Heritage of the Polish Central Industrial District - New Cities

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Abstract. "New cities" are perhaps one of the most interesting aspects of the construction, existence and subsequent development of the Central Industrial District. These settlement units founded “in cruda radis” have all a similar and characteristic layout structure. A newly established industrial plant of strategic production profile (usually associated with arms manufacturing) was directly or indirectly connected with a residential/services unit, which subsequently evolved into a city. The analysis of new settlements development in the COP area leads to identification of four groups, that vary in terms of transformation effects and current status. These are: small cities, medium cities, villages with urban characteristics and villages absorbed by previously shaped urban units. It seems that among these groups, the group of small cities deserves special attention, as it presents an explication of construction process and urban structure transformation, analysis of which may be easily achieved due to the size such units. This article presents the outline of layouts and the development history of the settlement units that were parts of functional/spatial structure created through the construction of industrial and residential estates in the Central Industrial District. The aim of the study was a framework analysis of how these cities originated and how the tissue of presented urban complexes transformed. The tools used to present these origins and basic urban development transformations included the analysis of available literature, museum/archive resources, general analysis of cartographic materials and also field studies.

1. Introduction

The idea of Central Industrial District (COP) has recently been regularly invoked, especially in the context of 100th anniversary of Polish Independence and presented as an archetype of successful state interference in the development of economic structures in both functional and spatial terms. The concept of the COP was created as a part of the Four-Year Plan, which was a state reconstruction program introduced by the Polish Government after regaining the state independence in 1918 (Figure 1). The District was an area of planned construction of several arms industry plants and other supporting industrial facilities serving a common overall purpose. As a result of investments, many of the plants were located inside existing cities (e.g. Weapons Factory Łucznik in Radom, State Aircraft Plant: Engine Factory No. 2 in Rzeszów or Aircraft Factory No. 2 in Mielec), while others were built in new locations (e.g. Ammunition Factory No. 3 in Dębica (Nowa Dębica), "Nitroza" Nitrate Plant in Sarzyna (Nowa
Sarzyna), "Lignoza" Explosive Materials Factory in Pustków and, above all, Steelworks Plant in Stalowa Wola) [5].

One of the most interesting features of the development, existence and subsequent evolution of the Central Industrial District are "new cities". They were settlement units located “in cruda radis” and had a similar general arrangement - a newly established industrial plant of strategic production profile (usually associated with arms manufacturing), which was directly or indirectly connected with the residential/services unit, that subsequently evolved into a city. [13].

The literature that comprehensively covers the subject of COP urban and architectural issues is relatively rare and mostly relies on descriptions of historical aspects, ignoring the dynamics of changes in the morphology of settlement units throughout their lifetime [5], [12], [16]. This article presents the outline of layouts and history of development of settlement units that were parts of functional/spatial structure created through the construction of industrial and residential estates in the Central Industrial District. The aim of the study was a framework analysis of the origins and evolution of presented urban complexes. The tools used to present these origins and basic urban development transformations included the analysis of available literature, museum/archive resources, general analysis of cartographic materials and also field studies.

**Figure 1.** Location of the Central Industrial District (COP) within the borders of the Polish State. 1 - Current borders of Poland, 2 – The borders of Poland in the period 1918-1939 (interwar period), 3 - Central Industrial District (COP) (Author’s arrangement)

2. **Settlement units with urban features located “in cruda radis”**.

The new settlement units initially had polycentric structures (two- or multi-centric) of various levels of land development. From the beginning, their basic (creative) function was operation of a powerful industrial plant, while the complementary function was served by residential estate or estates designed for management, engineering, office and line workforce personnel. Construction of new structures was inevitable due to unusual location of industrial and residential complexes. As their production was part of the country defence system, these units were usually located in dense forest regions, which enforced the migration of workforce. Gradually, many of residential estates located “in cruda radis” increased
their population density or expanded and were supplemented by services and communal resources. Some settlements were absorbed by previously established urban complexes, and others expanded to such an extent that they were granted a legal municipal status and nowadays are independent small or medium-sized cities (the case of Stalowa Wola). (Figure 2).

Figure 2. Major COP settlement units (existing till today) characterized by possession of urban features. Indications: 1 – Province capital cities (by administrative division of 1999 and in the years 1975-1998), 2 – Cities having the rights of Province capitals (by administrative division of 1975) currently without these rights, 3 – the city of Stalowa Wola 4 – the city of Kraśnik Fabryczny 5 - settlement units with urban features associated with the COP, located “in cruda radis”, which transformed into small cities 6 – settlement units with urban features associated with the COP, located “in cruda radis, which transformed into a medium-sized city, 7 – previously developed medium-sized cities, 8 - COP border (Author’s arrangement)

The contemporary medium and small cities, which stemmed from an industrial-residential complex, are: Stalowa Wola, Nowa Dęba, Nowa Sarzyna, Poniatowa and Pionki. These cities vary in regard to the type of internal connection network structure, system morphology and architecture.

2.1. Stalowa Wola – a medium-seized city
The best described city in the literature of the subject is Stalowa Wola [5], [6], [10], [11]. Alike in other cases, the commencement of its construction was approved in 1937. At that time, the Southern Works Plant was built with a nearby residential estate called Stalowa Wola. The name is symbolic and comes from the words of Gen. Tadeusz Kasprzycki, who referring to the plan of Central Industrial District construction claimed that "it is the steel will of the Polish nation to break into modernity" (In Polish” Stalowa Wola“literally means „steel will””) [6].

The overall development plan for the city of Stalowa Wola has never been fully implemented. The planned structure was complex. The base assumption was a fan-like layout of the streets beginning at the meander of the San river, which crosses a railway line on the eastern side of the location. The nearest neighbourhood of Southern Works (currently Stalowa Wola Steelworks) became an area of loose residential and service development, which gradually built-up towards north to turn into a metropolitan architecture (dense urban frontages) in distant from the plant northern parts.
**Figure 3.** General orientation and compositional plan of the Stalowa Wola residential estate, dated on April 1, 1938 (source: resources of the Regional Museum in Stalowa Wola)

**Figure 4.** Land plot division and development of the southern districts of the Stalowa Wola residential estate, dated on May 31, 1939, completed buildings are marked black (source: resources of the Regional Museum in Stalowa Wola)
Implemented modernist urban layout was a relatively complex network of streets with several residential estates, mainly consisting of multi-family buildings arranged predominantly in comb pattern or in ruler pattern, where the buildings formed loose frontages. Apart from multi-family buildings in the northern and eastern parts of the development, an estate formed of semi-detached houses and villas for management personnel were planned. Additional facilities of the investment were: workers’ and office clerks’ hotels with canteen and basic service outlets, management guesthouse, pub and shops. In addition to commercial services, several public facilities such as primary school, middle and high school, movie theatre, stadium, tennis courts, bank, bakery, bookstore, first-aid outpatient clinic with social insurance office and farmers’ market were created (Figure 3, Figure 4).

In consideration to the process of urban structure crystallization, a crucial period of the city development were post-war years, when raw modernist comb arrangements were supplemented with social-realism architecture, in order to create meander or quarter arrangements. The street lines and corners were emphasized, by constructing high residential buildings topped with original attics and containing service premises on ground floor level. Supplementing of the frontages also allowed for clear identification of sizable public spaces, largely ignored in the interwar period.

In later years, the city development continued through the extending of its space and constructing the architecture of similar type. Urban complexes and communication networks were designed with grandeur, e.g. an enormous fly-over that connected two parts of the city over the railway line and residential estate development including four-storey and ten-storey blocks of flats arranged in patterns.

2.2. Small cities

The Sandomierz Forest became an ideal place for the location of arms industry plants. Its dense forest complexes provided the cover essential for this type of production. Alike in Stalowa Wola, the cradle of the city was a manufacturing plant and a residential estate constructed for accommodation of arriving professionals. In most cases, completed buildings were built without any comprehensive plan. The designers prepared simplified land development projects. These were usually linear (Nowa Deba), parallel (Nowa Sarzyna) (Figure 5) or irregular systems, adjusted to local natural conditions (Pionki, Rejowiec Fabryczny).

![Figure 5. The original design of Awaryjne residential estate in Nowa Sarzyna (source: Central Military Archives, CAW, I.300.63.225).]
Nowa Dęba received municipal rights in 1961, although the construction of the city structure began in 1927 with the location of a military training ground. The first investment was the Ammunition Factory No. 3 located “in cruda radis” in 1939, together with a number of blocks of flats for factory workers. The accommodation investment was extended with founding of villas for management personnel, a hospital, primary school and swimming pool [9]. The development of the estate continued after World War II. Simple modernist architecture was completed with new buildings, which created quarters and meanders. After 1961, the service base was developed and the city expanded with the construction of two other residential estates in its northern part [14].

Nowa Sarzyna is characterized by a polycentric urban structure completely different from the monocentric structure of Nowa Dęba. The origins of the city are related to the construction of the “Nitroza” Nitrate Organic Composite Plant and its residential colony - Awaryjna estate [8]. South of this modernist estate, on the opposite side of the Trzebośnica river a residential/services complex of urban character was located. The city structure developed independently by appearance of quasi-quarters of multi-family buildings. In 1973, the functional and spatial structure was developed enough to result in granting Nowa Sarzyna municipal rights. In the 1980s and 1990s multi-family residential estates with service facilities were constructed in the western part of the city and on the outskirts of single-family housing developed [13].

In Pionki (Zagożdżonie), the State Gunpowder and Explosive Materials Factory (since 1927 called the State Gunpowder Plant) was a core of the development. Around it, groups of single-family detached houses spread and a few of multi-family blocks were built [4]. It is worth saying that the characteristics of interwar Pionki structure was quite unique. Contrary to other cities with their modernist style, Pionki featured many objects in classic style, which Bogusław Blum called the national style or the "style in the French costume". The buildings had multi-hipped roofs, rich ornamentation (cornices, avant-corps, attics), decorated entrance sections and balconies [2], [3]. In terms of urban structure, they did not form any typical group (estate), as the density of development was low. These scattered developments caused spatial chaos and aesthetic inconsistency of the settlement, which received municipal rights in 1954.

Alike in Pionki, the urban space of Rejowiec Fabryczny, lacks of any dense urban tissue, which could form the core of the city. The development is loose and chaotic in a way. The process of expansion of the city was gradual. It was triggered by two events at the turn of the centuries: the construction of a railway line and station operated by Vistula Railway (Nadwiślańska Kolei Żelazna) and the foundation of Cement Firlej plant managed by Lublin Portland Factory joint-stock company. The origins of the city were two residential buildings for qualified factory staff [7]. In the 1950s the development of cement plant took place increasing the rank of the city. Rejowiec Fabryczny received municipal rights in 1962. The main residential/services investments were implemented after granting the city with municipal rights and included scattered settlements in its eastern part.

An interesting case of small town built “in cruda radis” is Poniatowa. The city owes its uniqueness to the fact that prior to its development a specific urban solution was designed. The author of the project was a well-known architect Stanisław Odyniec-Dobrowolski. The self-sufficient development site had an area of 117 ha and the objective of the project was to provide accommodation and service facilities for employees of the State Radio-telecommunications Works. The size of the investment was enormous (Figure 6) [5].
The main axis of the city was a wide artery in the north-south direction with service facilities operating on local and regional level. The central part was designed as a huge square with a latitudinal wedge of green landscape design including sports/leisure grounds, that divided the city into two parts: northern part consisting of single-family housing development and southern part with long rows of multi-family buildings formed in comb patterns [5]. The construction of the city was interrupted by the outbreak of war. After the war, the local plant was transformed into an Installation Equipment Works, a branch of enterprise from Bydgoszcz. The main development of the city took place in the 1950s and 1960s, when new estates with characteristic quarter layout were constructed in its northern part [1]. Accompanying investments included the foundation of a cinema theatre, sanatorium and the Cultural Centre. Poniatowa was granted municipal rights in 1962. Since then, alike in Nowa Sarzyna, residential tissue of the city developed in a bipolar order: the northern part presented a regular dense structure of the New Town and the southern part hosted completed sections of the residential estate from the interwar period [15].

The investment dynamics during the formation of Central Industrial District was immense. However, the development of many plant residential estates was insufficient to effect in granting them settlements municipal rights. These settlements include: Pustków (at "Lignoza" Synthetic Materials Factory SA), Niedomice (Cellulose State Factory), Skopanie (plant owned by Kruische and Ender Pabianice Cotton Products Factory SA) and Gorzyce (Erazm Mieszczański & Tadeusz Jaroszewski Warsaw Semi-Precious Metal Foundry).

3. Conclusions
Considering the group of major settlement units of the Central Industrial District, one may distinguish those fully involved in the COP concept (located “in cruda radis”) and others partially associated with it (located in existing cities). The analysis of new settlements development in the COP area, one may identify four groups, that vary in terms of transformation effects and current status: These are: small cities, medium-sized cities, villages with urban characteristics and villages absorbed by historically shaped urban units. It seems that among these groups, the group of small cities deserves special attention as it presents an explication of construction process and urban structure transformation, analysis of which may be easily achieved due to the size such units. [17].
This article focused on new cities that were founded in the COP area in the interwar period and then developed to the present day. At the same time, it only presents a general outline of the functional and spatial structure transformations within the period of urban development process that took place in 20th century. The basic data on the new cities are presented collected in Table 1.

This work contains both the description and synthesis of the most important elements associated with the heritage of the Central Industrial District. They are presented in the table of basic data regarding the “new cities” above. Examining these figures, one may attempt to pre-classify these cities in regard to:

- the size (population): small and medium-sized cities. Small cities are: Nowa Dęba, Nowa Sarzyna, Pionki, Poniatowa, Rejowiec Fabryczny. Stalowa Wola is the medium-sized city;
- the date of commencement of works: World War I period (Rejowiec Fabryczny), mid-interwar period (1927 (Nowa Dęba, Pionki), Four-Year Plan period (1937-1939) (Stalowa Wola, Nowa Sarzyna, Poniatowa);
- the type of investor: State (Stalowa Wola, Nowa Deba, Nowa Sarzyna, Poniatowa Pionki). private investor (Rejowiec Fabryczny);
- the type of production: related to arms industry (Stalowa Wola, Nowa Dęba, Nowa Sarzyna, Poniatowa, Pionki), unrelated to arms industry (Rejowiec Fabryczny);
- the spatial relation between the city and the plant: monocentric (Rejowiec Fabryczny, Pionki), polycentric (Stalowa Wola, Nowa Dęba, Nowa Sarzyna, Poniatowa);
- the urban structure of the city: monocentric (Stalowa Wola, Nowa Dęba), polycentric (Nowa Sarzyna, Poniatowa), additional criteria: presence of quasi-quarters (Nowa Dęba, Nowa Sarzyna, Poniatowa), axial structure, dense, loose (Pionki, Rejowiec Fabryczny), chaotic;
- other factors;

The above list does not include industrial/residential/service complexes, which could provide additional data to proposed classification, effecting in further reasoning on the formation mechanisms and morphological transformations of urban units.

This list is simply an introduction to deeper deductions on the subject of small city settlements, which may be undertaken in further scientific papers and monographs.
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