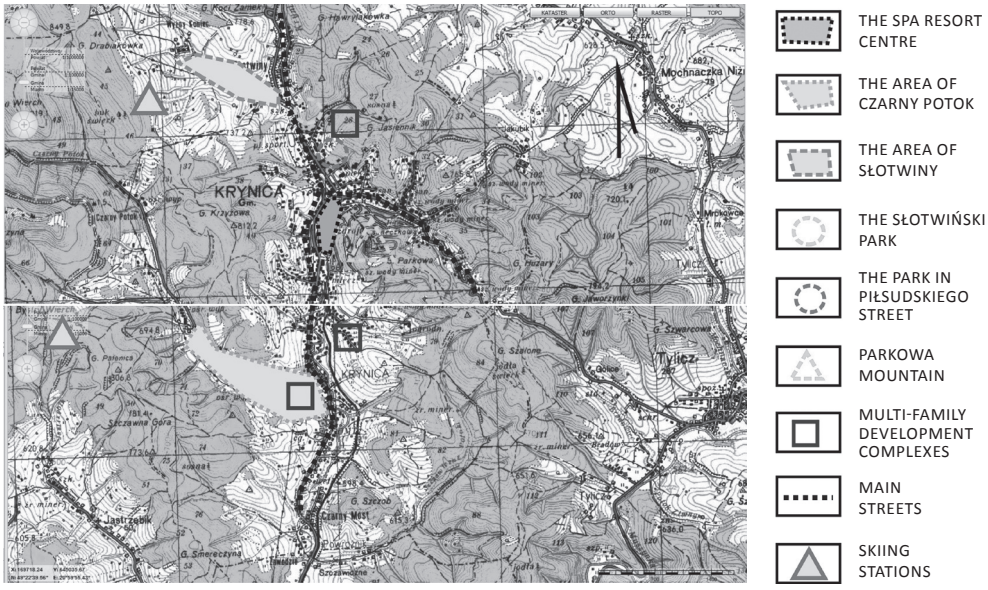
In Busko, the town grew to the north of the spa resort. The centre is made up of a market square with dense residential and service developments. The prevailing development is residential, partly guest house type. In the vicinity of the centre, there are also small complexes of multi-family developments, which complement the dominating

Ill. 3. Krynica, modern multi-family development along Piłsudskiego Street and the Kryniczanka stream, adversely dominant in the space of the town (photo by the author, 2012)

Ill. 4. Busko-Zdrój, the spa resort park extension. A new form of arranging the green area in the vicinity of the spa resort (photo by the author, 2012)

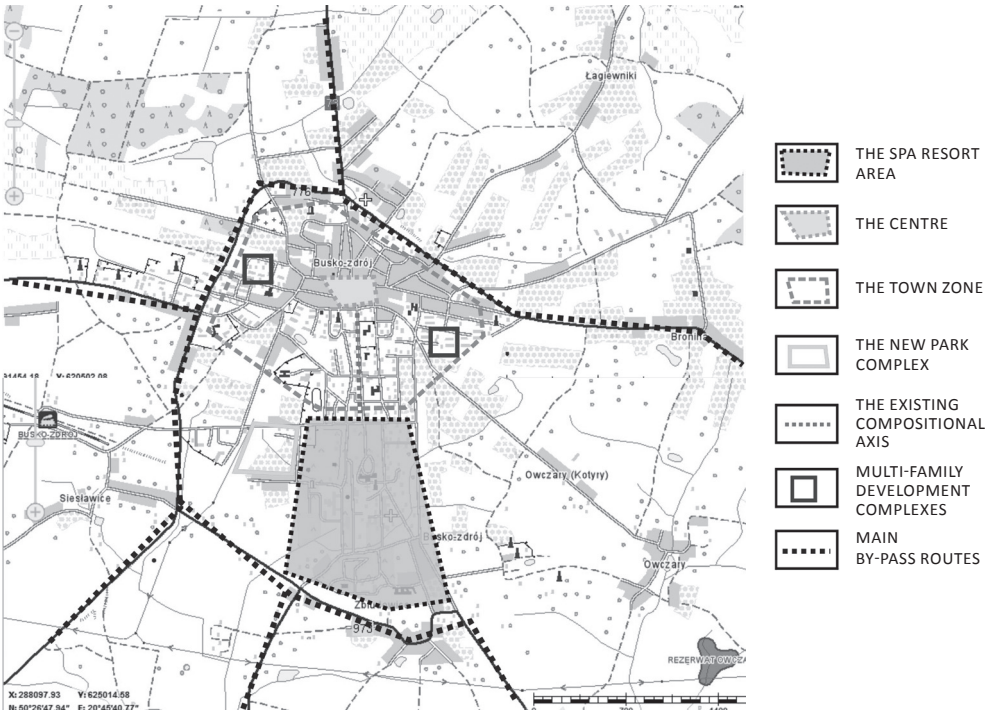
single-family type of urban structure. In the outskirts of the town, there remains some farmhouse development, which reflects the still preserved agricultural character of the town surroundings.

Ill. 5. Solec-Zdrój, the historic building of the baths in the spa resort park
(photo by the author, 2012)



Ill. 6. Krynica – diagram of the selected elements of the functional and spatial structure
(produced by the author, 2012)

Apart from the characteristic spa resort area, Busko has not developed an equally strong spatial accent, for example in the form of a new centre, within the existing market square urban layout (Ill. 7).



Ill. 7. Busko-Zdrój – the spa zone against the background of the selected elements of the functional and spatial structure (done by the author, 2012)

Solec Zdrój is an even smaller urban settlement. Here, the 19th century park complex together with the guest-house facilities along Danielewskich Street is an example of the former clear idea of designing a small urban settlement in an open landscape.

Despite the small scale of the settlement and the free-standing spa facilities as well as the accompanying single-family and farmhouse development from the north and east, the prevailing impression is one of a small town rather than a village. The main reason seems to be the character and form of the historic-value spa facilities, a lot smaller than the ones in Busko, yet aptly designed in their scale and well suited to the open landscape (Ill. 8).

Analysis of the existing functional and spatial structure of the selected settlements indicates a need to adjust the plans to adjust the plans to the existing spatial realations in order to imporove the attractiveness of the urban space. It also points out the specific conditions and climate of a given town, which should be protected in the process of making new spatial decisions so that the unique values of the natural and cultural environment would be preserved. It is also important to keep the right proportions of changes, which should first of all complement the existing settlement and constitute a kind of modern continuation of the old principles.

Ill. 8. Solec-Zdrój – selected elements of the functional and spatial structure set against the background of the existing transportation network (done by the author, 2012)

4. Transportation services

Due to the need to protect their spa resorts, towns tend to limit the transportation accessibility of the central spa areas. Nevertheless, the location of the sanatorium facilities involves the necessity to provide access for visitors and personnel. Banning car parks from the spa zone under strict protection is a cause of great inconvenience. Since there are no comprehensive actions aimed at solving transportation problems in the scale of the whole town, the bans alone appear ineffective and they only aggravate conflicts, especially when they are combined with uncomfortable or limited public transportation services.

Krynica seems to be most affected by transportation difficulties. The town has not been able to provide convenient transportation service for years, and the number of cars has been growing incessantly. The main problems include lack of parking spaces both in the town and at individual holiday facilities as well as the ever growing transit traffic through the town centre in the direction of Muszyna – this is aggravated by seasonal intensive traffic generated by visitors to the Czarny Potok and Słotwiny skiing stations. Due to the specific character of long-term parking in the town, dense development and limited land availability, there are no systematic solutions that would provide the option of leaving cars in some indicated strategic places. Expansion of the additional sports function in the town without any attempt to solve the problem of transportation accessibility, may with time lead to total gridlock of the town and a deterioration of the living and holiday-making standards. Failure to use the railway as an alternative means of transport for visitors coming into the town seems to be yet another issue. However, it would require some investment and an improvement of the service quality.

Busko and Solec are less affected by vehicle traffic as it is much less intensive there. It results first of all from the location of both settlements and also from the absence of any additional functions that would generate traffic. Busko, being the seat of the local

commune administration, plays the role of a services centre for the nearest environs, which involves traffic of mostly local character. The highest volume of transit traffic occurs in the north-east part and is connected with the Tarnów – Kielce regional road which passes through. There are limitations imposed upon vehicle traffic in the spa resort, it is reduced only to servicing individual spa facilities with a limited number and organisation of parking spaces.

The transportation system in Solec is in turn a very organic system resulting from the gradual growth of the spa resort village. A characteristic feature is the preserved almost axial route of the main street gradually blending into the park complex of the spa resort. We can hardly talk about fundamental transportation problems in a town of such a small scale, yet undoubtedly introducing a certain order into the structure and the modernisation of pedestrian passages may boost the appeal of the area.

5. New forms of area development

All the analysed spa resort towns are characterised by a large potential for growth. Yet, implementation of pro-growth plans appears ineffective at present and is limited to modernisation of technical infrastructure, including transportation infrastructure, and a few actions aimed at the renovation of some individual facilities. All larger-scale projects are still at the planning stage, for example in Krynica, there are plans to modernise the main promenade as the most representational part of the spa resort and to launch some projects in the area of the buffer zone around the historic part of the town – Parkowa Mountain, the Municipal Park (*Park Miejski*), Piłsudskiego Street joining this part of the town with the centre as well as plans to do some works in the area of the Słotwiński Park.

It is difficult, however, with the present state of the area development, to find a discernible relation between the two complexes of municipal arranged green areas. It would be interesting to use the existing paths along the Kryniczanka stream for pedestrian traffic and recreational purposes, but the compact and dense development in this area has rendered it virtually impossible (Ill. 3). Unfortunately, the planned construction of a gondola lift station at the inbound road from the Nowy Sącz direction was aborted and so were plans to locate car parks in this area, which considerably limited the possibilities to arrange the town's transportation network in some orderly manner. The construction of a ring-road providing some relief for the centre in the direct vicinity of the spa resort does not hold much promise for realisation, either. Therefore, any chances of boosting the town's appeal are limited solely to some projects modernising the existing infrastructure in a rather conservative way.

Relatively large transformations of space are taking place in the areas located in Czarny Potok – the peripheral zone situated in the southern part of the town. A multi-family development complex is now under construction there as well as numerous hotel facilities which are to predominantly serve the tourist and skiing traffic. It is a natural consequence of building a skiing station on the slopes of Jaworzyna Krynicka and the plan to construct new infrastructure to serve its needs. From the point of view of the town's urban growth, it seems important to define the way this zone is to be linked to the rest of the town in the future, not only in the aspect of transportation but also in the spatial sense.

For many years, Busko has been untouched by any spatial transformations. The spa resort infrastructure has been subject to a limited process of modernisation and development relying first of all on the existing facilities. It was only in recent years, and thanks to the possibility of using external sources of funding, that new investment projects have taken place. The idea of rebuilding the town's main street joining the market square with the spa resort park and giving it a new representational character is interesting from the spatial point of view.

This historic settlement has been waiting for years for a new aesthetic setting. It seems that implementation of this investment project together with modernisation and activation of the market square space will contribute to the image change of the whole town – joining its two parts into one uniform organism. An interesting starting point for these actions is the already completed new part of the spa resort park, giving the town's green areas an attractive modern form and also contributing to the protection of the historic spa zone (Ill. 4). This landscape character of the town's development may become in the future one of the most apt concepts for the town's growth and using its attractive natural conditions.

Spatial transformations in Solec are of a very limited character, which results from a small scale of the whole settlement's urban structure. The main activities focus on the modernisation and partial reconstruction of the preserved historic value guest houses of the spa resort. The spa resort park with the historic baths facility situated on a recreational water reservoir and surrounded by wooded areas are still waiting for their former splendour to be restored to them (Ill. 5). At present, a complex of mineral water bathing pools is being built in this area, which to a certain degree, connects to the tradition of spa baths.

An interesting feature of this area is the system of watercourses directly linked to the park complex. Solec requires the undertaking of comprehensive actions modernising the existing urban fabric, but it needs an especially sensitive approach in order to preserve the intimate and cosy character of the whole settlement, which seems unique, especially now when numerous urban settlements are seeking new functions which would activate the space to varying degrees. Preserving the present exceptional climate of the place is the most reasonable direction in which the town should aim to develop.

6. Conclusions

The presented examples of urban settlements with a leading spa function indicate a considerable potential of natural conditions successfully used for many years for curative and rehabilitation purposes. Nevertheless, founding and developing towns which have rich resources of natural curative agents requires a specific approach, on the one hand, oriented towards growth and protection of the spa resort, but on the other, towards ensuring that the remaining parts of the town may also grow in a sustainable way. The presented examples of settlements vary in terms of their location and spatial structure scale, but they are similar in the aspect of the natural resources in their possession, and they manifest big potential for growth, of course suited to their respective sizes and local conditions. In each case, the essential element that undergoes transformation is the spa resort, constituting the most attractive part, yet subject to limitations resulting from the extensive

legal protection system. It frequently imposes limitations, but looking from the point of view of the primary goal, it seems reasonable as it may prevent excessive intervention into these valuable areas.

Spa resorts, with their well-developed curative and recreational infrastructure, are the most attractive town areas, and they influence the whole urban settlements because they are their integral parts. Nevertheless, for functional and compositional reasons, they should be linked to the other parts of the town in a natural way. It would give a chance for boosting the appeal of urban spaces leading to integrating them into a uniform urban organism. The first attempt at such a transformation may be seen in Busko, where the planned compositionally clear modernisation of Mickiewicza Street joining the spa resort with the town's market square gives a chance for spatial integration of the town in the future[7].

A similar solution, although on a smaller scale, has a chance of realisation in the future in the area of Solec Zdrój. It will use the historic park complex with former guest-house and treatment facilities located within its boundaries. Krynica, on the other hand, due to the high level of urbanisation of the areas neighbouring the spa resort and its central location within the town boundaries, seems to strive to integrate the spa resort with the rest of the town by introducing some order into the arrangement of its green areas constituting the spa resort buffer zone and linking the old spa resort historic facilities, including Parkowa Mountain. Nevertheless, developing the tourist functions requires far more extensive strategic actions. In the case of Krynica, they should include tidying up the issue of transportation accessibility, which involves solving the problem of the transit traffic passing through the town, implementing comprehensive parking solutions combined with developing modern municipal public transport and providing access to the skiing stations in Słotwiny and Czarny Potok.

Urban settlements with a spa function have had considerable chances of boosting their urban space appeal, especially in the last few years. The undertaken action should first of all:

- take into account the town's local specific character and conditions;
- strive to tie the spa resorts with the remaining urban structure in a natural way;
- seek an optimum architectural and urban form for new investment undertakings in order to integrate them harmoniously into the existing fabric;
- solve the growing transportation problems connected with the increasing traffic volume in a way that would also offer a possibility to improve access to selected zones of the town and spa resort;
- improve the quality of the spa resort infrastructure expanding where possible the range of provided services, which may give the settlements in question a competitive edge over their contenders;
- it is also important to improve the aesthetics and quality of public spaces since they affect the general image of the town and its appeal;
- it is important to preserve the right proportions in the changes, which should first of all complement and continue in a natural, although modern, way the old functional and spatial principles.

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[7] The design of this joining element is a result of an urban design contest organised in 2011 by Busko-Zdrój Town and Commune Administration.

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TECHNICAL TRANSACTIONS | CZASOPISMO TECHNICZNE
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4-A/2014

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REMNANTS OF WATER FORMS AND FACILITIES IN THE AREA OF KRAKÓW ON A SELECTED EXAMPLE

POZOSTAŁOŚCI ZAŁOŻEŃ I OBIEKTÓW WODNYCH WE WSPÓŁCZESNEJ PRZESTRZENI KRAKOWA. PRZYKŁAD PRĄDNIKA CZERWONEGO

Abstract

The aim of this article is to present, on a selected example, the problems pertaining to the areas of valuable natural and cultural assets which are being absorbed by the ever-growing urban fabric. Prądnik Czerwony – a district of Kraków, has been selected as an example for the above presentation. The boundaries of this district encompass the areas that in the past used to be parts of three historic villages – Prądnik Czerwony, Olsza and Rakowice, and they still have some preserved facilities of considerable natural and cultural value. The article discusses the spatial transformations of these areas. Special emphasis has been put on the monuments of technological culture that have been preserved in the area of the district and on the principles of their conservation in the urban planning documents valid for this area.

Keywords: Kraków – Prądnik Czerwony, Żabi Młyn, Młyn Rakowicki, leats

Streszczenie

Celem artykułu jest przedstawienie na wybranym przykładzie, problemów dotyczących terenów o cennych walorach przyrodniczych i kulturowych, wchłanianych w obręb rozrastającej się tkanki miejskiej. Jako przykład rozważań wybrano dzielnicę Krakowa Prądnik Czerwony. W granicach tej dzielnicy znajdują się tereny, które w przeszłości należały do trzech historycznych wsi: Prądnika Czerwonego, Olszy i Rakowic, z zachowanymi obiektami o znacznej wartości przyrodniczej i kulturowej. W pracy omówiono przemiany przestrzenne tego obszaru. Szczególną uwagę zwrócono na zachowane na terenie dzielnicy zabytki kultury technicznej i zasady ich ochrony w obowiązujących dla tego obszaru dokumentach planistycznych.

Słowa kluczowe: *Kraków – Prądnik Czerwony, Żabi Młyn, Młyn Rakowicki, młynówki*

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... humans themselves through their activity ... have presented themselves to us as the most powerful factor which modifies the influence and limitations of nature to such a great extent that they are justly considered the most important factor in a geographical environment...[1]

1. Introduction

Throughout the centuries, humans have been transforming the geographical environment, using its individual elements to satisfy their defensive, economic or aesthetic needs. It is the hydrographic conditions of areas that have been especially exploited.

In Europe, transforming the existing hydrographic conditions and using the power of rivers and streams for economic purposes goes back to the 5th century. First mills appeared at that time. They became more common and their occurrence more widespread in the 11th century, and between the 12th and 14th centuries, the range of their use was subject to considerable growth[2].

The occurrence of the first mills in the area of Poland which was documented in historic sources dates back to the 12th century[3]. These were water mills and mills using wind power for their operation. They have been performing their economic function until present times, yet the water and wind power has been slowly replaced by heat energy and subsequently, electricity.

In the 13th century, there were 102 mills[4] in operation in the region of Małopolska, which constituted 21% of the overall number of mills functioning in the area of Poland at that time. In Kraków, the very well developed and continuously extended water system of the area was used for *inter alia* economic purposes up to the times of the Swedish Wars. "... Right outside the city, on its circumference, were located the mills – at that time important production plants, using the water power for grinding grain to obtain flour, but also for many other purposes (groat cutters, sawmills, grinding, cutting and polishing facilities, water mills and forge bellows used in smithies etc.) (...) facilities for manufacturing fabrics, (...) finally tanneries adjacent 'at the water mill' to the former duke's tanners..."[5]. Some water mills in the area of Kraków were still in operation in the middle of the 20th century. Some private mills in the Prądnik and Dłubnia river valleys were among their number, as well as the former royal mill in Rakowice.

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[1] T. Bartkowski, *Fizjografia Poznania. Początki i rozwój Starego Miasta w Poznaniu*, PWN, Warszawa 1977, 35.

[2] See: M. Dębińska, *Przetwórstwo zbożowe w Polsce średniowiecznej X–XIV w.*, Wrocław 1973, 239.

[3] More on the subject is to be found in: M. Wasiutyński, *Regal młynny w średniowiecznym prawie polskim*, Warszawa 1936, p. 9-10; S. Trawkowski, *Młyny wodne w Polsce w XII w.*, Kwartalnik Historii Kultury Materialnej, Year's Issue VII: 1959; M. Dębińska, *op. cit.*

[4] See: M. Dębińska, *op. cit.*, 78.

[5] See: *Kraków. Studia nad rozwojem miasta*, (ed.) J. Dąbrowski, Wydawnictwo Literackie, Kraków 1957, 134.

2. Outline of the history of the area which is now a part of the Prądnik Czerwony district

Prądnik Czerwony, at present a district of Kraków, comprises an area which in the past used to be part of three historic villages: Prądnik Czerwony, Olsza and Rakowice. A small stream Sudół Dominikański flows through the district cutting it almost in halves. The waters of this stream, as well as of the Biełucha river flowing nearby, played an important role in the history both of the Prądnik Czerwony and Rakowice villages.

The village of Prądnik Czerwony was first mentioned in 1105[6]. The village was founded under German law and occupied the area along the river Prądnik up to St. Nicolaus' church. Prądnik Czerwony, also called Wielki, Dominikański or Tyniecki, was bordered from the west by Prądnik Biały, also known as Biskupi, from the north by Węgrzce, from the east by Batowice, Mistrzejowice and Rakowice, and from the south by Dąbie and Grzegórzki. Initially it belonged to the Benedictine monastery in Tyniec, who until 1418, was the owner of the Prądnik village community established in 1327, and it was subsequently taken over by the Dominicans[7]. Prądnik Czerwony was the place where rich burghers (e.g. the Cellari or Montelupi families[8]) had their farms, and so did the orders of Franciscans, Barefoot Carmelites and Jesuits; some of the land also belonged to St. Mary's Church in Kraków. As an area elevated in relation to the area of Kraków, and with an advantageous climate, it was also used by the city dwellers as an area of festive relaxation, strolls and shelter at the times of epidemics plaguing the city.

The rich water system existing in the area of Prądnik Czerwony was used for economic purposes. As early as in the Middle Ages, there was a mill on the river Prądnik, two ponds and a vegetable farm on the land belonging to the Dominican estate in the area of the present Albertine Sisters convent. Frequent overflows of the river and the consequential damage induced the Dominicans to move the farm to the area near St. John the Baptist's church in the present Dobrego Pasterza street. The so-called Dominican Mill, also called Żabi Młyn (*Frog Mill*) was built in the area of the farm. It operated with the use of waters from the Prądnik river (delivered to it via a leat) and from the Sudół stream flowing from the north. The mill that was built at the confluence of those two watercourses was originally made of wood. Destroyed during the period of the Swedish Wars together with the ponds and the leat situated in its vicinity, it was rebuilt and functioned until the end of the 19th century (Ill. 1).

Until the 17th century, Prądnik Czerwony also encompassed Olsza[9] together with its separate farming estate, where there is still preserved a classicist manor house with a garden, which used to belong to the Potocki family, the last owners of the village. At present, the manor and the park is listed in the Register of Historic Monuments as the so-called 'Garden in Olsza'.

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[6] M. Tobiasz, *Rozwój przestrzenny Prądnika Białego i Czerwonego*, Scientific Journal, issue 4, Cracow University of Technology, Kraków 1965, 10.

[7] The baroque St. John the Baptist's chapel, preserved until today, was built on the area of the farm belonging to the Dominicans in 1642.

[8] The Cellari family built a Renaissance manor here towards the end of the 16th century, in the place of which the Pocieszka manor was built in the 19th century.

[9] In 1941, the north part of Olsza was incorporated in Kraków as its 42nd cadastral district. At present, the former village of Olsza is a part of the 2nd District of Grzegórzki and the 3rd District of Prądnik Czerwony.

Ill. 1. The Dominican Mill (*Frog Mill*) (photo by the author, 2010)

The boundaries of the present-day 3rd district of Kraków also encompass a part of the area that used to belong to the village of Rakowice. The first mention of this village, which until the end of the 1st Republic was a royal village, comes from 1244. In the 15th century, a farm, a royal manor and a mill called the Rakowicki Mill were established. The whole complex is still clearly discernible on a map from 1944. In the 19th century, the manufacture of chicory was founded in the area of the farm, which at that time was the property of Antoni Zazmanit[10]. In 1910, the area of the farm was bought by the Piarists[11], who built a chapel and an Education Institution for boys. In 1912, an airport started to operate in the area of Rakowice which was gradually extended in the following years – it was the biggest and the most modern in Poland at that time[12].

The existence of a royal mill in Rakowice is indicated by a paragraph in Jan Olbracht's privilege of 1500[13], which "bestows one third of the profits from this mill and the remaining two royal mills located on the river Prądnik on the convent of canons regular in Kazimierz... Three royal mills (...) the first mill next to our village Rakowice, the second in Piasek opposite Mogiła behind the bridge near the house of Jerzy Morsztyn – a consul of Kraków, and the third one situated behind St. Nicolaus's church, between Jan Kisiling near Blech, a consul of Kraków..."[14]. The mill was built on the Olszecka leat, which diverted the waters of the

[10] The previous owners of the farm were the Zagórski family. After the Piarist Fathers' Archives.

[11] See: Land and Mortgage Entries Register L-1-11 K.B. Kraków – Rakowice, 385.

[12] The Rakowice – Czyżyny Airport was finally closed in 1963.

[13] This information is to be found in J.W. Rączka, *Młyny królewskie w krajobrazie Krakowa*, Part II, Urban Planning and Architecture Committee Files, vol. XIII, Kraków 1979, 13.

[14] See: J.W. Rączka, *Młyny królewskie w krajobrazie Krakowa*, Part I, Urban Planning and Architecture Committee Files, vol. XIII, Kraków 1978, 25.

Prądnik from the area of the weir in Bularnia, having previously moved the wheels of the Frog Mill owned by the Dominicans. "... Following the example of the Rudawka, a leat, called the Olszecka leat, had been built for the mill near the royal village of Rakowice, upon which several mills were built owned by monasteries which had their land there ..."[15]. The wooden building of the Rakowicki mill, which had not been destroyed at the time of the Swedish invasions, was replaced by a brick facility in the 70s of the 18th century, this facility performed its function incessantly until 1946 (Ill. 2).

Ill. 2. Fragment of the Greater Kraków Plan from 1910. One can see rivers Prądnik (Białucha) and Olszecka Leat, and buildinds "Dominican Mill" ("Frog Mill") and "Rakowicki Mill": 1 – "Dominican Mill" ("Frog Mill"), 2 – Rakowicki Mill (prepared by the author)

3. Modern spatial transformations of the area and the preserved monuments of technological culture

The southern part of the village of Prądnik Czerwony, at present located in the area of the 1st District, was incorporated into Kraków in 1910, the remaining part, as with Rakowice, found itself within the city boundaries in 1941. The areas that had been incorporated into Kraków[16], were usually characterised by a rapid growth of development, which involved

[15] *Ibidem*, 25.

[16] The territorial and admistrative growth of Kraków is discussed in R. Mydel's, Rozwój administracyjny miasta po drugiej wojnie światowej, Publishing and printing house "Secesja" in Kraków, 1994.

inter alia a different character and degree of intervention into the existing water systems of the area.

Radical transformations of both areas took place after the 2nd World War. The extent and type of transformations that the water forms and connected facilities situated in the area of Prądnik Czerwony and Rakowice were subjected to were different. The forms and the degree of preservation of those facilities are also different.

In the years 1950–1960, a transportation construction project, important for the northern part of Kraków, was realised, connecting the area of Bronowice with Krzesławice. It was a big traffic route from Opolska Street, through Lublańska, Dłuskiego (now Gen. Okulicki) to Łowińskiego street. The aforementioned Lublańska Street cut the Olszecka leat into two parts at that time, thus separating its part connected to the Dominican Mill from the portion connected to the Rakowicki Mill. This division became even more permanent and strong in the first years of the 21st century, when Lublańska Street was modernised and an overpass was built in the area of the Polsad Roundabout.

Further changes in the network of water system in the area resulted from the construction of multi-family development complexes. The first complex of multi-family development in the area of the former village of Rakowice (Olsza II) was constructed in the years 1963––1975. A part of the Prądnik Czerwony housing estate, in Majora, Powstańców and Dobrego Pasterza, was built at the same time. Another part of the Prądnik Czerwony estate, in the area of Strzelców Street was built in the years 1981–1990.

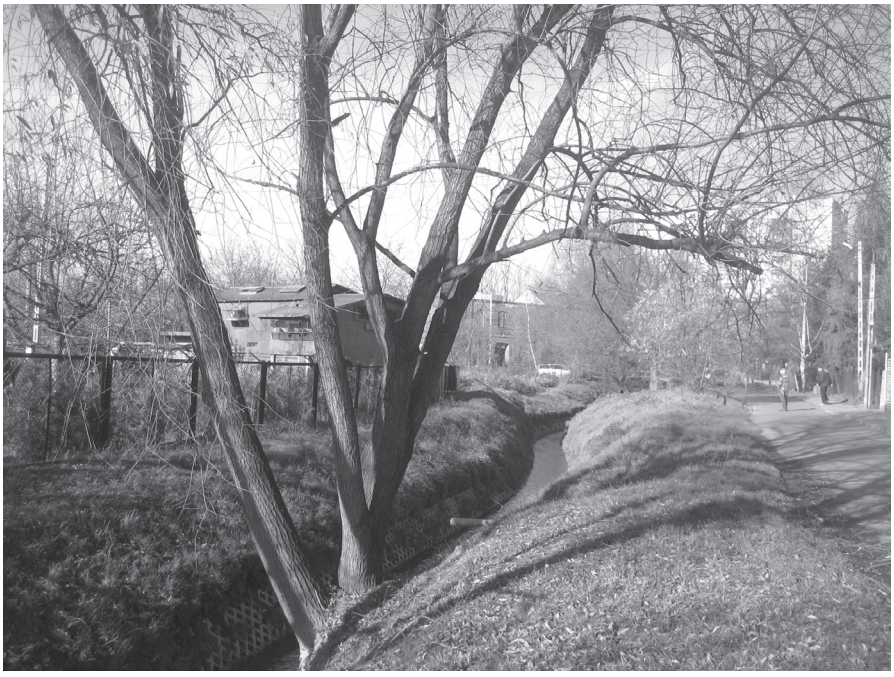
The ponds at the Dominican Mill were filled up to enable the construction of the housing estate in the area of Dobrego Pasterza Street, the leat supplying the waters of the Prądnik to this area from the weir in Bularnia had been done away with earlier. Its course is still discernible on a map from 1979, and at present, its traces – in the form of a depression in the ground – are still preserved in the area of Dominikanów and Nad Strugą streets. The other two watercourses supplying water to the Frog Mill still flow in their original beds (Ill. 3).

The area of drained land created by filling up the ponds at the Dominican Mill served as the ground on which *the Dominican Park* was established, which at present bears the name *the Enchanted Cab Park*. The park is a part of the park of the River Prądnik and its tributaries. A pond has been created in the central part of the park. This pond and a part of a watercourse flowing into it from the side of the mill is merely a poor substitute of the previous water system existing here. The system consisting of two ponds and a leat is still clearly discernible on a map from 1979. The designers want to remind the public of a dyke that used to encircle these ponds by elevating one of the park's alleys above the ground. The 19th century building of the Frog Mill on the other hand, at present rather decrepit, is intended by the designers, after the necessary repair and adaptation works have been completed, to perform cultural and educational functions.

Nevertheless, the Enchanted Cab Park occupies only a part of the area, around 2 ha, between Dobrego Pasterza, Kaczary, Olszecka and Lublańska, which in the City of Kraków's study of land use conditions and directions[17] was classified as a green area of general urban

The subsequent changes of the city boundaries may be traced in: The Atlas of the City of Kraków (map No. 8).

[17] Studium uwarunkowań i kierunków zagospodarowania przestrzennego Miasta Krakowa, Kraków City Council, 2003.



Ill. 3. The waters of the Sudół stream flowing along Olszecka Street, the building of the Dominican Mill visible in the background (photo by the author, 2010)

type *meaning is unclear* and was to perform the function of a river park. The remaining part of the area adjacent to Lublańska street since 2008 has been gradually built up by a multi-family development complex called *The Enchanted Mill*. The development complex is being constructed in compliance with the land development conditions decision for the area obtained by the investor. The area which is being built up is exposed to flooding with the 'one-hundred years water' (Q1%) and is also disadvantageous from the point of view of acoustics[18].

The building of the Rakowicki Mill, which as one of the few facilities of that type had been functioning in the space of Kraków until 1946, has met a different fate. In 1946, it lost its primary function and became a warehouse, which began its slow decline. The demolition of the building of the last royal mill in Kraków took place on the 7th November 1976[19].

Waters of the Olszecka leat, which used to move the wheels of this mill, were let into the sewers. The outline of the Olszecka leat course in the section between Lublańska and Żarnowa streets is still discernible in the space of the housing estate as a water-less bed lined with trees which used to grow over the water flowing in it (Ill. 4).

[18] See: Resolution No. XXXII/1976/09 of the Kraków City Council of the 7th October, 2009 on adopting the local land use plan for the Sudół Dominikański area.

[19] See: J.W. Raczka, *Młyny królewskie w krajobrazie Krakowa*, Part II, *op. cit.*, 7.

Ill. 4. Water-less Olszecka Leat bed between the Polsad Roundabout and Młyńska Boczna Street (photo by the author, 2012)

4. The principles of water forms and facilities conservation formulated in urban planning documents

Quality of life in urban areas is to a considerable extent affected by the preserved elements of the cultural and natural environment of a given area. According to the acts of law with a binding force in Poland, the key role in their conservation, as well as in the proper use that is made of them in shaping urban fabric, is played by the urban planning documents of the commune, i.e. the city study of land use conditions and directions and the local land use plans.

It therefore seems important to survey the passages in those documents pertaining to the objects of natural and cultural value which have been preserved in the space of Prądnik Czerwony, especially the ones referring to water facilities and water form relics.

In the valid study of land use conditions and directions in the City of Kraków of 2003, the following *inter alia* were listed as cultural assets: "hydrographic networks embedded in the city topography (the course of the Royal Leat), dikes and traces of past ponds and water industrial facilities"[20]. And further on: "The following should be listed as the most important objectives of land use policy: preservation of the unique assets of the cultural environment as well as prevention of structure transformations and

[20] See: *Studium*..., *op. cit.*, 120.

land use types that might constitute a threat to its exceptional values contributing to the identity of the City". Moreover, the network of rivers and streams of Kraków, together with their accompanying green areas, are to be protected as a system of river parks[21]. It is emphasised in the document that these areas should be "... permanently incorporated into the city spatial structure as areas free of development, facilitating social contacts and universal use of the resources of the environment. The main directions of their use are also hereby determined"[22].

Twelve river parks are scheduled to be created in the area of Kraków. The river park of the Prądnik with its tributaries is to be one of them. The current valid *Ranking List of Municipal Investment Projects Pertaining to Greenery*[23] comprises 28 parks of a combined area amounting to 803.6 ha, including 15 fragments of river parks, and with *Park Rzeczny Rozrywka* (*The Entertainment River Park*) among them. This park, with an area of 36.6 ha, constitutes a part of the River Park of the Prądnik with its tributaries. On the area of the Entertainment River Park, there is a 7 km-long section of a stream bed together with its green surroundings, situated within the city boundaries. The area of this park is covered by the local land use plan *Sudół Dominikański*[24]. The plan is one of three local land use plans that are valid in the area of the district of Prądnik Czerwony[25]. Together they cover an area of 90.2 ha, which is 13.8% of the whole area of the district[26].

In the Sudół Dominikański plan passed on the 27th November 2009[27], "Protection of the natural environment and the landscape of the stream Sudół Dominikański (Rozrywka) has been adopted as the primary objective of the plan", and the detailed objective was "... to ensure natural and functional continuity between the areas of the Dominikański park located in the southern part of the plan with the areas surrounding fort 471/2 Sudół, together with its greenery and a part of the areas of the forefields not sure what this is supposed to be to the east of the fort"[28]. A Conservation Office Protection Zone was marked out in the plan. It encompassed "... the so-called Frog Mill of the early 20th century at 18, Olszecka Street together with its surrounding park, which was created on the area of the former Dominican ponds..."[29]. The Frog Mill facility[30] is one of the very few historic industrial facilities of this type that have been preserved in the area of Kraków. The plan also includes a drawing with an outline of the Historical and Cultural Route of Prądnik Czerwony. A part of this route runs in the vicinity of the Frog Mill and the Enchanted Cab Park, and a small fragment

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[21] See: *Ochrona i kształtowanie środowiska przyrodniczego*, [in:] *Studium..., op. cit.*, 174.

[22] See: *Kształtowanie struktury przestrzennej miasta*, [in:] *Studium..., op. cit.*, 139.

[23] See: Jednolita lista rankingowa inwestycji miejskich w zakresie zieleni, Evaluated by the Committee for Spatial Planning and the Environment Protection of the Kraków City Council – opinion no 174/2006 of 23rd January 2006.

[24] The area encompassed by this plan amounts to 70.8 ha, which is 10.8% of the district area.

[25] The other two plans cover the area of the Prądnik Czerwony cemetery.

[26] Until the 26th October, Kraków had 92 valid local land use plans, which together covered as little as 36.9 % of the city area.

[27] Resolution No. XXXII/1976/09 of the Kraków City Council of the 7th October 2009 on adoption of the local land use plan for the area of Sudół Dominikański.

[28] *Ibidem*, 2.

[29] *Ibidem*, 11.

[30] The Frog Mill facility is listed in the commune register of monuments. In 2006, the commune of Kraków bought from the Dominican Order in Kraków the land on which the Dominican Park is situated together with the Frog Mill building situated within and the building of an old stables.

goes along Dominikanów Street. The Natural Assets Protection Zone has also been marked out. It is prohibited to locate new facilities in the zone, and in the case of the existing ones, their use has been permitted as before, yet any possibility of upward or outward extension has been excluded. Moreover, natural greenery protection has been commanded, and any intervention into the natural shape of the Sudół Dominikański stream has been prohibited. However, regulation of the watercourse has been permitted with the reservation that if the banks and the bed of the Sudół Dominikański stream are to be strengthened, only natural materials should be used.

Moreover, six local land use plans are currently being prepared for the Prądnik Czerwony district[31], covering the total area of 208.6 ha, which is 32% of the district area. One of those plans, the local land use plan *'The Area of XX Pijarów street'*, includes a small part of the area where the waters of the Olszecka leat used to flow. The area covered by this plan is only 15.4 ha. The work on drafting this plan commenced following a motion of the Committee for Spatial Planning and Environment Protection of Kraków City Council of the 9th May 2011. A part of the area covered by the plan currently in preparation fell under the old plan 'Olsza in the area of Gen. Bor-Komorowski and Księży Pijarów streets' implemented in 1998[32]. The aforementioned motion indicated the need to amend this plan as it was difficult to apply in practice. The plan 'Olsza in the area of Gen. Bor-Komorowski and Księży Pijarów streets' did not take into account the need to protect the waterless yet still clearly discernible bed of the Olszecka leat and its surrounding greenery. This relic *consider changing to 'ruin'* of a water form, so important in the recent history of Rakowice, was only referred to in the plan as "greenery accompanying the watercourse together with the watercourse development"[33]. The plan 'Area of XX Pijarów Street' currently in preparation covers the meandering part of the leat's old bed and the best preserved greenery of the surrounding areas. It is the area between the Polsad Roundabout and Młyńska Boczna Street. The objectives of the plan do not include any formulation pertaining to the existence and the need to protect the traces of the area's old water system.

5. Conclusions

Even today, it is possible to find traces of old water forms in Kraków's spatial arrangement, which testifies to the extensive use of water characteristics for economic purposes[34]. Such traces take on different forms in the contemporary area of Kraków. They are neglected ponds, parts of leat beds, mill facilities or stretches of characteristic vegetation which used

[31] The District of Prądnik Czerwony occupies the area of 650 ha and is inhabited by 48,654 people. After BIP, 2012.

[32] Resolution No. CXXII/1093/98 of the Kraków City Council of the 17th June 1998 on the local land use plan for the area Olsza in the area of Gen. Bor-Komorowski and Księży Pijarów streets.

[33] See: *Ibidem*, 4.

[34] More on the subject of commercial use of the waters of the rivers flowing through the area of Kraków and its closest vicinity may be found inter alia in A. Falniowska-Gradowska, *Mieszkańcy doliny Prądnika w XVIII w.*; M. Tobiasz, *Rozwój przestrzenny Prądnika Białego i Czerwonego*; J.W. Rączka, *Młyny królewskie w krajobrazie Krakowa*.

to accompany water forms. In many cases, the only reminders of a water form existing in an area in the past are the names of streets and squares[35].

"The character of Prądnik changes more every year, because the village has given way to the city; in a dozen or so years Prądnik's old cottages and houses will disappear and share the fate of the distant and so different past of the area, of which we have very few historic relics and the memory of which has only been preserved in old files and documents. In the light of these historic records, Prądnik acquires its proper colours and throbs with life full of transformations, different for each generation. For the history of Kraków, the fates of Prądnik are of special importance and are tied to it by an unseverable knot"[36].

This is how Mieczysław Tobiasz wrote about the area of the village of Prądnik Czerwony nearly half a century ago. Today the following relics of the past testify to the old character of Prądnik Czerwony: the building of the Dominican Mill, the so-called *Frog Mill* (Żabi Młyn), traces of the Olszecka leat in the area of Dominikanów, Nad Strugą and Olszecka streets.

In the area of the village of Rakowice, there is the still discernible bed of the Olszańska leat. The Rakowicki Mill does not exist any longer. In the place of the mill's building, a housing tower was built at the end of the 70s, a car park and a green plaza have been put up (Ill. 5). The existence of a royal mill in this place is commemorated in the names of the streets: Młyńska (Mill street), Młyńska Boczna (Mill Side street), Żarnowa (Hand mill) or Sadzawki (Pool).

Ill. 5. The Rakowicki Mill used to stand in the place of the present car park and block of flats visible in the background until 1978. On the left, the water-less bed of the Olszecka Leat (photo by the author, 2012)

[35] E. Supranowicz writes extensively on the subject of the names of streets and squares in Kraków: E. Supranowicz, *Nazwy ulic Krakowa*, Institute of the Polish Language, Polish Academy of Sciences, Kraków 1995.

[36] M. Tobiasz, *Rozwój przestrzenny Prądnika Białego i Czerwonego*, Scientific Journal, issue 4, Cracow University of Technology, Kraków 1965, 87.

The preserved relics of technological culture in the area of Prądnik Czerwony, testifying to the former splendour of this area and its significance in the history of Kraków, should not only be seen as material remains of the past, but also as an important element in shaping the local identity of this part of Kraków. Therefore, there is an urgent need to counteract the decay of the existing objects of natural and cultural value of this area, which has not always been possible until now, *inter alia* due to a lack of relevant legal documents or efficient instruments for law enforcement. It must be strongly emphasised that legal regulations alone do not guarantee success, eventually it is the quality of the adopted solutions that decides.

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[10] Resolution No. LXXXII/1076/09 of the Kraków City Council of the 7th October, 2009 on adopting the local land use plan for the Sudół Dominikański area.

[11] Resolution No. CXXII/1093/98 of the Kraków City Council of the 17th June 1998 on the local land use plan for the area „Olsza in the area of Gen. Bor-Komorowski and Księży Pijarów streets.

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CONTEMPORARY ENVIRONS OF WATERCOURSES IN SZCZYRK – THE SILESIAN BESKIDS

WSPÓŁCZESNE OTOCZENIE CIEKÓW WODNYCH W SZCZYRKU – BESKID ŚLĄSKI

Abstract

As a town of abundant natural environment resources, Szczyrk provides a good example of the spatial transformations taking place in recent years. The changes also affect watercourses and areas indicated as eligible for the status of protected areas. Nevertheless, the changes now in progress not only fail to comply with the currently valid trends in architecture and urban planning, but also frequently copy erroneous solutions from the past. The existing situation calls for undertaking appropriate actions for the future, which will enable preservation of the natural environment in the possibly unchanged form so that it could coexist with humans and their activities.

Keywords: *Szczyrk, rivers, urbanized area, protected area, natural environment, riverbed, watercourse, public space, the Beskids*

Streszczenie

Szczyrk jako miasto o bogatych zasobach środowiska przyrodniczego jest przykładem transformacji przestrzennych dokonujących się w ostatnich latach. Zmianom tym podlegają także cieki wodne oraz obszary postulowane do nadania im statusu obszarów chronionych. Jednak dokonujące się przemiany nie tylko rozmijają się z obowiązującymi trendami w architekturze i urbanistyce, lecz często powielają błędne rozwiązania z przeszłości. W istniejącej sytuacji zachodzi potrzeba podjęcia odpowiednich kroków na przyszłość. Umożliwi to zachowanie środowiska naturalnego w możliwie niezmienionej formie tak, by mogło ono koegzystować z działalnością człowieka.

Słowa kluczowe: *Szczyrk, rivers, urbanized area, protected area, natural environment, riverbed, watercourse, public space, the Beskids*

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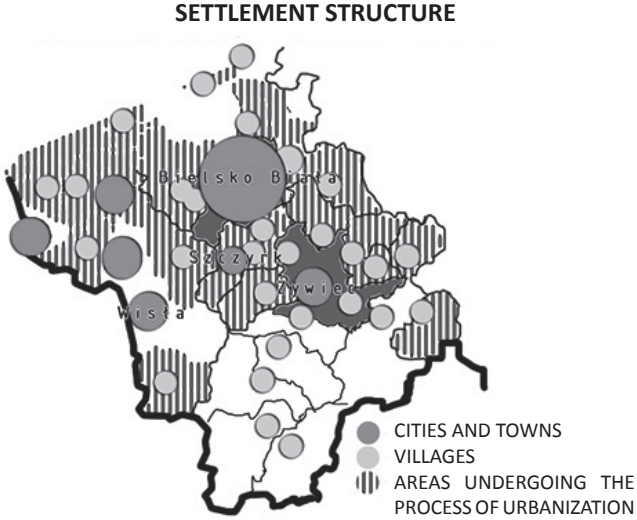
The area of the Beskids, especially recently, has been undergoing the process of considerable transformations. Numerous economic changes are taking place here involving first of all a significant rise in the number of new construction projects – consisting not only in erecting new facilities but also effecting changes in public spaces. The actions aim at activating the thus far neglected areas but they also strive to create a network of new areas of diversified functional programme. There are also numerous undertakings in which the transformations are co-financed primarily by the EU funds.



Ill. 1. Silesian voivodship settlement structure (prepared by the author)

Due to the land topography, most towns in the area of the Beskids are situated in mountain valleys. This feature, combined with other natural conditions, makes such towns popular tourist destinations, and tourism is the driving force for the development of some urban centres. One such town is Szczyrk, which together with Wisła and Ustroń, constitutes a tourist 'tri-city' of a kind in the Żywiec region. Numerous ski lifts, hiking and cycling trails, as well as many sports facilities of significant national rank make it an exceptionally attractive town for visitors. We should also mention numerous examples of animate and inanimate nature as well as the areas of the 'Promotional Forest Complex' and sizeable areas protected by the NATURA 2000 programme[1]. In the area of Wisła and Ustroń there is already a protection zone of 'Curative, Natural and Climate Assets of Spa Resorts'. Favourable conditions are being created for commercial undertakings whose activities do not adversely affect the environment.

[1] NATURA 2000 – European Ecological Network; the programme was created as a system of protection of endangered species and biological diversity of the European continent; is has been implemented since 1992. The network of areas comprises two area types: a network of special protection areas for birds (SPA) and special areas of habitat conservation (SAC).

Nevertheless, there is yet another factor necessary for all those positive impulses to take effect. The town should, or indeed it must have public spaces which are functional and visually attractive. They should be safe for their users (including disabled people) and, due to the type of development and the location within the surrounding landscape, they should be saturated with greenery penetrating into the town from the surrounding forested mountain slopes.

New projects in public spaces do not always meet all the requirements of sustainable development. A good example is Szczyrk and its 'Deptak nad Żylicą' (*Promenade along the Żylica*), a street which stretches through nearly the whole town along the Żylica river[2]. In the past, it used to be a largely dilapidated area, yet in the years 2010–2011, the appearance of this precinct was changed completely. The ruined and uneven paving had been replaced so that the pedestrian and cycling route would promote recreation and transportation. It has considerably facilitated moving around the town and in consequence, the pedestrian and vehicle traffic has risen in volume. At present, a lot of residents use this alternative route around the town in fine weather. However, due to the aforementioned strongly linear layout of the town as well as to the scarce presence of services in the vicinity of the promenade, tourists tend to choose the main road, where most of the services are situated. There is also a system of parallel parking along the main road, which the promenade does not have. Therefore, at present the promenade remains a second-choice option.

Ill. 2. The Promenade along the Żylica before transformation (photo by the author, 2009)

Ill. 3. The Promenade along the Żylica after the reconstruction (photo by the author, 2009)

There are some attempts at encouraging people to use the promenade, e.g. small playgrounds for children have been arranged in its vicinity. Yet, due to the very extensive transformation of the riverbed which was done while the river was being regulated, some of those areas are surrounded by a wall. There are also deep culverts and drainage canals which pose a real danger to children. The heights of those facilities are large enough for a child to suffer a limb fracture in the case of falling, not to mention some more serious injuries. The scale of the problem is large, because the riverbed has been turned into a concrete drainpipe, which has a permeable bottom only in certain sections, and this is only because concrete slabs of a grate structure have been used there. It has to be mentioned that in certain places,

[2] The Żylica – a mountain river in the Silesian Beskids and Żywiec Dale, with its spring on the northern slopes of Malinów and Salmopol Pass in the area of Szczyrk – Salmopol.

Ill. 4. The Żylica river and its high walled embankment (photo by the author, 2012)

Ill. 5. Unprotected infrastructure elements next to a playground (photo by the author, 2012)

Ill. 6. The Żylica river banks lined with concrete – to the right: discernible a part of a playground (photo by the author, 2012)

the banks have been lined with concrete for more than a metre over the water surface with a very slight sloping angle. The above observation must lead to the conclusion that the land has been covered with hard surfacing without any reason – such actions do not increase the efficiency of the town's protection against flooding. A shallow basin with smooth surfaces, which impedes percolation of excess water during heavy rainfalls, only makes the situation worse by increasing the velocity of water flow. Thus, instead of protecting the town from flooding, it produces the exact opposite effect. In fact, nature has already verified the level of durability of several implemented solutions – in many places, the bottom has been damaged. The soil under the concrete slabs has been washed away, which has caused their collapse. The visual impression has greatly deteriorated due to this occurrence – it confirms that the maxim 'more is better' is not always the case. If the riverbed had been left in its natural state, such a situation would never have taken place, as it would have been shaped in the same manner all along its course. Moreover, even if there had been some points of damage, they would not have been so strikingly visible against the natural background, as is the case with artificial reinforcement.

Ill. 7. Damages to the artificial riverbed bottom (photo by the author, 2012)

Another consequence is the general deterioration of the visual and natural values of this area. Due to such distinct differences between the materials used in the watercourse environs and the surroundings, the natural borderline between the area of natural values (including water) and the users of this area becomes more distant. Such a method of developing the riverbanks also adversely affects the growth of natural vegetation accompanying watercourses. A large number of plant species grow in such places and they create the specific character of near-water areas. An attempt to transfer natural processes into a riverbed that has been turned into a concrete drainpipe is, from the start, doomed to failure. The riverbank running through the whole town is a wall, sloping more in certain places and less in others – in extreme cases, it is an almost a vertical wall as high as an adult person.

Ill. 8. The imposed industrial form (photo by the author, 2012)

Ill. 9. One of the storm water drainage outlets (photo by the author, 2012)

The only effect that may have justified the undertaken actions is the psychological effect – regulating the banks of the small river flowing in the direct vicinity of buildings is supposed to give the illusionary sense of security. It is illusionary because in the Local Land Use Plan for the town of Szczyrk (hereinafter referred to as LLUP) the area marked as the zone immediately threatened by flood encompasses a larger area than the riverbed and is actually the same as the area of development, which confirms the unreasonable character of the implemented solutions. Even the impression of the area's orderly arrangement is illusionary. A closer scrutiny reveals numerous problems that still have not been properly addressed, such as numerous storm water drainage outlets, which spoil the aesthetic impression.

From the legal point of view, the situation is ambiguous too. On the one hand, LLUP calls for new zones of natural environment protection, but on the other, it indicates the need to construct protection supports against flooding. Another problem is the inconsistency between what has been written in the plan and what may be seen in reality. For example: LLUP emphasizes the necessity "to preserve biological diversity and environmental balance as well as natural character"[3] of the indicated ecological sites (and some areas along the Żylica as well as the area UE10-Szczyrk are such ecological sites).

Zones of immediate protection for springs and water intake points have been marked out, with reference to which, an obligation has been imposed to fence the areas within the zone[4]. If we take a more general look at the whole problem, it will seem obvious that it is impossible to preserve the natural character of an area and at the same time build fences around everything that is valuable. Regulations referring to the protection of surface waters seem equally peculiar, as the solutions which they recommend are completely different from the ones we can see while strolling down the promenade. For example, LLUP writes about "providing access to water in compliance with the principle of universal use of waters" and about "the protection of biological buffer zones around surface waters"[5].

It would appear that the town authorities have attempted to link some public areas important for the town with the route of the promenade – after all, it runs not only through the square in front of the Town Hall but also through the area where the bus station was formerly located. It was rebuilt, however, in the years 2010/2011 and considerably reduced in size in the process, and the rest of the area was supposed to be turned into a public space focusing the so-called town life. The location is quite valuable in the sense that it is in the very heart of the town. It is also directly adjacent to the river. Nevertheless, the changes that have been introduced here resemble the ones done to the promenade, i.e. it has been paved with completely new surfacing. The pavement (block paviors in the 4 main shades) creates a cared-for and neat impression. It is not clear, however, why the pavement had to tightly cover the greater part of the parcel. Now the place resembles a concrete square, which it is not, and for several reasons:

– an area is not an urban square unless there are buildings situated at its sides, which constitute its boundaries;
– a lot of benches, rubbish bins, bicycle stands and lanterns have been placed there, but all these things are situated in the middle of the square along the central axis, which excludes certain functionalities that should be available for a space aspiring to the name of 'urban square'. Certainly, this deficiency might be explained by the fact that the town develops

[3] Local Land Use Plan for the Town of Szczyrk – art. 92, para. 8, point 3.
[4] Local Land Use Plan for the Town of Szczyrk – art. 94, para. 1, point 1.
[5] Local Land Use Plan for the Town of Szczyrk – art. 92, para. 9, point 2a and point 2c.

the area of the Skalite stage elsewhere, yet the question still remains – what is the point of creating such a huge paved area if it cannot be used for any mass event due to the presence of a large amount of street furniture that cannot be dismantled?

– the new space does not correlate in any way with its environs, so much so that the new 'square' is adjacent to the backyard of a hotel. At one end, the main axis leads the eye towards the Elbrus hotel, which is not even directly at the end of the axis but only in the background, and the other end is defined by a forest. In a sense, such a way of closing a panorama is typical of public areas in mountainous towns, yet in this case, it additionally emphasizes the impression of absence of any spatial elements that would define the area of the square.

The only bit of greenery that has been spared is a meagre group of lanky trees in the middle of the area. In the visual context, it looks but mediocre. Its impact on the spectator is significantly smaller than the one created by the greenery surrounding the town, also perfectly visible from here.

Writing about the situation at the junction between water and public spaces, it is impossible not to mention the new fountain which has been placed here. The idea matches the concept of the remaining part of the design. It is a drainpipe made of concrete and paving blocks, running along approximately one third of the parcel's length. Once again, the possibly least natural form has been chosen.

One might get the impression that there is a certain aspiration to draw from the abundant resources of the natural environment, yet the manner in which it is being done is completely counter-effective. There is no question of bringing humans closer to nature by lining it with concrete, paving it up, erecting walls or such invasive riverbed regulations. Arranging public spaces in this way and equipping them with such technical infrastructure defies the principles of sustainable development or indeed of natural and urban environments' coexistence.

Looking at the Żylica river from the point of view of an architect, it has to be concluded that it has been given a too technical character, making the river, which is by definition a landscape's natural element, into something that would be more accurately described by the name 'storm water canal'. The only material that brings it closer to the natural element is water. Natural beauty has been covered with concrete lining – the original character of the river has been transformed in a way that should have never occurred in this place. A town like Szczyrk may be considered a model example of an ideal location for a tourist destination. Situated in a richly forested mountain valley, abounding in mountain springs and having a river – it should encourage visitors to use the plentiful resources of the natural environment, not only with its function, but with its form as well. Otherwise, not only does it not make the proper use of the potential it has at its disposal, but frequently destroys the features that define the town's character.

It should be realized that Szczyrk is not the sole town in which the transformations of watercourses and their adjoining public areas similar to the ones discussed above occur; it has just been presented as an example. Creating new barriers brings about new spatial and environment conflicts, which will only be added to the list of the already existing ones and aggravate some of them. Understanding the need to protect the environment is a more profound concept than enclosing everything with walls – it is first of all, a certain social awareness consisting of perceiving and respecting common values. What we lack is a certain common vision of protecting the natural environment and its value while enjoying its beauty

and resources at the same time. Instead of undertaking actions that have been described in this paper, we should strive to preserve the possibly most natural form of the environment – not only because of the need to comply with the principles of sustainable development, but also for the sake of ourselves.

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BRZEŹNO – FORGOTTEN WATERING PLACE OF TRÓJMIASTO

BRZEŹNO – ZAPOMNIANE KĄPIELISKO TRÓJMIASTA

Abstract

For more than 150 years, Brzeźno was a popular and frequented seaside resort with characteristic development, characteritic of what? You need to specify this or use a different adjective extensive, well cared-for park and a grand pier, yet the place was able to retain an intimate climate. The history of the resort started around the middle of the 19th century, when spa objects and facilities were built next to the medieval fishing hamlet. The place, which later became a seaside district of Gdańsk, had its heyday in the first half of the last century. In the post-war years, Brzeźno fell into decline, lost its historic development, former infrastructure, character and significance; although it was not completely forgotten, it played the role of a residential district. The beginning of the present century brings the commencement of the revitalization process of the partly preserved fragments of the former spa, which may signify a new era in the development of the former spa resort. Brzeźno's asset is still its location at the seaside, traces of its historic identity and close connections with Gdańsk. Using the potential of the place and restoring it to its former function will be possible if the actions undertaken at present are not limited to the fragmentary revitalization of some elements of the complex, but also provide for the introduction of a diverse functional programme and harmonious spatial growth, including reconstruction of the atmosphere of the old Brzeźno.

Keywords: seaside resuxt, historic identity, revitalization, potential of the place

Streszczenie

Przez ponad półtora wieku Brzeźno było znanym i uczęszczanym kąpieliskiem nadmorskim, z charakterystyczną zabudową, rozległym, wypielęgnowanym parkiem i okazałym molo, zachowujące przy tym kameralny klimat miejsca. Historia kurortu zaczyna się około połowy XIX wieku, gdy obok średniowiecznej osady rybackiej powstały obiekty i urządzenia zdrojowe. Okres największej świetności i popularności tej miejscowości, a następnie osiedla – nadmorskiej dzielnicy Gdańska, przypada na I połowę ubiegłego stulecia. W latach powojennych Brzeźno podupada, traci historyczną zabudowę, dawną infrastrukturę, charakter i znaczenie; chociaż nie zostaje w całkowicie zapomniane, pełni głównie rolę dzielnicy mieszkalnej. Z początkiem wieku rozpoczyna się proces rewitalizacji zachowanych częściowo fragmentów byłego zdroju, co może oznaczać nowy etap w rozwoju byłego kurortu. Atutem Brzeźna jest wciąż jego położenie nad brzegiem morza, ślady historycznej tożsamości i bliskie związki z Gdańskiem. Wykorzystanie potencjału miejsca i powrót do jego dawnej roli będą możliwe, jeśli podejmowane obecnie działania nie ograniczą się do cząstkowej rewitalizacji elementów tego zespołu, ale obejmą także wprowadzenie zróżnicowanej oferty programowej i zadbanie o harmonijny rozwój przestrzenny, w tym odtworzenie nastroju dawnego Brzeźna.

Słowa kluczowe: *kąpielisko nadmorskie, tożsamość historyczna, rewitalizacja, potencjał miejsca*

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1. Introduction

The title of the article is by intention, a little deceptive. Brzeźno is not at present one of the popular seaside resorts or fashionable holiday destinations on the Polish coast of the Baltic Sea, yet it has not been completely forgotten.

The Brzeźno beach is frequented by local residents. Visitors who come to Gdańsk on various errands find a bed for the night in one of a few small hotels away from the noisy and crowded parts of the city. Cyclists and strollers use the trail, marked out along the Trójmiasto coastline, which starts here. Nevertheless, the old Brzeźno is no longer present. Looking at the remnants of the original fishing hamlet, partly mixed with the chaotic development from the 2nd half of the last century, as well as when looking at the condition of the former park complex, one feels sorry and melancholic for what has been lost. Brzeźno, the way it was only several decades ago, and especially in the earlier periods, has a circle of devotees and is still cherished in the fond memory of those who knew it. Are the glory days of this resort gone forever?

2. The emergence and development of the seaside resort

The former bathing spa and holiday resort, later a district of Gdańsk, which it has remained until today, may be included in the category of spa centres linked to a big city[1].

The development of Brzeźno as a village, a watering place and a city district may be divided into several stages:

- a fishing hamlet,
- emergence and development of seaside watering place,
- construction of facilities connected with the Gdańsk port in the vicinity of Brzeźno,
- development and heyday of the seaside resort,
- military operations,
- functioning of the watering place in the socialist economic reality,
- expansion of Brzeźno as a residential district of Gdańsk,
- decline of the watering place,
- commencement of the resort revitalization.

Brzeźno became a popular watering place on the Gdańsk Coast in the 1st half of the 19th century. Spa facilities and objects started to emerge in the area of the medieval fishing village originally belonging to the order of Cistercians of Oliwa[2]. Before the end of the century, the original spa complex comprised:

- a bathhouse,
- the Spa Hall with the curative garden,
- the Seafront Pavilion[3].

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[1] According to the classification suggested by Elżbieta Węcławowicz-Bilska. See: *Uzdrowiska polskie. Zagadnienia programowo-przestrzenne*, The CUT Press 2008, 159-160.

[2] In the last quarter of the 18th century (until 1807), Brzeźno was a part of the so-called Oliwa estate remaining under Prussian management. See: http://pl.wikipedia.org./wiki/Brzeźno_(Gdańsk).

[3] The first bathhouse was built here in 1820, the second one, after the first was destroyed by fire, in 1833. The Spa Hall was built in Brzeźno at the same time. New facilities were built towards the end

The composition was completed with the organized park complex on the wooded areas stretching parallel to the beach.

Starting from the first part of the 19th century, the eastern part of Brzeźno acquired a defensive function[4]. Some fortifications, artillery stands and a railway station were constructed on the outskirts of the town. A part of the seafront fortifications, rebuilt in the first decades of the last century, has survived until contemporary times. The military structures (shelters and artillery stands) were incorporated into the park area after the 1st world war.

The glory days of Brzeźno as an independent town and subsequently (after it had been incorporated within the administrative boundaries of Gdańsk) as a spa district, were connected with the emergence of new objects and facilities, which enriched the recreational appeal of the seaside resort. The place experienced its heyday at the beginning of the 20th century, and later in the interwar years. Apart from the objects and areas mentioned above, the watering place infrastructure comprised the following:

– a 100-metre pier, subsequently extended to 200 hundred metres[5],
– a bathhouse with over three hundred cabins for ladies, gentlemen and families[6].

The seafront Spa Park, originally called the Brzeźno Woods and planted for the protection of military warehouses, was an important part of the spa area. After being transformed in 1842 to comply with the canons of the art of horticulture, it became a carefully planned park complex with compositional axes and a vantage point, adorned with varied vegetation. As such, it started to perform the function of a recreational place, a venue for concerts and a meeting spot. Hotels, restaurants and guesthouses provided comfortable sojourn conditions for visitors coming in great numbers[7]. Brzeźno enjoyed the excellent reputation of a well-known, fashionable and attractive spa resort, and it had its ardent admirers[8].

Brzeźno had transportation links to Nowy Port and Gdańsk in the form of vehicle roads, railway lines and subsequently, from the end of the 19th century, tramway lines.

Incorporation of the place into the administrative boundaries of Gdańsk in 1914, involved creating closer links with the city.

Three functional areas could be identified within the layout of Brzeźno: a fishing hamlet from the west, a watering place with the park in its central part and the post-fort and port development from the east. The plan of the town from 1932 shows: the historic spa with the Spa Hall; the Seafront Pavilion; the Pier; the Bathhouse; the park. It also shows the remaining areas – the fishing and the port development complexes. The watering place area is held

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of the 19th century: a new Spa Hall and the picturesque Seafront Pavilion, situated right next to the beach.

4 I am referring here to the construction of Fort Brzeźno at the beginning of the second quarter of the 19th century.

5 The 100-metre pier was built in 1900, and extended to 200 hundred in the interwar period.

6 Originally built before the 1st world war, pulled down and built again in the years 1919/20, and subsequently modernized.

7 It is worth noting here that, as emphasized by Maria Bogucka, in the interwar period, going to fashionable places with a favourable climate and location in order to improve one's health and spend leisure time in an interesting way became not only popular, but also available even for people of average income. See: Bogucka M., *Kultura, naród, trwanie. Dzieje kultury polskiej od zarania do 1980 roku*, Warszawa 2008, 400.

8 One of them is Gunter Grass, who mentions Brzeźno in his books.

together by the alleys leading through the park towards the sea – from the east, the view towards the entry into the port is closed by a breakwater with a lighthouse[9].

3. The decline of the resort

The break in the functioning of the watering place which took place during the 1st world war did not stop it from returning to the previous condition and expanding the spa function. The situation in the district was different after 1945. The second world war and the change of political regime brought about the destruction of the former spa character and infrastructure. As a result of war operations, the major part of the historic spa development (including the Seafront Pavilion, the bathhouse and the pier) had been annihilated. The Spa Hall was partitioned and turned into council flats. The almost sole remnants of the old resort were the declining Spa Park, the complex of seafront beach development and the main alley, a sandy promenade leading from the Spa Hall along the park to the pavilions of the 'paid beach'. Together, they created a romantic enclave – a reminder of the former glory.

In the post-war decades (from the 50s to the 70s of the 20th century), single and multi-family development (including great-slab blocks of flats) emerged in the vicinity of the fishermen's houses and the former spa, bringing chaos into the orderly spatial layout of the district.

The method of management applied to the space and the historic objects in the system of the so-called socialist economy, gradually led to the degradation of what had remained of the former complex[10], and in consequence, to the decline of the spa function in Brzeźno. Tourist infrastructure deficiencies and low quality of the offered services, dilapidated beach and contaminated coastal waters completed the degradation and disrepair.

4. Beginnings of Brzeźno revitalization

The beginning of the 21st century brings a breakthrough in the modern history of the once-exquisite spa and a chance of regaining the lost function of the seaside district of Gdańsk. Initial projects and works on lifting Brzeźno from its state of dilapidation have been broken down into stages planned for the subsequent years of the first decade *not sure which years you mean, needs rewording* of the present century.

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[9] Two lighthouses existed in the eastern part of Brzeźno as early as in the mid-18th century, serving the purpose of navigation at the entrance into the port of Gdańsk, one of them was replaced nearly a hundred years later.

[10] Gradual degradation resulting from lack of proper care of the preserved development coupled with operations of stormy weather and, as is supposed in Brzeźno, arson at the end of the last century, all together led to the destruction of the seafront wooden development complex, which originally housed a restaurant, changing rooms, beach equipment rental and a natural open-air solarium (I quote the information on probable arson on the grounds of conversations with Brzeźno residents).

The Brzeźno Park and its environs have been included in the revitalization programme. The park alleys as well as its facilities and furniture have been cleaned up and rearranged, including the orchestra gazebo and the entrance gate opening onto the promenade running along the park and into the beach as well as the viewing platform at the location of the destroyed beach development complex. The centre of the district has been paved and a green plaza has been created at the entrance to the former spa zone.

The provisional services development existing in the same area has remained mostly unchanged. The actual way of use of the former Spa Hall is not congruent to its original character. The adjacent area, belonging to the spa garden, remains still in a condition of complete ruin and devastation[11]. The park itself is still covered with wild and overgrown vegetation, which gives it the character of a forest park.

The western, fishing and holiday part of the present district of Gdańsk, with its former fishermen and later – villa and single-family development, has been completed by three small hotels near the beach, built in the last decade, and a seafront walking and cycling trail, running along the coast and linking Brzeźno with Sopot. In season there are small cafés and bars put up along the walking trail, which bring some life into the sleepy atmosphere of the district. A new pier has been built beyond the area of the former watering place, to the west.

The present condition of the seaside part of the district may be described as extremely varied functionally, aesthetically and spatially.

5. Final conclusions

The primary asset of Brzeźno is its seaside location, making use of natural environment elements and the proximity of a big urban complex. The specific cultural environment of the former watering place, comprising the composed park complex, the characteristic architectural objects of the historic spa and the promenade linking the important places with the seaside beach, created the appeal of this place for over 150 years[12]. Small-scale characteristic fishing village development, neighbouring the spa zone, was a romantic completion of this complex. It could be said that the assets of location, development and general climate surpassed the ones of Sopot. Restoring its former role to Brzeźno would require not only repairing the damage, but also building the watering facilities from scratch. One of the basic conditions that would have to be fulfilled is also the problem of Gdańsk Bay coastal waters purification. Apart from the efforts to regain the lost assets of the former spa district, it would be necessary to enrich the offer and the recreation and tourism infrastructure and adjusting it to modern standards.

Undertaking the task of complete revitalization of the park complex and making the former watering facilities more functionally attractive may breathe new life into this still partly dilapidated and forgotten place on the map of contemporary Gdańsk, once one of the pearls of the Gdańsk coast.

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[11] The desolate area of the former garden has been fenced up with corrugated steel sheets.

[12] As emphasized by Mieczysław Orłowicz, the author of pre-war tourist guidebooks. See: *Brzeźno w granicach Gdańska, czyli kąpielisko od 1914 roku*, www.przewodnik.trojmiasto.pl.

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ARCHITECTURE | ARCHITEKTURA
4-A/2014

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THE INTERWAR SPA RESORT WISŁA – THE DEGREE OF CULTURAL ENVIRONMENT PRESERVATION

MIĘDZYWOJENNE UZDROWISKO WISŁA – STAN ZACHOWANIA ŚRODOWISKA KULTUROWEGO

Abstract

The aim of the article is to present and highlight the cultural heritage of Wisła as an example of an interwar spa resort designed from scratch, which in the contemporary times has been to a large extent destroyed. The urban principles and the construction projects realized in result of the regulation plans of the 20s and 30s of the 20th century created a coherent concept of the town's growth based on spatial order and harmony with the natural environment, a concept which was consistently executed. The Author emphasizes that at present, owing to erroneous planning decisions, the proportions between the developed areas and the natural environment have been distorted, and the stylistic uniformity of buildings has been disfigured in the process of their modernization.

Keywords: holiday resort, regulation plaus, cultural heritage

Streszczenie

Celem artykułu jest zwrócenie uwagi na dziedzictwo kulturowe Wisły, jako przykładu projektowanego od podstaw międzywojennego uzdrowiska, które w czasach współczesnych uległo znacznej destrukcji. Założenia urbanistyczne i realizacje budowlane powstałe w efekcie planów regulacyjnych z lat 20. i 30. XX wieku stworzyły spójną koncepcję rozwoju miasta opartą na ładzie przestrzennym oraz harmonii ze środowiskiem przyrodniczym i konsekwentnie były egzekwowane. Autorka podkreśla, że obecnie w wyniku nieprawidłowych decyzji planistycznych zniekształcone zostały proporcje miedzy terenami zabudowanymi i środowiskiem naturalnym a poprzez modernizacje obiektów zaburzono ich jednorodność stylistyczną.

Słowa kluczowe: *miejscowość wypoczynkowa, plany regulacyjne, dziedzictwo kulturowe*

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1. Wisła's geographic location

The town of Wisła[1] is situated in the Silesian Beskids in the Western Carpathians at the origins of the greatest Polish river – the Vistula. It has the reputation of a tourist and recreational resort, and first of all of a winter sports centre. Wisła lies in the direct vicinity of the border with the Czech Republic and approximately 15 km away from the border with the Slovak Republic. It is surrounded by mountains from all sides. The natural border from the west is the mountain ridge of Wielka Czantoria */the Great Czantoria/* (995 mamsl), from the south – Stożek Mały */the Small Stożek/* and Wielki */the Great Stożek/* (978 mamsl) as well as the Kubalonka Pass, from the east – the main ridge of the Silesian Beskids and Barania Góra */the Barania Mount/* (1220 mamsl) and from the north – the Malinowaridge (115 mamsl). The town area encompasses several valleys of the Vistula river in its initial course as well as of all its tributaries, and it is therefore cut through by numerous watercourses[2]. It is a really extensive town and comprises nearly 40 hamlets constituting settlement concentrations whose names are derived from the names of the streams flowing through the area they occupy.

There are 11.403 residents in the Wisła commune[3]. The area of the town equals 11.091 ha, the greatest part of which is covered by forest stretching over 8.250 ha, which accounts for 74.4% of the total area. The arable land comprises 1.115 ha, i.e. 18.9%, and the developed area – 293 ha, which accounts for 2.6% of the town area.

2. Development of Wisła as a holiday resort

Although at present, Wisła does not have the status of a spa resort, its splendid location in the vicinity of a spruce forest and its moderately warm climate with a high humidity level provide health benefits which are excellent for people recovering from heart or respiratory system diseases as well as from conditions of nervous exhaustion. Over 70% of the town area is covered by forest, which until the end of the 17th century was composed of beech and pine, but at present is a spruce monoculture.

Wisła, situated in the area of the historic Cieszyn Silesia, as a ducal village it was linked to the court in Cieszyn. The emergence of Wisła as an administrative unit dates back to the 16th December 1643, when, upon the orders of duchess Elżbieta Lukrecja / *Elisabeth Lucretia/*[4], it was recorded in the urbarium[5] as 'a New Village established on the Vistulas'.

As a tourist destination, Wisła had remained unknown until the mid-19th century, when the area started to attract travelling scientists discovering the origins of the Vistula river and describing their expeditions in the press and magazines. In 1885, 'Tygodnik Ilustrowany'

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[1] Wisła was granted municipal rights in 1962.

[2] The most important streams are: from the west – Gahura, Jawornik, Dziechcinka, Łabajów; and from the east – Bukowa, Partecznik, Gościejów and Malinka.

[3] The data come from the Wisła Town Hall and are as of the 31st Dec. 2005.

[4] Elżbieta Lukrecja – the last duchess of Cieszyn from the Piast dynasty – died in 1653 and then the Duchy of Cieszyn was taken over by the Habsburgs, who were its rulers until 1848.

[5] A book containing a register of a land owner's property as well as the duties of his serfs.

(*The Illustrated Weekly*) published an article by the ethnographer and social activist, Bogumił Hoff, entitled 'A Trip to the Origins of the Vistula'. The author of the article, enchanted by the beauty of the Wisła area, became a discoverer and propagator of its tourist merits. His activities triggered a discernible increase of interest in this hitherto unknown place among the inhabitants of big cities, such as Cracow, Lwów, Poznań or Warsaw. In 1886, Bogumił Hoff built the first Polish villa 'Warszawa', and a year later another one – 'Jasna'. Promotion of Wisła as a Polish holiday resort, initiated by Bogumił Hoff, was continued by his son, Bogdan Hoff, who was the author of design as well as the constructor of the first villas, and also the founder of the natural therapy centre[6] and a bathhouse[7], which operated until 1915 when they were destroyed by flood. Another propagator of Wisła and the holiday resort creator was the man of letters, psychologist and philosopher, Julian Ochorowicz, who together with Bogdan Hoff, built a number of wooden villas such as 'Zofiówka' (*Sophie's Place*), 'Placówka' (*the Establishment*), 'Maja', 'Jaskółka' (*Swallow*) and 'Sokół' (*Falcon*). They were two-storey buildings, with the elevated central part crowned with a balcony over the entrance and, of course, with a shingle roof. Larger villas were built on stone bases and had towers with terraces to admire the views. The beginning of the 20th century was the 'golden' era for Wisła, which, owing to Julian Ochorowicz's[8] social activity and development of cultural life, was visited by well-known literary personae, such as Władysław Stanisław Reymont, Maria Konopnicka and Bolesław Prus.

Villa Bożydar built by Bogumił Hoff in 1895, became a canon for wooden villa construction forms in the area of Wisła. It was a two-storey wooden villa of log wall structure, seated on a high stone base tapering upwards. The base had arcades creating a sort of covered space, and the upper one-storey part with a balcony and an attic was set forward projecting beyond the ground floor of the building. The design of the villa was inspired by elements of traditional construction methods used in the area of Wisła, which include: the stone base; log wall structure; gablet roof covered with shingle; open porches; decorative lining boards at the gables. The style used in villa Bożydar is defined as the 'Wisła style' and houses inspired by this style are still built at present. This testifies to the large popularity of the style promoted by Hoff with the local community. Nevertheless, in the interwar period, masonry guesthouses of modernist forms were also built, and their style was a combination of functionalism and the local Wisła style, which gave them the characteristic stone bases with arcades.

3. Interwar regulation plans

At the turn of the 20s and 30s of the 20th century, the Silesian Voivodeship Office initiated a programme of extension and modernization of Silesian spa and holiday resorts in an endeavour to attract Polish tourists and health visitors, who were more inclined to go to foreign, more modern spa resorts. General and specific regulation plans were prepared, which were to introduce some order into the chaotic and unplanned development. New arteries

[6] The establishment was located in hotel "Luisenhof"(later the name was changed to "Hotel Piast"), bought and redecorated by Bogdan Hoff in 1903.

[7] The bathhouse was opened in 1906 in a building converted from a former stable.

[8] In 1905 Julian Ochorowicz established the Association of Wisła Enthusiasts.

and streets were marked out and parcels of land were allocated for future squares, market places, parks and promenades. Spa zones were delimited and separated from economic and industrial zones. The works were undertaken in Ustroń, Istebna, Jaworze, Jastrzębie-Zdrój and Wisła, and they pertained not only to the realization of the architectural and urban vision, but also included building a railway line, water supply and sewage systems. The spa infrastructure extension attracted private investors who built new guesthouses, hotels and service outlets, thus improving the residents' quality of living. The plans provided for a place for Wisła town centre, which was to be situated in the most accessible area, in the river valley sheltered from northern winds by the mountains. The problem of regulating the Vistula river emerged immediately, as it flooded the valley extensively at springtime. The authors of the plan tried to avoid the unplanned and uncontrolled development, which was a commonplace problem in other Carpathian spa resorts. A post of a commissioner was established – an official whose job was to execute all the building operations in compliance with the regulation plan[9].

The most important investment projects carried out by the Voivodeship Office in Wisła in the 30s are:

– regulation of the Vistula river,
– building the water supply system and electrification,
– building the Ustroń Polana – Wisła Głębce railway line,
– building two state schools,
– building the President's Castle at Zadni Groń[10],
– building the Therapy and Education Centre at Kubalonka in Istebna[11],
– building the swimming pool and the bathing park complex[12],
– building the Spa Hall and the Town Hall seat,
– building the spa park,
– building the ski jumps in Łabajów, Malinka and on the slope of the Barania Góra.

The above projects had a significant influence on the spa resort growth and they stimulated construction projects of private investors, which in consequence made Wisła a fashionable spa resort.

The regulation plans produced a town centre that was a clearly defined public space in the form of a square open towards the park. In the 30s of the 20th century, the square was a geometric garden composed of four sections cut across by alleys and a central piece.

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[9] By executing the regulation plan, the authorities exerted influence on the choice of such architectural forms that would not infringe upon the landscape quality.

[10] The Castle of the President of the Republic (1929–1930), authored by Adolf Szyszko-Bohusz, is an exquisite work of architecture designed in the style of Polish modernism and with the use of the cutting-edge construction technologies of the turn of the 20s and 30s of the 20th century. The structure was made of reinforced concrete and brick, and clad with Istebna sandstone and artificial stone.

[11] The Therapy and Education Centre (1931–1937) built according to the design selected by way of a contest (arch. Jadwiga Dobrzyńska and arch. Zygmunt Łoboda) is situated at the height of 750 mamsl on the southern slopes of the Kubalonka Pass and occupies 8 ha of land. It is a complex of 8 buildings, which could provide treatment for 400 children.

[12] The bathing park was built on the right bank of the Vistula river, at the forks of the Parecznik stream. The complex comprises a swimming pool (50 × 50 m), a changing rooms pavilion, a café, locker rooms for hockey players (in the winter it had the function of an ice rink), 3 tennis courts, a park and a beach.

The Wisła park is a stripe of greenery with strolling alleys occupying the left bank of the Vistula and connecting the centre with the swimming pool complex. The park was designed to blend in with the surrounding landscape, and its viewing axes are directed at the peaks of the neighbouring mountains. Together with the modernist development, it made complete the urban planning concept of the spa resort's main public space, complementing it on the north-south axis along the Vistula river. The main square was surrounded by two wings of the Office building and the Spa Hall, with its viewing axis directed towards the domineering body of the Evangelical church. The square offers far-reaching views over the panorama of the mountains, and its large area highlights the architectural objects which co-create this space.

Strict observance of the regulation plans by private investors and local authorities, but also inspection of the already formally approved designs, resulted in the emergence of a coherent architectural and urban concept of Wisła's growth. The concept was fully adjusted to the land conditions as well as to the requirements of environmental and greenery conservation. The concern for spatial order is evident in the 'Local Statute on the preservation of the aesthetic appearance of Wisła spa resort' of the 14th March 1935, approved by the Silesian Voivedeship Council, where the heights of development, type of roofs and positioning of buildings were precisely determined. Some of the paragraphs read as follows: "... The Commune Office will not grant permission for execution of a structure the appearance of which would blemish the spa resort. Considering the mountainous character of the landscape, it is unacceptable to build curb (mansard) roofs ... as well as to cover roofs with asbestos sheets or roof tiles ...in colours arousing doubt as to the possibility of blemishing the spa resort..."[13]. As emphasized by engineer S. Tworkowski[14], a distinguished urban planner in service of Wisła and Ustroń during the interwar years, the author of *inter alia* the Spa Hall, the mountainous landscape required roofs of greater slope or of a horizontal line, the development should be composed with intervals giving views into the landscape, the maximum height of development should be determined and tourist roads were to be objects in their own right rather than built up on both sides.

The construction boom in the 30s of the 20th century produced in effect approximately 160 new villas and guesthouses, which could accommodate 4,000 guests. The objects were scattered in the valleys and on mountain slopes, blended in with the surroundings, and they did not form a massive development.

There were two types of villas and guesthouses in Wisła in the interwar period. The first group comprises wooden villas built along the Hoff-like pattern, i.e. one or two storeys high with high attics, of log wall structure, covered with pitched shingle or tin roofs and seated on high stone bases with arcades. The other group are modernist masonry villas and guesthouses – three or four-storey asymmetrical buildings with semi-circular or rectangular avant-corps projections, flat roofs and stone cladding in the basement.

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[13] After: *Od wsi do uzdrowiska. Dziedzictwo architektoniczne Wisły*, Materials for a monograph of Wisła, Wisła 2009.

[14] S. Tworkowski, *Architektura w krajobrazie Beskidów*, [in:] *Architektura i Budownictwo*, Year XII (1936), No. 4.

4. The present condition of the town development

The rich architectural heritage of the interwar Wisła is not clearly visible at present, or it could even be said that it has been wasted. Numerous modernist villas and guesthouses of historic value have been destroyed. Conservation activities have been allowed to stop, and essential stylistic features have been lost as a result of redecoration works. Owing to the regulation principles and the interwar construction projects, Wisła received some pro-growth stimuli, from which it has benefited at present, yet it has lost its identity and the climate of a coherent spatial expression. It could be stated that its stylistic uniformity has been destroyed, and the urban layout disfigured. The harmonious arrangement and proportions between built-up and green areas have been disrupted. The mountain slopes have been drastically developed – overloaded with objects of random scale and form. I would like to mention the district of Partecznik here, where the valley is dominated by a towering complex of six large cubic volume hotels for organized groups of holidaymakers. Right at the entrance into the town centre, opposite the bus station, on the slope of Czerhla, sits the enormous building of the *Gołębiewski Hotel* with 562 rooms.

The designed development should be discreetly blended with the existing fabric of important historic and aesthetic values. Objects of high artistic class – forgotten, neglected and often disfigured by modernization and rebuilding, do not promote the awareness of the significance and unique character of the spa resort in the interwar period. It is very important for preserving these values that institutions responsible for monument conservation should cooperate with the local authorities. A considerable number of valuable villas and guesthouses are not listed in the historic monuments register, which means that they still face a significant hazard of being further destroyed or modernized in an ill-considered way.

There are 7 (seven) objects listed in the historic monuments register run by the Voivodeship National Monuments Conservation Office in Katowice (Local office in Bielsko-Biała). They are:

- the Evangelical Church of the Augsburg Confession church from 1838 (since 1978),
- the former Evangelical school from 1824 (since 1978),
- the building of the Evangelical parsonage 1805–1807 (since 1978),
- the building of a former inn, at present the seat of the Beskid Museum, from 1794 (since 1987),
- the former Habsburgs' hunting lodge from 1897, transferred from Przysłop, at present the seat of the PTTK */Polish Tourist and Sightseeing Society/* (since 1986),
- a wooden residential building from 1909 (since 1987),
- The Polish Republic President's Manor "the Castle" at ZadniGroń 1929–1931 (since 1994).

It is worth mentioning that at the Register of historic monuments at the Historic Monuments Conservation Office, there is information that the area of Wisła contains 207 valuable objects of architecture.

13 Local Land Use Plans were passed in 2012, which together cover the area of 495.8 ha. These are:

- Wisła Partecznik – Kamienny – hotels for organized groups of holidaymakers, guesthouses, sports and recreation areas, and supplements of the residential and commercial development (area of 24.8 ha),

Ill. 1. Hotel ‘Ognisko’ from the interwar spa resort

Ill. 2. ‘Gołębiewski’ from the contemporary time

Ill. 3. The Market Square of Wisła

Ill. 4. The picturesque views of hills from the market square

Ill. 5. The view of the monumental church situated in the market square

Ill. 6. The drawing of the old boarding-house ‘Koliba’

- Wisła Centrum – Sokolity – construction projects in the town centre, building of a new sports and recreation complex (area of 137 ha),
- Wisła – Obłaziec – residential and commercial development (area of 9.3 ha),
- Wisła – Malinka – Cieńków – development of a ski centre (area of 44.4 ha),
- Wisła – Malinka – Zieleńska Polana – residential development and transportation links (area of 7.8 ha),
- Wisła – Jawornik – Ropienki – modernization of a sports and recreation complex (area of 4.9 ha),
- Wisła – Kubalonka – development of cross-country skiing and biathlon (area of 62.6 ha),
- Wisła – Jawornik – Cieślarów – residential development (area of 5.9 ha),
- Wisła – Malinka – Rówień – Sports and Recreation Centre (area of 135.3 ha),
- Wisła – 'Silany II' – a ski centre (area of 11.8 ha),
- Wisła – Czarne I – residential and commercial development (area of 17.5 ha),
- Wisła – Czarne II – residential development, hotels for organized groups of holidaymakers and guesthouses (area of 18.5 ha),
- Wisła – Silany – Ochorowicza – modernization of the public road network and residential and commercial development (area of 16 ha).

The land covered by the recently passed plans encompasses nearly 500 hectares of the commune area, nearly 400 hectares of which have been allocated for extension of ski centres and sports & recreation centres. The remaining part has been allocated for developing the organized holiday and guesthouse accommodation infrastructure as well as supplementing the residential and commercial development.

Discussing the issue of land use and spatial order, we should emphasize that the regulation of Wisła's watercourses carried out in recent years has contributed to the town's protection against flooding as well as to the development of the recreational function. New walkways and cycling routes have appeared along the Vistula riverbanks. The embankments with stairs give better access to water, and the weirs are used as places for bathing on hot summer days.

The indisputably huge cultural heritage of Wisła, designed from scratch in the pre-war years in compliance with a specifically defined urban concept, requires respect and protection so that the historic value of the place characterized by the specific atmosphere of the past could be duly emphasized. I do hope that the recently passed land use plans will respect the identity and climate of the place.

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4-A/2014

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SALT TREATMENT AS AN IMPULSE FOR INDUSTRIAL TOWNS' FUNCTION CHANGE

LECZNICTWO Z WYKORZYSTANIEM SOLI JAKO IMPULS DO ZMIANY FUNKCJI MIAST PRZEMYSŁOWYCH

Abstract

The article discusses the healing properties of salt and its application in various methods of spa curative treatment. The discussion serves as the background for presenting the origins of Polish and foreign spa resorts which are now able to function due to making use of post-industrial salt making facilities – mine working pits and brine graduation towers. Special emphasis has been laid on the character and consequences of the transformations of salt making towns, where industrial salt production has given way to spa treatment activities.

Keywords: salt making industry, spa curative activities, brine boiling, salt mining, town development

Streszczenie

W artykule omówiono lecznicze właściwości soli i jej zastosowanie w różnych metodach lecznictwa uzdrowiskowego. Na tym tle przedstawiono genezę polskich i zagranicznych uzdrowisk, które współcześnie funkcjonują, wykorzystując poprzemysłowe obiekty związane z pozyskiwaniem soli – wyrobiska górnicze w kopalniach oraz tężnie solankowe. Szczególną uwagę zwrócono na charakter i skutki przeobrażeń miast solnych, w których działalność produkcyjna ustąpiła pola lecznictwu uzdrowiskowemu.

Słowa kluczowe: *przemysł solny, lecznictwo uzdrowiskowe, warzelnictwo, górnictwo solne, rozwój miast*

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1. Introduction

Salt production on an industrial scale is considered to be one of the oldest branches of human economic activity. As early as the Neolithic period (approx. 10,000 – 3,000 BC) primitive communities that had abandoned the nomadic lifestyle in favour of organized settlements were seeking natural sources of salt – the substance that was indispensable for survival and further civilizational development[1]. Throughout the centuries, people mastered various methods of salt production depending on the accessibility of the raw material deposits, climate conditions and the stage of technological progress. These techniques not only made possible a systematic increase in production necessary to satisfy the constantly growing demand for salt, but also considerably influenced the growth and transformations of salt towns, where production was taking place.

Until the 19th century, salt had been considered primarily as an economic commodity – it was used first of all to preserve food, and in many other industries, as a simple chemical compound – sodium chloride. Among other things, salt was also commonly used in everyday life – in the kitchen and in the household[2]. Due to salt's specific properties, the range of its applications has always been, and still is, rather extensive, yet one fundamental factor that was of key importance for salt producing towns in the last two centuries was salt's beneficial influence on human health.

2. Biological function of salt and its healing properties

In the past, when the nature of salt had not yet been scientifically examined, the substance was attributed with divine and magical properties. Salt was considered a substance that had influence over human health and mood, also affecting fertility and sexuality. It was already known that sodium chloride (NaCl) – customarily called salt – played an important biological role and was indispensable for life. At present, salt is often labeled as 'white death', and its excessive consumption poses a serious health hazard. There is no doubt, however, that sodium chloride occurring in the form of ions – sodium cation (Na^+) and chloride anion (Cl^-) – is necessary for survival and proper functioning of a human organism as well as all animal species. The presence of salt is a condition for most living processes to run properly – it is responsible for water balance, regulates blood pressure and pH, participates in controlling the functioning of the nervous system and the digestive and muscular systems. Prolonged salt deficiency in a human organism causes serious diseases and may even lead to death.

Regardless of its biological function, salt supplied to the organism in certain amounts has healing properties which help to overcome certain diseases and ailments. Moreover, it

[1] M. Kurlansky writes extensively on the significance of salt in the history of humanity as well as on the origins of industrial production of salt in the publication *Dzieje soli*, Książka i Wiedza, Warszawa 2004.

[2] Detailed discussion of various properties of salt and possibilities of its use resulting from them is to be found in the following publications: Stobiński J., Stobiński W., *Sól soli nierówna*, Państwowe Zakłady Wydawnictw Szkolnych, Warszawa 1965; Gutorski K., *Sól*, Krajowa Agencja Wydawnicza, Warszawa 1978 and Moersth C., *Sól. 1001 praktycznych zastosowań*, K.E. LIBER, Warszawa 2008.

positively influences the human psyche and emotional sphere, which is emphasized by some researchers[3]. Salt's usefulness in medicine results from its specific features. A strongly salted environment stops numerous pathogenic microorganisms from multiplying or even destroys them completely; it especially refers to bacteria, fungi and dust mites[4]. Initially, this property was mostly used in the kitchen where salt was used for preserving food products that went off easily. At present, salt is commonly used as a natural healing agent. Its deathly effect on microorganisms promotes overcoming colds and upper respiratory tract infections, allergies and chronic skin diseases. Moreover, salt also has an application in post-injury rehabilitation and the recovery of the osteoarticular and muscular systems as well as in rheumatism treatment. It also alleviates muscle and joint pains and the discomfort connected with insect bites.

3. Salt applications in curative and body care treatments

As early as in antiquity, salt constituted an important ingredient of many medicaments used for the treatment of the majority of diseases. It was of a more symbolic character and usually did not produce the desired therapeutic results. The research into the curing properties of salt initiated in the 5th century BC by a Greek philosopher – Hippocrates, a pioneer of "salt" medicine. The scientific work in this field was carried on by Paracelsus (Phillippus Aureolus Theophrastus Bombastus von Hohenheim), a naturalist and doctor living at the turn of the 15th and 16th centuries, considered one of the most important representatives of modern medicine[5]. A real breakthrough in using salt for curative treatment only took place at the beginning of the 19th century, at the time of common application of various methods of spa treatment, developed by *inter alia* Sebastian Kneipp and Vincent Priessnitz, especially in the field of balneology[6]. At present, salt – understood as sodium chloride in various forms, finds application mostly in two methods of spa treatment – balneotherapy[7] and halotherapy[8].

Application of salt in balneotherapy comprises various medical treatments[9], including:

– brine baths, in solutions of sodium chloride but also other mineral salts – chlorides, sulphides, sulphates, bromides and iodides;
– inhalations with spray created by suspension of salt solution in water, the so-called "aerosol therapy".

Brine baths and inhalations may be applied both in artificial and natural settings. Most spa treatment centres have appropriate technical infrastructure in the form of pools and

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[3] G. Adams writes on the subject of salt's healing properties and the possibilities of its application in medical and body care treatments in Adams G., *Lecznicze właściwości soli,* KIRKE, Wrocław 2005.

[4] See: Witomski P., *Wartość grzybobójcza chlorku sodu*, Studia i Materiały do Dziejów Żup Solnych w Polsce, vol. XXVI, (ed.) Jodłowski A., Museum of Kraków Salt Mines, Wieliczka 2009, 295-304.

[5] Adams D.G., *op. cit.*, 18-19.

[6] *Ibidem*, 67-70.

[7] From Latin *balneo* = bath and Greek *therapeia* = treatment.

[8] From Greek *hals* = salt.

[9] Ponikowska I., *Przegląd balneologicznych metod leczniczych*, Medycyna rodzinna, issue 3/2004, 117-118.

inhalatoriums (Ill. 1). Curative baths may also be taken in natural salt water reservoirs, especially in inland lakes, such as the Dead Sea in the Middle East or Lake Baskunchak in central Asia. Inhalation treatments may also be administered in natural scenery – most often in the direct vicinity of brine graduation towers, which constitute indispensable elements of spa resort parks in numerous European health resorts (Ill. 2).

Ill. 1. A brine bathing pool in a natural treatment centre in the German spa resort Bad Salzdetfurth (photo by the author)

Ill. 2. Salt spray inhalation in a brine graduation tower in the area of the spa resort park in Konstancin-Jeziorna (photo by the author)

The other of the aforementioned methods of salt's curative application, halotherapy, makes use of the specific properties of the microclimate created in closed facilities whose surfaces are lined with the natural salt rock – halite[10]. Healing agents present in such spaces include:

- presence of dry salt spray in high concentration;
- stable atmospheric conditions – temperature, humidity and pressure;
- air saturated with ions of various elements, including micro- and ultra-elements;
- absence of pathogenic microorganisms or allergens, as well as gaseous and dust impurities in the air;
- isolation from harmful external stimuli, such as noise, vibrations or radiation.

The person who blazed the trail for halotherapy was Feliks Boczkowski – a salinary doctor working at the beginning of the 19th century in the Wieliczka salt mine[11]. Examining underground miners, he realised that the underground pit's specific microclimate has a beneficial influence on the human organism. This conclusion encouraged Boczkowski to use

[10] Chervinskaya A., *Haloterapia w mikroklimacie komory solnej jako metoda medycyny rekonwalescencyjnej*, Balneologia Polska, vol. XLIX, No. 2 (108/2007), Medi Press, 142-144.

[11] *Ibidem*, 142.

brine baths as a curative treatment, which in consequence led to the opening of a balneology centre in Wieliczka[12].

Feliks Boczkowski's work was continued in the first half of the 20th century by his successor doctor Mieczysław Skulimowski[13]. In 1958, he successfully created the first underground spa directly in the salt mine worked pits – this event opened a whole new direction of using salt in curative treatment.

At present, halotherapy may be administered in two ways:

– in underground sanatoriums placed in post-excavation pits in the area of inactive salt mines;
– in salt chambers installed above ground or inside some facilities especially for the needs of curative treatment.

Initially, halotherapeutic treatments were offered only by spas functioning underground, sometimes also called "speleo health resorts". Undoubtedly, an advantage of halotherapy administered in underground worked pits is the microclimate created in a natural way, mainly due to the free flow of air around the exposed salt rock. Owing to this, the atmosphere inside the pit is not only saturated with salt spray but also contains ions of trace elements, indispensable for life.

Another healing agent present in the spaces situated at considerable depth is the permanently heightened atmospheric pressure, which positively influences the functioning of blood and respiratory systems as well as stimulating an increase in general stamina and immune system efficiency[14]. It should also be mentioned that, apart from its beneficial influence on human health, going down a mine into a worked pit is for most people, a strong psychic and emotional experience.

Due to the fact that the aforementioned sanatoriums are situated underground, halotherapy is often called "subterraneotherapy", which means "treatment by staying in underground spaces". Nevertheless, it has to be explained that this term has a broader meaning and refers to the operation of all sanatoriums using pro-health properties of underground climates, e.g. in radon inhalatoriums, where the healing agent is not salt but a radioactive noble gas.

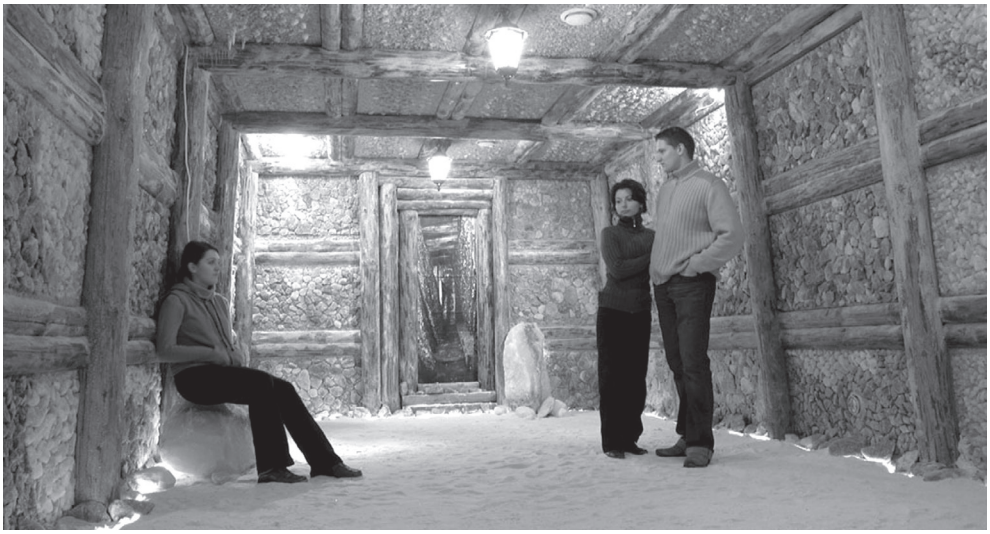
For obvious reasons, it is not possible to offer underground halotherapy in all spa resorts. At present, the curative method uses more and more common artificially constructed chambers also called salt caverns or caves (Ill. 3).

The interiors of these facilities most often reflect the austere character of worked pits in salt mines, yet contrary to underground sanatoriums, a stay in a salt chamber is always of static character and has the form of sessions of a fixed time duration.

[12] Boczkowski published his research results and described his treatment method in Wieliczka Brine Bath Centre in the publication *O Wieliczce pod względem historyi naturalnej, dziejów i kąpieli*, W. Pisz, Bochnia 1843.

[13] M.D. Schmidt-Pospuła writes on Mieczysław Skulimowski's role in developing the halotherapy method and treatments administered in the underground sanatorium in the Wieliczka salt mine area in *Mieczysław Skulimowski – prekursor podziemnego leczenia sanatoryjnego w Wieliczce*, Studia i Materiały do Dziejów Żup Solnych w Polsce, vol. XXI, (ed.) Jodłowski A., Museum of Kraków Salt Mines, Wieliczka 2001, 273-278.

[14] See: Olechnowicz-Bobrowska B., Wojkowski J., *Bioklimat komór sanatoryjnych w kopalniach soli Bochni i Wieliczki*, Acta Agrophysica, Year 2004, issue 3(2); Kmiecik M., *Subterraneoterapia w Kopalni Soli „Wieliczka". Part I*, Balneologia Polska, Year 2006, issue 1, 68-70; also Kmiecik M., *Subterraneoterapia w Kopalni Soli "Wieliczka". Niecodzienność metody i miejsca. Part II*, Balneologia Polska, Year 2007, vol. XLIX, issue 1, 64-67.



Ill. 3. Interior of a prototypical salt chamber manufactured in Bochnia for the needs of halotherapy offered in spa resorts which do not have the possibility of using salt mine underground worked pits (photo by P. Konieczny)

The main difference between underground spas and salt caverns lies in the origin of the healing microclimate. In salt mines, it is created spontaneously, in a free and natural way, while the pro-health agents inside salt chambers are artificially generated with the use of specialised equipment, and they are controlled automatically. In particular, devices called "halogenerators" are used for creating a suitable atmosphere, which produce and spray dry salt aerosol in the interior[15]. Due to the analogy between salt chambers and natural geological formations (caverns and caves), halotherapy is also sometimes called "speleotherapy". In recent years, salt caves have become easily accessible. They are offered not only in spa resorts, but also in numerous holiday resorts, biological regeneration centres and even in hotels.

Application of salt in curative treatments is not limited to spa activities. Salt and its derivatives are also used as home remedies, e.g. to treat bacterial infections of the upper respiratory tract by applying a saturated salt solution rinse. Salt products are also used in various body care and relaxation treatments, most frequently in the form of baths and compresses.

4. Industrial salt production and the spa function

The tradition of producing salt on an industrial scale goes back a few thousands of years. Throughout the millennia, humans have mastered a few completely different methods of salt production using various sources of the raw material available in nature. Of all the methods,

[15] Chervinskaya A., *op. cit.*, 143.

two are important for the development of spa treatments: pan brine boiling and underground mining.

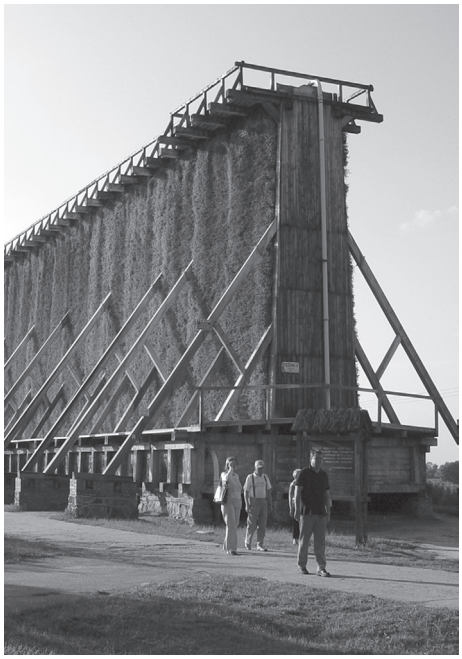
The pan brine boiling is the oldest method of salt production used in many regions of the world as early as the 6th millennium BC[16]. The essence of this technique was the "boiling", i.e. obtaining crystal salt by evaporating a salt solution – salty waters coming from natural surface reservoirs (seas, salt rivers and lakes) or springs flowing out into the surface. The process of brine boiling took place over open fire, where vessels filled with brine were placed – initially they were ceramic and metal pots, and later flat-bottom rectangular vats with a large base area – the "pans". Salt production in brine boiling plants was in general of a large scale, but the basic factor limiting the production capacity of such establishments was the insufficient supply of fuel for the ranges. In many places, the natural brine was of a relatively low concentration – only a few percent, which made the whole process much more energy-consuming. The problem of insufficient fuel supply was finally solved only in the middle of the 18th century, when brine graduation towers were used for the first time in salt making. It is believed, quite wrongly, that those objects were built to accommodate the needs of spa treatment, yet in fact, the primary and exclusive function of brine graduation towers was to concentrate brine tapped from natural springs and used in pan brine boiling plants for salt production.

Although the brine graduation tower principle of operation is relatively simple, the structures are of complex design and monumental character (Ill. 4). Brine preparation for the salt making process takes place in several stages. Salt water tapped from a natural spring is pumped to the top of a wooden structure and distributed by an elongated trough. The brine flows through small holes in the bottom of the trough and soaks through the dense piles of twigs stacked in heaps that are a few metres high, sometimes even more than ten metres. The brine undergoes the process of dispersion, i.e. breaking into very small droplets, greatly multiplying its active evaporation surface. The appropriately shaped structure of the graduation tower enforces air movement, which promotes intensive evaporation of the weak salt solution and thus concentrates it systematically. Additionally, free flow through the pile of twigs helps to purify the brine, as unwanted mineral compounds precipitate from it – mostly particles of clay, gypsum and other salts. The brine that has soaked through the column is collected in containers placed at the bottom of the structure and subsequently pumped up again, obtaining in several cycles a concentration reaching even 20%. The concentrated brine water is then sent to the pan brine boiling plant and subjected to thermal treatment.

A natural phenomenon that accompanies the operation of a graduation tower is the presence of salt aerosol mist and a considerable increase of air humidity in its environs, both of which have been considered important healing agents. For this reason – regardless of their industrial function – brine graduation towers erected in salt producing towns contributed to the creation of balneology spa resorts offering inhalation treatments and brine water baths. Starting from the middle of the 19th century, spa facilities and spa resort parks started to spring up around brine boiling plants, and their focal points have always been the characteristic graduation tower structures. Such places are *inter alia* Ciechocinek and Inowrocław[17] in Poland, and also

[16] S. Ciszewski writes on the subject of pan brine boiling history and the application of this method in various part of the world in *Sól*, [in:] *Studia etnologiczne*, Polskie Biuro Etnologiczne, Warszawa.

[17] Aleksandrowicz J., *Inowrocław i okolice*, PTTK, Inowrocław 1973.



Ill. 4. Brine graduation tower in Ciechocinek built in the 20s of the 19th century for the needs of the local pan brine boiling plant (photo by the author)

Ill. 5. The structure of the historic-value brine graduation tower in the area of the spa resort park in Inowrocław *is this right?* (photo by the author)

German spa towns of Bad Reichenhall[18] and Bad Salzdetfurth[19]. The degree of graduation tower usefulness for the purposes of spa treatment is confirmed by the fact that nowadays, such facilities are installed in spa resorts which have never been involved in industrial salt production in brine boiling plants, *inter alia* in Konstancin-Jeziorna.

The other method of industrial salt production, apart from pan brine boiling, which has contributed to the development of spa treatment, is underground mining. Mining salt deposits in Europe was started as early as between the 8th and 5th century BC by the Celts, who opened a mine pit in the vicinity of an Alpine town of Hallstatt in the area of present-day Austria. The beginnings of salt mining in Poland are dated back at the 13th century, when the mines in Wieliczka and Bochnia were opened. In most of the historic mining centres, salt was mined incessantly for many centuries, the result of which was that the mines have taken the form of extensive, multi-layered underground structures composed of spaces characterised by various shapes and sizes – spacious chambers and narrow corridor working pits (Ill. 6).

[18] *Salz aus Bayern*, Salzbergwerk Berchtesgaden, Saline Bad Reichenhall, Bad Reichenhaller Salz Handelsgesellschaft, Munich.

[19] Heinemann E., *Bad Salzdetfurth*, Gerstenberg Verlag, Hildesheim, 1980; and Mundel R., *Bad Salzdetfurth. Saltzstadt mit Tradition*, Alan Sutton, Erfurt 1999.

The spatial layout and the size of a mine depend first of all on the time of commencement and the duration of the excavation as well as on the geological structure of the salt deposit and the whole geological formation. The extensive networks of underground working pits are equipped with ventilation shafts, thus enforcing air circulation under the ground. At the same time, due to the high mechanical durability of rock salt, the parts of working pits drilled in the pure deposit do not require application of any supports in the form of continuous lining (Ill. 7). Owing to this fact, the air flowing through the excavation spaces becomes saturated with dry salt solution and ions of other elements thus acquiring its healing properties.

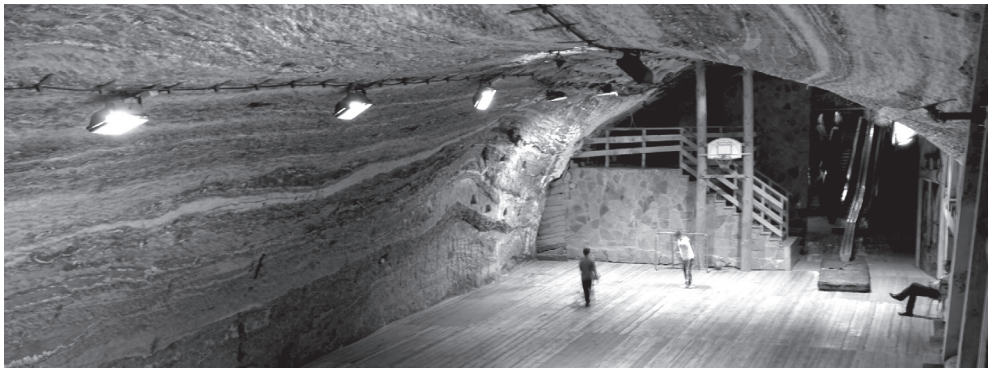
Ill. 6. Organic layout of the mining working pits in the Wieliczka salt mine – fragment of a 17th century plan

Ill. 7. Bare (i.e. with no lining) corridor working pit drilled in the rock salt deposit "Kazimierzów" within the area of the KGHM mine "Polkowice-Sieroszowice" (photo by the author)

The specific microclimate of salt working pits, combined with their visual, natural, scientific and historic values, has laid the foundations for the present use of salt mines for spa treatment purposes, but also for functions related to sport, recreation, entertainment, tourism, religious cult, museum exhibitions, culture, art, education and science (Ill. 8). Apart from the aforementioned Wieliczka, spa treatment activities are also carried out in the salt mine in Bochnia, and abroad – Solotvino and Artemovsk (Ukraine), Soligorsk (Bielarus), Berchtesgaden (Germany), Salzebad-Salzeman (Austria), Berezniki (Russia), Siget (Romania), Nakhichevan (Azerbaijan)[20]. Underground spas are mostly located within vast post-excavation chambers, where it is possible to have not only a sanatorium with the necessary infrastructure, but also some accompanying functions, e.g. gastronomic facilities, sports courts and facilities, multi-purpose halls, music and theatre scenes etc. (Ill. 9).

[20] Chervinskaya A., *op. cit.*, 142.

Ill. 8. Underground sanatorium installed within "Ważyn" Chamber in the Bochnia salt mine (photo by the author)



Ill. 9. Team sports court at the sanatorium operating in the Bochnia Salt Mine – one of the elements of the underground infrastructure serving both the spa patients and tourists visiting the mine (photo by the author)

5. Spa curative activities as an alternative for salt industry

Numerous examples of towns both in Poland and in other European countries show that industrial facilities used in salt production, especially brine graduation towers and working pits in salt mines constitute the foundations for innovative methods of spa treatment using the healing properties of salt. In the history of those towns, there are discernible critical periods when the industrial function (brine boiling or underground salt mining) was overshadowed and even completely replaced by spa curative activities.

The process of functional transformation was different for brine boiling and salt mining towns. In the case of places where salt was produced with the use of the traditional pan evaporating method, the turning point in their development usually occurred in the middle

of the 19th century, when there was a dynamic increase in the number of spa resorts all over Europe resulting from the new fashion of 'going to the waters to take the cure', as it was called at that time. Using brines of varied chemical compositions and healing properties in balneotherapy breathed a new life into brine boiling centres, where salt waters had thus far been used exclusively for the purpose of salt production. The period of founding new spa resorts coincided with the time of erecting brine graduation towers at pan brine boiling plants – objects which, apart from their industrial function, became an important element of curative treatment.

Introducing the spa function considerably affected the dynamics of the salt making industry development and the scale of salt production in salt making towns. In many places, like in the German spa town Bad Salzdetfurth, spa activities were gradually replacing the town's traditional function becoming its primary field of development in the 2nd half of the 19th century. Salt production was finally abandoned there in 1948, the pan brine boiling plant was shut down completely, but the water intake points and brine graduation towers were preserved for the use in spa treatment. Other salt making towns, e.g. Ciechocinek, managed to maintain salt production and they still continue to do so. The scale of this production is small and it mostly caters for the needs of the spa patients and tourists – pan evaporated salt is used for the manufacture of souvenirs, cosmetics, body care products and also as the traditional condiment. Modern salt production in salt making spa towns is based on the vacuum evaporation process, which has replaced the less effective pan evaporation method. Regardless of the present state of the salt making industry, the transformation of function that has taken place in salt making towns, i.e. reduction or discontinuation of industrial activity in favour of developing the spa function, has been usually of evolutionary character.

The diagram illustrating the changes in the levels of industrial and spa function development in salt making towns in characteristic time periods as well as mutual interdependencies between these functions is presented below (Ill. 10).

The functional transformation of mining towns has different origins to brine boiling centres. Its foundations lay in the present-day decline of the underground salt mining industry, which can be observed both in Poland and in other European countries. The reasons of the rock salts mining industry crisis are of a complex nature. The reasons for reducing mining excavation in underground mines are most often the decrease of extraction profitability connected with the rising costs of maintaining production, salt deposit exhaustion, mining disasters or a real danger of such disasters occurring, as well as competition from modern methods of salt production, first of all vacuum salt evaporation, borehole mining and mine water desalination[21].

A distinct decrease in production powers as well as in the demand for salt extracted with the use of the so-called 'dry method' (by working the salt deposit in underground working pits) was the direct cause of the closing down of numerous salt mines in the whole of Europe, *inter alia* in Germany, Poland and The Ukraine. The process of closing down a mine is equivalent to the definite discontinuation of its industrial activity, which for the majority of salt mining towns means losing the familiar grounds for functioning, economic stagnation or recession as well as the need to seek new impulses for continuing growth. An important chance in this respect is the post-industrial use of defunct mines for contemporary purposes – especially the ones oriented towards spa activities based on the specific microclimate of mine working pits.

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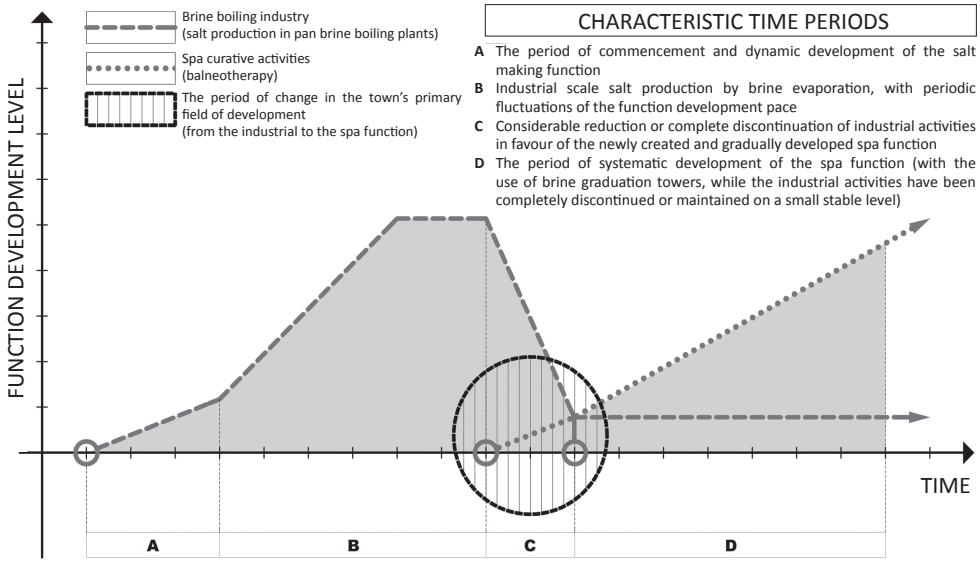
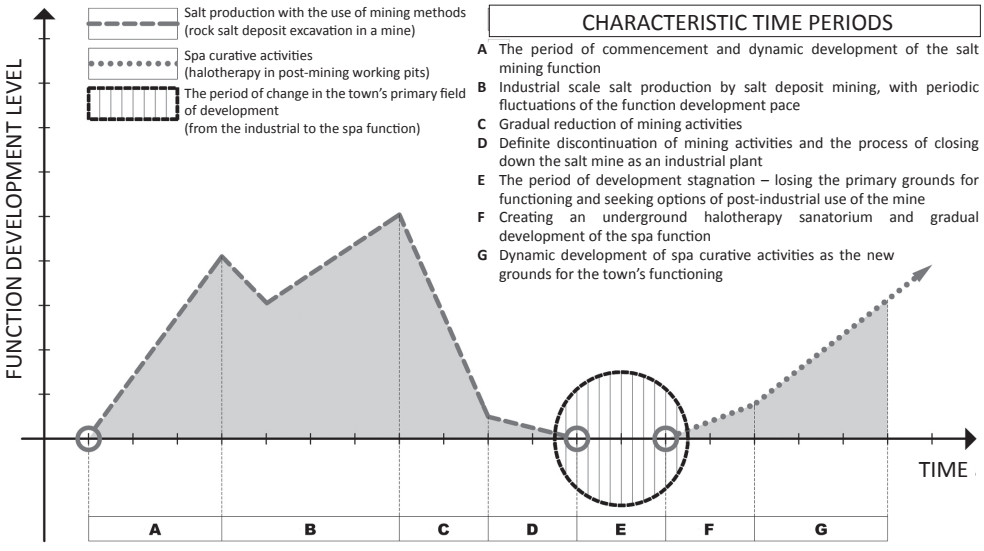
[21] Hwałek S., *Górnictwo soli kamiennych i potasowych*, Śląsk, Katowice 1971.



Ill. 10. Salt making towns – the levels of industrial and spa function development in different time periods (prepared by the author)



Ill. 11. Salt mining towns – function transformation in characteristic periods of time (prepared by the author)

Building an underground sanatorium is a costly and technologically difficult enterprise, it also requires adaptation and the maintenance of a considerable part of mining infrastructure – transportation and ventilation shafts, installations and facilities, and also the continuous monitoring of the geological processes taking place in the working pits and the whole surrounding geological formation. In spite of objective difficulties, there are underground sanatoriums which are successfully carrying out their curative activities in many European mining centres, now better known as spa resorts.

The figure below illustrates the contemporary transformation of salt mining towns' functions, taking into account the characteristic periods (Ill. 11).

An important element of transforming defunct salt mines for the needs of the curative function is the possibility to renovate and adapt the post-industrial areas and facilities situated above ground, including the historic complexes of development and characteristic engineering structures. An example of such action is the adaption of the lift machinery room, *Sutoris,* in the Bochnia salt mine for the purpose of a recreational, hotel and gastronomic facility, while the transportation function of the lift shaft itself has been retained.

6. Conclusions

Specific properties of salt have made it suitable for numerous applications in various spheres of human life and activity. Sodium chloride's healing properties are the grounds for using this compound in medicine and various methods of spa treatment – balneotherapy and halotherapy. The examples of Polish and foreign towns discussed in this article prove that many spa resorts functioning at present are operating thanks to the elements traditionally associated with industrial salt production – brine graduation towers and working pits in defunct mines.

Renovation and functional adaptation of these facilities for the needs of spa treatment activities seems extremely important in the present-day development of salt towns in their post-industrial period. The spa function, considered as an innovative direction of development, may peacefully replace the production activities, which are losing their dominating status, and at the same time, it may promote preservation and proper display of the existing industrial heritage. It is especially important in the case of salt mining centres, where, apart from underground working pits, there still exist many different post-mining elements above ground. It must also be emphasized that given the present civilization development and the discernible trend to return to natural curative treatment methods, modern spa curative treatment is gaining prominence and has become economically profitable, which speaks for the need to stimulate the development of this function.

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TECHNICAL TRANSACTIONS | CZASOPISMO TECHNICZNE
ARCHITECTURE | ARCHITEKTURA
4-A/2014

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SPA RESORTS IN THE AGE OF KNOWLEDGE-BASED ECONOMY

UZDROWISKA W DOBIE GOSPODARKI OPARTEJ NA WIEDZY

Abstract

Spa resorts with a high quality environment, both in the natural and cultural sense, are attractive places for locating knowledge-based economy infrastructure. The article discusses several examples of technology parks and centres located within spa towns and presents the strategies which spa resorts may apply to boost their competitiveness and diversify the services they offer. Building partnerships and networks between research units, linking businesses and administration, developing services and technologies connected with balneology treatments and tourism as well as implementing green technologies open up new opportunities of growth for spa resorts.

Keywords: technology parks, technology centres, spa resorts

Streszczenie

Miasta o funkcji uzdrowiskowej, dysponujące wysokimi walorami środowiskowymi, zarówno przyrodniczymi, jak i kulturowymi, są atrakcyjnym miejscem dla lokalizacji infrastruktury gospodarki opartej na wiedzy. W artykule przytoczono kilka przykładów wprowadzenia parków i centrów technologicznych w przestrzeń miasta, wskazując strategie, jakie mogą zastosować uzdrowiska w celu poprawy swojej konkurencyjności i dywersyfikacji usług. Budowa partnerstwa, sieci między jednostkami badawczymi, przedsiębiorstwami i administracją oraz rozwój usług i technologii związanych z lecznictwem i turystyką balneologiczną, a także rozwiązaniami proekologicznymi otwiera przed uzdrowiskami nowe możliwości rozwoju.

Słowa kluczowe: *parki technologiczne, centra technologii, uzdrowiska*

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Spa resorts are usually envisioned as secluded places with a high quality landscape and environment where people restore their depleted vital forces by changing their daily routine and benefiting from the natural resources they have at their disposal. Indeed initially, spas were developed as rather elite single-function centres of recreation and medical treatment, and they targeted their business mostly to the affluent social classes [6]. The presence of social elites meant that, apart from the curative functions, the town offered its visitors participation in a flourishing social life in the attractive scenery of the spa resort architecture. The specific development type, historic events, the presence of celebrities as well as artistic and social events that are often still organized today have contributed to the cultural variety of these places.

The time after the 1st and especially after the 2nd world war brought a great popularization of spa treatments in Europe and in Poland, and they became available to the general public, which resulted in the change of both the culture and the life style cultivated at spa resorts, yet their specific character had been retained [6]. The second half of the 20th century in Polish spa resorts was characterized by a growth of the recreational function, progressing underinvestment of the curative function, which contributed to the deterioration of standards, and gradual degradation of the townscape and infrastructure. In this situation, spa resorts started developing other areas of economic activity. Research into services offered by spa resorts of the Upper Vistula region, carried out by the Author[1], demonstrated in many cases an excessive growth of tourist and recreational function, which manifests itself mostly in the presence of an extensive accommodation infrastructure and numerous tourist and gastronomic services, the latter usually of low quality. Tourist-oriented economic growth of a spa resort results in the periodic increase of the number of visitors, which when coupled with inadequate infrastructure and non-observance of spatial standards referring to, for example, organized greenery, may jeopardize the spa function.

At present there is a large-scale campaign going on in Poland for the privatization of spa facilities, which involves a process of spa service diversification and transformation oriented towards health tourism and the 'spa, beauty and wellness' sector aimed at a more affluent clientele. The privatization scenarios and approaches to future development of spa resorts vary, and there is no universal pattern. Some of them, restored in whole to their lawful owners (Szczawnica, Solec) or bought by an investor (Swoszowice, Konstancin, Wysowa), or partly privatized (Nałęczów[2]), have a chance of regaining their spa character and prestige and also have a chance of preserving the spa function or transforming into luxurious centres offering mostly services concerned with beauty care, wellness and vitality.

Taking the above into consideration, it is worth asking a question about the future development of spa resorts. Will they remain mono-functional fossilized remnants of the past supported by public money or will they turn into elite private spa and wellness centres with limited accessibility to the medical treatment offer? How can the function and services in spa resorts in order to stimulate their economic growth be diversified without jeopardizing

[1] A research project KBN No. 6 T07F 024 24 Spatial and functional research into statutory and potential spa resorts situated in the basin of the Upper Vistula River from the point of view of their development opportunities and gaining a competitive edge over other European centres of balneological treatment carried out under the supervision of E. Węcławowicz-Bilska, PhD. Eng. Arch., associate professor at the CUT, in the years 2003–2006.

[2] Sanatoriums in Nałęczów have been privatized, but public areas have been left in the hands of the local self-government.

the environmental quality or diminishing their appeal based on a set of natural, cultural, compositional and spatial assets, which are the mainstay of these towns' prosperity [6]? Does locating knowledge-based economy infrastructure centres in spa resorts give them a new growth-boosting chance?

A study of activities undertaken in several European spa towns indicates a number of strategies applied with a view to their renovation and further growth.

Aix-en-Provence, a town with a history of over 2130 years, owes its fame to the curative waters which were already known in Roman times, which gave the town its name[3]. The Roman baths, the medieval university complex (in operation since 1409), the modern administrative and political centre[4] as well as the town's artistic life and rich cultural heritage make the Aix of today a uniquely picturesque and attractive tourist destination, regarded as a waters and arts centre, attracting to a large extent, pensioners wishing to spend the waning days of their lives in a mild climate spa resort.

The spa itself, the Baths of Sextius, has for centuries remained at the place of its historic Roman location, directly connected to the Old Town district, with no plans for further expansion [7]. Apart from the main spa complex in the town centre, there are clinics, rehabilitation and treatment centres located in the neighbouring wooded hills.

One such centre, isolated from the town and hidden in dense pine forest is the estate, Petit Arbois, stretching over an area of 4.500 ha. It housed a sanatorium and a hospital complex, built in the 30s of the 20th century, oriented towards treating patients suffering from respiratory failure. The spatial composition of the estate comprises a complex of buildings clustered along the loop of Sanatorium Street and several individual pavilons spread over the area. The aesthetically uniform complex designed by the Marseille architect, Gaston Castel, in the Provencal style is characterised by simple repetitive facades with regular windows combined with decorative elements in the form of arches, porches and bays as well as white walls slit by light stone of delicate texture contrasting with brick-red roof tiles.

In the 70s, the authorities of the Bouche-du-Rhône department (the owner of the estate) suggested to devote this unique area. Partly under legal protection, located in the metropolis's "green lungs" region, in the heart of the 11 000-hectare Arbois upland of high natural and environmental value. The development of innovative companies connected with environmental technologies[5]. In 1991, Technopole Arbois[6] was established, and the long boarded-up and abandoned buildings of the sanatorium were completely restored and adapted according to the design by Massimiliano Fuksas to suit the scientific and research function of the technopolis. New objects were added with time (the complex comprises

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[3] Water is inscribed in the town's name – the present Aix-en-Provence comes from the historic Latin name Aqua Sextiae (Sextius's waters). Aix, which since Roman times has functioned as a thermal centre and spa, was officially declared a spa resort in 1913.

[4] The restitution of the capital of Provence function and establishing the Parliament in the 16th century contributed to the town growth. Quartier Mazarin and Cours Mirabeau, built up with high quality architecture of the 16th and 17th century, were created at that time.

[5] C. Barletta, *Aix: la Zac de la gare enfin sur les rails*, published on the 7th Dec. 2011 on the portal www.laprovence.com.

[6] The association managing the Technopolis (Sydicat Mixte de l'Arbois) was created by the Bouche-du-Rhône department authorities (57%), the Aix Agglomeration authorities (38%), the Provence-Alpes-Côte d'Azur (PACA) region authorities (5%) [9].

15 buildings altogether), compositionally completing the existing historic complex, so that the functionality of the technopolis could be improved and all its activities concentrated in one place. In 2012, a new office building was opened, named after Henri Poincaré, built as a cutting-edge energy efficient facility destined for six poles of competitiveness functioning in Aix and connected to environment-friendly technology [9]. At present, the 205 hectares of Technopole Arbois planned for development (the rest are areas of protected greenery), house 110 companies, 11 research centres, a business incubator and 3 centres of higher education, which together accommodate 1100 employees and 300 students [9].

In the last 50 years, Aix-en-Provence has been experiencing an unprecedented economic and demographic growth[7] – it is becoming a young and dynamic town. This process is related to the development of the research sector and the advanced technology industry as well as the change of image of this tourist and spa town. The technology function of the town and region, which is now one of the more important economic centres in France, is realised by numerous institutions of higher education and research and development units, including the university Aix-Marseille[8], the Nuclear Research Centre in Cadarche and Technopole Arbois. The last one is developing another zone of activity in the area of the new TGV station[9]. The town's economic transformation has been greatly influenced by the activity zones created since the 70s, which were built up with large-scale development, had a more or less composed layout and a varied saturation of green areas. The zones have created a new district of the town stretching over 800 ha of previously unurbanized and rural areas. The biggest zones include, apart from Technopole Arbois, the Les Milles industrial park, Europarc de Pichuary, the Duranne technology park or the zone of the new TGV station; all of them had been, to a considerable extent, developed or rebuilt in the years 1990–2010 [3].

The picturesque townscape, architectural variety, appeal of the landscape, climate, sun exposure, location between the sea and the mountains as well as a large proportion of greenery[10] in the town and the diversity of public areas, all constitute dream conditions for developing not only the tourist, recreational and spa function, but also the economy, since the quality of the living environment is of great importance for it [3, 4].

Another French spa resort, Vichy, has also been famous for its thermal waters since Roman times, when over 2000 years ago it was founded as a settlement next to a curative water spring. For centuries, the therapeutic properties of the Vichy waters have been highly appreciated, which resulted in the spatial growth of the spa resort as well as the erection of representational facilities of high architectural value. The position of a renowned spa

[7] In 1954 the town had 48.400 inhabitants, and in 2008 – 142.750 [3].

[8] The university tradition in Aix goes back to the Middle Ages. The university Aix-Marseille was created on the 1st January 2012 by merging three universities (Provance / Méditerranée / Paul-Cézanne). At present, with 70 thousand students, it is one of the biggest French university complexes located in five campuses in the area of Aix and Marseille.

[9] The Technopolis will be further developed (80% of the new enterprises are supposed to be involved in environmental technologies) in the area of the TGV station, where there are 40 ha of land released for development in 2012/2013. Unlike in Arbois, where the development is of traditional and local character, and, as the property of the Technopolis, it is rented, the areas in the new zone will be sold or leased, but their development is going to be subjected to rigorous specification so that the result would be an exemplary technology district with buildings of high quality architecture erected from innovative and energy efficient materials. After: C. Barletta, *op. cit.*

[10] Wooded areas in Aix occupy 6000 ha, which constitutes 1/3 of the town area, which equals 18 000 ha [3].

also involves a wide and varied range of cultural services[11], sports facilities[12] and areas of organized greenery[13], which are rarely encountered in towns of this size (27 thousand inhabitants). Additionally, since 1989 there have been activities undertaken aimed at creating an attractive urban space: the restoration of the architectural heritage; the introduction of pedestrian zones; the modernization of sanatorium and hotel facilities as well as spa centres; the foundation of a balneotherapy biological regeneration centre; the renovation of the congress centre and the opera house; the revitalization of the railway station [11]. Owing to its varied range of services, Vichy offers a high quality of living and attracts those who want to use the big city infrastructure and facilities without having to endure its inconveniences. The town offers living conditions suitable for specialist employees of research institutions as well as innovative technology companies, which begin to function within its structure. A plan created in 1997 was aimed at improving the town's economic situation by attracting "grey-collar workers" and developing a knowledge-based economy[14].

Industry in Vichy started after the 2nd world war. Previously existing production plants had been, to a great extent, connected to the town's spa function (bottle manufacture, water bottling). At present, there are several industrial zones in Vichy and its neighbouring areas, and the manufacture and service activities are concentrated there. The zone Vichy Rhue, spatially connected to the town and located in the near commune Creuzier-le-Vieux, is the seat of the L'Oreal laboratory, which develops cosmetics based on mineral water and known under the brand name Vichy. The premises and their environs differ considerably in quality, which is characteristic of technology centres from the surrounding industrial development. At the same time, parks of a research and technological character are growing, so they are destined to be built up with laboratories and research and development units, e.g. Bioparc Vichy. The park was created in 1993 in a place called Hauterive – 5 km away from Vichy. Bioparc, stretching across 35 ha of land, is situated in a natural countryside landscape, in a secluded area isolated from other buildings and functionalities by walls of trees. The park is mostly destined for research and development units and laboratories working in the field of health, beauty and wellness as well as biomedicine, also based on spa medical treatments and natural mineral resources.

Implementation of the research-development and technological function involves realization of structural projects significant for the town's growth and focusing on the revitalization of post-industrial and post-spa brownfields as well as developing the key areas of activity, such as the Lardy University and Technology Pole and the Atrium Technology Centre. The ATRIUM Technology Centre, inaugurated in 2008, is located in a former mineral water bottling plant, which had been abandoned for 20 years and completely degraded. The building, which is a monument of industrial architecture, is situated in the town centre area in the vicinity of the main railway station. The structure is composed of repetitive segments

[11] Vichy has an opera house, a media centre, 5 museums, a six-screen cinema (visited annually by 290 thousand patrons), a culture centre and an academy of music.

[12] Rugby and basketball sport clubs, a swimming stadium and a racing track on the Allier river as well as sports facilities for fifty different disciplines (e.g. an athletic stadium, several fields for playing team games, tennis courts, mini golf course) and an international sports centre of biological regeneration in the Parc Omnisport – park area stretching over 120 ha of land.

[13] The area of organized greenery in Vichy accounts for 1/4 of the whole town area. Nevertheless, the town gives the impression that the amount of greenery is greater as the parks which are situated outside its administrative boundaries are connected to the town structure (e.g. Parc Omnisport) [11].

[14] Delannee S., Le pôle universitaire de Vichy Val d'Allier, article published on the 17th Nov. 2011 [10].

crowned with a multi-arch roof and pierced with high windows. The main façade is in the form of a large, completely glazed structure crowned with an arch combines the building's traditional industrial expression with the contemporary technology of glazed front elevation linking the interior with the urban square in front of the building. The interior of the structure has been arranged by putting free-standing office units into the former workshop floor in such a way as to not lose the impression of its enormity covered with the arched roof structure. In the space between the outer walls and the office complex, a meeting place has been created for conversations, discussions and making contacts. The representational main hall performs a similar function. The building has also been furnished with green patios introducing elements of nature into the workplace. The Centre, whose main objective is the creation and development of businesses, houses a business incubator, offices and services connected with the operations of businesses.

The Lardy University and Technology Pole was created in 2001. An idea was born at the beginning of the 90s to revitalize the old spa complex, Lardy, built in the 30s (1937), when the spa resort was blooming, closed in 1967 and falling into ruin from that time on. The bath-house, situated in the spa park accommodating the water intake point of Vichy's most famous spring, Celestine, was designed by Charles Letrosne in the Provencal style [10]. The complex had two two-storey wings with marble arcades on the ground floor and a tower water container. Owing to the revitalization of these facilities, the University, as one of the town's strategic functions, has obtained premises in a very attractive location near to the town centre and the spa district, and surrounded by beautiful greenery. Its construction resulted from the town's economic plan adopted in 1997, which was to raise its appeal, enliven it and fill it with young people, and first of all, to provide a steady specialist workforce for the labour market in the region. The Pole is also a place where enterprises are established, of which there are approximately forty and these employ approximately 40% of students in the form of internships and student training placements[15]. Introducing the university function into the town is changing its image and the community, which is getting younger – it also enables the building of connections between science and business.

The strategy to locate knowledge-based economy centres in towns with a leading spa function and characterised by high quality urban environment in order to boost their competitiveness can also be found in Aachen[16], Warnemunde[17] or Bad

[15] A few businesses have been established by the university's students/graduates; after: Delannee S., *op. cit.* [10].

[16] The region of Aachen (a spa since the Roman Times) is at present one of the most innovative areas in Europe, which it owes to its location near the border, high quality living and working environment as well as the activities and partnership between the RWHT Aachen University, research centres and business support institutions. The institutions of this type include: the Europlatz Technology Centre (1993) with its seat in a building of attractive architectural design and prestigious location at the entrance to the city from the motorway and in the vicinity of the spa complex and compact areas of organized greenery, Medical Technology Centre (1994) connected with the University Clinic as well as the BioMedical Technology Centre. In Aachen, there are also Competence Centres, for example of Science History or Medical Technology, the latter connected with the Medical Technologies Cluster; after: www.technologiezentrum-aachen.de.

[17] Warnemunde is Rostock's spa district situated on the Baltic Sea. As one of the most beautiful traditional German spa resorts, it offers an appealing environment both for recreation and creative work. Since 1990, Warnemunde has been home to a technology centre (TZW) and a technology park (TPW) spatially and functionally connected to the institutes of the Wismar University and the University of Rostock. The same space also comprises the Research Centre of Biosystems

Ischl[18]. This tendency can also be observed in Poland, e.g. in Szczawno-Zdrój. This small spa resort situated within the influence zone of a large city (Wałbrzych) is characterised by high quality traditional architecture as well as considerable amounts of green areas, which in the form of fields, meadows, woods and spa parks, account for more than 50% of the town's area. The commune-owned periphery area of Szczawno-Zdrój, from the side where the town borders on the Wałbrzych urban fabric, is now the house of Dolnośląski Technology Park "T-Park". The park, managed by the Dolnośląska Regional Development Agency, is one of the elements of Szczawno-Zdrój Economic Activation Zone development. It is destined first and foremost for commerce and industry. The T-Park is located in the Research and Development Centre facilities, which comprises three functional zones – the business incubator, office and laboratory infrastructure and production workshop facility. The Park, inaugurated in 2009, is aimed at developing information technologies, electronics, construction and renewable sources of energy as well as spa medicine, the last of which is connected with the speciality of the neighbouring medical treatment centre. There are 20 ha of land available for development linked to the technology park, which are destined for innovative and environmentally friendly businesses.

In the presented examples, the curative and technological functions are not always directly connected. Most frequently, local authorities introduce a new function into an existing spa resort or former spa facilities which remains the commune property with the view of stimulating the town's and region's growth – opening new possibilities of creating partnership networks and building knowledge-based economy infrastructure. An example of the strategy of combining the spa and technological functions are the activities that are planned in the area of the Zgierz commune situated in the northern part of the Łódź Metropolitan Area, in the zone of the Łódź metropolis's 'green belt', which is to be taken under legal protection within the framework of the Sokolnicko-Piątkowski Area of Protected Landscape and in the strip of Łódź recreation areas [8]. In the area of the Zgierz commune, especially in the vicinity of the village Rogóźno, situated near the exit from the A2 motorway, there are deposits of rock salt, lignite, geothermal waters and peats, which have been the potential basis for a spa resort that has been planned here since 1974 [8]. In the years 2006–2009, in connection with the activities undertaken by the Adamów Lignite Mine for opening an open-pit lignite mine in Rogóźno, a number of research projects[19] on alternative applications of the deposits have been carried out – these included reports on spa creation or using geothermal energy for the

Technology and Biomaterials and the Leibnitz Institute for Catalysis. The park stretches over an area of 5 ha located in the city centre fabric, 800 m away from the seaside promenade [4].

[18] The preparatory works for location of the technology park in the Bad Ischl, a spa resort situated in the Austrian Alps, have been going on since 1992. The park is located on the outskirts of the town, on its main thoroughfare. Its objective is to boost the potential of the region by the appreciation and proper use of local resources.

[19] Projekt „Rogóźno", Sustainable Development Centre, Łódź 2006; Analiza możliwości wykorzystania zasobów wód geotermalnych i powierzchniowych oraz torfów i borowin w okolicy miejscowości Rogóźno dla potrzeb rozwoju turystyki, rekreacji i lecznictwa (Analysis of the possibilities of using the geothermal and surface waters as well as peats and peloids occurring in the area of the village Rogóźno for the needs of tourism, recreation and medical treatment development), Sustainable Development Centre, Łódź 2007; M. Kucharski, Analiza stanu i identyfikacja koniecznych działań dla uzyskania stref ochronnych uzdrowiska "Rogóźno" (Analysis of the existing conditions and identification of the actions necessary for obtaining protection zones of the "Rogóźno" spa resort) Warsaw 2009.

generation of electricity. In the Study updated in 2011, the spa creation was recognized as one of the primary directions of the commune spatial development. The boundaries of individual protection zones were also defined and so were the principles of their development. Moreover, an obligation was imposed to draw a local plan (the only one in the whole commune!) for zones A and B of the spa protection [8].

The works aimed at founding the spa and realization of the activities stipulated in the "Rogóźno" Project, including the Research and Development Programme, were accompanied by establishing a partner institution – the science and technology park[20], founded in 2006. The park's objectives include the creation of an environment for research, the transfer of knowledge and technology as well as support for SMBs connected with renewable energy, tourists, agri-tourists and a spa medical treatment sector. The park's activities were to focus on four fields – science and education, support for innovation in agriculture, alternative sources of energy as well as the implementation and management of the spa resort creation process, including building the spa and sanatorium infrastructure, a recreation and sports centre and arranging green areas[21]. The park's main research field was to be concerned with alternative ways of generating energy from lignite by underground gasification with the use of classic and microbiological methods[22] as well as possibilities of using carbon dioxide for producing fuels, also proposals of creating geothermal power plants and heat and power plants.

In spite of the fact that relevant records have been made in planning documents and a managing institution has been established, both the spa and the technology park remain in the sphere of plans and arrangements.

A knowledge-based economy is built by organizations which create cooperative links between businesses, scientific units and administration. Through our accession to the EU, we have gained access to sources of funding for activities implementing the EU economic policy, which has resulted in the founding of clusters and cooperative networks.

Creating cooperative networks is one of the possibilities to overcome spa resort stagnation and growth barriers. Building on the cooperation capacity enables the promotion of spa products and services, and additionally creates a positive image both of the individual towns and the whole region. Instruments conducive to creating cooperative networks are clusters, whose members achieve higher profits compared with acting alone due to joint actions, concentration and positive competition. Undertaking active cooperation contributes to creating a uniform strategy for the active promotion of the members' interests, undertaking

[20] The Rogóźno Science and Technology Park was established by the Zgierz Commune and the Sustainable Development Centre in Łódź. In June 2006, an agreement on partnership and cooperation within the framework of the park was signed by AGH University of Science and Technology in Kraków, The Oil and Gas Institute in Wrocław, the Institute of Heating and Sanitary Technologies in Radom, Łódź University of Technology, the University of Computer Sciences and Skills in Łódź, the University of Humanities and Economics in Łódź, the KGHM CUPRUM Research and Development Centre as well as ten local self-government administrative units; after: meaning unclear, not sure how it relates in this context Adamska T., Park Naukowo-Technologiczny "ROGÓŹNO". Strategia, program, projekty /The ROGÓŹNO Science and Technology Park. Strategy, programme, projects./ a presentation delivered at the conference "Rogóźno – yesterday, today, tomorrow", which took place on the 14th Oct. 2009 in Zgierz.

[21] *Ibidem*.

[22] Iciek J., Alternatywne metody pozyskiwania energii z węgla brunatnego /Alternative methods of generating energy from lignite/, a presentation delivered at the conference "Rogóźno – yesterday, today, tomorrow," which took place on the 14th Oct. 2009 in Zgierz.

joint projects and research, creating a possibility of developing innovative complex services and products, mutual support and promotion as well as providing better access to information, infrastructure and technology.

One of the examples of creating cooperation networks by spa resorts in Poland is the Innovative Cluster Health and Tourism 'Spa Resorts – Pearls of Eastern Poland' (Innowacyjny Klaster Zdrowie i Turystyka 'Uzdrowiska Perły Polski Wschodniej'), established as an association of nine partners in 2009. The project of creating the Cluster and its initial activities, realized in the years 2010–2011, was financed within the framework of the Operational Programme Development of Eastern Poland for the years 2007–2013[23]. In 2012, the cluster comprised thirty-four entities operating on the territory of Podkarpackie, Świętokrzyskie and Lubelskie voivodeships, including: two private institutions of higher education[24]; seven spa resort communes[25]; three business support institutions[26]; a number of businesses involved in spa and tourist functions [2]. By creating the cluster, the member spa resorts may become important centres of the region's economic growth, relying on their natural resources. Participation in the cluster aims at supporting and developing medical treatment and spa tourism services[27] by using the potential of local businesses, creating new products, joint promotion, building the brand names of the cluster and its partners as well as creating an attractive image of the involved towns and the region[28]. Operating within a cooperative network enables undertaking initiatives, creating complex services, developing the brand names of the cluster and its individual partners as well as the exchange of knowledge and experience within the framework of the project undertaken jointly.

During the two years of financing the Cluster and its active functioning, scientific research was carried out diagnosing the situation in the spa businesses and communes and a number of conferences and working meetings were organized to discuss the strategy of its operation. The next period of financing was to bring about the creation of a system of uniform multimedia points of tourist information and modern recreational infrastructure with entertainment centres for children in all the spa communes. There were also plans to create a virtual shop-window for local produce and a virtual travel agency as well as to implement some promotional actions marketing the cluster[29].

Initiatives of this type are also undertaken in other countries of the European Union. In Latvia, there is the Latvian Health Tourism Cluster[30] with its seat in the spa resort of Jurmala, situated on the Baltic Sea near Riga. The cluster comprises the Latvian Resort

[23] Action 1.4. Promotion and cooperation, component: Cooperation, area: creation and development of clusters.

[24] University of Information Technology and Management in Rzeszów, founded in 1996, and Unviersity of Management and Administration in Zamość, founded in 1997.

[25] The communes of Iwonicz-Zdrój, Rymanów, Busko-Zdrój, Solec-Zdrój, Horyniec-Zdrój, Solina and Krasnobród.

[26] Association of Entrepreneurship Promotion in Rzeszów, Centre for Promotion of Businesses Ltd. in Rzeszów, portal kurort24.pl.

[27] Ecotourism, spa tourism, active tourism, culture tourism.

[28] www.klasterzit.pl.

[29] Kolejne 4 mln zł na innowację uzdrowisk (4 mln PLN more for spa resorts' innovation) an interview in Radio Via radio station of the 17th Dec. 2011 with Tomasz Soliński, PhD – the President of the Board of Directors of the Association Health and Tourism and the Cluster's office Head.

[30] Latvian Health Tourism Cluster was founded in August 2012 on the initiative of the Latvian Resort Association and the Jurmala City Council.

Association, the City of Jurmala, Riga Stradins University, clinics and hospitals, numerous rehabilitation centres, sanatoriums and hotels, an Olympic sports centre and businesses operating in the medical-cosmetic and tourist sectors as well as tourist-spa associations[31].

Developing a cooperative network is aimed at creating a joint brand name for Latvian spa resorts, diverse health services and products attracting foreign visitors to Latvian spa resorts. Within the framework of the cluster, the following activities are planned – joint marketing projects, developing new and innovative pharmaceuticals based on natural resources, and launching them into foreign markets. An important element of the network is the promotion and intensification of cooperation between the cluster's partners in the field of education and industry, e.g. introducing balneology classes into the medical schools curricula or the organization of know-how workshops on developing spa services and products. The project of creating the cluster is closely linked to the Latvian Spa Resort Strategy for the years 2012–2020, developed by the Latvian Resort Association and the Jurmala City Council[32]. Similar actions[33] aiming at developing cluster initiatives based on the spa industry have also been undertaken in Estonia[34] and Bulgaria[35].

Spa towns, most frequently situated in places with a beautiful landscape, abounding in cultural heritage and diverse green areas and boasting a specific spa area, are attractive places for the creative and specialist workforce – engineers, scientists and artists. Owing to the permanent presence of often affluent health visitors, spa resorts are places with a naturally wide range of services, including first and foremost sport, health and beauty but also other specialist services rarely encountered in places of a similar scale. Both the value of the natural and cultural environment and the attractive services influence the quality of living – the offer is comparable with that of a large city, but without the inconveniences invariably connected with living in one. As spa towns offer living conditions sought after by the creative class, they are eligible for location of knowledge-based economy centres, such as technology parks, research centres and business incubators. Taking up this function by a town involves embarking on a completely different course of economic growth, which however, may be connected with the hitherto prevailing activity. Introduction of the technological function requires developing the higher education sector as well as the research and development sector, which is not frequently encountered in small spa resorts. Moreover, it involves a change in the social structure.

The process of receiving and developing technology centres, to a considerable extent dependent upon the activity of the town and regional authorities, may take different courses. In the discussed examples, we have seen various strategies applied to managing the process.

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[31] Gunta Uspele, Health tourism in Latvia, a presentation at the 17th Annual ESPA Congress, Jurmala 15th–18th May 2012; From this year, the health and tourism cluster of Latvia started its action, information of 24th Nov. 2012, published on the portal http://www.europeanspas.eu.

[32] *Ibidem*.

[33] Research has been carried out at the University in Tartu on creating a spa cluster; after: Muristaja Heli, The Analysis of Parnau as a health resort tourism cluster, Tartu 2003.

[34] Estonian Health Tourism Cluster was founded in November 2011 on the initiative of the Association of Estonian Spa Resorts, and it is a network linking health centres, sanatoriums and spa resorts; after: Spa Association launches health tourism cluster, information of the 30th Nov. 2011, published at the portal www.hei.eas.ee.

[35] Health Tourism Cluster was founded in Sophia in 2011 and its aim is to create an attractive and comparatively cheaper medical, dentist and spa offer for foreign clients.

The newly introduced technological function may dominate the spa function and become the main engine for the town and regional economic growth.

The example of Vichy, where the new function is in the initial stage of rising, shows equilibrium between the spa and the industrial elements, the latter is also based on the natural resources of the place (mineral waters) and the balneology treatment tradition. In this case, the traditionally understood spa function is continued in modern economy, but its understanding, use and impact have been extended, the best expression of which is the global brand of cosmetics manufactured on the basis of thermal water.

In the remaining examples, the introduction of a technology park constitutes one of many aspects of the town and regional growth, which is also evidenced by its location in the town. In places like Szczawno-Zdrój, Bad Ischl or Warnemunde, the location of the technology centre is basically incidental, peripheral and in the best scenario, in a compact urban structure and distant from the main spa area. On the other hand, places for which parks are of strategic significance locate them in attractive and important areas, connected with the town's spatial network and its structural hubs (railway station, the spa complex, entrance into the town) of high architectural and spatial value. Their connection with the former function of the spa resort (the sanatorium-hospital complex, former water bottling plant or the bath-house) indicates a renewed application of the old function for the benefit of the new one, which may prove equally significant for the town's growth.

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