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Abstract

The main aim of this article is to investigate the management process in the transformation of industrial canal zones. This term is referred to those abandoned factory areas along watercourses that have made many areas at the edge of a consolidated urban structure quite distinctive. In the long-term process of transformation, managers from several parties participate in it with different titles and roles and have a very influential role. This article will investigate the efficiency level in the management processes and methods used in the transformation of such abandoned areas. Furthermore, it will explore the level of exchange between experimentation and practice so as to enhance and protect the qualities of these sites.

The author will refer to B5 canal zones in The Netherlands as a case study. B5 or BrabantStad is the metropolitan area including the 5 cities (Eindhoven, Breda, Tilburg, s’Hertogenbosch and Helmond) and the towns in-between, located in the southern area of the country, named Brabant. Former industrial zones located along specific canal-courses/shipways characterize all 5 Municipalities. Originally located at the edge of the historical urban structure of each city, these areas are characterized by industrial buildings of different scale and architectural styles. Furthermore, a system of navigable canals connects the 5 canal areas (and cities) in a circuit with a high potential.

Methodologically, this paper will first discuss the meaning and heritage value of abandoned industrial canal zones, explaining the necessity to keep them standing and to protect their integrity. Secondly, it will illustrate the methods adopted in the management process of canal zone areas and will discuss the relationship between research and practice, focusing on the involvement and collaboration with Province, local authorities and University.

Keywords: industrial canal zones, management process, research and practice, experimentation, ‘research-through-design’.
1. Introduction

Since the beginning of 70’s many industrial areas in Europe have been closed and large productive areas have fallen into disuse.

In the Netherlands, like elsewhere, the process of de-centralization, that is the transformation of the productive system and the crisis of some industrial sectors, have made large urban areas available. As a result, it has been sparked off a debate on the future of dismissed sites, the unrivalled opportunity that these areas might represent in re-launching and acquiring strategic areas for future urban development.

In terms of urban sustainability, the rehabilitation of dismissed industrial areas fulfils two needs: ‘necessity’ and ‘resource’.

‘Necessity’ refers to the reclamation of polluted lands, which represent a contamination threat against the surrounding areas. The threat is often due to the central location of these sites and their vicinity to densely inhabited areas. This is basically an engineering approach to the site.

‘Resource’ is referred to the potential benefit, both environmental and social, that a well-advised reuse of such large portions of territory can be for the macro and micro scale of the city. It refers to design strategies able to suggest a different idea of urbanity. Urbanity will arise from an unexpected and complex network of old and new; urbanity is meant as the coexistence of both official and un-official developments, i.e. a mixture of large and small scale.

What about the heritage value of abandoned industrial sites?

According to the definition of industrial heritage by The Nizhny Tagil Charter of 2003, as “the evidence of activities which had and continue to have profound historical consequences”, the remains of dismissed industrial areas record historical and social events, technological and architectural experimentation, whose investigation would contribute to the understanding of our industrial past and present.

Therefore, they are not empty sites, valueless and ordinary locations. On the contrary, they are rich areas with in-built forces, energies and patterns that the passing of time has set and moulded. In most cases, the regions identity is tied to industrial sites. The industry bred towns and cities and even if they are no longer in use, that identity source still has not faded. For example, port cities retain their character long after their harbour has gone.

Therefore, this definition discloses how much abandoned areas are vital and confirm that the heritage they represent is not to be neglected (Powell, K., King, L., 2005).

Focusing on industrial canal zones, this paper will first investigate the characteristics of such heritage; secondly, the complexity of these areas and the multidisciplinary approach in the
The canal zone along the Zuid-Willemsvaart in B5 area, The Netherlands, will be the study case of reference.

2. Industrial canal zones: a multidisciplinary approach

Historically, industrial canal zones were intensively used in the ninetieth century and were the staging points for the import and export of goods. The water as infrastructure gave them a competitive advantage to industrial enterprises and they have been the major source of wealth for many cities. Nowadays, such wealth has resulted in environmental degradation and toxicity.

Similarly to those industrial waterfront areas along the seaside, canal zones are incredible opportunities for cities to be reconnected to their water’s edge, in order to recapture economic investments and to attract people towards deserted and isolated areas.

Dictated by principles of mobility and efficiency, the morphological structure of canal zones is based on regular footprints. A canal imparts order to the territory and it is comparable to a ‘street’, which offers architecture and public spaces multiple ways of presenting its aesthetical and functional capacities. Sober buildings with a distinguishing character (and valuable expressions) often stand next to new ones, built on budget. Fragments of memory appear here and there. Streets are plain transportation routes whose width optimize machineries’ needs and rapidity of connection. Peers and quays are sharp edges to the water. Water is no longer a dynamic force but has now turned into a stagnant one.

However, they stimulate our imagination, perception and inspire our memory. We should not forget that local and regional identities are tied to these sites.

Under attentive observation of canal zones, it is evident that they are articulated urban organisms where several features are in play; they do co-exist and are marked by interesting characteristics that imply complexity.

From the morphological viewpoint, we can distinguish two types of complexity in the canal zones: an internal one, based on the physical characteristics and logistics of the sites; an external one, which is based on the relationship that these sites have with their context.

Physically, the requirement for functional buildings (moving, storing and delivery of goods, such as the warehouses in Rotterdam) leads to unique architectural expressions (especially in the design of facades) and construction systems that turn the need into a highly creative virtue (in technical and aesthetical terms). Therefore, an attentive observation of the architecture of these buildings proves that they are not so ordinary and plain as they are commonly perceived.
On the other hand, the scale of these buildings is often in contrast with the fine grain of the city to which they relate; this disruptive zone is very often the focus of transformation designs.

Last but not least, the presence of several land-ownership of these sites make the dialogue among the parties a very interesting piece in the process of reuse.

In the end, if we add to the aspects briefly mentioned above, the heritage values of industrial canal zones, we can understand the stratified layers and intertwining complexity that compose dismissed industrial canal sites. Therefore, interventions in these areas require an interactive presence of diverse competencies, from the ‘analysis of the problem’, along with the ‘concept of design’ and throughout the entire process of development. Design should be identified as a collective action, instead of individual product, so to respond to an explicit request by the ‘formal client’ and to optimize time in the formulation of the design answer. (Ciamarra M.P., 2009).

We should then ask ourselves how we can handle this complexity; which methods we should adopt and how we can monitor the level of efficiency in these processes.

The following project will attempt to answer these questions by employing the exchange between practice and experimentation as an operative method.

Figure 1: Exchange between practice and experimentation as the management process.
3. B5 and Zuid-Willemsvaart: site and problem field

3.1. BrabanStad or B5 and canal zones

BrabantStad or B5 as commonly named, is the metropolitan area formed by the five Dutch cities of Eindhoven, Helmond, ’s Hertogenbosch, Tilburg and Breda, which are located in the southern part of The Netherlands, the Brabant region.

In the past, Brabant was the leading industrial area of the country and economically able to provide one of the main sources of income. The industrial activity was primarily related to textile manufactures and the production of peat; goods were transported out through the large net of canals present in the area. Their construction started at the beginning of 1800 and canals were efficiently used and implemented until the 60’s. At the end of this period, the decline of the area started. Large companies moved to new industrial areas that offered more facilities, such as larger harbours and better connections with railway and road infrastructures.

Nowadays, these cities strongly cooperate with each other; and infrastructures, cultural activities, design and innovations are some of the elements that promote the network among them. We can call it ‘light’ cooperation, driven by mutual goals that respect the diversity of each city, not with (political) pressure but rather with a stimulating competitiveness.

B5 still remains a centre for industrial production. The increasing production by Philips (technological products) and competitiveness of the low-cost manufacture in India and China has offered a challenging opportunity to B5: how to renew the positioning of the five cities within the European/Global context?

![Figure 2: The 5 cities of BrabantStad (or B5) and the connecting canals](image-url)
From the urban and architectural point of view, these cities are connected to each other by two systems of canal: an outer one, a ring-like canal, that connects the five cities, while cutting through the open landscape formed by numerous heritage villages; an inner one, dead-end waterways, formed by dismissed canals characterized by notable buildings (some of them are listed monuments) on a different scale and architectural style. These dead-end canals were originally located at the edge of the historical urban structure, but nowadays have an internal location into the city fabric since the new urban development has absorbed them.

3.2 Problem field

Every four years the five Brabant cities discuss a common program that establishes the actions on the territory through projects and finances. BrabantStad 2008-2012 is our planning period of reference. The experiment undertaken by the Province North-Brabant, named ‘Atelier BrabantStad’, that I will discuss in this paper, represents the first step in the process of negotiation of the common program.

The reuse of the canal zones is an important aspect in the political agenda’ of the BrabantStad. The reasons are several: firstly, the canals are potential places of future urban development; secondly, their remains (buildings, in particular) are visible expressions of the regional industrial past and they are strong reminder of the identity of the area; thirdly, dismissed terrains (canal areas in our case) should be considered within the ‘economy’ of land in the Dutch territory, where not even a square centimetre of land can be left unproductive.

As a matter of fact, all five municipalities have ambitious programs and long for new design plans for their industrial waterfront areas. Some of them would like to focus on the revitalization of specific portions of the former industrial canal-zones; others envision a transformation of the old buildings towards new uses; all of them need a mixed program able to ‘rejuvenate’ these forgotten sites.
The approaches and questions concerning the enhancement of the historical value of the canal zones are very important in the transformation of these areas. Policies aiming at the maintenance of the industrial heritage should form the common background of interventions.

Indeed, all municipalities struggle with the pressure of economical issues and the power of investors and developers. Therefore, good intentions towards the industrial legacies are very likely to fall through. So, what should we keep of the existing heritage? Beside the ‘standard rules’ of evaluation, can other aspects influence the choice of keeping them? why and how should we demolish them?

The general trend is to transform ‘fragments’ of the larger area of development according to market needs and economical availability. The program of implementation appears to be poor when it comes to keeping an eye on complementarity among the five cities, or the identity of the sites. Standardization of open spaces seems to be the dominant rule.

The initiatives undertaken by the Province, in 2006 with the Atelier BrabantStad and the current research managed/developed by the University of Eindhoven, Department of Architecture, aims to engage all parties involved in the process of transformation so as to formulate a strategic common plan able to fulfil all demands within a short time. The enhancement of the heritage values has become a target at last.

Important notice: by ‘heritage’ we mean both those values embedded in buildings along the canal areas, the canals themselves and the landscape which the canal zones encounter through their course. To their ‘intrinsic values’ we should also add the ‘instrumental’ and ‘institutional’ ones so as to obtain a complete definition of the heritage value.

Nowadays, development is becoming more and more difficult due to the economical crisis. Nevertheless, the reuse of the former canal zones is a strong aim. Commitments by authorities, and concerns by citizens and investors on the future of these areas are exponentially increasing.

4. Four actions

The work undertaken by the Province North-Brabant and by the University of Technology of Eindhoven indicate a *modus operandi* whose aims are the following:

1. to investigate a full-scale dialogue on concepts and architectural quality in the canal development among stakeholders in this process.

2. to understand and enhance the industrial values of the existing canals

3. to illustrate how different design-based methods can serve as tools in the process.
In order to reach these aims, the actions undertaken explore the management system on two specific and interrelated scales: planning issues and building design strategies. This setup defines also the amount of actions, numbers of people involved and time frame for each activity.

We can single out four actions: Atelier BrabantStad 1, Atelier BrabantStad 2, Kanaalzones Atelier and Public Seminar.

**Action 1: Atelier BrabantStad-1 (heritage management at regional level)**

Atelier BrabantStad aimed at understanding the space qualities and potentials of BrabantStad. It was a one year project (2006) started as an experiment of collaboration between national, regional and local governmental institutions. In fact, the parties involved were representatives of the 5 Municipalities of BrabantStad, of the Province Noord-Brabant and of the Ministry of VROM (Ministry of Housing, Spatial Planning and the Environment).

The atelier was located in Tilburg, one of the 5 cities of Brabantstad, in a’ neutral’ zone and intentionally far away from central government. The activity was organized in 2 sessions whose aim was the integration of three specific topics: environments, connections and icons.

Combining research and practice, the atelier used the ‘research-through-design’ as operative methodology. The planning horizon was the year 2036.

*Figure 4: ‘research-through-design’ as operative methodology (Atelier BrabantStad1, 2006).*
Work activity

The first session involved urban designers, landscape architects and architects. The focus was the relationship city-land and the individualization of potential areas between highly urbanized (red points) and low-density zones/villages (green points). These elements follow the advice of the Memorandum issued by the Ministry of Spatial Planning of The Netherlands (VROM, Nota Ruimte, 2006).

The second session involved representatives from those ‘red’ and ‘green’ points, investors, developers and experts from the cultural field (historian, anthropologist, etc.).

Result

In design terms, the first result of the atelier was the definition of the spatial coherence of B5 cities, named ‘mozaïek BrabantStad’. As a metaphor, the word ‘mosaic’ emphasized the strength of the ‘tesserae’, which lies in the differences of heritage values and cultural-history of built-up areas. Their colours and tones were used to suggest diversity, intensification of programs and their location.

Among the ten lessons (golden chances) we learned from the atelier, the canal zones had a special importance. They were regarded as the big secrets of B5 cities, to be enhanced in their heritage qualities and individuality and their reuse is indicated as a must. On a larger scale, canal zones were identified as an infrastructural network for transportation and recreational use; they were considered the backbone of B5, which allows circumscribed areas to grow and may sustain them.

The atelier indicated the necessity of reusing the canal zones and pointed out specific areas of interventions to operate on; but it did not highlight a common policy of reuse of the industrial heritage, which was referred to the municipalities.

In economical terms, the one-year atelier defined an investing program of € 1.000.000 for the period of four years.

Definitely, the intense collaboration between regional government and municipalities and the limited time span for the work, efficiently contributed to reach the collaborative investment (Samen Investeren): timing was perfect; the commitment by B5 and Province was high (the mindset was on cooperation). It is hard to measure the direct influence of the study on the different investments. What was new about the ‘Samen Investeren’ was the conceptual switch by the Province concerning the definition of heritage sites. It moved from ‘traditional’ rural areas to ‘urban areas’.
Evaluation

Reflecting on the process of the atelier, some considerations should be taken into account: first of all, the experimentation phase should have started earlier in the process; secondly, the discussion towards a common agreement on reuse of the built-up heritage could have been more specific in the agenda of the atelier; lastly, the formula ‘discussion and design’ (talking and drawing) generated enthusiasm, and this was an excellent ingredient for the success of the experiment.

The action towards the enhancement of the heritage values has to be seen within the framework of its ‘institutional value’, that is about the process and techniques used to create organizational legitimacy, public trust, accountability and organizational process.

Action 2: Atelier Brabantstad-2 (heritage management at urban level)

Atelier Brabantstad 2 was a two-day workshop organized by the province, as an in-depth analysis of the previous action.

Figure 5: Management through ‘discussion and design’ (talking and drawing), Atelier BrabantStad2, 2008.
Compared to the Atelier BrabantStad 1 the brief of this new action limited the field of research to one specific canal area: the Zuider- Willemsvaart\(^1\), one of the 3 canals forming the outer ring of B5 and connecting the two main cities of 's Hertogenbosch and Helmond. The future of the canal was the goal and it was investigated according to its space potential, heritage meaning and programmatic transformation. The planned transformation of the existing provincial street, which is parallel to the canal, was an interesting combination of causes and prospective effects.

As in action 1, the workshop was held away from the governmental institution, in a neutral zone (on a boat) and it was attended by a higher number of participants. In fact, beside the representatives of the 2 cities of Helmond and 's Hertogenbosch, the province and government, an important role was played by the members from the industrial field, water management, different associations (from transport to engineering, etc.) and guest experts.

Once again, the formula research-by-design was adopted.

*Work activity*

It included a physical experience of the canal (walking) and a creative one (design). The six sluices, three of which were in the heritage list, were regarded as essential action points;

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\(^1\) In a brief history, this canal is dated 1822 and it was conceived as part of the ‘Grand canal du Nord’ (never realized and aiming at military purposes as in the wish of Napoleon Bonaparte). It is a long incision into the historical landscape of sand plateaus, turf pits and physically it connects the city of ‘s Hertogenbosch to Maastricht.

As a chain of bottlenecks, six sluices puncture the course of the canal and form complex architectural and engineering points for the navigation and the crossing from each other side of the waterway. Three sluices are actually listed monuments.

Economically, the canal was an important incentive to the development of industry due to its strategic relationship with the city of Liege in Belgium, where was located a large a flourishing centre of industries.

The ‘heads’ of the canal (within the B5) are two industrial zones from the 19\(^{th}\) century, respectively on the northern and southern part of it. The first one is the industrial area of ‘kop van ‘Zand’ related to the city of ’s Hertogenbosch. Here are located the well-known buildings of ‘sigarenfabriek Willem II’ and de Verkadefabriek, respectively for the production of cigars and chocolate.

The south ‘head’ of the canal is the Kanaaldijk Noord-West area, related to the city of Helmond. Here are located the large footprints of the historical buildings of Vlisco’s factory, a textile company dated 1846 involved in the production and exportation of wax-prints to the Dutch East Indies (the actual Indonesia).
furthermore, the sequential diversity of historical elements (buildings and landscape) and new implementations was considered a strong element of the area identity.

*Result*

Three scenarios were developed. They were focused on: 1. the dynamic relationship between big cities and historical villages (bourgondisch scenario); 2. reuse of the canal zones within the inner fabric of the two main cities through the transformation of the existing industrial buildings for cultural purposes (bruisend scenario); 3. intensification of the areas for a-new development.

The second scenario is of our interest as it clearly reveals the policy of reuse of historical industrial areas aimed at a high level of public use.

*Figure 6: creative discussion into operative process (Scenario 2) (Atelier BrabantStad 2,2008)*

Compared to the previous atelier, we can define this action with relation to the ‘instrumental value’ of heritage, which focuses on the benefit at a community level, mainly economic and environmental.

*Action 3: Atelier Canaalzones (heritage management at architecture level)*

This ‘action’ is part of a research concerning architectural qualities at the Department of Architecture, TU/e Eindhoven. The “actions” include workshops, seminars and possibly development projects.
Scope is the intrinsic value of the heritage; the benefit derived from the built-up elements and its existence value.

Therefore, Atelier Canaalzones focuses on the transformation of the industrial canal zones located within each of the five cities. The architectural scale of the existing buildings, their influence on the close surrounding and the awareness about their role as a source of local identity are the core elements of the action.

Representatives from Province, Municipalities, students and guest advisors are involved in the activity.

Work activity

It consists of parallel design studios and seminars every academic semester. In this period the dialogue between students and members from the involved parties allows the exploration of different approaches to the heritage value, thus bringing a new and fresh perspective on the matter. Through the inventiveness of young designers and the experience of professionals and academics, theory and practice find their invaluable combination.

Figure 7: Enhancing heritage values through the combination of theory (university) and practice (professionals) (TU/e, 2010)

Result

The action is under way and it will last one more year. Step by step, the design results of each semester are synthesized in guidelines for a design brief addressed to professional designers.
Evaluation

Although action 3 was not concerted together with the previous activities, it can be envisaged as their follow-up. This action adds to the quantitative and qualitative targets emphasized by the Atelier BrabantStad 1 and 2. They represent new outcomes aimed at increasing cultural awareness, skills and identity of the built-up elements and mean to prove the impact of the heritage.

Action 4: Kanaalzone public seminar (to disseminate knowledge and awareness about the built heritage)

This action is to come. It is conceived as the conclusion of the Kanaalzone atelier: representative of the five municipalities have requested it as a platform to compare and exchange strategies for the five canal zones.

The enthusiasm fired by the collaboration between University and official Institutions has inspired it.

5. Conclusion

The above-mentioned actions adopt an open-end approach with dynamic development plans as its result. Design choices and strategies are adapted to the specific and evolving situation. This is also regarded as a challenge for the project itself. Interventions on heritage buildings are then projects that call for individuality and an original solution for each case. The experiences undertaken in the canal zones of B5 should not be expected to provide universal answers. They illustrate an approach in the management of the built heritage in a context of de-industrialization whose aim is to keep the spirit and evidence of the industrial past as wealth for the future.

It is a complex process, where the management has a key role in as much as it achieves successful results. The public management has a tactful and strategic position here. In fact, the representatives are figureheads responsible for perpetuating the focus in a long-term vision (2040) and success relies on the commitment of a few key players in the process. It is their concern to manage the balance between a long-term vision and short-term results. We should not forget that eventually the vision for 2040 has to be translated into investments for the near future. The participatory actions undertaken through the ateliers are instruments to achieve this goal.

An effectual management cannot disregard some essential ingredients. Firstly, it requires openness, both of mind and process. An open mind and attitude of the participating management should prove to be receptive/available to contribution and sharing while offering their professional competencies. The process of setting up the collaboration between University and Institutions as for the Canal zone atelier should be open in that it allows for experimentation and hence for research into unconventional solutions. It requires creativity in the way of
capturing the attention of potential important parties, as in the workshops of Brabantstd 1 and 2; and is able to raise the level of interest of the community (for example, the public seminar planned in action 3). It enhances heritage values through the combination of theory (university) and practice (professionals). Finally, it is efficient in saving time thanks to the presence of many experts under one roof who generate enthusiasm while working together for a common purpose.

The actions illustrated in this paper are a work-in-progress activity, and projects of implementations are only at their initial phase. Only the future can test the overall management process. Instead, what we have noticed so far is the increasing enthusiasm for the described activities. This adds to quality and ambitions in the development of our environment. An ever-growing number of professionals and students may be driven by the interest in acquiring and disseminating knowledge and research as they might be the prospective ‘managers’ of problem-areas of heritage value. Finally, realism and professionalism always generate enthusiasm into designing plans of the B5 urban growth in a 2040 perspective.

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