

## **The fit of urban waterfront interventions: matters of size, money and function**

La justesse des interventions riveraines : une question de taille, coût et fonction

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### **RÉSUMÉ**

Une intervention riveraine mal conçue échoue généralement à plusieurs niveaux : un mauvais programme, avec le mauvais budget et un calendrier mal conçu, sans se soucier des besoins locaux ou du contexte, entraîne une intervention peu attrayante et coûteuse, avec un bénéfice social ou environnemental réduit. Les interventions riveraines urbaines pourraient être améliorées à l'avenir si, au moment de décider quoi faire de nos berges urbaines, nous apprenons des erreurs du passé. Cela peut être aussi important (ou peut-être plus) que d'observer ce qui a fonctionné ailleurs. Ce qui a réussi dans une autre ville peut ne pas être reproductible, si le contexte et l'opportunité étaient très spécifiques à cette ville. Pourtant, reconnaître ce qui n'a pas fonctionné ailleurs, les causes de l'échec, peuvent nous fournir les indices dont nous avons besoin sur la façon d'améliorer nos propres projets. Savoir comment éviter le surdimensionnement, les dépenses excessives, la mauvaise planification, ou bien l'incapacité d'attirer des publics divers ou ne pas apporter d'avantages écologiques, nous fournissent paradoxalement un excellent cadre sur la façon de concevoir une meilleure intervention. Pour bien faire, nous devons reconnaître le contexte local, la morphologie de la vallée de la rivière, le temps et le budget qu'une série de solutions implique, et choisir les utilisations et les fonctions qui réussissent à attirer une foule diversifiée et la restauration de la connectivité naturelle des rivières.

### **ABSTRACT**

A poorly designed riverfront intervention typically fails on several levels: a bad program, with the wrong budget and timing, no concern for local needs or context, results in an unattractive and costly intervention, with reduced to no social or environmental benefit. Urban riverfront interventions may be improved in the future if, when deciding what to do with our urban riverfronts, we learn from past mistakes. This may be as important (or perhaps more) as observing what worked. The successful element in another city may not be repeatable, as the context and opportunity was very specific to that one city. Yet, recognizing what didn't work elsewhere, the causes for failure, may provide us with the clues we need on how to improve our own projects. Knowing how to avoid oversizing, overspending, inadequately planning, failing to attract diverse publics and uses or fail to provide ecological benefits will, paradoxically, provide us with an excellent framework on how to create a better, successful, intervention. To get it right, we should acknowledge the local context, the morphology of the river valley, the time and budget a set of solutions entail, and select uses and functions that work for a diverse crowd and provide multiple benefits, including good flood management performance and the restoration of the rivers' natural connectivity.

### **KEYWORDS**

Urban riverfronts, Project management, Flood management, Public spaces, Waterfront redevelopment

## **1 THE “DISCOVERY” OF THE URBAN RIVERFRONT**

### **1.1 Getting the river back**

From the late 18<sup>th</sup> to the mid-20<sup>th</sup> century, a process of accelerated transformation of the urban waterfront saw the widespread introduction of industry, linear infrastructure (such as railroads and highways), and port infrastructure along the riverbanks. This process often entailed the landfilling of natural floodplains to produce cheap (or free) land next to the river, with the river itself serving diligently as a transport route, a source of power and, ultimately, as a utilitarian waste conduit. Encroaching the river often led to worsened urban flooding, which in turn promoted the introduction of hard flood protection infrastructure, further detaching the city from the river (Mann, 1973).

In the last few decades, the progressive relocation of industries, port infrastructures and, in some instances, roads and railroads, has rendered riverfront brownfields available for redevelopment. These are often centrally-located plots, with coveted open views and good access, which makes them prime real-estate. Seen from the river or the opposite bank, they will often define the «first row» of the urban skyline, becoming a central element in the urban landscape. Cities are rediscovering their rivers.

### **1.2 The current “gold rush”**

There is mounting interest in the redevelopment of these coveted plots, but with it come a myriad of public and private interests, which are often in direct conflict. Should the waterfront be a generator of wealth? Should it host natural habitat? What to do with the transport infrastructure, keep it, remove, or bury it? Should social issues supersede environmental ones? These debates are complex, but the actors and interests are not always necessarily equally represented or enfranchised, and scrupulous weighing of alternatives is often sidestepped for fast decision-making. These rushed or misinformed decisions often compromise the balance and potential of the riverfront interventions.

The visibility and attractiveness of these sites attracts promoters, but also speculators, and politicians are frequently unable to resist the allure of the “iconic” building or the fashionable urban project that will “brush up” the city’s image.

### **1.3 Getting back to the river**

Several projects in this context appear to have been fast-tracked without proper consideration, and often fail to adequately consider the local context, constraints and needs. Some amount to little more than reframed copies of some project perceived to have worked elsewhere.

Considerations on how the local population had related to that specific stretch of the river in the past, or how that relation should be stimulated in the future; how the river functions were impaired by centuries of neglect and could be restored; or even the adequate balance of uses and proper scheduling of interventions are often afterthoughts in the decision-making process surrounding many urban riverfront interventions.

But getting the river back will only mean “getting back to the river” if the choices we make on how to intervene on the urban riverfronts promote appropriate and attractive uses and spaces, and if those uses are framed as an opportunity for restoring a “healthy relationship” with our rivers.

## **2 WHAT NOT TO DO IN URBAN RIVERFRONT INTERVENTIONS**

### **2.1 The wrong “size”**

A common issue deriving from the “copycat” nature of some interventions is that they were “inspired” by locations with very different contexts: a much wider or narrower river, a larger city, different topography, cleaner waters, and so on. And in trying to reproduce the perceived success of another site, decision-makers will go for nondescript replicas, with issues of scale affecting its chances of success.

In Tbilisi, the Kura river’s banks have been the object of a set of recent interventions. Despite being dotted by iconic (and expensive) buildings and bridges by famous foreign architects (which have been criticized for their awkward relation with the scenic river valley), the costly project failed to address the river’s serious pollution issues and does little to suppress existing barriers separating the river from the city.

## 2.2 The wrong “budget”

As the Tbilisi project exemplifies, a typical consequence of the “wrong size” debacle is that the solution (especially when “imported” from a wealthy, larger urban center) often results in megalomaniac projects, where cost-benefit analysis has been eschewed or simply not well conducted. These interventions have the characteristic of being too costly to build and too costly to upkeep. Common offenders are riverfront parks with vast expanses of underutilized and overdesigned spaces, costly infrastructure to regulate water levels, bridges to nowhere or oversized and overpriced iconic building by “starchitects”. One way these projects tend to fail is that the escalating costs make them unpopular with the community, or that the maintenance budget is shrunk and the decay of the spaces leads to a progressive degradation and ultimate abandon.

Through being an unwanted burden on the local community, the project not only fails to serve the population but may eventually even hinder the natural desirability of the urban riverfront, which can be closely correlated to the wrong choice of uses and crowds, or the “wrong program”.

Abrantes, in Central Portugal, embarked on an ambitious project to create a shallow reservoir on the Tagus, complemented by a large riverside park and an “urban beach”. The “Aquapolis” project now appears oversized for the city’s 18 thousand inhabitants, and the cost of operation of the inflatable weir that blocks the Tagus have led to successive maintenance issues, which have even affected the ability to lower the weir during the anadromous fish migration, as mandated by the national environmental agency.

## 2.3 The wrong “program”

The selection of uses and layout of the projects is regularly compromised by narrow-minded or short-sighted decisions, such as the option to select the uses that provide the most short-term economic benefit, rather than strive to balance the different needs and opportunities a given site may provide. This may be especially evident when a large land-owner, such as a port authority, strives for immediate yield from selling riverfront property. These “lucrative” uses are often selected at the expense of public spaces, social facilities, or affordable housing, and this type of projects seldom includes provisions to cater for social diversity, ecological benefit or sustainable mobility.

These projects fail to provide multiple benefits, even when that would be feasible or even obvious. By limiting the scope and objectives of the intervention to narrow and monofunctional solution where several ends could be met, the resilience of the intervention in face of shifting demands is reduced. Not catering to diverse crowds is the surest way to reduce the “vitality” of an urban area (Jacobs, 1961).

Canary Wharf’s slow start has been given as an example of a project that was overly dependent on a single use, rendering it vulnerable to an economic downturn, while at the same time failing to provide the city with a diverse set of uses and spaces, minimizing its early impact on the city of London.

## 2.4 The wrong “time”

Sometimes, projects fail to fulfill their potential not necessarily due to a “bad design” or one that is “too costly”, but simply because of bad project management. Although it is often hard to discern what exactly goes wrong with a project, inappropriate timing of the investments, public outreach, or simply phasing the project inadequately may contribute to it failing. Typical mistakes are building everything at once in large, costly projects, not involving the local population from early on, resulting in the community not being invested in the completion of the project, or not adequately phasing the project, leading to less desirable uses being done upfront with resulting perception of a “failed project”, leading to an uphill struggle to “clean the image” of the intervention in ensuing phases.

The Isla de la Cartuja project, sitting on an island on the Guadalquivir facing downtown Seville, has been marred by successive delays and missteps, failing to benefit from the initial momentum created by the Universal Exposition of 1992.

## 2.5 The wrong “color”

The traditional stance of flood defense led to the concept that city and river were in a fight for territory, and the perception that the measure of success was exclusively our ability to keep the flooding river “at bay”, behind levees or concrete channel walls. Shifting paradigms now force us to confront this ambition with the environmental consequences of these “grey” solutions.

Nowadays, there is a growing understanding that floods may be managed, through the implementation

of broader strategies at the watershed level and the incorporation of local “green” flood mitigation solutions, such as the creation of detention basins or the provision, where space is available, of widened channels or terraces and floodplains, to accommodate the flooding river without compromising urban uses and infrastructure. There is also a growing realization that these “green” infrastructures are often compatible with desirable urban uses, such as parks, which may be used extensively by the local population whenever the river is not at its flood stage. Fortunately, there appears to be a growing understanding that ecological restoration is possible along a spectrum of solutions, dependent on the available space and, naturally, budget. These solutions range from simply providing more trees and shades along the armored banks, where only limited space is available, to restoring longitudinal connectivity by removing weirs, creating narrow strips of riparian vegetation along walkable banks, to recreating stepped terraces doubling as flood plains, on to eventually restoring natural floodplains and possibly even giving the river the “espace de liberté”, restoring lateral and vertical connectivity (Kondolf and Pinto, 2017).

Highly designed projects with formal elements imported from other climates and settings may also fail because they are not adapted to the river’s geomorphic processes. In Houston, the highly designed Buffalo Bayou Park suffered extensive erosion and deposition of a foul mix of silt, sewage, and solid waste during Hurricane Harvey in 2017. Houston lies in the ‘flash-flood alley’ of Texas, exposed to floods not only from Hurricanes from the Gulf of Mexico but also intense local convective systems, so a more geomorphically appropriate approach would be to leave a wide natural corridor to absorb the periodic floods, their high energy, and high sediment loads.

Projects that, despite all evidence to the contrary, still go for fully “grey” solutions, reinforcing banks against floods without the incorporation of any compatible elements of habitat restoration, can be blamed of an anachronistic choice of the “wrong color”.

## **2.6 Getting it “all wrong”**

These and other offenses tend to work cumulatively, as a poorly designed project typically fails on several levels. A bad project is the consequence of a series of bad decisions. Several “bad” decisions result invariably in failed urban riverfront interventions. These are, therefore, frequently “multiple offenders”: a bad program, with the wrong budget and timing, no concern for local needs or context, resulting in an unattractive and costly intervention, with reduced to no social or environmental benefit.

## **3 GETTING IT RIGHT**

It is not hard to imagine how urban riverfront interventions may be improved in the future: when deciding what to do with our urban riverfronts, learning from past mistakes, and the mistakes of others, is as important (or perhaps more) as taking away what worked. Oftentimes, the iconic building that “saved” a given post-industrial city is unrepeatable, as the context and opportunity was very specific to that one city ; yet, our ability to recognize what didn’t work elsewhere, the causes for failure, provide us with the clues on how to improve our own projects. Knowing how to avoid the wrong size, budget, program, time, and color will, paradoxically, provide us with an excellent framework on how to create a better, successful, intervention. To get it right, we should acknowledge the local context, the morphology of the river valley, the time and budget a set of solutions entail, and select uses and functions that work for a diverse crowd and provide multiple benefits, including good flood management performance and the restoration of the rivers’ natural connectivity.

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