A sustainable proposal for the waterfront brownfield reclamation in Vila Real de Santo António, Portugal

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Abstract: - Today, as over half of the world population lives in urban areas, new approaches to urban problems are demanded. It is therefore necessary to introduce current urban development strategies, such as urban containment, smart growth, shrinking smart and sustainable communities, in urban planning. With post-industrial transformations in the second half of the 20th century, several cities began to decline, and brownfields, derelict industrial sites, appeared within urban centers. Algarve’s main industry was the sardine and tuna canning industry and its decline gave rise to brownfields. Using urban development strategies, a reclamation project was developed for Vila Real de Santo António’s waterfront brownfield. Which was compared to the municipality’s plans to redevelop the area. The proposed project valued public space, a sense of place and the cultural heritage, while current municipality projects favored tourism and rapid economic development.

Keywords: urban strategies; brownfield; urban rehabilitation; cultural heritage, landscape reclamation.

1 Introduction
The great urban development felt in the last decades of the 20th century, urged the search for new approaches to urban problems [1]. For the first time in human history, over half the world’s population lives in urban areas and it is expected that in the next fifty years that percentage may reach 75% [2, 3]. Problems such as poverty, contribute to the expansion of low quality, over-populated neighborhoods and the gap between the upper-middle class and the lower classes widens [4]. Population concentration in coastal areas is an additional source of urban problems; over 360 million people live in these areas, vulnerable to weather phenomena, natural disasters and the sea level rise [4].

In 2009, in a study of over 120 cities, the World Bank concluded that the population density in 6 out of 7 cities is declining: as urban population increases, so does the use of soil for urban purposes, leading to a decreasing population density in urban centers. This occurs mainly in small or medium cities, under 50,000 inhabitants, where 52% of urban population resides [4, 5, 6].

It is crucial to manage land use and urbanization, and the strategies to approach these problems are divided between those that promote urban growth, like urban sprawl or smart growth, and those that consider such growth unsustainable and therefore search for its containment, like urban containment, shrinking smart or sustainable communities.

Several cities and regions began to decline during the second half of the 20th century, due to demographic shrinkage, suburbanization, de-industrialization, and post-fordist transformations [7, 8, 9]. These are associated with industrial decline, with various causes including globalization [10], that makes the most competitive cities prosper while others lose their competitiveness and decline.

Brownfields are derelict industrial sites, obsolete or underused areas within urban centers, that can be redeveloped [5], and are, therefore, privileged spaces for landscape architecture projects.

In Algarve (southern Portugal) the main industry was sardine and tuna canning. Its main centers were Portimão-Lagoa, Olhão and Vila Real de Santo António (VRSA). With this industry’s decline brownfields emerged in these cities, areas with valuable locations (near the sea or river estuaries), and therefore more relevant to redevelop.

This paper addresses the use of specific urban redevelopment strategies related to the reclamation of an industrial derelict site to create a sustainable project, that respects the cultural heritage and public’s opinion. A comparison with the current municipality projects is also presented.

2 Algarve’s Canning Industry
Fisheries were the most important resources in Algarve. The canning process was used for the first time in Portugal, in VRSA, in 1865 [11]. The canning industry prospered until 1925, attracting feminine labor from the countryside (labor that until then was domestic or agricultural).
Prior to the First World War, Portugal was the main world producer of canned goods, and in 1915, 55% of that production came from Algarve. This prompted a boom in the canning industry, with several small units prospering, but was coupled with a decrease of the quality of the canned goods. In 1922, with products loosing quality, an economic crisis, and an increased tax load, the canning industry began to decline [11]. Competition of Spain and Morocco made local production and exportations plummet. This led to the closing of several production units and to a new deterioration of product quality, mirrored by a downfall in the international markets acceptance [12, 11, 13]. After 1968, dwindling fish resources, costlier raw-materials (e.g. olive oil) and higher salaries [11, 13], as well as Portugal’s adhesion to European Economic Community (EEC) brought new difficulties to the sector, while tourism became the main economic activity in the region. As a consequence, the driving market of sardine and tuna canning industry is now the national market [11].

2.1 Vila Real de Santo António (VRSA)

Due to its position near the Guadiana River (fig. 1), the area that is now VRSA, was for a long time, a trading post [14].

In the 18th century, to avoid smuggling, gaining control fishing activities, to enter the transformation market and to create industrial units, Marquês de Pombal, Portugal’s State and Kingdom Secretary at the time, encouraged the exploitation of the Monte Gordo bay, an area rich in fishing resources. Among several measures to promote tax control, and reform Algarve’s economy he mandated the creation of a settlement, near the Guadiana River, and near the border with Spain to ensure control of smuggling and illegal economic activities [15, 14].

The construction of VRSA began in 1774, and it followed a regular, orthogonal plan; all blocks being the same type and size [15].

This new town was at first deserted, with the population remaining near Monte Gordo; it was only more than a century later, with the first canning industries that it achieved success. The canning industry provided jobs for most of the population, including women [16, 15].

Similar to what happened in the rest of Algarve, during the second half of the 20th century the canning industry entered into decline, which induced a sharp decrease of the town’s prosperity; industrial buildings were abandoned, and are now obsolete. Nowadays, VRSA economy mainly depends on tourism and services.

If, originally, the city was overbuilt for its population, with time, it had to expand. Eventually urban development was contained by two protected areas: at north the Castro Marim and VRSA Saltmarsh Nature Reserve, and at south, classified VRSA Coastal Dunes National Forest. Therefore urban growth followed a linear suburbanization, along a national road, containing this growth was a concern, and the only other option was to increase urban density within the urban perimeter.

Although there were efforts to maintain the city’s regular plan, to respect its metric and the dimension of the city blocks, some of the new constructions, for tourism and residential use, differed from the city’s original buildings. Their height varied, and they isolated some of the old industrial buildings from the rest of the city’s original constructions (fig. 2). Legal constraints impose a protection perimeter around the historic centre, but beyond that, there are 8-stories buildings, while buildings in the historic centre only have two floors.

2.2 Vila Real de Santo António’s waterfront brownfield reclamation proposal

The study area is the waterfront brownfield near the Guadiana River (fig. 3), and it covers 26.5ha; to the north, it is limited by a Wastewater Treatment Station, the northwest corner includes part of the
estuaries included in the Castro Marim and VRSA Saltmarsh Nature Reserve, the southwest limit is composed by degraded industrial buildings, the south limit is the recreational dock, and the east limit is the Guadiana River and the fishing port (fig. 3).

The area can be divided in two: the waterfront, including the industrial area (fig.3 - A), and, on the north portion, west of the fishing port, the area of degraded marshland (fig. 3 - B).

Figure 3- Location of the study area.

Between 1991 and 2000, and contrary to the city’s tendency, the population in the study area declined 12.2%, and the number of buildings decreased by 23.4% [17, 18]. This area is, therefore, shrinking, so it should be shrinking smart.

The goal of the work presented was to create a project that respected the site’s sense of place and answered to the population’s expectations. The population’s concerns were taken into account, as they are the daily users of this territory, and therefore, those better acquainted with it. In order to do so, local organizations were contacted and an enquiry to the population was made. Sensory, social and economic, biophysical and urbanism analysis were also made and legal constraints were analyzed.

The population enquired felt a sense of belonging towards the area, particularly towards the derelict industrial buildings. The majority believed that the area’s future implied its demolition. Some expressed the will to limit the height of any new buildings due to the vicinity of the city’s historic center.

The old railways near the river, where the ferryboat to Spain can still be boarded, are no longer used and became obsolete; this element is missed by the population. When enquired about their desires for this waterfront area, people mentioned car parking, recreation areas, a privileged pedestrian area, gardens, children’s playgrounds, theater and cultural space for exhibitions. Some mentioned night clubs (which don’t exist in the city); others a quay to receive small dimension cruises in the Guadiana River.

This kind of waterfront brownfield reclamations is becoming more common due to the change in industrial and commercial land uses. It allows urban planners to bring the population closer to the water, to create community areas, and multifunctional areas; but what brings added value to these projects is the “democratization of the linear access to water” [19].

Trying to integrate the urban development strategies referred before, brownfield reclamation helps in urban containment, or shrinking smart, because this is an under-used, derelict space, that will be redeveloped within the urban perimeter, not consuming any more greenfields.

As a concept to sustain the proposed project, we used integration (fig. 4): integration of the city’s past, present and future, as way to make something whole, answering the current needs and trying to take into consideration future needs, by compromising between past, present and future land uses, connecting urban and natural spaces, and introducing the urban development strategies studied, to prepare it for the future.

Figure 4- Conceptual Strategy.

As a result of this process the proposal described below and illustrated in figure 5 was developed. Because the city’s economic drive was the canning industry, this brownfield reclamation strategy was to shrink smart [20]. However the redevelopment strategy for this proposal has principles of smart growth and sustainable communities.

The key-elements that contributed to a sense of place and to the community’s sense of belonging were identified and preserved, and the dissonant elements that created conflict were also identified so they could be eliminated, altered, or integrated to minimize their negative interaction with the place.
To ensure connectivity and integration (the main goals of our conceptual strategy), and because train circulation cannot be restored, following the principles of New York’s High Line, a public park on an old elevated railway road [21], and other Landscape Urbanism principles, those obsolete train lines were converted into bicycle paths, as part of Algarve’s ecopath (a bicycle path connecting Algarve from east to west). Promoting this kind of “light” mobility follows smart growth principles [22, 23].

If physically the study area is almost divided in two, with our proposal it becomes connected and integrated, in four sectors:

The waterfront (fig. 5 - 1):
An urban open space, with recreational functions for public use; there the city’s metric was prolonged through the floor, dividing the space into regular blocks. To the south there is a mobility center (fig. 5 – 1.1.), creating good connectivity with good public transportations [24], including a ferryboats quay, an informal mini-cruises platform, a new bus station, car parking, and the old train station transformed into a shop to rent bicycles. Through the bicycle path this mobility center is connected with the current train station. The tree coverage is regular to allow the installation of a temporary street market.

The proposed waterfront has planted spaces with leisure areas, to receive traditional games and children’s playgrounds; areas to receive restaurants, snack-bars, and night clubs. The building height is limited to one floor, and outside the maritime public domain of the Guadiana River. The installation of urban equipment is proposed, using the old railways, for wagons to receive the fish, to install mobile benches, promoting public interaction with the project, as Martha Schwartz did in Manchester Exchange Square [25]. Access to the River is ensured by the mini-cruises platform, and by a deck on the northeast corner of this waterfront, a leisure area, protected from the unpleasant, north winds.

Residential industrial-technological sector (fig. 5 -2):
The second sector is a residential and industrial-technological area, reclaiming the old industrial area, with several uses. Some blocks were converted into residential (fig. 5 – 2.1.), answering the housing demand, with different typologies, providing choice as required by smart growth principles [22, 23, 26]. Other blocks of this sector receive small industries
and services (fig. 5 – 2.2.). This will prolong the current industrial area, creating jobs. A technological park planned by the municipality by the estuarine zone is, in this project located in this sector, viewing this area as a shrinking smart opportunity [3, 20]. A block was converted into a skate park (fig. 5 – 2.3.), across the Av. da República from the waterfront promenade, so that it will give teenager some seclusion to practice their sports. The old Ramirez factory, one of the buildings that is still recoverable, with direct contact with the waterfront, was chosen to become the Canning Industry Memorial Center (fig. 5 – 2.4.), appealing to the place’s cultural heritage, and collective memory, fulfilling the goals of sustainable communities [24]. This memorial center will have a day center, to receive elderly population, a municipal museum, and an exhibitions’ center with an interior garden.

Fishing port sector (fig. 5 -3):

The intervention in the third sector, the fishing harbor area, is dominated by the creation of a shipyard to support nautical activities and fishing industries. This area was designed according to PARQUEXPO’s project [27]. This shipyard will provide an alternative to the gathering of ships, and repair warehouses that currently occur in near the protected forest, protecting and preserving this forest.

Degraded marshland sector (fig. 5 -4):

The fourth sector (fig. 5 - 4) is the degraded marshland area, illegally being used as a dump site. The proposal protects this area with reduced human interaction, and promotes contact with the saltmarsh nature reserve. According to sustainable communities principles [24], the strategy for this sector is to build elevated wood pathways to create viewpoints into the natural reserve, decrease disturbance to the saltmarsh, allowing it to recover. This will allow the population to contact with natural areas, and will connect the city with a nature reserve.

2.2 Vila Real de Santo António’s municipality waterfront brownfield reclamation proposal

The municipality has three projects to redevelop the study area: a technological park, in sectors 3 and 4, fig.6, a detail plan of the cemetery zone, in sector 2, and a waterfront land use and development plan, in sector 1.

The technological park, in an area of 3.5ha, 3.2ha of which are built, for industrial and technological uses[27].

The detail plan of the cemetery area, totaling 2.95ha, proposes to demolish all the old industrial buildings and build residential, mix-use and industry blocks, with building heights up to 8 floors near the city’s main street, facing the Guadiana River, the Av. da República where nowadays the highest building has 5 floors [28].

The waterfront’s land use and development plan, proposes to reclaim the waterfront with bicycle paths, a cultural center, restaurants and bars. This plan also includes construction lots near the river with 3-stories height and an 8-stories height hotel inside the maritime public domain. It changes the traffic on Av. da República, creating a central square to north of which the avenue gains a central pathway.

There was no public consultation for these projects. Therefore, the population didn’t feel included in the process. They knew some of the factories would have to close, that those buildings would be demolished, and that jobs would be lost, but they didn’t know what for, so public participation wasn’t accessible or embracing enough throughout this process.

3 Comparative analysis between Vila Real de Santo António municipality’s current projects and the proposed alternative project

Figures 6 and 7 show a comparison of typologies and areas between the different projects. The areas compared do not coincide because the current municipality plan for the cemetery area involves more building area than the brownfield area.

Figure 6- Comparative analysis between areas (ha) of the municipality’s current projects and the proposed alternative project.

Figure 7- Comparative analysis between municipality’s current projects and the proposed alternative project.
The main difference is on the property regime: the proposed alternative project favors public space. As Carr, Francis, Rivlin & Stone [30] mention, public well-being has always motivated the creation and improvement of public spaces, it generates social interaction and physical activities opportunities, enhances life-quality. Principles of sustainable communities advise the creation of good public spaces and green areas, because they contribute to public health, local economy strengthening and help protect the population from climate changes [24].

The proposed waterfront (sector 1), differs from the municipality’s waterfront’s plan, because the latter promotes constructible area and rapid economic development, valued by the proximity to Guadiana estuary, regardless of the maritime public domain.

Sector 2 is treated by the municipality’s “detail plan of the cemetery area” as a building area, for residential and commercial uses, without consideration of the industrial buildings’ cultural heritage, and with proposed buildings rising higher than the current ones.

The third sector includes the same shipyard as the technological park of the municipal project.

The municipal projects have, on sector 4, an extension of the technological park, valuing economic growth, instead of the preservation of natural values.

4 Conclusions
Brownfields reclamation is a current subject and an important one within the field of Landscape Architecture. The project proposed herein may be the groundwork for the future of Vila Real de Santo António as a sustainable community, supported by current urban management strategies.

The proposed project respects urban containment principles in reclaiming a brownfield, smart growth principles in planning a future development, shrinking smart principles assuming that the economic drive of the city changed from the canning industry to tourism and services, and sustainable communities principles respecting this place’s cultural heritage, and collective memory.

The integration conceptual strategies allowed for the integration of natural and urban space, connecting the city with the Saltmarsh Nature Reserve, and the study area to the bicycles ecopath of Algarve. The proposed Canning Industry Memorial Center also integrates the cultural heritage and the collective memory as in other projects like Duisburg Nord, or Zollverein in Germany, or even the Portimão Municipal Museum in Algarve.

A simple comparative analysis between the current municipality projects and the proposed alternative shows that the latter values more public space and public access, as well as the recovery of the saltmarsh environment, and cultural heritage, whereas the current municipality projects value more housing area, buildings construction for mix-use and the development of a larger technological park.

Promoting community participation, by enquiring them previously regarding the municipality projects, engaged the population in the project process. As future research more public participation moments should be created, to follow sustainable communities’ principles [24].

References
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