



Field ARCHITECTURE

PhD THESIS
- ABSTRACT -

**TIME-BASED FLUCTUATIONS - INDUSTRIAL PRECINCTS
AND BUILDINGS IN ORADEA**

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ARGUMENT

Throughout history, cities have had periods of growth or decline, in accordance with the evolution of industrial development. Changing political regimes, economic crises that occur once in a few years, the real estate mafia and deindustrialization have given rise to ruins, perceived nowadays as gaps in the urban fabric. These former industrial facilities are located at key points for settlement development, often in the core area of today's cities.

Once glorious, they left their mark in the memory of the inhabitants, who consider them landmarks in the territory. However, with the passage of time and the change of generations, their gradual loss from the collective memory can be observed. Their willful deletion would represent a crime at a cultural and social level because the structures that possess valuable characteristics from a historical, technological, social, architectural or scientific point of view are of major importance, being part of the mosaic of evidence that explains the present.

The human being is affected by everything that surrounds us; it is sensitive to architecture and space. We cannot say that an architectural complex, something so significant, belongs to only one person - it belongs to everyone - it is primarily an essential piece in shaping the local identity.

In the absence of clear and prohibitive legislation, regulations are sought to protect the buildings that are part of our cultural heritage. Protection begins with the awareness of the value and respect of the industrial heritage by society, especially in a period when due to the inconsistency between the wishes of the owners, the wants of the local administration and the desire of the cultural organization for heritage protection, significant elements of history and civilization are wasted through irrevocable actions, society being witness to:

- abolition or demolition - property owners not having the knowledge or tools to capitalize on them,
- functional conversion with brutal interventions or indifference and non-maintenance,
- situations in which the site is not exploited and put to good use, with relics of no cultural importance or use remaining on it, but possibly of historical importance,
- examples of successful functional conversion (quite rare).

These spaces in awaiting, a challenge for architects and urban planners, can be the solution to many urban and social problems if handled responsibly.

WORKING HYPOTHESIS AND OBJECTIVES

Industrial heritage is often hard to read, misinterpreted and consequently disrespected, ignored. There is also a negative perception that prevents the approach to its rehabilitation, which is related to a traumatic past of society and the ignorance of its value, not only aesthetic, but economic, technological and historical.

The city of Oradea houses two types of important industrial sites: the heritage from around 1900 and those established during the socialist/communist period. The settlement presents a decreasing number of valuable examples of buildings and precincts of the industrial heritage that contributed to the development of the city. This has decreased considerably in the last 20 years. Several valuable objectives have been disbanded, demolished or structurally compromised:

- inherited from the period 1880-1927: Dreher-Haggenmacher Brewery (2001), Mor Moskovits Spirit Factory (2008-2010), Emilia Mill(2014), The Tram Draw (2019- 2020).
- the legacy of the period 1944-1989: Înfrățirea Enterprise and Sinteza (2018-2021), Zahărul Diamant Sugar Factory (2018-2022), Avantul Canning Factory (2022).

However, the examples of industrial architecture that are still preserved, through rehabilitation and functional conversion, could become points of attraction and activity cores.

The objective of this thesis is to highlight the potential of Oradea's former industrial heritage, and at the same time to bring added value to the community by making it aware of the existing and still maintained dowry.

At the same time, in the current context of the lack of raw material for the creation of certain materials, the depletion of natural resources and the fight to stop greenhouse gas emissions, more than emphasizing the mnemonic feature of industrial ruins, another objective is to attract attention to their opportunity character and to challenge towards a responsible use of the urban space through rehabilitation and functional conversion of the pending built environment.

METODOLOGIE GENERALĂ

In the research process, a multidisciplinary approach was chosen. Studies and analyzes were carried out from an urbanistic point of view (temporal fluctuations on an urban scale,

with neighborhood analysis), architectural (evolution over time of industrial architecture objects), historical (archives and private collections), and sociological (witnesses, questionnaire and interviews). Each practice example and case study was visited and experienced first hand. In order to achieve the objectives, the following stages were established to be followed in the research process:

Stage 1 - Introduction to the Oradea industry phenomenon

The aim was to understand the phenomenon of industrialization since 1900, forced industrialization from the socialist period and identify the results of deindustrialization in Oradea. This stage aims to recognize the social, economic, cultural and legislative aspects that have favored the urban development of the city over time, from the architect's point of view.

The investigation of the context was carried out through bibliographic study (specialist books and magazines and historical studies) and forums, archival research, direct approaches to the industrial heritage through field visits, the study of the media of the time and the analysis of urban planning studies of the areas of interest (with proposals of restructurings).

At the same time, this stage is one of understanding the sustainability aspects regarding the industrial heritage.

Stage 2 - Identification

The identification of the former industrial sites established between 1900-1945, in the period 1945-1989 and the sites that currently have a brownfield character, and are located in essential areas for the good development of the city, was achieved through the study of the monographs of the former factories, research of writings from the field of history, the analysis of the systematization plans of the settlement and by consulting the population, by analyzing the new *Area Town Planning*, as well as reading the old ensembles by the most common method in architectural anthropology studies, *first-hand approach or direct approach*.

Stage 3 - Comparison with examples from other countries with other economies

Examples of good practice have been selected recognized in the field of heritage protection, which have been mentioned in specialized publications, some of them also being awarded or nominated in some competitions. They offer sustainable intervention solutions on former industrial units, being presented from the point of view of the degree of transformation achieved and the new functions proposed with effect on a global and local scale.

Stage 4 - Understanding the population's perception of the industrial heritage and the needs of Oradea society

Discussions took place with the municipal administration (Technical Department – Urban Planning and Systematization), with various actors who influenced the development of the city and industrial architecture enthusiasts, through whose kindness I had access to various private collections containing information about the studied subject.

An important part of the research is the series of interviews (Appendix no. 27) with specialists involved in the modeling of the city of Oradea, who presented their point of view on the current approaches to the former industrial units and on the development of the settlement. Their purpose was to identify the city's vocation and identity, attitudes in its

recent evolution, as well as to expose the current situation of the buildings and premises selected as case studies.

Because the urban development and the architectural object are analyzed together, the multidisciplinary approach of the case studies goes from the general (Oradea Macro) to the particular (Oradea Micro). The questions designed to carry out the interviews are also grouped in this way.

Another research tool used was the questionnaire, which allowed the collection of information from 448 respondents, residents of the city of Oradea, regarding the degree of knowledge on the subject of industrial heritage and their perception of former local industrial units.

Stage 5 – Reflecting on the results

Analysis of the effects of social, economic, historical, cultural and legislative aspects on the way in which architecture evolved, together with analysing what was built and developed in the urban space of Oradea, respectively the study of palimpsest type plans (overlay of the city perimeter from several periods with the identification of locations industries established then) leads to an understanding of the industrialization-urbanization-deindustrialization trinomial and the effects of its cyclical repetition in time, from the architect's point of view.

The analysis of the attitudes and the actual situation of the local industrial heritage compared to the examples of good practice, generates new directions of sustainable approach and emphasizes methods of preserving the memory of the place with a positive effect on new developments.

The data presented offers the actors involved in decision-making process a vision of the development of the built environment, of the positive effects that the adaptive reuse of the industrial heritage has. At the same time, it highlights the tools and new methods of heritage protection, ways to reduce the creation of residual spaces and emphasizes direct actions towards the development of a coherent city.

Analysis methodology scheme

Process→	Establishing sources	Gathering information	Processing
Crt. nr.	Source	Information	
1.	Oradea General Urban Plan 2016 + Discussions with the municipal administration	- Historical studies - City development plans - Plans with urban regulations - Protected areas and monuments - Buildings with architectural or historical value	Identifying the development intentions of the built fund. Updating the lists of protected objectives. Identifying valuable constructs.
2.	Field visits	- Photos - Appreciation - Measurements and surveys	Mapping the precinct and remaining buildings and rendering them in digital format.
3.	National Archives + Consulting the Database of the National Agency for Cadastre and	- Plans - Documents related to the premises studied - Orthophoto plan of Oradea - framing plans in the area	Analysis filtering and centralization. Data recovery that is currently not physically found in the field. Obtaining an overview of the territory.

	Real Estate Advertising		Work support.
4.	The press of the past	- Articles from the archives - Articles from the contemporary period	Analysis, filtering and centralization.
5.	Specialty books	- Architecture field - Economics - History field	Identifying the characteristics of important periods in the evolution of the city. Analysis of the documents that expose the financial and social situation of the elite of industrialists in Oradea from the 20 th century.
6.	Websites	- Scientific articles - Press articles - Digital archives	Building a data base for work.
7.	Design offices	- Collect data from offices that have studied and designed in the areas of interest.	Studies carried out in order to make new investments. Historical studies the General Urban Plan of Oradea 2016.
8.	Private collections	- Photos - Vintage postcards - Documents - Plans	Analysis, filtering and centralization.
9.	Interviews and discussions	- Administration - Designers - Executors - Workers	Collecting testimonies related to the peculiarities of a past time and immortalizing the information received orally.
10.	Conclusions: Graphic data, text, building a virtual image of the industrial complex (built environment and glossary of memories – social impact)		

THESIS CONTENT

The doctoral thesis is organized in eleven chapters, developed in two main sections. Each chapter is followed by conclusions of the analysed topic.

Joining the Current State of Knowledge, Chapters 1 and 2 include definitions and explanations of the terms used (urban regeneration, functional conversion, urban resilience, sustainable development, temporal fluctuations, palimpsest, heterotopia) and of several concepts analysed throughout the study (brownfield regeneration, industrial heritage, concepts related to sustainability).

The schematization of concepts such as sustainability and building sustainably, building green and the matrix of actors involved and responsible for sustainable development was carried out in a personal way, the subject of the thesis being approached from this perspective as well.

Chapter 3 includes the main titles of the annotated bibliography, anchoring the present work in the phenomenon of temporal fluctuations at the European level.

Chapter 4 of the paper presents the working hypothesis and its objectives:

- To highlight the potential of Oradea's former industrial heritage,
- To bring added value within the community by making it aware of the existing and still maintained dowry,
- To draw attention to the opportunity character of former buildings and industrial premises and to challenge towards a responsible use of urban space through the rehabilitation and functional conversion of the pending built environment, in accordance with the present reality and, of course, with an assumption towards the future.

Chapter 5 presents the way of working and the approach to the subject studied during the thesis. As a general methodology, a multidisciplinary approach was chosen starting from studies in the field of Architecture, History and Sociology. The sources used during the documentation are mentioned in this section: the town planning regulations of the city of Oradea, discussions with the local administration, visits to the studied sites, national archives, databases of the National Agency for Cadastre and Real Estate Advertising, the press of the time, specialized books, websites web, design offices, private collections. Following the interviews, a collection of testimonies related to the peculiarities of the past as well as visions of the future developments of the city is compiled. Attention is paid to the points of view of the decision-making factors in the administration, of the actors of the public institutions, of the specialists who know the history of the place and the evolution of the industrial premises, The information collected is from the consulted historical studies, from plans, directly from the sites, from photographs, measurements, reliefs, orthophoto plans, zoning plans, articles from archives and from the contemporary period, from scientific articles, digital archives, data from architectural offices, vintage views / postcards. The method of processing all the information for the deepening and development of the study is presented: from the identification of the characteristics of important periods in the evolution of the city, the identification of the development intentions of the built fund, from the analysis of the documents that expose the financial and social situation of the elite industrialists in Oradea from the XX century, to the identification of valuable constructions, to the mapping of the premises and the remaining building bodies and their reproduction in digital format, updating the lists of protected objectives, recovery of data that are currently not physically found in the field, obtaining an overview of the territory and up to the immortalization of information received orally.

At the same time, the method of processing and presenting the results of the studies is presented here: graphic data, text, building a virtual image of the industrial complex (built environment and glossary of memories - social impact).

Chapter 6 analyses the current context through the lens of the sustainability of industrial heritage, showing that we are in a period in which humanity is faced with a

multitude of crisis situations: climate, economic, biodiversity, energy crisis and cultural identity crisis; these being generated by climate changes, by the degradation of climate ecosystems, by the COVID 19 pandemic, by the geopolitical situation, by the war in Ukraine, by recent earthquakes. In this context, the emphasis is on sustainable construction and, consequently, on addressing the issue of industrial sites from this perspective. This chapter contrasts the terms "conservation" and "sustainable development" with reference to heritage in general and with application to industrial heritage, showing that from case to case, the approach to sustainability starts from arguments; interventions on the structure and architectural proposals opening the way to future solutions and new interpretations and meanings possibly unpredictable today.

In Chapter 7 examples of good practice recognized by specialists in the field of heritage protection and cases that have been mentioned as examples of good practice in specialized publications, in courses and webinars organized by the European Union through the New European Bauhaus initiative or that have received awards for proposed and realized interventions have been selected and presented:

- Top-Down Approach:
 - o "Fosta Fabrică" - "Former brewery Luther - Grivița", Bucharest, Romania;
 - o Former silk factory (Selyemgyár) – cultural district, Mohács, Hungary;
- Bottom-Up Approach:
 - o FABER – The former soap factory in the AZUR complex, Timișoara, Romania;
 - o Studio City (NDSM)– urban incubator, Amsterdam, Netherlands.

The degree of intervention was tracked for each example and the way in which *the memory of the place* was addressed or preserved. At the same time, key points for a successful space recovery and reactivation in the case of the industrial heritage were identified.

Chapter 8, "Evolution of the city of Oradea. Definition of former industrial sites in Oradea" first makes a foray into the Middle Ages and the Pre-Industrial Era of Oradea, then presents documented from the text and maps since the 14th century the development of the city settlement, focusing on the initial stage of the industrialization of the city of Oradea. The inventory of the industrial units in Oradea in the years 1850-1900 was compiled in a table comprising 97 positions, from which the dynamics of their establishment also results. Several of these were possible to identify in the territory, and their location was graphically represented with a palimpsest map system. At the same time, a synthesis of the socio-economic and legislative aspects that shaped the industry of the city of Oradea between 1848-1918 is presented.

The interwar stage 1918-1940 of the city of Oradea is presented similarly: maps with site identification, centralizing table that includes the dynamics of industrial units between 1918-1944, including 44 positions, social and economic aspects, legislative context. The slight boost in the development of the settlement's industry from the period of the Hungarian occupation, followed by a sudden occupation of the industrial units by the army, is

highlighted. In the period 1944-1949, an attempt at the social, economic, and cultural recovery of Oradea society, until the moment of nationalization and collectivization can be read.

The presentation of the post-war stage 1944-1989 follows the same route, with the help of the information gathered from the personal archive of the arch. Zărnescu Viorica, head of the Systematization Bureau within *Bihor County Design Institute*, from the 1980s. There are 28 industrial units presented with the dynamics of establishment and their disappearance. It is highlighted that in the post-war period 1944-1989, the phenomenon of forced industrialization appeared in Romania, bringing with it the need for labour force, a substantial demographic growth and thus a necessary rapid urbanization. In Oradea, the demographic growth is not only due to the increased birth rate, but also to the migration of the population to the city. These years were defined by collectivization and the idea that the state was the sole owner of the large industrial production units. After the Revolution of 1989, industrial enterprises fall prey to dissolution, decommissioning and transfer to private ownership, through strongly criticized means.

To present Oradea's industry through the phenomenon of the 90s, information was selected from interviews with specialists and decision-makers, actors involved in the development of the city.

The aspect of the dynamics of Oradea industrial units and their situation in 2023 includes the analysis of 40 positions of industrial companies and the positioning of most of them on the map of Oradea. It is shown that today in Oradea there are former industrial units that present themselves as follows:

- spaces in awaiting,
- restructured premises,
- premises in the process of restructuring.

Chapter 9 brings into focus the 5 case studies of the doctoral thesis:

- from the period 1850-1918:
 - A. Former Adria Distillery,
 - B. Former Emilia Mill,
- from the interwar period:
 - C. Former Leichner/1 Mai/Rovex Fur Factory,
- from the period 1944-1989:
 - D. Former Sugar Factory – Zahărul/Diamant,
 - E. Former Înfrățirea Enterprise,

The first three mentioned appear to be from the category of archipelago that gravitates around the Oradea Citadel, in the southern area of the city centre (fragments), and the last two appear as large enclosures outside the outline of the protected historical center.

The following table shows the selection method of the included case studies:

Selection methodology of former industrial sites - future case studies

Criteria course	Selection criteria	
1.	Place in context	Natural (powered by natural resources)
2.		Architectural (enhanced by neighboring functions)
3.	Valuable architecture	Intrinsic architectural value
4.		Reusable material resource
5.	Result of the General Urban Plan	Former industrial premises proposed for restructuring
6.	Personal opinion	

These addressed through the presentation of history, a photographic documentary, the factual situation, extracts from interviews and conclusions.

At the same time, this chapter highlights the attitudes over time towards the former industrial premises, presenting the current state and future strategies on their sites. To understand Oradea's attitude towards the former industrial premises, and to mark their recent temporal fluctuations, the stipulations of the General Urban Plan for Oradea approved in 2016 which target the premises proposed for restructuring (they coincide with the former industrial units), were analysed. In addition to the five case studies presented, three other complexes on which there were interventions for urban regeneration have been studied.

Tabula rasa approach was applied to a lot of the regeneration projects in Oradea (especially until the approval of the new General Urban Plan for Oradea).

Throughout the thesis, the tabular method of synthesizing information was used.

Site	Approach / year	Site in the present 2023	Project stage	Local urban planning regulation
Emilia Mill	<i>Tabula rasa / Total demolition in 2014</i> Proposals - residential complex / 2021-2022	Vacant land	Proposal rejected by the CZMI commission, design in progress	The old general urban plan of Oradea
Înfrățirea and Sinteza	<i>Tabula rasa / Totally demolished between 2017-2021,</i> Zonal Urban Plan approved in 2016 to build collective housing, Amending zonal urban plan approved in 2019	Partially residential area, Prima Premium Decebal district, Ioșia, Ared, partly commercial premises, construction site and vacant land	Completion of construction works	
Cominca	<i>Tabula rasa / Total demolition in 2014</i> Zonal Urban Plan approved in 2018 for mixed housing, trade, complementary functions area	Construction site, Prima - Arena Residence	Completion of construction works	
Fabrica de zahăr	<i>Tabula rasa / Propunere de demolare în 2018,</i> Demolare totală între	Vacant land	-	new general urban plan of Oradea

	2020-2021			
Avantul	Partial demolition/ Initially Zonal Urban Planning approved in 2019 for the functional reconversion of an industrial building into a collective housing building, Demolition in 2023	A derelict building, pending precinct	-	
Adria	Partial conversion and construction of new buildings, Masterplan – mixed assembly, consultation phase 2020	On hold	Consultation phase in CZMI and CMUAT commissions, design in progress	
Rovex	Partial conversion and construction of new buildings / Detailed Urban Plan approved in 2021 for the restructuring of the former Rovex premises, Partial demolition in 2023	On hold	Stagnation (archaeological discoveries)	

A summary of the information is presented following the collection of the series of interviews that reflect the orientation of the city and the actual situation of these complexes and constructions:

- Oradea Macro – follows the development, identity, and vocation of the settlement as well as the current attitude of the city towards the industrial heritage, exhibiting also what is the image that the city has consolidated or what is the identity that the administration wants to outline for Oradea:
 - o the most important factors in urban planning in Oradea,
 - o challenges and opportunities in the city in terms of urban planning,
 - o the way in which the city is developing today,
 - o whether or not the transition from tabula rasa approaches (of industrial heritage) to a circular economy and recycling of the built environment (European trend) has taken place in Oradea,
 - o the perception of industrial heritage.

- Oradea Micro – emphasizes the fate of the case studies addressed.

The case studies were included in a questionnaire addressed to a number of 448 respondents (ages between 18 and 75 years), from all backgrounds in the city of Oradea - along with other questions oriented towards appreciation, action, impressions, aiming at:

- the degree of information of the population regarding the subject of Industrial Heritage,
- the perception of the city's inhabitants towards former industrial buildings,
- the development potential of premises/buildings of this type.

Chapter 10 of the doctoral thesis presents the statistical processing of the results of the questionnaire which highlights that most of those interviewed understand the potential of reuse of the structures of former industrial premises (a large part being in the central area of the urban settlement). Following the data processing, three types of functions, necessary for the city, were identified: cultural functions (such as cultural and exhibition centers), offices (and co-working spaces) and social functions – gathering places. The analysis of the results shows the lack of education to protect the industrial heritage. The questionnaire was used as a method of investigation, but it was found that it can be a tool for educating the people.

Chapter 11 presents the conclusions of the study as well as the personal and innovative contributions of the thesis. The work discusses both monuments and ordinary buildings. It talks about value, authenticity, the memory of the place, but also about the need to reintroduce former buildings and industrial premises into the living circuit of the city, for their protection and/or sustainable development of the city. It identifies recent approaches to Oradea's industrial heritage and proposes possible attitudes.

The thesis refers to the palimpsest character of the urban fabric and in fact debates a way of urban resilience: by corroborating the information collected, it is found that Oradea is one of the cities in Romania with great adaptability to changes in any field or to crisis situations, but the transfer of the built environment of the past with modifications to the comfort and health of the present, is less common in terms of the Oradea's industrial heritage.

Following the analysis of good practice examples and case studies in Oradea, it is found that there is no single recipe for dealing with former industrial premises and buildings. Increased attention is needed on the degree of intervention on constructions:

- The solutions put into practice reveal over time situations that have really capitalized on the historical-architectural resources or have deprived the ensembles of the very elements that gave them authenticity or through irreparable actions have deprived society of any trace built on the former industrial sites,
- Towards sustainability and coherence, change is inevitable, but the protection of heritage also depends on the size of the transformations proposed through various architectural solutions and the way in which they are produced,
- Following the corroboration of the knowledge acquired from the theoretical research and with the conclusions of the experimental part of the thesis, a positive evolution was observed over time in the attitude of the actors involved in starting investments in the key points of the city, in the proposals on the former industrial premises (especially in the projects carried out after approval of the new General Urban Plan from 2016). So, from the tabula rasa approach, the proposals also focus on preserving valuable elements, be it structure, technology, or architectural aesthetics.

- At the same time, with the approval of the Zonal Urbanistic Plan for the Protected Built-up Area (Historical Center of the Municipality of Oradea) in 2020, a calibration and limitation of the built density is noted, future proposals requiring other approaches to the heterotopic sites in the central area.

The thesis provides insights into former industrial premises and buildings and a working base. This can become a tool both in the process of protecting the remaining valuable buildings from Oradea's industrial heritage, and in that of establishing the development directions of the city. At the same time, the case studies offer general findings such as the reconsideration of a set of values present in most of the industrial-type structures in Oradea until 1989. Such values allow defining the types of possible transformations and interventions.

The chapters that focus on the evolution of the former industrial premises in Oradea, through data collections, photographs, and unique reconstructive elements, make up a virtual image, a significant database and complete the memory of the buildings and ensembles of the past, thus leaving future generations accessible testimonies of them. All this provides information in the opposite direction as well - we can understand what influence industrial establishments had on the built environment of the time and on society. Neighbourhoods developed and functioned in symbiosis with them.

Apart from framing the historical evolution of former premises and industrial buildings in Oradea from the architect's point of view, the personal contribution is reflected in the following:

- After the Revolution of 1989, within the territorial administrative units there was chaos regarding the content of the documentation for the issuance of Construction and Demolition Permits. Consequently, the present work completes the memory and image of former buildings and sites by gathering unique and important data, photographs and reconstructive elements, thus leaving accessible testimonies of them (Chapters 8 and 9);
- The thesis emphasizes the fact that a healthy attitude towards former premises and industrial buildings is built starting from the consensus of the actors involved in development/conservation and education towards understanding the value of architectural objects in the sense of industrial heritage protection. The actors involved in the recovery of the industrial heritage and the reuse of abandoned industrial complexes in an urban context were identified. The success of the interventions is ensured when they work together – achieving the matrix of responsibilities in sustainable development (Fig. 2.8);
- A particular view on the concept of sustainability is brought to attention through an own schematization (Fig. 2.3) and the latest criteria for a sustainable construction are corroborated and configured in a schematization (Fig. 2.4);

- A special view on the concept of "green building" is brought to attention through a schematization (Fig. 2.5) and the criteria of a green building are synthesized schematically (personal vision on the subjects) (Fig. 2.6);
- Bringing to attention and corroborating the crises that humanity is currently going through and their consequences (Fig. 6.1) - creating a conceptual scheme, including the crisis of cultural identity;
- The hybrid system is proposed for analysis and intervention on former industrial buildings for a sustainable construction (Fig. 6.2);
- The review of Oradea's experience of industrial heritage recovery and attitudes towards it, by comparison with possible classic and new recovery methods - identification in the examples of good practice presented (Subchapter 9.4.)
- Chronological structuring of the developments (and urban regeneration) carried out on the former industrial sites in Oradea, highlighting the type of approach at the urban level in relation to the General Urban Plan at the time of design and approval (Tab. 9.2 – Attitudes over time towards the former industrial premises);
- Comparative analysis of the functions identified in the city's systematization proposals approved in 2016 and the examples of good practice with results obtained after completing the questionnaire / the search for a sustainable solution influenced by: local administration-strategies, the desire and needs of the inhabitants and the examples of good practice) (Tab 11.1);
- Realization of palimpsest type plans by overlaying the territory, the city outline in three important periods for the development of the city, the built environment and the industries established in the three identified periods (units established around 1900, between 1918-1945 and between 1945-1989) dynamic illustration of Oradea industry (Fig. 8.10, Fig. 8.13, Fig. 8.28);
- The plans mentioned above are accompanied by the inventory in the form of a table of the premises established in the three periods studied, which reproduces the dynamics of the Oradea industry (Tab. 8.1, Tab. 8.6, Tab. 8.11) - in the context of a responsible administration and use of space urban, the inventory of dilapidated places can immediately become the inventory of areas for potential urban catalysts, an atlas of unused places, and thus a tool in the city's development strategies;
- Realization of the plan that reflects the situation of the former industrial sites at present (2023) in Oradea (decommissioned, regenerated or proposed for restructuring (Fig. 8.29);

- Realization of the inventory table of the former industrial objectives - analysis on an urban scale, which reproduces the dynamics of Oradea industrial units and their situation in 2023 (Tab. 8.14);
- Interviewing some representatives of the Oradea local community, from different spheres of concern, different fields of action – professionally involved in shaping the city (selection of answers given in the thesis, conclusions of interviews summarized in Appendix no. 27):

1	President of C.J.B.H.	Ilie Bolojan
2	Rector of U.O.	prof. Bungău Constantin
3	Mayor	Birta Florin
4	Deputy executive director Chief architect, P.M.O.	eng. Lipoveanu Adriana
5	Former deputy executive director Chief architect, P.M.O.	arch. Covăcescu Raluca
6	DJCBH representative	hist. Pașca Mircea
7	President of C.Z.M.I.	prof. Prada Marcela, dean of the Faculty of Construction, Cadastre and Architecture - University of Oradea
8	C.Z.M.I. member	arch. Ștefan Paskucz
9	President O.A.R. Bihor	arch. Panait Daniel
10	V. President of O.A.R. Bihor	arch. Pârvuleț Mihai
11	Director M.Ț.C.C.M.O.	prof. Moisa Gabriel - dean of the Faculty of History, International Relations, Political Science and Communication Sciences, director of Țării Crișurilor Museum
12	Specialist	hist. Roland Hochhauser (autor al publicației Contribuție la o istorie a industriei de fabrică la Oradea în perioada 1848-1948, Oradea 2011)
13	Specialist	hist. Drecin Mihai
14	Specialist	hist. Culiciu Cristian
15	Specialist	conf. Novicov Ramona
16	Specialist	eng. Cun Iosif
17	Specialist	arh. Zărnescu Viorica
18	Specialist	arch. Pafka Ernest
19	Specialist	arch. Szabo Anemari
20	Specialist	arch. Pescaru Adrian
21	Specialist	arch. Manolică Lucia (whose doctoral thesis addresses the subject of Oradea's industrial heritage, field of History)

22 Specialist	arch. Boca Miruna (whose doctoral thesis addresses the subject of Oradea's industrial heritage, field of Geography)
23 Specialist	Sabău Adrian

- Synthesizing the interviews (9.1.1.7., 9.1.2.7., 9.2.1.7, 9.3.1.7., 9.3.2.7. - Actual situation - extracts from interviews, 9.4.5. - Attitudes and proposals in Oradea (interviews and analysis);
- Completion of the questionnaire called " Industrial Heritage of Oradea - perceptions and directions", with the help of the Google Forms online platform (last accessed - May 2023) - promoted in the online environment through own channels and with the help of the Oradea community - the questionnaire had 448 respondents (Chapter 10, Annex no.);
- Statistical / graphical interpretation of the results of the questionnaire "Industrial Heritage of Oradea - perceptions and directions" (Chapter 10, Annex no.);
- Creation of tables summarizing the conclusions of the analysis of good practice examples with the identification of the set of functions that ensure the success of interventions for sustainable development (Tab. 7.1);
- The processing of plans, maps and images by overlaying information from several periods in order to highlight the evolution of the infrastructure and the composition of the plots and the temporal fluctuations of the built environment (Fig. 8.5, Fig. 8.6), Fig, 8.11);
- The processing of the images that indicate the location of the studied industrial complexes in relation to the central area of the city and the Oradea Citadel (Fig. 9.4., Fig. 9.5, Fig. 9.18, Fig. 9.20, Fig. 9.30, Fig. 9.31, Fig. 9.39, Fig. 9.59);
- Processing and creating collages of images that exemplify the evolution over time of the plots studied, chronologically (Fig. 9.7);
- Processing of satellite images (based on the Google Earth database) and plans highlighting interventions over time on the studied industrial premises (Fig. 9.2, Fig. 9.16, Fig. 9.28, Fig, 9.38);
- Creation of summary tables with the identification of the socio-economic aspects that influenced the development of Oradea industry (Tab. 8.4, Tab. 8.7, Tab. 8.8) and the legislative framework related to different periods (Tab. 8.5, Tab. 8.9, Tab. 8.10, Tab. 8.13);

- Brief proposal of possible alternatives, directions of approach for the chosen case studies (Subchapter 9.4);
- The proposals for the regeneration of the former industrial sites in Oradea until the effects of the new Urban Planning Regulation included housing with commercial spaces on the ground floor as new functions. Comparing what is proposed by the Local Urban Planning Regulation related to the General Urban Plan of the city of Oradea, the desire of the inhabitants and the functions found in the examples of good practice, the following points of intersection were identified: main - office spaces (co-working spaces) and functions cultural, secondary - housing and social functions (gathering spaces) – (Tab. 11.1);

The future research directions were established based on the quantitative evaluation of all the factors involved in the evolution of Oradea's industrial heritage, the investigation of dynamic strategy models for sustainable development and the approach to the concepts of sustainability and green building from the perspective of the architect.

A future perspective is that the city will have to expropriate for various facilities that the future will demand so that the (former industrial) spaces now free of constructions or furnished with parasitic or non-reusable elements inventoried in this study, could be a currency valuable exchange. Future research directions will also lean towards updating over time the inventory of brownfield spaces in Oradea including the surfaces they block.

Part of the content of the thesis - the inventory of a very large volume of former and current premises and valuable industrial buildings, the collection and transcription of information transmitted orally (memories, experiences and visions), the collection of data and testimonies from the archives and personal collections of the implicated professionals in the valuing of heritage, of historians, of "senior" specialists - opens the way for me and obliges me to expand the study with the aim of creating a virtual database that I can make available to the community, also in the sense of passing it on to the next generations. Starting from this virtual archive, a next step could be the creation of an online platform for Oradea City Hall to use, both in the sense of a platform for action from citizens to the administration, for administrative-technical purposes, as well as in touristic and informative purpose.

The recovery of the industrial heritage, through the continuous adaptation of the attitude and way of working, by approaching the built environment in accordance with the principles of sustainability, makes it opportune and necessary to continue the research process of sustainable solutions correlated with the different typologies of the industrial heritage. In this sense, case studies can be extended to take over and adapt existing or future solutions from good practice models.

Considering my concern for this subject, part of the conclusions of the thesis obliges me to continue the steps started, to contribute to proposals to complement the local and national procedures in order to protect the valuable industrial heritage still maintained.

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