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MAIN SECTION

Re-defining the appreciation and usability of urban watersides in the urban center and peri-urban fringes of Shanghai

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ABSTRACT

Countless waterways defined both the rural and urban landscape and related daily life activities in China's Yangtze River Delta for many centuries. However, much of these bodies of water disappeared due to extremely rapid urbanization in the last three decades and this process is ongoing. This paper critically assesses how the appreciation and usability of the remaining urban watersides is currently changing drastically by examining recent waterfront projects in the Direct Controlled Municipality of Shanghai. This research mobilizes insights from the academic field of Sustainability Transitions – specifically on expectations, experimentation and innovation journeys – to explain how, in the context of extreme urban pressure, well-manicured new urban watersides are often visually attractive but functionally inadequate. The paper concludes with recommendations to reverse this trend and to create more sustainable and attractive watersides. By describing, comparing and evaluating three cases, this paper by Dutch Shanghai-based urban designer and researcher Harry den Hartog also wishes to contribute to the discourse on China's urban transition by critically examining the gap between expectations and outcomes in daily life reality.

KEYWORDS

Place-Making; Real Estate; Shanghai; Socio-Technical Transitions; Urban Delta; Urban Waterfront; Waterfront Usability; Waterfront Appreciation; Yangtze River Delta.

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Introduction

This paper describes and analyses the changing appreciation and role of living and working along waterfronts in the context of China's extremely rapid and large-scale urbanization, occurring since the end of last century.[1] The paper focuses on the Direct Controlled Municipality (equal to a province) of Shanghai and its surrounding region, with its many canal towns and rich water history. Historical continuities and recent discontinuities will be explained and assessed regarding the appreciation and usability of urbanized watersides, with one case in Shanghai's Central City and two cases in its rural fringes, all under high urban development pressure.

Resorting to Sustainability Transition theories, overarching patterns are identified and translated into broad lessons on how urbanization processes can be steered into more sustainable paths, keeping historical continuity and attractive well functioning new environments. In the next section, three key concepts are introduced (expectations, socio-technical experimentation and innovation journeys) as useful tools to help assess the promises and realities of waterside transitions. The third section elaborates on the methodological approach and the selection of the cases. The fourth section describes the dynamics for the three cases. The fifth section combines the findings and the final section concludes with some recommendations.

Theory: expectations, experiments and journeys

This paper describes and analyses tendencies in recent urbanization projects and their relationships with the water in Shanghai, China, especially regarding the functionality of new public spaces, but also regarding ecological, socio-economical, and sociocultural values, and flood risk measures. Illustrated with three cases, these changing relationships are conceptualized by resorting to insights from the field of Sustainability Transitions. In this field, scholars investigate major shifts toward sustainable socio-technical systems of production and consumption. The study of socio-technical transitions to sustainable urban development draws on a wide range of theories and lines of thought (such as neo-institutional theory, evolutionary economics and science and technology studies) and a variety of frameworks and approaches (such as the multi-level perspective, strategic niche management and transition management) to express how promising visions of a sustainable future and attractive urban realities – for example living along the waterside – can be translated into experimental development projects and how these can be empowered

1. You-Tien Hsing, *The Great Urban Transformation: Politics of Land and Property in China* (New York: Oxford University Press, 2014).

in order to transform the unsustainable current order.[2] To investigate the promises and realities of urban waterfront projects, three core concepts from the Sustainability Transitions field will serve as "sensitizing concepts" for the empirical analysis and structuration of the argumentation.[3] These concepts are: (1) expectations, (2) socio-technical experimentation and (3) innovation journeys, which I proceed to explain below.

To investigate how actors use appealing visions of the future in their urban development projects, scholars from the field of Sustainability Transitions often use *expectations* as a concept. Expectations can be defined as "statements about the future – uttered or inscribed in texts or materials – that circulate."[4] The idea that they circulate is important, because they are not merely descriptive statements, but they are especially "performative," which means that they help to create a new reality by providing heuristic guidance[5], by coordinating roles and activities amongst actors[6] and by legitimizing certain investments.[7] Expectation is one of the key processes in facilitating sustainable innovation journeys, and to do this successfully, expectations should be robust (shared by multiple actors), specific (if expectations are too general they do not give guidance), and of high-quality.[8]

To turn visions into reality, actors engage in a process of *socio-technical experimentation*. Ideas that look appealing on paper and sound good in words are applied in real-life settings to be tested and developed further. In this context, experiments can be seen as seeds of change that may eventually lead to a shift in urban planning approaches.[9] Opposed to the experimentation in the natural sciences that usually take place under strictly controlled conditions to find hard objective truths, the experimentation in the field of sustainability transitions take place in a real-world environment with a wide variety of societal actors and other influences. To deal with this, it is more accurate to talk about a "socio-technical experiment,"

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2. John Grin, et al., *Transitions to sustainable development: New directions in the study of long term transformative change* (New York: Routledge, 2010). Jochen Markard, Rob Raven, and Bernhard Truffer, "Sustainability transitions: an emerging field of research and its prospects," *Research Policy* 41 (2012): 955–967.

3. Herbert George Blumer, "What is wrong with social theory?" *American sociological review* 19, no.1 (1954): 3-10.

4. Harro van Lente, "Navigating foresight in a sea of expectations: lessons from the sociology of expectations," *Technology Analysis & Strategic Management* 24(8) (2012): 769-782.

5. Arie Rip and René Kemp, "Technological change," in *Human choice and climate change* (Columbus: Battelle, Rayner and Malone, 1998), 327–399.

6. Kornelia Konrad, "The social dynamics of expectations: The interaction of collective and actor-specific expectations on electronic commerce and interactive television," *Technology Analysis & Strategic Management* 18(3-4) (2006): 429–444.

7. Mads Borup, Nik Brown, Kornelia Konrad, and Harro van Lente, "The sociology of expectations in science and technology," *Technology Analysis & Strategic Management* 18(3-4) (2006): 285–298.

8. Johan Schot and Frank Geels, "Strategic niche management and sustainable innovation journeys: theory, findings, research agenda and policy," *Techonoly Analalysis & Strategic Management* 20(5) (2008): 537–554.

9. Frans Sengers, "Cycling the City, Re-imagining the City," *Urban Studies* (2016): 1-17.

which can be defined as: "an inclusive, practice-based and challenge-led initiative, which is designed to promote system innovation through social learning under conditions of uncertainty and ambiguity."[10]

Experimentation in the urban environment is an unfolding *innovation journey*[11] and in particular a "sustainable innovation journey."[12] A journey also implies open-endedness and uncertainty.[13]

Case study selection and methodological approach

This paper describes and analyses two different situations of a changing relationship between city and waterside: one urban case along the Huangpu River in downtown Shanghai with a transition of industrial waterfronts into recreational waterfronts, and two rural (now peri-urban) cases with "Long Island" on Chongming Island and "New Venice" in neighboring Nantong [Fig. 1]. In the latter two cases, agricultural functions and wetlands have been transformed into speculative residential and recreational property. By conducting this comparative case study research[14] also qualitative methodological approaches for geographers[15] are used.

Both the Huangpu Waterfront case and Chongming Island (exclusive Long Island and New Venice) were during their initial planning process appointed as National Demonstration zones. The urban and peri-urban cases are chosen because they are complementary to each other (urban vs. rural, high-density vs. low-density, etc.), because they are related to each other (same target group: the new middleclass), and because they are representative for many waterfront developments in the wider context of the Yangtze Delta (and to some extent even for China as a whole).

The Direct Controlled Municipality of Shanghai and surrounding Yangtze River Delta Region are China's economical engine and "Head of the Dragon" for centuries, thanks to a strategic location for trade, efficient waterways, and fertile soil. Many experiments and projects in Shanghai function as model for projects elsewhere in China.[16] Shanghai's new urban waterfronts form one of the main planning strategies in this city's attempt to become an "Excellent Global City" according to the Shanghai

10. Frans Sengers, Anna Wieczorek, and Rob Raven, "Experimenting for sustainability transitions: A systematic literature review," *Technological Forecasting and Social Change* 145 (2016): 153–164.

11. Andrew Van de Ven, Douglas Polley, Raghu Garud, and Sankaran Venkataraman, *The Innovation Journey* (New York: Oxford University Press, 1999).

12. Frank Geels, Marko Hekkert, and Staffan Jacobsson, "The dynamics of sustainable innovation journeys." *Technology Analysis & Strategic Management* 20(5) (2008): 521-536.

13. Raghu Garud, Joel Gehman, and Antonio Paco Giuliani, "Contextualizing entrepreneurial innovation: A narrative perspective," *Research Policy* 43 (2014): 1177–1188.

14. Robert K. Yin, *Case study research: Design and methods* (Sage: Thousand Oaks, 2003).

15. Melanie Limb and Claire Dwyer, *Qualitative methods for geographers* (London: Arnold, 2001).

16. Harry den Hartog, *Shanghai New Towns - Searching for community and identity in a sprawling metropolis* (Rotterdam: 010 Publishers, 2010).

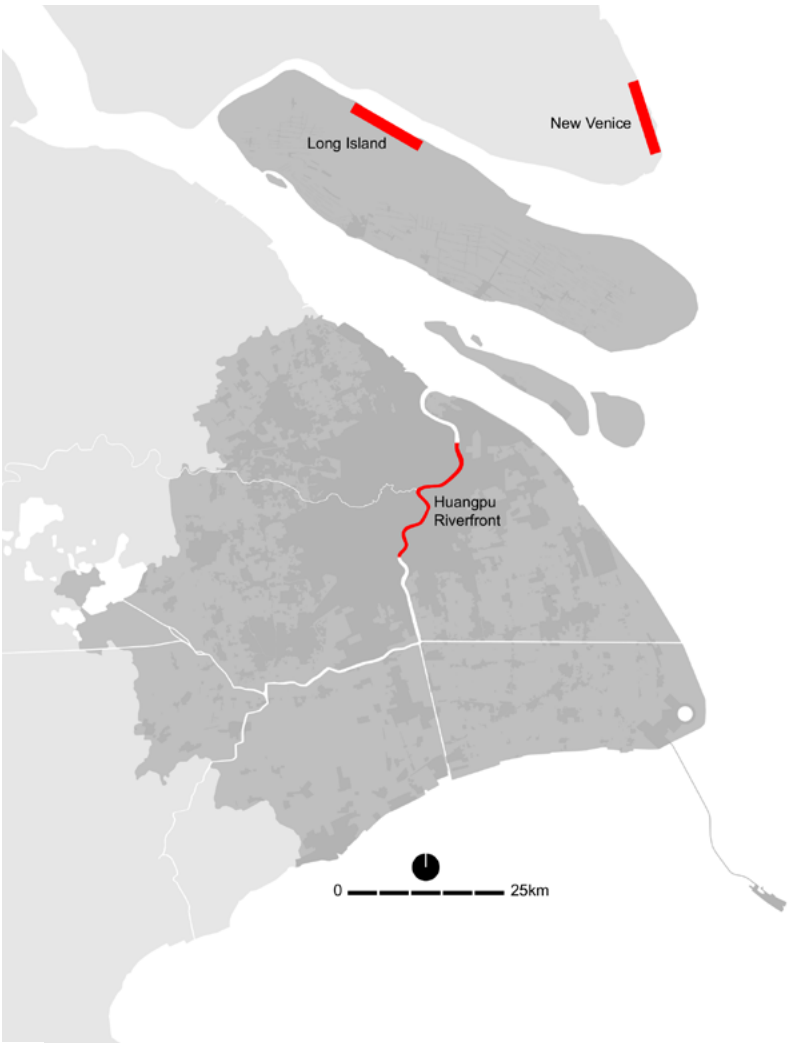

FIG. 1 Huangpu River with more than 45 kilometers of new waterfront in the Central City of Shanghai's Direct Controlled Municipality. The cases Long Island and New Venice at Shanghai's rural fringes are under the administration of Nantong, in Jiangsu Province (map by author, 2019).

Master Plan 2017 – 2035.[17] Since 2018 the Huangpu Waterfront is earmarked as a "demonstration zone for the development capability of the global city of Shanghai"[18] to determine the image and brand of Shanghai and to improve the quality of life in megacities. Chongming Island was appointed as National Ecological Demonstration Zone in 1996.[19] Both demonstration zones function as sample for similar situations elsewhere in China, according to the Shanghai Master Plan 2017 – 2035.

17. Shanghai Planning and Land Resource Administration, *Shanghai Master Plan 2017 – 2035*, public version (2018) www.shanghai.gov.cn/newshanghai/xxgkfj/2035004.pdf, accessed May 17, 2019.

18. Shanghai Planning and Land Resource Administration, *Striving for a world-class waterfront area - Shanghai Huangpu River and Suzhou River planning*, public version (2018). Accessed May 17, 2019, https://mp.weixin.qq.com/s/6R9DCl4xFSGjvCRnXSioqg.

19. Julie Sze, *Fantasy islands: Chinese dreams and ecological fears in an age of climate crisis* (Berkeley: University of California Press, 2015). Xin Ma, Martin de Jong, and Harry den Hartog, "Assessing the implementation of the Chongming Eco Island policy: What a broad planning evaluation framework tells more than technocratic indicator systems," *Journal of Cleaner Production*, 172 (2017): 872–886. Harry den Hartog et al., "Low-carbon promises and realities: Lessons from three socio-technical experiments in Shanghai," *Journal of Cleaner Production* 181 (2018): 692–702.

Within the context of Chongming Island the case of Long Island is described in this paper because it illustrates the loopholes of the National Ecological Demonstration Zone. Chongming is an experiment to realize a more sustainable and balanced (but still urban-centered) society. The real estate development of Long Island illustrates what would probably happen on Chongming as a whole when the Eco Island policy is absent. Inherently related to this the case of New Venice shows the extreme consequences of what will go wrong if the waterfront landscape is approached as a mere investment object.

Scientific research that focuses on recent developments at the waterfronts in Shanghai and the Yangtze River Delta region is still limited. The Huangpu Waterfront redevelopment and the ambitions for Chongming Island are both to a high degree experimental within the Chinese context. The degree of experimentalism is illustrated by the fact that dozens of international design competitions have been launched during the past two decades for the Huangpu Waterfronts and Chongming Island as a whole and also for subareas, e.g. Chongming Island Master Plan in 2004, Dongtan Eco-City (on Chongming) in 2005, North Bund in 2010, Suzhou Creek redevelopment plan in 2016, the 22-kilometer long Huangpu River East Bank in 2016, and many others. This has generated an enormous amount of plans and ideas. Subsequently, new plans were compiled by picking and reassembling the – in the eyes of decision makers – most attractive elements in a very opportunistic way. This method is very common in China's spatial planning and design but very unusual in Western countries in terms of copyright and prestige. This "shopping" among design competition entries and "use" (or misuse) of international input is rejected with great suspicion and distrust in the international discourse of architects and urban developers in the West.[20] Nevertheless, this is still daily practice in China, sometimes resulting in success, sometimes in failure, like in an experiment.

Although the cases have many similarities, there are also significant differences, in scale, in economic-geographic position, in policies, and in functioning. However, they clearly illustrate the recent dramatic shift in the relationship between the urban environment and the water, focused on the role and appreciation of urban watersides. The main goal is to give recommendations and suggestions to overcome future mistakes in planning and practices and to mitigate their effects. The findings in this paper are based on a series of site visits, observations and interviews (see table 1 for an overview of the data collection process). The author is very familiar with all cases and has done related research and design projects in this region during the last ten years. [TAB. 1]

20. Den Hartog, *Shanghai New Towns*.

	Interviews	Grey literature	Site visits
New urban waterfronts Central City of Shanghai	Residents (50+) Urban planners and architects (10) Local government officials (5) Developers (3) Real estate agents (5) Knowledge institutes (1)	Official policy docs (3) Governmental website (1) Expert meetings (3) Knowledge institute reports (1) Workshops (3)	Hongkou Creek (25+) Suzhou Creek (25+) North Bund (25+) East Bund (15+) South Bund (15+) West Bund (15+)
New peri-urban waterfronts (Chongming and Nantong)	Home-owners and residents (25+) National government officials (1) Master plan expert committee (3) Shanghai government officials (2) Local government officials (3) Urban planners and architects (8) Developers (2) Real estate agents (3) Knowledge institutes (6)	Official policy docs (3) Governmental website (3) Expert meetings (4) Knowledge institute reports (5) Workshops (3)	Chongming Island (35+) Nantong (7)

TAB1 Figures on data collection

New urban waterfronts in the central city and peripheries of Shanghai

Shanghai's rich historical relationship to the water during the years

Shanghai, and its wider urban region with neighboring cities and towns, used to be crisscrossed by waterways [Fig. 2]. The city's name literally translates as "upon the sea," since the coastline has been shifting eastwards due to sedimentation processes of the Yangtze River and tributaries. Water is not only a means of transportation and trade but also a source for stories, local myths and cultural practices. The classic Chinese painting *Qingming Shanghetu*, from the early 12th century, is the perfect

FIG. 2 There used to be a more direct interaction between urban life and water, also for washing laundry and cleaning food (photo by author, 2013)

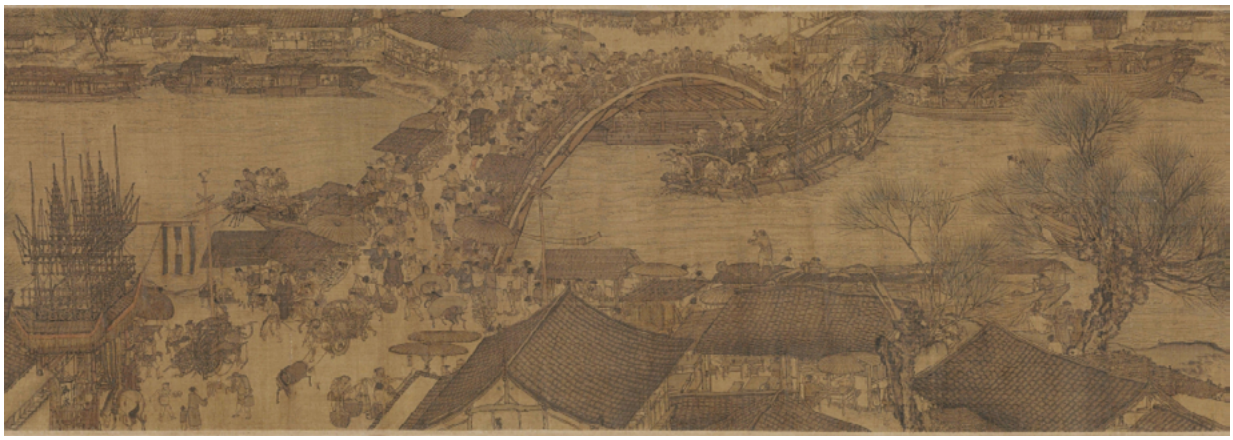

FIG. 3 Fragment of the classic painting Qingming Shang He Tu – original painting by Zhang Zeduan. Twelfth century, Handscroll, 24.8 x 528.7 cm (Source: Beijing, Palace Museum).

illustration of the importance of water in Chinese urbanization **[Fig. 3]**. The *Qingming Shanghetu* depicts the rich mix of economic activities on the urban waterside and embankments, symbolic for the vitality of a relative compact city clearly defined within its city walls.)

Until the middle of the twentieth century, the spatial and economic development of the Yangtze Delta was propelled by an efficient network of waterways and canal towns.[21] In "Farmers of Forty Centuries" F.H. King describes how more than 3,000 kilometers of waterways provided an ingenious transport system that simultaneously supported soil fertility and irrigation. To improve the fertility of the land, a great deal of mud was dredged from the canals and creeks and spread across the fields. At the same time, night soil from the cities was transported to the fields by boat to be used as natural fertilizer, even until the late 1990ies (author's own observation). To a large extent, these techniques contributed to the self-sufficiency and economic growth of China.

Later, under Mao's leadership, the Chinese government adopted policies that imposed a technocratic engineering on the surrounding landscape: "Man must conquer nature."[22] Natural capital and rural values around Shanghai (and elsewhere in China) have been largely neglected since then. Current planning practices are consequently based on a tabula rasa approach and steered by GDP-oriented motives, with a lot of collateral damage for ecosystems and livability. During the last few decades many natural waterways in this region were transformed into canals, while others were dammed or filled in completely. The eastward shift in the world's economic center of gravity at the end of last century has made highways, railroads, and airports the new flywheel of Shanghai's development — a process accelerated by mass migration to the city from rural

21. Franklin Hiram King, *Farmers of Forty Centuries: Or, Permanent Agriculture in China, Korea and Japan* (Madison, Wisconsin: Democrat Printing Co., 1911). Philip Ball, *The Water Kingdom: A Secret History of China* (Chicago: University Of Chicago Press, 2017).

22. Judith Shapiro, *Mao's War against Nature: Politics and the Environment in Revolutionary China* (Cambridge: Cambridge University Press, 2001).

areas. The few remaining canal towns are revalued now and more and more exploited as tourist attractions and investment opportunity, hence still loosing their original population and character due to gentrification processes. Simultaneously, many remaining waterways around Shanghai are currently transformed into scenic landscapes due to experimental landscape "beautification" policies, which resulted in the planting of many flowers along roadsides and canals. The long and fruitful relationship between the urban landscape and its water systems is changing drastically. The water system seems to be degraded from a transportation and urbanization backbone into a decorative element to brand real estate projects, without much sense of its historical importance and former usages. Countless street names still pay homage to the former canals and creeks that disappeared. Today, the reality is completely the opposite to the former water-rich landscape, with multiple new towns, high-tech industrial parks and other new phenomena sprawling at the fringes of Shanghai and other megacities connected by asphalt and rails.[23] Since late last century Shanghai is transforming itself from an industrial and agricultural – large parts of the Direct Controlled Municipality are still mainly agricultural – dominated city into a service-oriented metropolis. New real estate projects aim for a rising upper middle class, and in the rural fringes especially also on the wealthier elderly who are in search for leisure and luxury. Shanghai is "Striving to become an Excellent Global City" according to the credo on the first page of the Shanghai Master Plan 2017 – 2035. To facilitate this in the Central City, a large number of waterfronts has been transformed from a mainly industrial usage into a recreational and commercial use with abundant public recreational space, offices, shopping and hotels, offering a welcome and pleasant relief of the urban congestion for many.

Simultaneously – but not directly as a result of policies but more as a result of greedy developers that know how to exploit loopholes in regulations –more and more recreational and luxurious settlements are popping-up in the rural fringes. The latter ones are located on often-questionable locations – e.g. in conflict with existing natural and social-cultural values, vulnerable[24] to flooding, inaccessible to common people – as observed during fieldtrips and also learned from interviews with multiple stakeholders.

Because of ongoing transformation, the role and experience of water have changed, especially in daily life usage **[Figs. 4-6]**. In the past, living by the waterside in Chinese cities was rarely an attractive option. Industrial developments, especially since the 19th century, made many of them very dirty and smelly, while others became repositories of household waste. However, since about a decade ago, real estate developers and policy-

23. Den Hartog, *Shanghai New Towns*.

24. Stefania Balica, Nigel George Wright, and Frank van der Meulen "A flood vulnerability index for coastal cities and its use in assessing climate change impacts," *Natural Hazards* 64, no. 1 (2012): 73–105.

FIG. 4 Most creeks disappeared and the few remaining ones, such as Hongkou Creek, are often disconnected from urban life by floodwalls (photo by author, 2018).

FIG. 5 Most creeks disappeared and the few remaining ones, such as Hongkou Creek, are often disconnected from urban life by floodwalls (photo by author, 2018).

FIG. 6 The Cool Docks as depicted was shortly after its redevelopment in 2010 disconnected from the city by new floodwalls and parking, resulting in the closure of many restaurants in the old warehouses. Since 2018 this area is under redevelopment again (photo by author, 2018).

makers are increasingly rediscovering watersides as an added value. For example, along the new highway that connects Chongming Island and Nantong to Shanghai, huge real estate sales advertisements promise living close to nature and along watersides. Also in many shopping malls and metro stations in downtown Shanghai, real estate companies are adverting investment in real estate in the rural periphery around Shanghai aggressively, using flyers, model houses and virtual reality presentations. These locations are advertised as relatively cheap, not too far if you own a car, and away from urban congestion.

Regeneration of urban waterfronts in the Central City of Shanghai

Following the development plan "Striving for a world-class waterfront area"[25] the Huangpu River and Suzhou Creek will have 120 kilometer of continuous accessible riverside zones in 2020. The expectation is to bring a large-scale continuous greenery and public space in the city (a "people-centered focus on creating a shared space"), to preserve some historical (industrial) buildings, and "to extend the spirit of the Expo by building a global city of excellence to be able to compete with waterfronts such as in New York and Paris."[26] Since end of last year more than 45-kilometer of renewed riverfronts are now open for pedestrians and cyclists, with a very positive impact on the quality of life for the city as a whole.

During the last decade the local authorities have made a very serious effort to clean up the riverbanks to improve Shanghai's image as a city along the river. It started with the 2010 World Expo, which played a key role in redefining Shanghai's relationship with its waterfronts. The promise (*expectation*) was to reconnect the city with the water starting with the Expo. Wharfs and accompanying industries have been relocated, to decrease pollution in down town areas and to create space for industrial growth elsewhere. The planning authorities located Expo 2010 in a relatively central place, deliberately aiming to further densify the city instead of contributing to the suburban sprawl. However, today, more than eight years after the event, the more than 5 square-kilometer large Expo site is yet to realize its oft-quoted slogan: "Better City, Better Life." Only a small part has been redeveloped. The central park on the river's south bank especially built for the Expo is now partly walled off and poorly maintained, attracting only a handful of daily visitors. Some exceptions are buildings owned by the Propaganda Bureau[27] such as the Power Station of Art, a former power

25. *Striving for a world-class waterfront area*, public version.

26. *Shanghai Master Plan 2017 – 2035*, public version.

27. Yawei Chen, Qiyu Tu, and Ning Su, "Shanghai's Huangpu Riverbank redevelopment beyond World Expo 2010," *AESOP Annual Conference* (2014). Lingyue Li, *Urban Planning and Mega-Event Projects: Lessons from Expo 2010, Shanghai* (2018). Accessed May 17, 2019 at https://www.intechopen.com/books/an-overview-of-urban-and-regional-planning/urban-planning-and-mega-event-projects-lessons-from-expo-2010-shanghai.

plant that became home to one of China's most avant-garde galleries. Also, the China Art Museum and the Mercedes Benz Arena still play host to popular events. Nevertheless, most other buildings have been demolished, and on the south bank of the river, a few dozen office towers have been constructed since three years ago, but these developments remain devoid of any sign of urban street life until today.

For municipal officials, mega events are a great excuse for revitalizing and rebranding cities.[28] But too often, the vitality of the host city is undermined by a lack of long-term strategy. The ambitious promise to give the Expo site back to the city seems to have failed for the time being, with only a few dozen sparsely used new office towers and one huge shopping mall on the site, instead of the urgently needed (affordable) housing. Meanwhile, on the fertile agricultural lands outside Shanghai, huge residential and commercial areas are sprawling.

However, with a series of design competitions between 2013 and 2018 more than 45-kilometer stretch of new waterfront along the Huangpu River has been redeveloped now as recreational and commercial spaces: South Bund, West Bund, North Bund, and East Bund **[Figs. 7-9]**. All of them refer with their name to the international image and ambition of the classic Bund. According to the before mentioned development plan "Striving for a world-class waterfront area" the Huangpu River must become "the public living room in the city" to create continuous open urban space in the dense urban fabric.

Shanghai rediscovered itself as a city "above" or along the water. This creates big spinoffs for the local economy. For example, the Yangpu District used to be a rundown part of town with many industries and working-class inhabitants but promotes its waterfront now on their website as a "World Class Waterfront Development Belt" aimed to attract foreign investors (including Fortune 500 companies) and the creation of 50,000 new jobs before 2020.[29] The square meter prices for real estate along the Yangpu Districts waterfront today are on some locations already up to more than $12,000 (2019). The project is nicknamed by McKinsey "from rustbelt to brainbelt." Also the redevelopment of Suzhou Creek, a branch of the Huangpu and until recently one of China's most polluted waters is an indicator of change in appreciation of watersides amongst developers and policymakers. Extremely luxurious new housing complexes (up to $16,000 per square meter, 2019 – visited by author) have sprung up along the banks of Suzhou Creek, overlooking the newly odor-free river.

To make the Huangpu waterfronts attractive, a multitude of cultural facil-

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28. Tim van Vrijaldenhoven, *Reaching Beyond the Gold* (Rotterdam: 010 Publishers, 2007).

29. Katrina Lv and Ivan Wang, "Yangpu waterfront: From rustbelt to brainbelt," *Global Infrastructure Initiative*, December 2017, accessed May 17, 2019 https://www.globalinfrastructureinitiative.com/article/yangpu-waterfront-rustbelt-brainbelt. Jian Yang, "Nod for world-class waterfront area," *Shanghai Daily*, August 24, 2018. https://www.shine.cn/news/metro/1808240997/.

FIG. 7 One of the regular positioned marinas with decorative new yachts for rent along the new waterfronts of the Huangpu River. The yachts are rarely used (photo by author, 2019).

FIG. 8 Today there is more than 45 kilometer of combined cycling and pedestrian routes along the Huangpu's new waterfront (photo by author, 2019).

FIG. 9 Multiple new cultural institutions opened their doors in reused industrial relics. Here Tank Space, a center for contemporary art installations and performances (photo by author, 2019).

ities have been implemented such as reused industrial buildings mainly aiming for creative industries, museums and exhibits [Fig. 9]. Multiple playgrounds for children, including skating parks and climbing walls, have been built along the riverbanks. To create a lively attractive "image," even a dozen marinas have been constructed on eye-catching locations. They are filled with luxurious yachts to suggest vibrant water tourism. However, the yachts are seldom used and most of them are not privately owned –it is very hard to get a permission to use a yacht on the busy Huangpu River since there is a lot of freight transport – but are available for rental by a development company to be used for special occasions like weddings or company activities. Another still-unaddressed issue is the fact that most of the above mentioned waterfront projects have so far taken the form of offices, hotels and high-end apartment buildings, and most of them remain empty since they are used as investment objects only. Most of the ground floors – which are usually used for public services, shops and restaurants – are still empty. According to some respondents, the Feng Shui – a traditional Chinese philosophy that was been illegal during the heydays of communism, but is in a process of revival nowadays. Feng Shui aims to bring harmony between people and their surroundings – is not good here, especially along the North Bund.

Except for the West Bund part most of the new constructed boardwalks and cycling routes are not used intensively yet. Although they are visually very attractive large parts are often relatively inaccessible for daily life use, according to field observations and a number of interviews with residents, being far away from residential areas and difficult to reach by public transport [Fig. 10-12]. It is often hard to find a place to sit and enjoy the view on the water (except for the West Bund and East Bund). Dozens of cameras and security guards stop people from taking spontaneous actions, so as to prevent the local authorities from being held liable if someone falls into the water. While the dangers of swimming are clear, even fishing is prohibited in most places – but some people neglect this limitation and still go fishing. Additionally the construction of multiple barriers against a rising water level means that in many places the water is not visible. The Cool Docks for example, a promising redeveloped area along the South Bund that opened in 2010 is one example of an area where glitzy restaurants, hotels, and penthouses remain relatively empty and unfilled by virtue of their remoteness for pedestrians [Fig. 6]. Currently this Cool Docks area is already undergoing an intensive redevelopment, less than ten years after its completion.

The expectation for the Huangpu Waterfront was that it would become an international first-class public "sitting room as well as an"ecological corridor" according to the master plan. These very ambitious promises have already been partly achieved today. More than 45 kilometers of waterfront is realized almost continuously, for pedestrians and cyclist (less than 3 years ago most of these areas were inaccessible). Especially large tracks

FIG. 10 Figure shows a partly privatized part used for docking small cruise ships, but seldom used.

FIG. 11 Figure shows a partly privatized part used for docking luxurious yachts for rent, but seldom used.

FIG. 12 Figure shows a sign with the text "If you love me, don't touch me!" to prevent people sitting on the grass lawns (photo by author, 2019).

of the newly constructed West Bund became a very dynamic and attractive public space and also some parts of the North Bund and East Bund, although most of the waterfront still lacks users. The promised cultural facilities and historical linkages with the industrial past are established in multiple museums and galleries in reused and renovated warehouses, and the integration in the new landscape of cranes, rail tracks, anchor piles, and other artifacts. The low carbon promises are achieved through the replacement of industries and abundant green space for recreation, although the ecological connection is not optimal since there is no continuity for animals and plants in their natural settings. The new green spaces are mainly decorative grasslands and trees. Although parts of the embankments have a green character the waterfronts are still dominated by long stretches of concrete former industrial embankments and this seems unlikely to change soon. The promise to attract investment is also lacking, most new real estate projects (mainly offices and commercial spaces) are missing tenants. Tourism is limited to the Old Bund area and the new creative centers at the West Bund, which is less than 5% of the

total new waterfront space.

The short timespan and high-quality outcomes can be seen as a successful result of socio-technical experimentation, although according to many interviewees the usability is not optimal yet. However, more and more places show spontaneous adjustments and creative use of the waterfront spaces such as picnicking and various sport activities on places that were not meant for this. Meanwhile there also is an improvement visible when we compare the first implemented parts and the later implemented parts, especially also the redevelopment of the Cool Docks area, which proves to a certain extend a sustainable innovation journey. Coming years more improvements are expected, especially when more and more people will start using the spaces.

The current transition of China's society and economy is perhaps reflected in the controlled transition of public spaces and urban settings along the watersides. All is aimed on economic prosperity and improving the public image and status. But the real potential of urban watersides seems unnoticed, and space for spontaneous usage (fishing, kiting, playing) is strictly limited. Many buildings along the waterside are still not turning their front to the water; they are oriented with their entrance and main façade towards the roadside. Shanghai's new relationship with the water seems slightly platonic here.

New role and usage of watersides in the peri-urban periphery of the Direct Controlled Municipality of Shanghai

The rural parts of the direct controlled municipality Shanghai (equal to a province) transformed drastically in last two decades. For this paper, two segments of the waterfront in the Yangtze estuary are examined, both bordering to Shanghai but administratively belonging to Nantong (Jiangsu Province). The first case is on Chongming Island; the second one is just north of it at the other side of the Yangtze River. In 1996 Chongming Island has been appointed as China's National "Green Eco-Island," a pilot project for sustainable development[30], in the latest master plan this status been upgraded to a National Ecological Demonstration Zone, it is expected to be an experiment to realize a more sustainable and balanced (but still urban-centered) society. Chongming and also large parts of Nantong are still rural in appearance and land use, although this is changing due to new infrastructures. Shanghai's Chongming Island is located in the middle of the Yangtze River Estuary and is still far behind on the general development of Shanghai, due to its isolation. At the same time, it has high ecological values, especially for

30. Harry den Hartog, "Rural to Urban Transitions at Shanghai's Fringes, Explaining spatial transformation in the backyard of a Chinese mega-city with the help of the Layers-Approach," *International Review for Spatial Planning and Sustainable Development* 5, no. 4 (2017): 54-72.

migratory birds (at the east end of the island there are even two zones that are according to Unesco's Ramsar Convention on Wetlands of international importance). It also has rich agricultural resources, since this alluvial land is extremely fertile.

However, the urban development pressure is alarming, especially since the completion of a new tunnel-bridge in 2009. This resulted in rapid increasing real estate values and ambitious plans aiming to attract Shanghai's new middle class.[31] A range of new real estate projects and infrastructures does not appear to be eco-friendly at all. Chongming's new infrastructure and urban developments brings new opportunities and prosperity for the local population, but simultaneously it also forms a threat for traditional lifestyles, existing spatial qualities, the water system and ecological system. Also in terms of governance there are conflicting interests. Although the national government desires the island to become a national sample for sustainable development, the local government seems especially keen on stimulation of new real estate developments, such as high-end housing and business parks, as an opportunity to gain more income and to catch up economically. The current ambition is to connect the island with Shanghai's metro system before 2020, although this seems not feasible. Simultaneously the Shanghai Direct Controlled Municipality considers the island as a backdrop for day-tourism as a release for the urban congestion. Recently a series of senior housing complexes are under construction, aiming fore wealthy elderly. However, they do not come, and the apartments remain empty and are used for investment only.[32]

A clear illustration of what could go wrong if there is no strict supervision is the township of Haiyong, at the northern tip of the island. As a result of the natural sedimentation process over the years, this township belongs to the Jiangsu province and drops outside the National "Green Eco-Island" policy. This part is under the jurisdiction of the City of Nantong, north of the river, who saw this as an opportunity to develop a new town for 100,000 inhabitants, named "Long Island" **[Figs. 13-25]**. This water sport and leisure-oriented project is under construction on top of reclaimed wetlands and tidal flatlands since 2013. Most of the already erected 40-floor-skyscrapers and villas are acquired by individual buyers from Shanghai, who use this location as an investment opportunity, and certainly not for living, resulting in a dramatic situation of empty real estate on top of former wetlands.[33] This is socio-economically, culturally, and especially ecologically a grand failure. Last year national officials were revising this case and ordered a temporary "halt" on construction. After considering the possible demolition of the high-rises the decision was made to still continue constriction but limit the building height to 6 floors.

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31. ibid.
32. ibid.
33. ibid.

FIG. 13 Fragment of the Long Island development project (image from http://www.fang.com).

FIG. 14 Empty real estate for investment on Long Island. According to real estate agents and spoken residents almost 100% of the units are owned by Shanghainese (photo by author, 2019).

FIG. 15 Empty real estate for investment on Long Island. According to real estate agents and spoken residents almost 100% of the units are owned by Shanghainese (photo by author, 2019).

FIG. 16 Scale model of New Venice in Nantong (photo by author, 2018).

FIG. 17 Billboard of New Venice in Nantong (photo by author, 2018).

FIG. 18 Privatized new beach in New Venice, Nantong (drone photo by author, 2018).

Another, even more extreme situation can be found at the Nantong side of the estuary, just north of Chongming [Figs. 15-18]. After opening of the Chongqi Highway Bridge in 2011, the travel time from Qidong to Shanghai dropped from 4 to 1 hour. This fact, in combination with the strategic location at the northern side of the mouth of the Yangtze River, led the Nantong authorities to prepare this location for investment, with the hope this could give a positive spin-off to the economically rather poor surrounding areas.

The local economy used to be mainly based on agriculture (aquaculture) and a few outdated shipyards with related industries. To diversify the economy and attract higher income groups, the decision was made to focus on water related tourism and housing. To brand this new town and attract investors the name "New Venice" was chosen. A water-rich plan was made for the first phase of the development, with a five star hotel, conference venue, commerce, and housing for 100,000 new citizens on top of reclaimed land, formerly tidal flats and wetlands. A dam was made in 2011 to improve the water quality, especially its color, near the coastline: the sediments in the water will sink to the bottom and increase the transparency of the water a bit. In 2012 the first apartments completed and quickly sold to mostly Shanghainese individual investors, according to interviewed real estate agents. Hence this site became an investment vehicle. Today this project remains still empty, five year after its completion, similar to many so-called Chinese ghost towns.[34] The beach – one of the only two beaches in a 60-kilometer radius from the center of Shanghai – is walled of and only accessible after payment of sixty Chinese Yen, which is more than a day salary for local people in neighboring villages. Due to the wall also the visual relation towards the water is absent. Only hotel guests on higher floors can see the water. Public transport is missing and the available shops and even the hotel and conference venue are sparsely used. Though the local authorities and developers made a lot of money by this development also this case can obviously be named a mismatch in socio-economic terms: (1) almost no new jobs are created for locals; (2) the project is a waste of space and resources; and (3) it is an ecological tragedy since former wetlands are gone. This project showcases another clash between promises and reality, and moreover a mismatch with what is really needed.

Discussion

Periods of rapid economic growth and urbanization frequently go hand in hand with innovation. Contemporary Chinese cities fulfill all the conditions for experimenting with architectural typologies, building technologies, and planning concepts: economic prosperity, a vast and relatively cheap labor

34. Wade Shepard, *Ghost Cities of China* (London: Zed Books, 2015).

force, a growing educated middle class, and a financially strong government that legally owns all the land. Experimenting means to try something new, evaluating the results, and repeating the experiment if necessary. While outcomes may vary, the spirit of experimentation is something to be celebrated. China is home to its fair share of failed architectural experiments, but it has also seen many promising results, especially regarding new urban transportation systems.

Although the process of collecting inspiration and innovative ideas through "shopping" under international design competition entrees[35] appears to be highly experimental, it remains sometimes unclear if the decision makers learn during their "innovation journey." Nevertheless multiple adjustments during the process of design and implementation suggest that there is at least an intention to learn and discuss. The Cool Docks area for example has been used for tests with various typologies of integrating a flood barrier into the public space, and also there was a pilot to activate this remote area by implementing an artificial beach (between 2010 and 2017). Currently a new boardwalk is under construction to improve visibility of the water. In the case of Chongming we see that new versions of the general master plan include updates and improvements to steer the eco-island development into a more desirable direction.[36] Especially also the building halt of the Long Island development indicates willingness for adjustments and radical changes (even complete deconstruction of the high-rises was for a moment a serious option).

Testing out different ways of making better cities are supposed to be a key to this strategy of improving the quality of live and stimulating the economy. The scale and speed of China's transformation in the last two decades could not have happened without embracing innovation and the energy for change. Unlike relatively small-scale urban labs[37] in the Western context, the Chinese approach has been much more pronounced, albeit with often-severe collateral damage to the environment. An increasing uncertainty in terms of climate change and also the national economy call for a paradigm shift in architecture and urban planning. Policymakers, developers, architects and urban designers across the country should articulate a more coherent vision for the readjustments that will have to be made to our living environments sooner or later. Hopefully more thoughtful experiments will follow and result in trendsetting inspiring samples that transform China into a world-leading urban lab for sustainable building and urban innovation.

Though lot has been changed in a positive way the new relation between city and water is still a platonic one. That is really a pity. Many samples

35. Den Hartog, *Shanghai New Towns*.

36. Ma, "Assessing the implementation."

37. James Evans, Andrew Karvonen, and Rob Raven, *The Experimental City* (London and New York: Routledge, 2016).

worldwide – Barcelona, London, New York, and Rotterdam, etc.[38] – prove that a wider range of design solutions is possible to bring people closer to the water safely. However, with kilometers of waterfronts still waiting to be (re-)developed in the area of Shanghai, there will be new opportunities for real "place making."

Conclusions

This paper uses basic insights from the academic field of Sustainability Transitions, especially about expectations, socio-technical experimentation and sustainable innovation journeys. Paragraphs 4.2 and 4.3 describe how drastic spatial and economic measures do not automatically result into realization of expectations. Although the general quality and appearance of the implemented projects is very high, these attributes are not accompanied by the expected improvement of the quality of daily life. The cases promise to go beyond conventional projects and have to a certain extent an experimental character, but in the end after implementation they are not that much different and the promises are mainly used for branding[39] and investment.[40] The new watersides have a high decorative character, yet fail to fully utilize all the potentials offered by their prime locations along the water. It seems that "numbers," "size" and especially "image" matters for local developers and authorities. However, the adjustments in the described cases also prove that lessons are learned, though usually after damage is done. China is rapidly shifting from a production economy towards a consumption society. Its unique situation of large-scale and extremely rapid transformation is unavoidably accompanied by trial and error.

Based on the findings of this paper some recommendations can be made, aimed to make the discrepancies between expectations and needs for daily life reality smaller. Although the quantity and quality of the implemented new public spaces are highly attractive visually, there is a discrepancy between form and needed functions: accessibility, space for spontaneity [Figs. 19-21], proximity of (affordable) housing, and more places to rest (especially in the North Bund area). *By involving more stakeholders and end-users in the planning and design process, and by implementing "needs assessment" in advance, more usable, attractive and vibrant spaces can be realized* (recommendation 1).

In the first part of this paper, an experiment is defined as an "inclusive, practice-based and challenge-led initiative, which is designed to promote

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38. Han Meyer, *City and Port; Urban Planning as a Cultural Venture in London, Barcelona, New York, and Rotterdam: Changing Relations Between Public Space and Large-Scale Infrastructure* (Utrecht: International Books, 1999).

39. Martin de Jong et al., "Explaining city branding practices in China's three mega-city regions: The role of ecological modernization," *Journal of Cleaner Production*, 179 (2018): 527–543.

40. Den Hartog, "Rural to Urban Transitions."

FIG. 19 Spontaneous use of watersides in new towns near Shanghai (photo by author, 2010 - 2019).

FIG. 20 Spontaneous use of watersides in new towns near Shanghai (photo by author, 2010 - 2019).

FIG. 21 Spontaneous use of watersides in new towns near Shanghai (photo by author, 2010 - 2019).

system innovation through social learning under conditions of uncertainty and ambiguity."[41] The cases that are analyzed in this paper teach us that China's extreme development speed in combination with the present political vigor (financial strong, quick changes and decisions are possible, all landownership belongs to the government) also requires social learning and connection with all stakeholders and their needs to be able to realize a more sustainable innovation journey. The three cases described show mismatches and partial failures in their promises (expectations) and what they delivered in terms of socially, economically and environmentally sustainable development. Another recommendation to planners and policymakers is *to foster a more "experimental mindset" without fixed end goals, and to look beyond their own projects and seeking to learn from other practices. Moreover it is essential to be aware of societal and environmental challenges and uncertainties* (recommendation 2).

Even more needed is a transition in worldviews: the earth is not an empty sheet, a tabula rasa, but a palimpsest of multiple layers in which multiple factors come together. By searching a better connection with the existing landscape, ecological and sociocultural values a stronger identity and sense of place could be realized (recommendation 3). This third recommendation is practiced in the case of the Huangpu Waterfronts, but is absent in both rural cases. The supervision in the central city is obviously stronger than on Chongming.

The relation of urban settlements with the water used to be very direct in this region. This shifted during the period of industrialization since late 19th century. Nowadays there is a new shift taking place, geared toward service industries, recreation, and tourism. To be able to facilitate this shift and steer it in the right direction, more awareness of the place-making possibilities of watersides is needed, in line with already existing local values (historical, ecological, and socio-economical). This will certainly result in a less platonic relation: a more dynamic, functional and pleasant urban life, as a reinterpretation of the classic Chinese painting *Qingming Shanghetu*.

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41. Sengers, "Cycling the City."

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