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Abandoned heritage – the first European airports

Opuszczone dziedzictwo – pierwsze europejskie porty lotnicze

Due to the development of air transport and urban expansion, the locations of pre-war airports were often changed. The question of the fate of the abandoned airports and their entire infrastructure arose. This article looks at the issue of derelict, pre-war airfields. Examples of airports which were successfully adapted as well as the ones which were abandoned and closed yet but equally important in historical context are shown. In this paper, alternative possibilities for using the former civil airports which allowed memory of important, historical events to be honoured are shown as well as benefits of their preservation are presented.

Keywords: airports, architecture, urban planning, historic landscape, heritage of technology, Johannisthal Air Filed, Paris Le Bourget, Tempelhof, Gdańsk – Wrzeszcz, Kraków Rakowice – Czyżyny, abandoned airports

Abstract

W związku z rozwojem transportu lotniczego oraz ekspansji urbanistycznej lokalizacja przedwojennych portów lotniczych często ulegała zmianie. Rodzi się pytanie: jaki los spotkał opuszczone lotniska i ich całą infrastrukturę? Niniejszy artykuł porusza kwestię opuszczonych przedwojennych lotnisk. Przedstawione zostają przykłady udanych adaptacji ww. portów lotniczych, jak również tych niszczejących, ale niemniej istotnych w kontekście historycznym. W artykule zostają ukazane alternatywne możliwości wykorzystania dawnych cywilnych lotnisk, dzięki którym stało się możliwe uhonorowanie pamięci po ważnych wydarzeniach historycznych. Przedstawione także zostały korzyści płynące z działań mających na celu zachowanie tych miejsc.

Słowa kluczowe: porty lotnicze, architektura, urbanistyka, dziedzictwo techniki, Johannisthal Air Filed, Paris Le Bourget, Tempelhof, Gdańsk – Wrzeszcz, Kraków Rakowice – Czyżyny, opuszczone lotniska

1. Introduction

Historical objects associated with industry and transport are the subject of wide interest with many of them being protected. Numerous conferences concerning the heritage of technology have been held, it is also possible to find a very great number of publications related to the subject of the protection and reuse of such places. However, there are few publications related to air transport, although it deserves the same attention as rail or water transport which are often discussed in connection with heritage protection. Aviation is the youngest branch of transport, which has dynamically developed. Within a few years air communication has became widely available and has been steadily gaining in popularity. The growing number of new, larger aircraft which were capable of flying more passengers flights and the development of the technical infrastructure have forced airports to grow in size. The development of urban infrastructure in the vicinity was another reason for relocating airports. Therefore, air traffic has been moved to new locations [21, 10]. The question was being posed: what happened to the areas formerly occupied by the airports and their infrastructure? In the literature, we can find only basic information about the remains of abandoned airports. The purpose of this article is to identify the value of the remnants of the former airports in the context of the heritage of aviation technology as well as presenting possible ways to reuse abandoned airport areas and the benefits that could come from it.

The first stage of the study was to become familiar with airport classification according to their functions (airfield, military airport, sport airports, civil airports). The preparation of the article covered a wide range of literature [21, 13, 6, 7, 14, 10]. The next step consists of collection, verification and organizing material. The subject of this article is a collection of airports which were opened before World War II and stopped fulfilling their function as civil airports. From this group, only those airports which played a significant role in history were selected. Some of them could be used as examples of the effective use of the heritage of technology as well as examples of successful adaptation and reuse. Understanding the way old airports in other European countries are being preserved is the background for the study. The development of aviation and transforming its infrastructure is presented based on source materials. The study used the comparative method and logical reasoning. The value of the abandoned airports as well as the presentation of the possible reuse of the rest of their infrastructure and benefits which may come from that can be presented thanks to the steps shown above.

2. Former civil airports

The first airports appeared at the beginning of the 20th century. Initially they were used for sport and recreation activities and by military units. The heyday of aviation was during wartime. Planes were becoming more and more agile, which was their main advantage for instance during reconnaissance activities during the war. Therefore their production increased and this led to growth in the number of airports. When the political situation became more

stable, planes started being used for passenger flights. Due to the technical development of the aircraft, their constant improvement as well as the development of airport infrastructure and the growing availability of civil flights, the lack of space in existing airports areas became obvious. On the other hand, new buildings and urban sprawl began to move closer to the airports. The development of aviation, the urban expansion as well as political and economic changes led to the closure of many airports and moving them to new locations. Former civil airports met different fates: some of them are being used by aviation clubs and for sporting purposes, others were destroyed and new buildings built or they are simply left as derelict buildings. Nevertheless, some of them were adapted to new functions. That last group may become a model of the protection and honouring the old airports and their infrastructure which are often associated with important historical events [6, 10, 13, 21].

2.1. Johannisthal Air Field

Although as "the mother of all airports" the airport Berlin-Tempelhof is commonly called [5], it was not the first German airport. The first commercial airfield in Germany and one of the first airports in Europe was the airport located in Johannisthal, near Berlin. The airfield was opened in 1909 and initially used for air-shows. It was located in an open, grassy area. On its outskirts were spread hangars and stands. Soon the Johannisthal Air Field became a meeting place for European pilots and events organized there became international. Although the first objects were only temporary it did not take much time until the lack of infrastructure was filled and soon administrative buildings, halls, as well as technical equipment (among others lighting and an anemometer) appeared at the Johannisthal Air Field. In Johannisthal, the most important manufacturers and designers of the aircrafts soon settled [25].

During the First World War the airport in Johannisthal was used by military and for aircraft production. In 1912 the German Experimental Institute (DVL-Deutsche Versuchsanstalt für Luftfahrt) was established and the airport became an important place where research was conducted. 1919 was very significant for the airport history too, because then the Deutsche Luft-Reederei (German airline, Lufthansa's predecessor) began its first post and passenger flights there. Passenger traffic was moved from Johannisthal to Berlin when the new airport

Fig. 1. Former airfield in Johannisthal. The place is a subject of interest of photographers and graffiti artists
(source: Abandoned Berlin [29] accessed: 12.12.2018)

Berlin-Tempelhof was built (1923). The army returned to Johannisthal and up to the 80s it was used for military purposes. In 1995 the airport was officially closed.

The runway was converted into a park, part of the former airport was rebuilt for the Aerodynamic Park University of Humboldt. Other buildings (in original equipment could be found) are still decaying. These objects have aroused interest among lovers of abandoned buildings, as well as being an attractive place for graffiti artists [8, 25, 29, 30, 31, 33, 36].

2.2. Gdańsk-Wrzeszcz Airport

Gdansk-Wrzeszcz Airport was founded in 1910 in Gdansk by the Prussian military authorities. At the beginning it was used for military purposes. In 1917 a school for pilots was established and that time the second hangar was also built. After the First World War, the airport was used for civil aviation purposes and in 1920 international flights began. The airport's buildings consisted of: a couple of hangars, station, workshops, fuel warehouse and houses for the airport staff. This place was of great importance to European air transport and it was one of the first which supported civil flights. In the 1930s. the airport in Gdańsk-Wrzeszcz was used for night flights and was also used during difficult weather conditions, which set it apart from other airports. An additional distinction for the airport was the participation in the international air contest Europe-Rundflug.

During the World War II, the airport was used for military exercises. In 1945 during the Soviet offensive the airport infrastructure was seriously damaged by Allied air raids and later by the Red Army. After the war, the airport was rebuilt and extended. It was used by military and civil aviation, and carried flights between Berlin, Copenhagen and Stockholm. In the 70s, there was a big economic revolution and it was decided to move the airport. It required expansion; however, it was impossible to extend the airport area in its current location. The official closure of the airport in Wrzeszcz was in 1974. The same year air traffic was moved to the newly built airport located in nearby Rębiechowo (opened 1974) [6, 7, 13, 21, 34].

The area of the former Gdańsk-Wrzeszcz Airport was absorbed by a new housing estate, and that district was named "Zaspa", which is still in use. Of the former infrastructure, the remnants of the runway and one of the hangars could be seen. The hangar was adapted into a shopping centre, the other two hangars were demolished, and the area has been allocated

Fig. 2. An old hangar in Gdańsk-Zaspa, 2019 (photo by A. Szuta)

for housing. Only street names, the remaining airstrip, and adapted hangar recall the history of this place [7, 21].

2.3. Berlin-Tempelhof Airport

The airport was located in the centre of Berlin and had good communications with the rest of the city. The first flights took place in 1903 on a grassy airstrip. In 1909 a demonstration flight was given by Oliver Wright, and this event brought gather a large number of viewers. In 1919, the first passenger flight took place. In the 1920s. Tempelhof was used by the German airline DHL (Deutsche Luft Hansa) [5]. During the interwar period, Tempelhof was a major hub in Europe. Soon a decision to build a building which would reflect the power of Germany was made. The terminal project was innovative – it envisaged separate levels for people and luggage as well as a wide underground level. Construction of the Tempelhof terminal was completed in 1937 while finishing works were stopped because of the outbreak of World War II.

During the war, Tempelhof was mainly used for the production of aircraft. Although Soviet troops devastated many of the premises, the Americans, who received the airport in 1945, made all necessary repairs. In the following year the first international flight was held. During the blockade of Berlin (1948–1949) all supplies for the city could be transferred only by air transport. Due to this, airplanes landed at Tempelhof almost constantly. After the end of the blockade, Tempelhof was partly controlled by military forces and also served civil transport. Tempelhof was again one of the most widely used airports in Europe. The times of its grandeur lasted until the opening of the Berlin-Tegiel Airport in 1975 to which many airlines moved. Tempelhof was closed for the first time and used only for special occasions [22]. The Fall of the Berlin Wall and the economic boom led to the reopening of Tempelhof airport in 1989. In 1994 American forces were deactivated; nevertheless, within a few years the transfer of air traffic from Berlin-Tempelhof and Berlin-Tegel airports to Berlin-Schönefeld was discussed. In 2008 Tempelhof was closed for the second time. The question arose: what to do with the Tempelhof airfield?

In 2009 a competition for the adaptation of Berlin-Tempelhof airport, whose terminal building has been protected from 1995, was announced. The former airport became the subject of many works. Although the projects differ a lot, a linking element in these conceptions could

Fig. 3. Berlin-Tempelhof Airport a bird's-eye view and facade of the terminal
(source: [37, 38] accessed: 26.02.2019)

be found. Every project introduced new functions to the terminal (for instance a video label or an office) and none of them changed anything in the structure of the building or its facade in order to preserve its nature. The winning project was created by GROSS Studio. However, about 4 years after that investors cooperating with Berlin saw the potential of the place and wanted to establish some new buildings there. It was decided to vote in response. Berliners voted that the Park should remain green space. The largest park in Berlin, the "Tempelhofer Park" was founded in May 2010. In the former Tempelhof airport various cultural events, fashion shows, etc. were held. It has been also used by skaters and for other sport activities. In 2015 year, Tempelhof became the largest shelter in Germany for refugees [5, 9, 19, 22].

2.4. Paris-Le Bourget Airport

The Le-Bourget Airport was located near Paris in the village of Le Bourget. In 1914 the army established an Air Reserve there, and few a months later the place became a respectable, military airport. Wooden hangars, workshops, and administrative offices were built there. The area of the airport was continuously enlarged. In addition it was not only a good place for the military but it also created ideal conditions for aerospace experiments as well. After World War I, the potential of the aviation industry and its development also for civil purposes was noticed. The first airport in France which held civil flights was Le Bourget. From 1919, it was also used for civil aviation. Although military and civil industry lived in a symbiotic relationship, the aviation development required an increase in the airport's area. In the 1930s, in the background to other European airports, the Le Bourget airport became obsolete due to its project and small area. For this reason, a new terminal based on the European model was designed. It was officially opened in 1937. By the end of the 1930s. Le Bourget became the most beleaguered airport right after Berlin-Tempelhof.

In 1940 German bombardment damaged the airport's military and civil infrastructure and during the war the airport was occupied by the Luftwaffe. Then American and British bombing seriously damaged the terminal. After the liberation of Paris the airport was used by the British and American armies, who quickly repaired it and soon civil flights were held there again. In 1951 Le Bourget played the host in a very prestigious meeting at which the most recent creations of the aviation industry were displayed. In 1974, the Charles de Gaulle Airport was opened and the air traffic was transferred there from Le Bourget. As a result of releasing the space at Le Bourget, the oldest museum of aviation in the world "Museum of Air and Space" (Musee de l'Air et de l'Espace) was moved there. The museum suffered from lack of space for a long time and, due to that, using the inactive part of the airport was seen as a good solution [17, 18, 23].

Till 1977, Paris-Le Bourget functioned as one of the capital's airports. The last commercial flight took place in 1982. The Air and Space Museum, which already took part of the airport, expanded its exhibition space into the terminal building, which has been protected since 1994. Every year (since the '50s) it has held the international air and space show "Paris Air Show". Currently part of Paris-Le Bourget Airport is a museum and the other part is used for business aviation – Paris-Le Bourget Airport is one of the most used airports for business flights in Europe [20, 23].

Fig. 4. Air and Space Museum in Paris (source: [39, 40] accessed: 26.02.2019)

2.5. Kraków-Rakowice Airport

Rakowice-Czyżyny Airport was established between two villages Czyżyny and Rakowice, both of them located near Kraków. It is one of the oldest airports in Europe. In 1912, the Austro-Hungarian army bought an area covered by orchards and vegetable gardens from the Cistercians. The area served as a landing area, and the first attempts at flights were held there too. Already in autumn of that year the construction of the first buildings and technical facilities was carried out [13, 35]. The airport developed quickly and a few years later it became an important hub. The airport was continually developed, new structures were built, and it also gained in importance for the military [34]. In 1917 the airport was named "Kraków-Rakowice Airport" and was added to the postal line Vienna – Kraków – Lviv – Ploskirow – Kiev – Odessa, which was the first regular post airline in Europe. In the 20s, the Civil Air Station Cracow was opened at the airport, one of the first civil air stations in Poland was also established there. Simultaneously as the rank of the airport increased, so increased its area. Regular transport activities started in 1923. By the end of the 20s. Kraków-Rakowice was a major hub connecting foreign flights to Brno, Vienna and Budapest. In 1924, the airport infrastructure was still being developed (one of the hangars which was built then today belongs to the Polish Aviation Museum) [13].

In 1939 the airport was bombed by the Germans and during the war it was used by the Luftwaffe. In 1945 it was again bombed and occupied by the Russians. While leaving, the Germans destroyed much of the airport. In December 1945 the control of the airport was transferred from Russian to Polish authorities. The damaged facilities were rebuilt and only a year later the first passenger flight was held there. At the beginning of 60s, the decision to liquidate the airport was made. This was due to the development of the metallurgical combine steelworks which was associated with the building of some new residential areas. In 1963, civil transport was moved to Kraków-Balice Airport. An army base was stationed at Kraków-Rakowice Airport till 1966, and till 1969 it served as an alternate airport [13, 21, 34, 35].

The origins of the museum on the site of the former airport Rakowice-Czyżyny started in the 60s when the unused equipment began to be stored there. Because of an aviation exhibition, other aviation exhibits were soon moved to Cracow. The landing area of the

Fig. 5. Polish Aviation Museum in Cracow (source: [32, 35] accessed: 12.12.2018)

former airport was gradually built up, and new residential and service buildings were built there. A landing strip on the side of the airport which hadn't been built up was created, and then, in 2010, a new, main building of the museum was opened. In this modern object a rich display of aircraft is presented. This place held both museum and educational functions. In December 2018, the Polish Aviation Museum in Cracow was highlighted as one of the 20 best museums of aviation in the world [21, 32, 35].

## 3. Advantages of using heritage of technology in various fields

According to the definition of the Hague convention, cultural goods are "movable or immovable property of great importance to the cultural heritage of every people, such as monuments of architecture, art or history, whether religious or secular; archaeological sites; groups of buildings which, as a whole, are of historical or artistic interest; works of art; manuscripts, books and other objects of artistic, historical or archaeological interest; as well as scientific collections and important collections of books or archives or of reproductions of the property defined above" [27]. In the rudiments of the knowledge of monuments and conservation is valorisation of the cultural goods. On its basis, legal-administrative and/ or political and economic decisions are taken. One of the criteria for the application to be included on the World Heritage List says that goods should: "be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history" [26]. UNESCO's documents deal with the usage of the heritage in sustainable development. Another document concerning heritage conservation can also be found at the level of the voivodeships's development strategy. Among others.

it aims to: "develop and form the national consciousness, nurturing and developing local identity; stimulating economic activity, preservation of the cultural and natural environment values considering needs of the future generations and keeping spatial governance" (author's translation) [28]. B. Szmygin in his work shows that monuments are an important factor in the development, as well as tourism largely based on heritage, which is taking on increasing importance in the modern economy [1, 24].

On the heritage of technology and what are the effects of its use it is possible to find much in a wide range of literature. Technological heritage is a part of the cultural heritage as well as being a trace of the former events especially connected with technical and technological processes. In the method of valorisation heritage of technology TECHNITAS developed by J. Affelt certain words are defined, it is worth quoting two of them here "*Heritage of technology* includes all good that man created in order to survive and to improve the conditions of his existence, which are an essential component of the civilization and culture; those are movable or immovable material objects as well as linked with those incorporeal objects of heritage with its surrounding and landscape which is characterized by them" (author's translation) *Technology heritage resource* is "a group of objects which are components of a resource; it is identified by a proper name, location, ownership, legal status, the technical or functional cohesion, etc." (author's translation) [4] .

Heritage can help in the creation of social identity, and former industrial buildings allow the original cultural landscape and cityscape as well to be preserved. This could be possible if the objects are reminders of important historical events as well as they might transmit symbolic political, patriotic, and multicultural content. [2, 3] The subject of the post-industrial heritage was raised among others at the conference "Post-industrial heritage and its culture-forming role" (Dziedzictwo Postindustrialne i jego kulturotwórcza rola) (The first edition was held in 2009 [11] and the second in 2010 [12]). An attempt to highlight and spread in a wider scale subjects related to the heritage of technology was made then. At this time a number of the important articles were also published which concerned the heritage of technology, and the main suncategories of the technological heritage were presented too. Three categories could be found there, one of them is industrial heritage which includes transport and its infrastructure. About the opportunities in using monuments of communications technology as a tourist attraction for cities and regions writes among others T. Turner. Referring to monuments of public transport, he observed many possibilities for their use due to the fact that it becomes possible to strengthen recognition of the former transport infrastructure as a tourist attraction of the cities and regions [36].

Subjects related to the aviation infrastructure are sparsely raised in the field of the architecture and urban planning or work connected with the conservation and reuse of technology heritage resources. However, mentions which concerned using former airport areas could be found in the work of the Institute of Tourism. The issue of the social and economic benefits which are the result of the people's interest in aviation is being raised there. Research shows that not only new airports (such as Kansai International Airport) could be the subject of tourist interest but also old buildings, such as the Museum of Air and Space which was created in the former airport of Paris Le Bourget [17]. This last example shows that
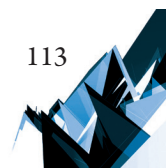
strengthening the cognitive and educational values of historically important places is possible via the thoughtful choice of new functional programs and keeping clear what the old function of the place was. Such places could also contribute to the shaping of local identity and cause an increase in interest in the heritage of air transport [11].

4. Applications and summary

Aviation has aroused emotions since the beginning of its existence with air shows attracting huge crowds. The keen interest of constructors and engineers resulted in the constant modernization of flying machines, thus the popularization of air transport increased. Aviation is the youngest branch of the transport industry, but one of the fastest developing. All of the airports discussed in this article are the first such places in their countries. Firstly they were used as sports or military airfields and later began to be used for civilian traffic as well. Often soon after delineating areas intended for aviation purposes it turned out that these areas were too small and did not provide opportunities for the development of the airport infrastructure. The decisions to change the current location of the airports were made then. Some of the abandoned airports were reused for new functions and others were left alone.

All of the airports which have been discussed in this article have characteristics that affect the creation of social identity – these objects are reminders left after important historical events, and as well they transfer symbolic political and patriotic content. Every one of them is an important element in the history of aviation not only in the scale of their country but also in the European context. Although they could be regarded as symbols of the development of aviation, only a few have been honored by proper respect. Paris Le Bourget airport was partly adapted into a museum and the other part supports business flights. Similarly to this, the former Kraków-Czyżyny Airport fulfills museum and educational functions. Equally important in the historical context: Gdańsk-Wrzeszcz Airport, Johannisthal Airfield, and Berlin-Tempelhof Airport which are, like the two abovementioned airports, witnesses to important historical events in a more than regional range, are being treated marginally. The abandoned infrastructure of the Johannisthal airport could be probably used for cultural and social activities, although it is possible that soon this airport's area will be absorbed by new buildings as occurred in the case of Gdańsk-Wrzeszcz Airport. The only souvenirs left after the former events in Gdansk are a hangar converted into a shopping center and the remains of the concrete airstrip. It is difficult to identify the former use of the area and respect for the historical context is also difficult to find there. It couldn't be said that preserving the historical values for subsequent generations has been undertaken. It looks otherwise with the situation of the former airport Berlin-Tempelhof – an attempt to revitalize the airport was made. The area was dedicated to establishing a new park. However, in a part like in the case of Johannisthal it became a place for entertainment of the graffiti artists, the old terminal became a shelter for refugees also.

This article shows that the heritage of technology is an integral part of the cultural heritage. Therefore, industrial heritage, including buildings related to transport and its infrastructure

may become one of the means to achieve the aims which are formulated (among others) in the voivodeships's development strategy. Although it is possible to find a wide range of literature related to the heritage of technology, air transport is overlooked there. The research areas usually focus on land and marine transport infrastructure, however, it is possible to draw from the experience of these forms of transport for studies. Disciplines which are related to tourism raise the subject of the economic benefits of the use of airports for museum and educational purposes. Regrettably, the use of former airports for these purposes is small and in Poland, hardly ever. Though there are many abandoned airports, only a few stand out as significant participation in the building of European history, as those which were presented in the article. The examples of the Museum in Le Bourget and the Polish Aviation Museum in Kraków prove that it is possible to attractively reuse the remains of the former airports. Both airports were treated with proper reverence and respect the solemnity of the space. These examples show advantages that come from using former aviation areas: they might contribute to shaping public awareness of the history of the site, inform future generations about the essence of the place where they are as well as being used for the purposes of historical education and popularization of aviation heritage.

Former airports – regardless of the amount of the retained material – whether it is only a hangar or whole areas along with most of the airport infrastructure, might contribute to stimulating interest in the heritage of technology. The airports discussed in the article are symbols of past events and are also related to historical characters. They are important elements of the cultural heritage in the context of cities, countries and even Europe. Their remains may be a valuable element in shaping local identity and could result in increasing interest in the heritage of air transport as well as contributing to the preservation and transmission of important cultural values for future generations.

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[29] https://www.abandonedberlin.com/2015/09/flugplatz-johannisthal-second-oldest-airfield.html (access: 10.01.2019).

[30] https://www.forgottenairfields.com/airfield-berlin-johannistal-435.html (access: 05.01.2019).

[31] https://www.berliner-zeitung.de/berlin/die-farbe-der-geschichte-sprayer-paradies-flugplatz-johannisthal-31237510 (access: 10.01.2019).

[32] https://edition.cnn.com/travel/article/best-aviation-museums/x.l?fbclid=IwAR14zZ3qPxx1qnMmitdappTlpjXa3FRIh51lOKPrnKMwKeMLOHfiPS280Lg) (access: 10.01.2019).

[33] http://www.johflug.de/ (access: 05.01.2019).

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[35] http://www.muzeumlotnictwa.pl/muzeum/pl/historia/ (access: 10.01.2019).

[36] https://www.urbanpresents.net/en/2015/12/graffiti-urbex-at-air-field-johannisthal-berlin/2/ (access: 10.01.2019).

[37] https://www.theguardian.com/cities/gallery/2015/mar/05/tempelhof-airport-berlin-history-nazis-candy-drops-in-pictures (access: 26.02.2019).

[38] https://www.abandonedberlin.com/2015/03/tempelhof-mother-of-all-airports.html (access: 26.02.2019).

[39] https://www.museeairespace.fr (access: 26.02.2019).

[40] http://www.le-bourget.fr (access: 26.02.2019).