

Mixed-Use Concert Hall – Insights from the Elbphilharmonie

by

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Master of Economics, 2011

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Submitted to the Program in Real Estate Development in Conjunction with the Center for Real Estate in Partial Fulfillment of the Requirements for the Degree of Master of Science in Real Estate Development

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Center for Real Estate  
July 27, 2018

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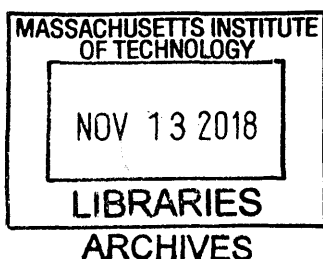
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## **ABSTRACT**

Taking a qualitative case study approach, this thesis examines the approach in combining a concert hall with other real estate product types in the urban redevelopment context, and demonstrates that successful mixed-use development with concert hall or other cultural facilities could be a viable strategy to add both civic and commercial value for new town development. Concert halls have been used as catalysts for place making and experience creation for wide community, with a new interest in playing a key role in urban regeneration. Combining cultural facilities in mixed-use development is expected to create a win-win situation that can benefit both the cultural institutions and the developers, and both the cities and the citizens.

This thesis analyzes the Elbphilharmonie in Hamburg, Germany to examine the real estate rationale for the mix of cultural and commercial uses in civic and commercial value creation, and explores the transferability of the HafenCity model defined based on the Elbphilharmonie case to China. This thesis then studies the concert hall market in China, and summarizes the Hexi New Town model and the Macau model from cases in Nanjing and Macau. A comparison of the three mixed-use cultural project models is made, and the thesis concludes with alternative points of view that worth considering and recommendations for the application of the Hexi New Town model in China.

**Thesis Supervisor: Kairos Shen**

**Title: Lecturer, Center for Real Estate**

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"Music is liquid architecture; Architecture is frozen music."

*Johann Wolfgang von Goethe*

## Chapter 1: Introduction

Since the twenty-first century, concert halls have been used as catalysts for place making and experience creation for wide community, with a new interest in playing a key role in urban regeneration. Such considerations have been incorporated into commercial development, public participation, cultural activities, technical advances, and the freedom of design (Hammond, 2006). The form and function of concert halls are turning to mixed use, which is challenging the conventional wisdom for both concert halls and commercial mixed-use projects. In this thesis, the author will examine the approach in combining a concert hall with other real estate product types in the urban redevelopment context, and to demonstrate that successful mixed-use development with concert hall or other cultural facilities could be a viable strategy to add both civic and commercial value for new town development.

The history of concert halls can be traced back to the eighteenth century after professional and established symphony orchestras were organized, such as the Gewandhaus in Leipzig (Figure 1), the Musikverein in Vienna (Figure 2), and the Royal Concertgebouw in Amsterdam (Figure 3). Traditional architectural design of windows, columns, arches, et cetera was utilized to “soften the impact of the bulky auditorium;” these large and unique buildings, with lobby facing the street and auditorium hiding behind, follow the building lines to “integrate them into their urban surroundings” (Rybczynski, 2016).



Figure 1: The Gewandhaus in Leipzig. Retrieved from [https://fr.wikipedia.org/wiki/Fichier:Gewandhaus\\_Leipzig.jpg](https://fr.wikipedia.org/wiki/Fichier:Gewandhaus_Leipzig.jpg).



Figure 2: The Musikverein in Vienna. Retrieved from <https://en.wikipedia.org/wiki/Musikverein>.



Figure 3: The Royal Concertgebouw in Amsterdam. Retrieved from <https://en.wikipedia.org/wiki/Concertgebouw>.

Alternatively, the concert halls may be enclosed in some other real estate product types, as shown in the Auditorium Building in Chicago (Figure 4) that was “buried behind a hotel and an office building,” and the Steinway Hall on 57<sup>th</sup> Street<sup>1</sup> in New York (Figure 5) that consisted of showrooms with large windows on the ground floor, a hall on the second floor, and offices on the upper floors (Rybczynski, 2016).

In contrast to the low-profile and fitting-in approach, contemporary concert halls start to distinguish themselves from conventional styles by standing out in open spaces. For instance, the Royal Festival Hall in London (Figure 6) and the Berliner Philharmoniker in Berlin (Figure 7) are independent buildings “with the desire to have

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<sup>1</sup> The Steinway Hall was located on 57th Street during 1925 to 2014 and moved to a new venue on 1133 Avenue in 2015. The historical building on 57th Street has been sold for renovation to high-rise luxury condominiums, according to NPR <https://www.npr.org/sections/deceptivecadence/2014/12/27/372730314/steinway-bids-farewell-to-its-historic-hall>.

form follow function” to emphasize the auditorium from the outside (Rybczynski, 2016). Entering into the 2000s, improved engineering and technology and the increasing importance of cultural element in urban planning are allowing or even pushing modern concert halls to be bolder and more distinct. It may be the case that a performing-arts project designed by a star architect is expected to be a special visual icon of the area, the city, or even the country, such as the Sydney Opera House in Australia (Figure 8) designed by Jørn Utzon. Apart from being venues simply for performances, concert halls are also required to serve various complicated functions in identity, economy, and culture; this may bring about the “disassociation of form from function” as the practical and basic function of a concert hall is eclipsed by the “architectural expression” as “virtual city,” which is occupied by not only the auditorium but also foyers, restaurants, shops, education centers, parking spaces, et cetera (Heathcote, 2016).



Figure 4: The Auditorium Building. Retrieved from [https://en.wikipedia.org/wiki/Auditorium\\_Building\\_\(Chicago\)](https://en.wikipedia.org/wiki/Auditorium_Building_(Chicago)).



Figure 5: The Steinway Hall on 57th Street in New York. Retrieved from [https://en.wikipedia.org/wiki/Steinway\\_Hall](https://en.wikipedia.org/wiki/Steinway_Hall).





Figure 6: The Royal Festival Hall in London. Retrieved from [https://en.wikipedia.org/wiki/Royal\\_Festival\\_Hall](https://en.wikipedia.org/wiki/Royal_Festival_Hall).



Figure 7: The Berliner Philharmoniker. Retrieved from [https://en.wikipedia.org/wiki/Berlin\\_Philharmonic](https://en.wikipedia.org/wiki/Berlin_Philharmonic).



Figure 8: The Sydney Opera House in Australia. Retrieved from [https://en.wikipedia.org/wiki/Sydney\\_Opera\\_House](https://en.wikipedia.org/wiki/Sydney_Opera_House).

Two most recent projects of the mixed-use and multi-functional concert halls are the Philharmonie de Paris – opened in 2015 – located on the northeastern edge of Paris (Figure 9) and the Elbphilharmonie – opened in 2017 – located in HafenCity of Hamburg (Figure 10). Besides the main concert hall, the 93,000-square-meter Philharmonie de Paris, designed by Jean Nouvel, offers rehearsal rooms, workshop rooms, an exhibition room, a conference room, and restaurants, café shops, and bars. More than “just one more concert hall,” it aims to be the landmark in the east of Paris

undergoing major changes and to offer diversified activities for the general public (Philharmonie de Paris, 2018).



Figure 9: The Philharmonie de Paris. Retrieved from [https://nl.wikipedia.org/wiki/Philharmonie\\_de\\_Paris](https://nl.wikipedia.org/wiki/Philharmonie_de_Paris).



Figure 10: The Elbphilharmonie in Hamburg. Retrieved from <https://en.wikipedia.org/wiki/Elbphilharmonie>.

Herzog & de Meuron, the designer of the Elbphilharmonie, more ambitiously transformed a brick warehouse in a redevelopment area into a 125,512-square-meter urban complex that houses a main concert hall, a recital hall, a plaza, a hotel, luxury residential apartments, multistory car park, and eateries and conference facilities. According to the designer, the Elbphilharmonie is “set to become a new center of social, cultural and daily life for the people of Hamburg and for visitors from all over the world” (Herzog & de Meuron, 2017).

Both projects also stir up controversy due to their serious cost overruns and schedule delays. Jean Nouvel refused to attend the inaugural concert of the Philharmonie de Paris and asserted that the rush completion of the project after Euro 390 million expense and seven years’ dramatic construction with disputes and delays did not fulfill the original architectural and technical requirements. The

Elbphilharmonie was completed seven years late and four times over budget, with final bill up to Euro 798 million. A frequent issue is that the problems haunting these two projects are not new; they have also happened to many other concert halls such as the Sydney Opera House and the Walt Disney Concert Hall in Los Angeles (Figure 11) designed by Frank Gehry.



Figure 11: The Walt Disney Concert Hall. Retrieved from [https://en.wikipedia.org/wiki/Walt\\_Disney\\_Concert\\_Hall](https://en.wikipedia.org/wiki/Walt_Disney_Concert_Hall).

This raises the question that as it is often expensive and difficult to build concert halls, could the recent mixed-use approach be considered a possible resolution of the financial pressure, especially that the concert halls are mostly public projects and that the cities are turning to mixed-use projects for urban regeneration? If the answer is yes, could the mixed-use concert halls be transferred to other geographies such as China, which is seeing increasing affection for performing arts like Western classical music and undergoing multiple transformations during new town development as well?

This thesis will perform a series of qualitative analysis of metrics used for the evaluation of mixed-use concert halls to explore the potential challenges and benefits in real estate terms. The author will start with a case study of the Elbphilharmonie in Hafencity of Hamburg to understand the planning, design, construction, and operation of the project, with the goal of analyzing how values are created and what lessons could be learned from the mixed-use model. Then the author would like to look into the transferability of the mixed-use concert hall model to China and to suggest some key parameters that worth considering when building a mixed-use

concert hall as an organic part of urban redevelopment. The thesis will conclude with a comparison of existing mixed-use concert hall models and some recommendations for their successful application in China.



## Chapter 2: Literature Review

In terms of analyzing the concert halls, let us start with the question “why arts?” Arts can provide private benefits to individuals, and the intrinsic personal benefits such as pleasure and emotional stimulation have spillover effects on the society by creation of social bonds and the expression of communal meaning; a range of benefits to the public society can help to improve economic growth and social capital (McCarthy, Ondaatje, Zakaras, & Brooks, 2004). From the urban design perspective, arts-based innovative ways have been advocated and used as placemaking strategies to transform and improve communities economically, culturally and socially. Guetzkow provides a detailed review of literature on arts impact studies and discusses three claims: the arts strengthen social capital, benefit the economy, and are good for individuals; Guetzkow explores the causal pathways via three aspects: direct engagement, participation as an audience, and the presence of artists and arts organizations/institutions in a community (Guetzkow, 2002). A 2017 report by PolicyLink studies 22 cases across the US in eight subsectors of transportation, housing, infrastructure and community investment, economic development and financial security, health and food, youth and education, open space and recreation, and technology and information access; the report states that integral involvement by arts and culture can enhance equitable development and make delivery of opportunities for residents more effective and resilient (Rose, Daniel, & Liu, 2017).

On the other hand, arts may fail in producing or promoting momentum in economy or social capital. Many forms of arts (such as theaters, opera houses, concert halls, et cetera) are seen as public goods, and Puu points out that market solutions may not always function well in the case of arts due to long production periods with uncertainty in potential monetary benefits; given the speculative nature of the investments, subsidy thus plays a crucial role in the financing process (Puu, 2006). Arts

and artists may also be the factors that bring about gentrification and displacement of low-income residents. There are three models of gentrification: first, individual artists act as a crucial agent in initiating gentrification processes in old working-class neighborhoods; second, following the artists, capital comes in at a later stage, commodifies cultural assets, and displaces original artists; third, public policy uses public arts and cultural facilities to promote regeneration and positive gentrification (Cameron & Coaffee, 2005). Statistical analysis on NAICS, Census, and American Community Survey data shows that commercial arts are most strongly associated with gentrification in rapidly changing areas while fine arts are related to stable, slow growth neighborhoods (Grodach, Foster, & Murdoch, 2014). If the arts are only for the few due to high entry barriers caused by pricing or programming, the presence of arts might be an obstacle to lasting diversity.

This thesis will focus on concert halls. Nowadays, concert halls play at least dual roles as both venues for performances by symphony orchestras and symbols of arts and culture. An essential measure for the quality of concert halls is acoustics, and Beranek argues that the best halls acoustically are shoebox-shaped Musikverein in Vienna, the Symphony Hall in Boston (Figure 12), and the Royal Concertgebouw in Amsterdam, all of which were built more than one hundred years' ago; since the vineyard-shaped Berliner Philharmoniker (Figure 13), greater emphasis has been placed on the architectural attractiveness and novelty instead of acoustics (Beranek L., 2016).

The Symphony Hall in Boston is "rectangular in shape with a high, horizontal coffered ceiling and two wraparound balconies;" it can seat around 2,600 audience, and musicians and conductors praise the hall for its great resonance to an orchestra, the balanced tone, and excellent ensemble (Beranek L., 2004). The success of the Symphony Hall in Boston is due to the shoebox shape, the proper reverberation time,

choices of materials, the intimacy brought by limited width and length, sound diffusion, and the stage house that blends the sound well and projects the music uniformly throughout the audience (Beranek L. , 2004).

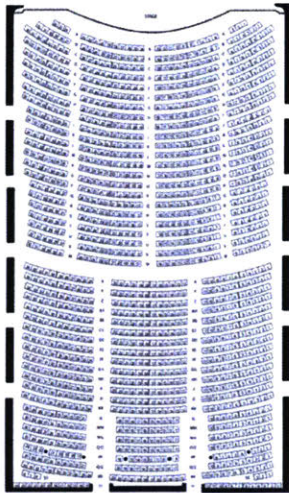


Figure 12: Floor plan of Boston Symphony Hall. Retrieved from [https://www.bso.org/media/12655840/bso\\_sh\\_seating\\_chart\\_12.23.16.pdf](https://www.bso.org/media/12655840/bso_sh_seating_chart_12.23.16.pdf).

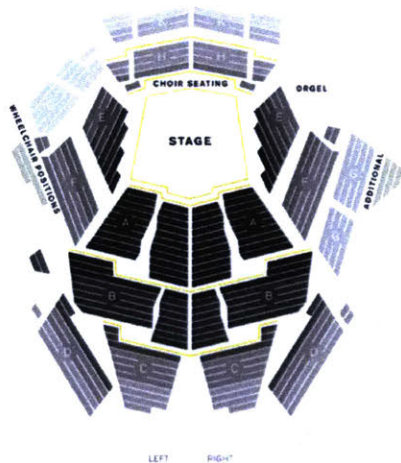


Figure 13: Floor plan of Berliner Philharmoniker. Retrieved from <https://www.berliner-philharmoniker.de/en/concerts/floor-plan-price-list-20172018-philharmonie/>.

While the shoebox-style concert halls put the players at one end and the audience at the other, the Berliner Philharmoniker designed by Hans Scharoun is a pioneer of "music in the center," aiming to encourage more free and intense communication between players and listeners. The Berliner Philharmoniker seats

around 2,200 audience in total, among whom 250 are seated directly behind the stage and 300 on each side; the seats are divided into blocks and audience are much closer to the stage: no farther than 30 meters comparing with the 40 meters maximum in the Boston Symphony Hall. The Berliner Philharmoniker is the first of the vineyard style, which provides beautiful sound to the audience seating in the front rows, but the major disadvantage is that people “seated to the rear, or near rear, of the stage hear a different sound;” however, “fortunately, the visual impression of viewing the conductor face-on favorably shapes one’s judgment of the acoustics” (Beranek L. , 2004).

Today, purpose-built concert halls are less common mainly due to complicated design and expensive construction and operation costs, and the stakeholders’ high expectations of new concert halls to be icons (Holden, 2016). Whether the spaces are new or renovated, and how the floors, walls, ceilings, shells, and finishes are designed can all largely influence the final architecture, acoustics, and visitors’ experience. Halls that are tailor-made for symphony concerts may have superiority in acoustics and performance environment for symphony orchestras, who can rehearse on stage freely without sharing the venues with other performers. However, many halls are under pressure to increase revenue via other channels such as dining, parking, retail, and leasing, as this kind of single-purpose exclusivity “comes at significant capital and operational cost” (Holden, 2016).

To mitigate the risk of project delays and cost overruns, the stakeholders need to be specific about the purpose of construction, develop a solid business case, and perform a detailed feasibility study (Davis, 2017). For instance, commercial halls might stress the importance of large capacity, visual effect, and facilities, while community halls might pay more attention to the diversity of programs and communication between audience and performers (Hardy, 2006). Architects’ unwillingness to imitate

existing design is understandable, and clients may be happy to see their bold or pioneering concert halls praised by architectural magazines, but the high-quality acoustics should always be the key. A group of professionals, including architect, theater consultant, acoustical consultant, structural engineer, mechanical engineer, graphic designer, lighting designer, management consultant, and cost consultant should be involved and work together in at least six phases: pre-schematic program study, schematic design, design development, construction documents, bid and negotiation, and construction administration (Hardy, 2006).

To sum up, it is no longer an initiating concept to include a concert hall in a mixed-use project. Mixed-use development is characterized by “three or more significant revenue-producing uses, significant functional and physical integration of project components including uninterrupted pedestrian connections, and development in conformance with a coherent plan” (Witherspoon, Abbett, & Gladstone, 1976). For a mixed-use concert hall, while the auditorium, stage, and backstage are the indispensable components, uses such as restaurants and parking may be naturally complementary to the concert function; retail, office, residential, and hotel may be incorporated for extra revenue generation; other related cultural or recreation elements such as museum and showroom may also support thorough use of land and space.

Concert halls are facing the challenges in funding and operations and would like more participation and support, while cities and developers are more motivated to include arts in mixed-use development to serve the needs of diversity, livability, and urbanity by communities. Combining cultural facilities in mixed-use development might be able to create a win-win situation that can benefit both the cultural institutions and the developers, and both the cities and the citizens.

### Chapter 3: Case Study: The Elbphilharmonie

This thesis chooses to examine the Elbphilharmonie in Hafencity, Hamburg, by Herzog & de Meuron. It is one of the latest mixed-use concert halls; reflecting on this project can provide a frame of reference and shed light on the approach of mixed use in the urban renewal context.

#### The Site, Hafencity, and Hamburg

Located at the western point of Hafencity, the Elbphilharmonie sits on the bank of the Elbe River and is surrounded by water on the north, west, and south sides. The site area is 10,540 square meters. It is adjacent to the Speicherstadt warehouse district and the Kontorhaus District (Figure 14), parts of once a thriving free port for world trade.

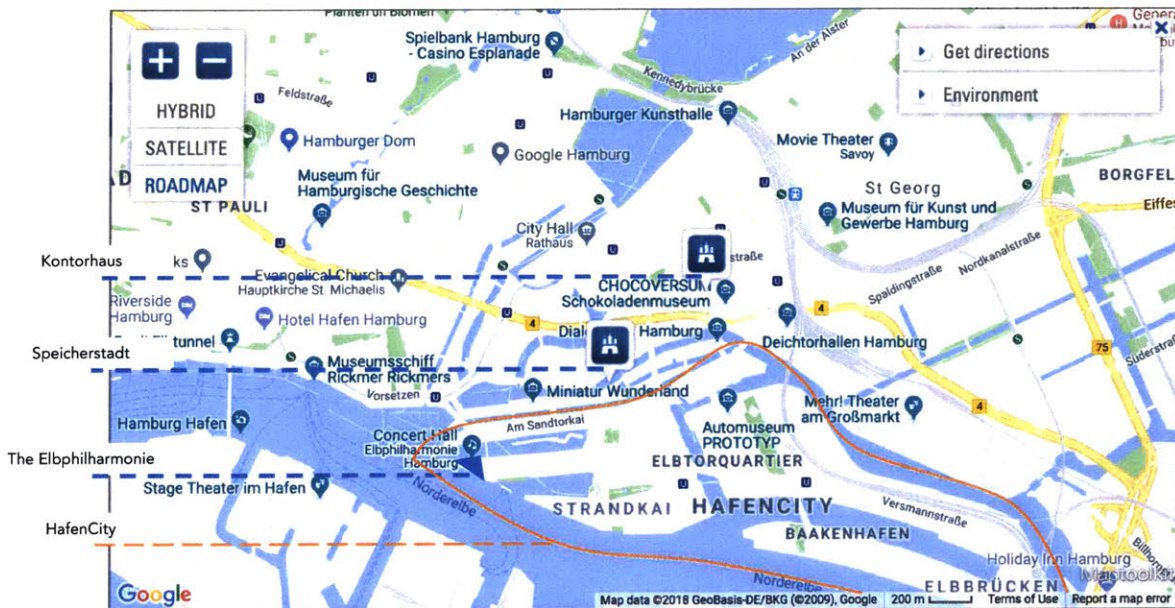


Figure 14: The site map. The map is retrieved from <https://www.hamburg-travel.com/attractions/historic-hamburg/unesco-world-heritage/>.

The districts have a relatively long history back to the late nineteenth and early twentieth centuries and were inscribed on the UNESCO World Heritage List in 2015. The 300,000-square-meter Speicherstadt warehouse district, built between 1885 and 1927 and redeveloped from 1949 to 1967, is "one of the largest coherent historic



ensembles of port warehouses in the world” (UNESCO, 2015). It consists of fifteen long warehouse blocks and six ancillary buildings, connected with narrow canals, streets, and bridges. The Kontorhaus district is more than 50,000 square meters and includes eight large office buildings constructed during the 1920s to the 1950s as extension to support the international trade businesses.

Speicherstadt and the Kontorhaus District are also distinguishable in their architectural styles. The warehouses in Speicherstadt (Figure 15) are largely unified in their structure with “long stretches of brick and clinker” and accesses from both land and water; their foundations are about 3.5 million oak piles up to 12 meters; the buildings follow the historicism (Hanover school of architecture) style, and the Neo-Gothic, red-brick façade is decorated with hatches, lucarnes and winch booms (Hamburg Marketing, 2018). The office buildings in the Kontorhaus District (Figure 16) are consistent in their Modernist style featured by red-brick blocks and flat roofs; the flexibility in their floorplans and division options is suitable for port-related small-scale usage, an essential complement to the growing international trade happened in the port city in the early twentieth century (Hamburg Marketing, 2018).

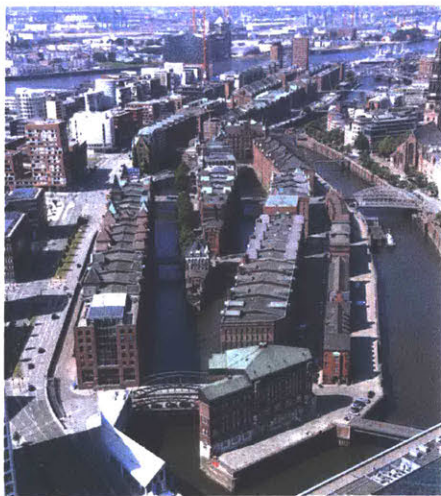


Figure 15: Speicherstadt. Retrieved from <https://en.wikipedia.org/wiki/Speicherstadt>.



Figure 16: The Kontorhaus District. Retrieved from <https://marketing.hamburg.de/fact-sheet-unesco-world-heritage-speicherstadt-und-kontorhausdistrict-with-chilehaus.html>.

An unusual aspect of the location of the Elbphilharmonie positioned in the edge of the historic districts is that it anchors the western section of HafenCity (Figure 17), “currently Europe’s largest inner-city development project” (HafenCity Hamburg GmbH, 2018). To revitalize the old free port area that was hit by European Union free trade, the Hamburg Senate approved a Masterplan in 2000 and further extended the plan’s geographical coverage in 2010 to redevelop the area in the south of the city center to a new downtown along the Elbe River with diversified uses including office, retail, education, hotel, residential, culture, leisure, public open spaces, et cetera (Figure 18). It is one of HafenCity’s design principles that “an urban horizontal and vertical mix of uses” is constantly reinforced (HafenCity Hamburg GmbH, 2018). With total site area of 1.57 square kilometers, HafenCity plans to construct 2.32 square kilometers gross floor area with around 7,000 residential units to attract more than 12,000 residents and with business venues to provide over 45,000 job opportunities (HafenCity Hamburg GmbH, 2018).

The architectural styles of Speicherstadt and the Kontorhaus District nearby help to set a tone for the general atmosphere of HafenCity, whose urban planning and architecture take into consideration the use of brick and clinker, the horizontal and vertical visual axes, and the water. The redevelopment of HafenCity is led by HafenCity Hamburg GmbH, and joint by the Hamburg Urban Development and



Housing Ministry and the public. Private builders go through competitions in urban design, open space, zoning plan, and architecture to take part in the development.

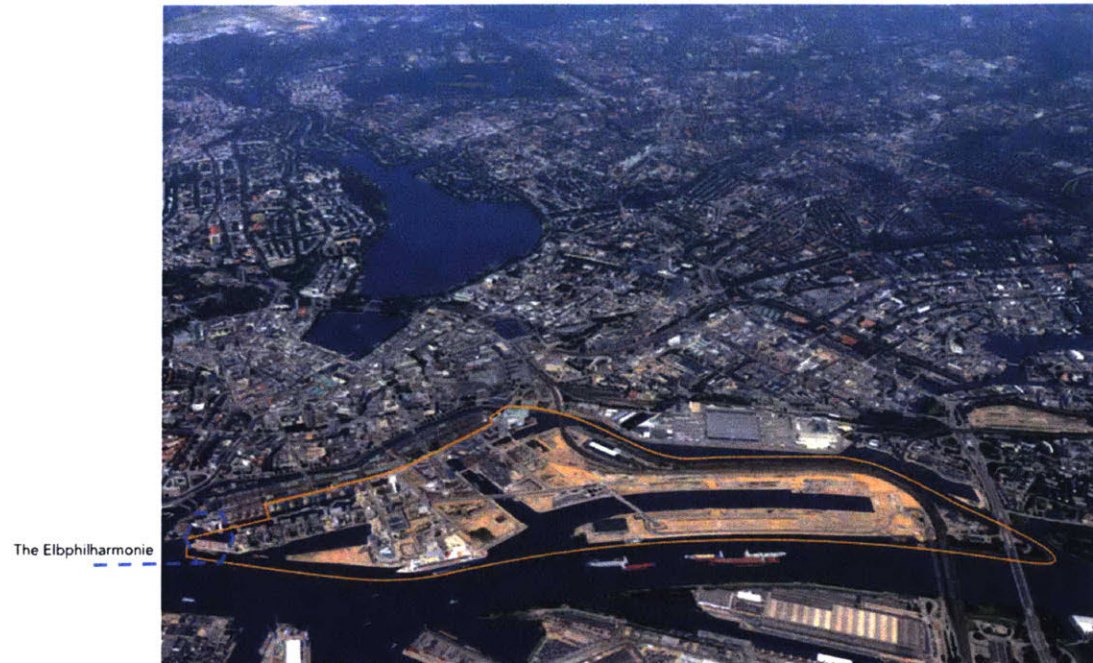


Figure 17: Hafencity Hamburg 2014 (Bruns-Berentelg, 2014).

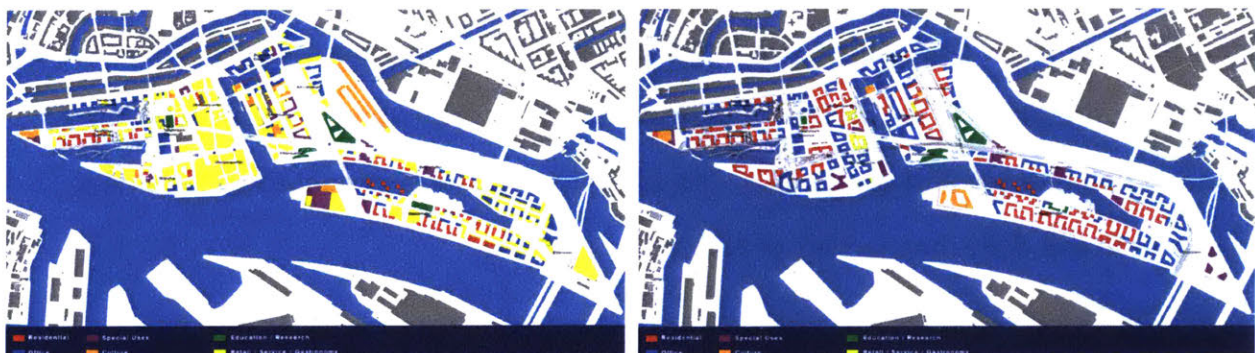


Figure 18: Differentiation of concepts and uses of ground floor (left) and second floor (right) (Bruns-Berentelg, 2017).

With a population of 1.8 million, Hamburg is the second largest city in Germany after Berlin. Its GDP is about Euro 110 billion and accounts for approximately 4% of the GDP of Germany; the GDP per capita is Euro 59,500, one of the highest in Europe (The European Commission, 2018). The city’s unemployment rate is around 4.1%, and its economy is mainly supported by maritime industry, aviation, automotive, bio-tech and media (Hamburg, 2018).

It is worth mentioning the rich music history in Hamburg. Citizens in Hamburg are proud that Johannes Brahms, a representative composer of the Romantic era, was born in the city; the Beatles, the famous English rock band, was formed in Liverpool and then grew up in Hamburg. However, when it came to concert halls, the Hamburg citizens were always a bit envious of other German cities such as Berlin. There has been a lack of a high-quality concert hall in the city for many years, as before the Elbphilharmonie, the Laeiszhalle was the only venue for symphony concerts. Opened in 1908, the Laeiszhalle has 2,023 seats in the grand hall, 639 seats in the recital hall, and 150 seats in the studio. With more than 100-year history, the Laeiszhalle is facing the challenge in limited capacity.

To summarize, the location of the Elbphilharmonie is well positioned at the meeting point between historic districts and a new downtown of a city well established with respect to history, culture, and economy. The Elbphilharmonie project is perceived not just as a place to go for concerts, but one that builds on people, the new town, and the city's culture and connection. The seed is the concert hall, but it is further layered by the development district and the surrounding context, which the concert hall merges and grows into. The Elbphilharmonie is expected to be a new element in the daily mechanism of HafenCity.

### **Features of the Elbphilharmonie**

**Historic preservation.** The Elbphilharmonie is constructed on an archeologically valuable building, the Kaispeicher A warehouse dating from 1966. The post-war-modernity-style warehouse was originally used to store cocoa, tea, and tobacco, but remained dormant since the 1990s due to the widespread of container ships. HafenCity first envisaged demolition of the warehouse into an office building for the media industry but gave up this plan after the media bubble burst. The project developer Alexander Gérard, who managed and co-invested the Hanseatic Trade

Center across the narrow canal just opposite to the Kaispeicher A, and his partner Jana Marko initiated the idea of a concert hall on the Kaispeicher A in 2001. The developer was aware of the historical background of the warehouse and might also would like to reconcile the new construction with the existing trade center offices. He commissioned the famous Swiss architects Jacques Herzog and Pierre de Meuron to design a concert hall on the site. The draft presented in 2003 put the concert hall above the brick structure of the Kaispeicher A and preserved its façade. This conservation echoed the architectural style of the surrounding area and celebrated the historic archaeological remains.

**Mix of uses.** The mix of uses illustrated in Figure 19 is another characteristic that makes the building unique. The 29-level building consists of a main concert hall, a recital hall, a studio, 520 units of parking, a five-star hotel of 244 rooms, 45 units of luxury apartments, restaurants, shops, and a plaza.



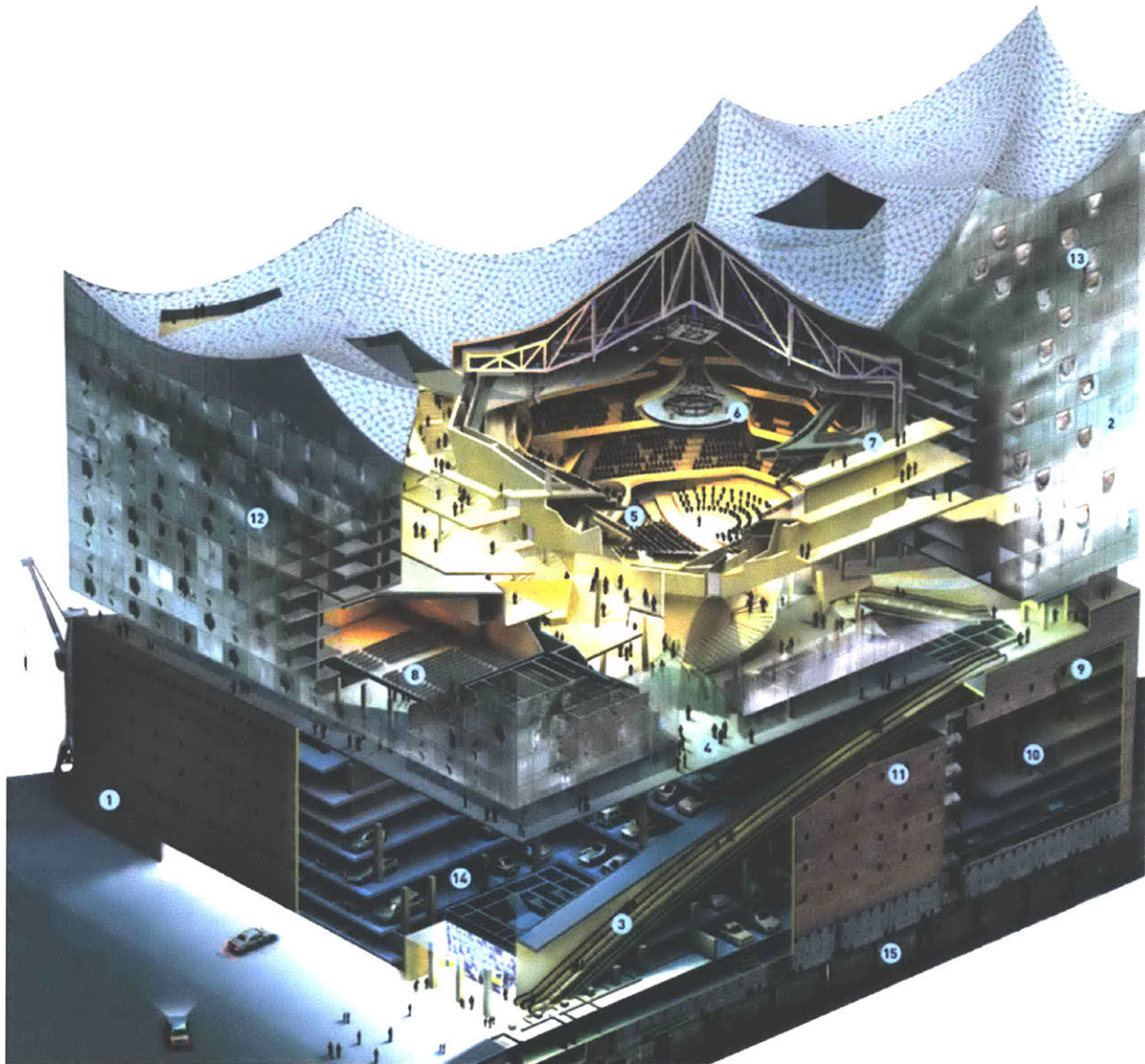


Figure 19: Cross-section of the Elbphilharmonie: 1) the old Kaispeicher A; 2) the façade; 3) the escalator; 4) the plaza; 5) the main concert hall; 6) the sound reflector; 7) the organ; 8) the recital hall; 9) the studio; 10) the Interactive Instrument Museum; 11) additional rooms and backstage for artists; 12) hotel; 13) residential apartments; 14) seven-story car park; 15) supporting pillars (The Elbphilharmonie, 2014).

As showed in Table 1, besides the philharmonic hall and the chamber music hall, the building is also 22% occupied by hotel, 19% by parking, and 10% by residential. These different uses are “combined in one building as they are in a city” (Herzog & de Meuron, 2017). The main grand hall is located in the heart of the building, with the hotel and the apartments on each side; the hotel is also equipped with restaurants, health and fitness center, and conference rooms. The vertical

integration of varied functions, such as culture, entertainment, business, and leisure, creates a new urban area or a new ecosystem of its own. On the other hand, the complexity of mixed use also affects the parking and circulation, which are different from those required for a building for concert hall only. Visitors and residents have different entrances, lifts, and parking spaces, and the placement of these facilities requires a thorough research on the circulation pattern to ensure that each visitor and resident has access to all the needed facilities but at the same time has his or her privacy protected.

Table 1: Uses of the Gross Floor Area (The Elbphilharmonie, 2018)

Function	Gross Floor Area (square meters)	% of Total Gross Floor Area
Concert Area	30,121	25%
Hotel	27,000	22%
Multistory Car Park	22,736	19%
Residential Units	12,801	10%
Plaza	5,745	5%
Other Public Area	3,100	3%
Eateries and Conference Facilities	4,963	4%
General Areas*	16,387	13%
<b>Total</b>	<b>122,853</b>	<b>100%</b>

Note: \* General areas include staircases, thoroughfares, equipment rooms.

**Visibility.** 110 meters in height, the wave-like roof of the Elbphilharmonie can be seen almost from all around the city. The glass structure on top of the existing Kaispeicher A resembles the shape of waves, and the glass façade reflects the sky, the river, and the surrounding buildings and changes constantly in different weather conditions. The difference in materials (glass on top versus brick in the base) brings about sharp contrast vertically and expands the characteristics and feelings of water

and warehouse horizontally. The external glass façade is approximately 16,000 square meters, and this glass structure “is composed of around 1,000 glass elements that are variously cambered and curved and individually marked” (The Elbphilharmonie, 2018). Due to the special location of the project, each piece of the glass panel “weights around 1.2 tonnes and has been tested to withstand hurricane winds” (The Elbphilharmonie, 2014). The manufacturing of those glass panels and the construction of the wave-shaped roof have presented a lot of technological and engineering challenges in the process, despite the stunning beauty after completion.

**Public space.** The Elbphilharmonie aims to be a new cultural attraction for the public instead of just the few. To accomplish this goal, the plaza is sandwiched between the concert hall and the Kaispeicher A remains. The “tube,” a long escalator (Figure 20), leads visitors from the main entrance to the east on the street directly to the plaza (Figure 21). The escalator is curved like wave so visitors cannot see the full length from one end to the other but can have a special spatial experience. The curved and transparent glass gives the plaza an “eye” toward the harbor. Visitors can enjoy the view of the river and the city and also the restaurants, shops, and access to the concert hall. The plaza also serves as the entry to the hotel. Arriving in this plaza, no matter as a concert goer or a random tourist, the visitor can feel the sense of participation and the pleasure of gathering. The generous public space helps to make for a lively setting in the project and provides convenient juxtaposition of different entertainment and leisure choices. It is also a visual extension for concert goers who exit from windowless concert venues.

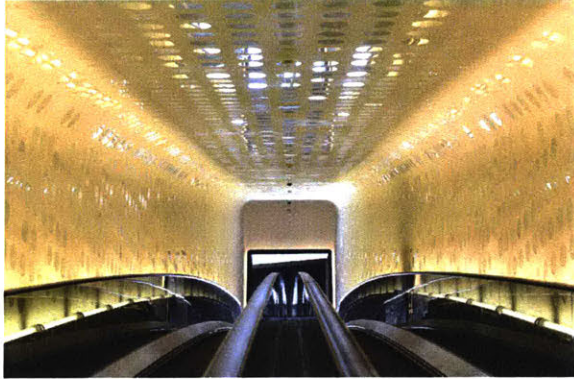


Figure 20: The escalator. Retrieved from <https://www.elbphilharmonie.de/en/press/elbphilharmonie/entrance>.

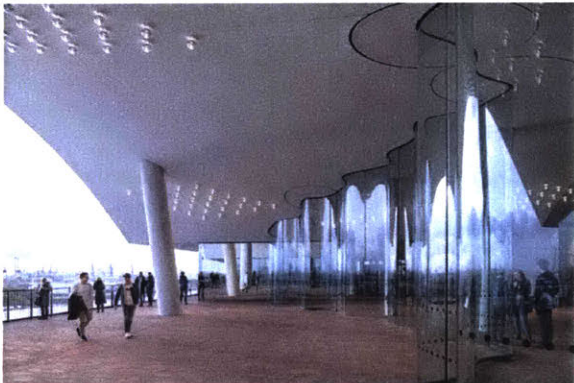


Figure 21: The plaza. Retrieved from <https://www.elbphilharmonie.de/en/press/elbphilharmonie/plaza>.

**Technical advance.** Lastly, the “white skin” (Figure 22), the most challenging but also pioneering development for the construction of the project. It is the nickname for the acoustical skin made by high-density gypsum fiberboard panels inside the main concert hall. The white skin consists of approximately 10,000 panels, and the usual size of one panel is around 0.5 square meters (The Elbphilharmonie, 2018). This surface structure is developed specially for the Elbphilharmonie by Yasuhisa Toyota, the most famous acoustic expert in the world; he has been the chief acoustician for other top concert venues such as the Philharmonie de Paris and the Walt Disney Concert Hall in Los Angeles. The main concert hall follows the vineyard style (as showed in Figure 23) to seat the audience as close to the stage as possible and houses 2,100 audience; the design involves “creating small groups of audience seats and designing effective, sound-reflecting wall surfaces for every group of audience seating” (Nagata Acoustics, 2017). Given the architectural design, special arrangement of the seats and stage, and



the fire protection requirement, the white skin is designed to fulfill many specific requirements of the project to create an outstanding acoustic in the main hall to create the feeling of “intimacy” between the listeners and the players. In order to make the audience feel not far away from the players, there has been intensive research, experiment, construction, and installation on the choice of materials, the manufacturing of the panels, the cutting of the boards, and the fitting of the heavy panels into every corner and angle of the hall precisely to achieve the perfect acoustics. This distinctive three-dimensional acoustic wall covering also adds vibrancy to the concert experience; the wall along the tube is decorated by the white skin, and the visitors can feel and touch the special texture when they go up to the concert hall by the escalator.



Figure 22: The white skin. Retrieved from <https://www.elbphilharmonie.de/en/press/elbphilharmonie/grand-hall>.

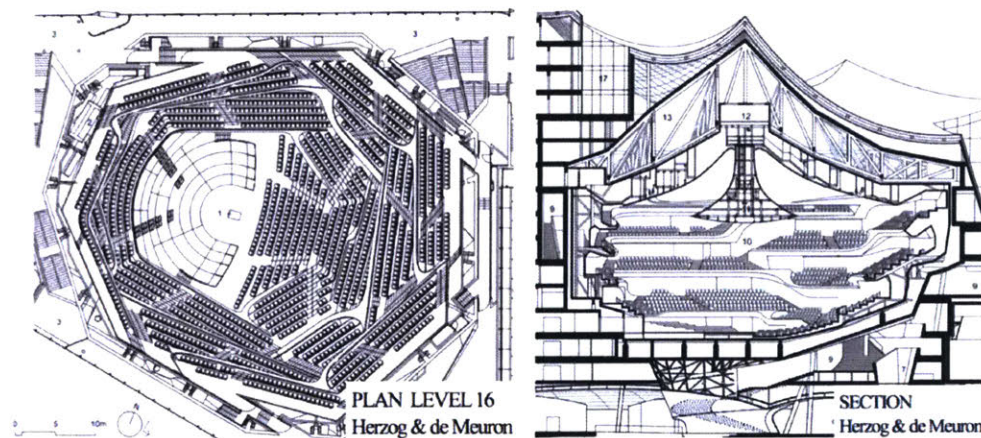


Figure 23: Level plan and section. Retrieved from [http://www.nagata.co.jp/e\\_sakuhin/factsheets/Elbphilharmonie.pdf](http://www.nagata.co.jp/e_sakuhin/factsheets/Elbphilharmonie.pdf).



### Project Ownership and Financing

In 2004, the developer failed to reach an agreement with the city on the funding of the construction so he left the project. The developer suggested a cross-financing structure, in which the commercial area (the hotel, parking, and residential units) would generate profit to the investor and also subsidize the construction of the concert area; nevertheless, he failed to provide sufficient securities to convince banks to provide financial support: the site could not serve as a security as the city refused to transfer the ownership before obtaining a guarantee for construction (Fiedler & Schuster, 2016). The city bought the developer out of the project and has maintained a high-profile role in bringing the project to fruition since then. The ownership structure of the project is illustrated in Figure 24:

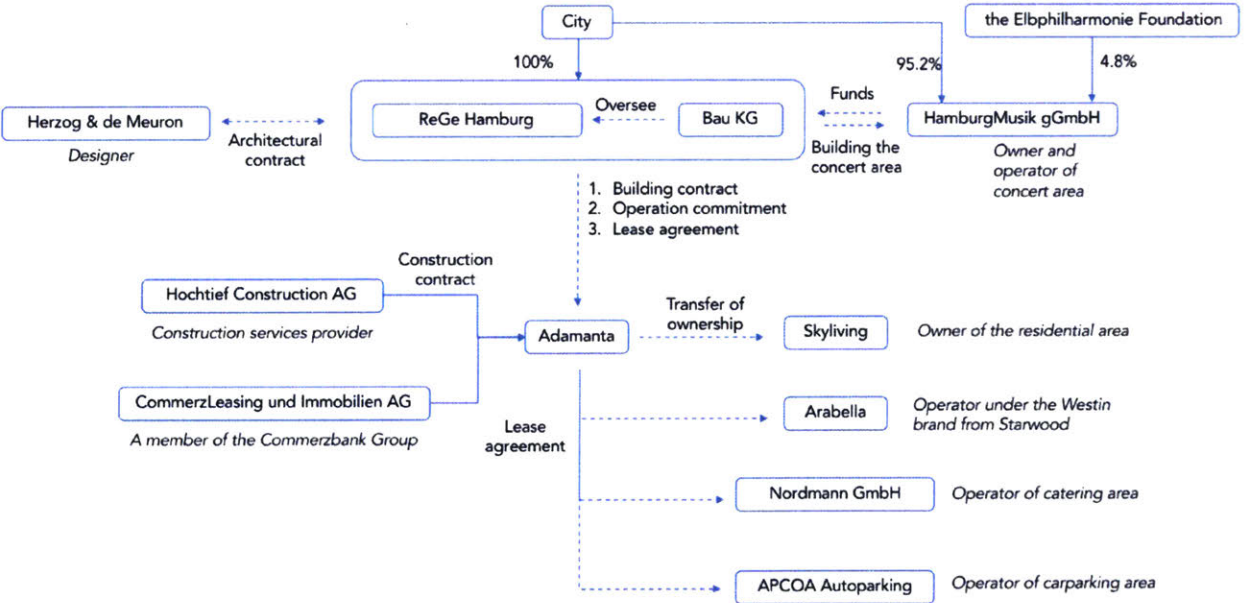


Figure 24: Involved institutions (The Free and Hanseatic City of Hamburg, 2014).

ReGe Hamburg is a city-owned private-organized project management company. It is overseen by Bau KG, which consists of a board of supervisors assigned by the city. Adamanta is a consortium participated by Commerzbank Group and Hochtief Construction AG, which was the general contractor of the construction work.

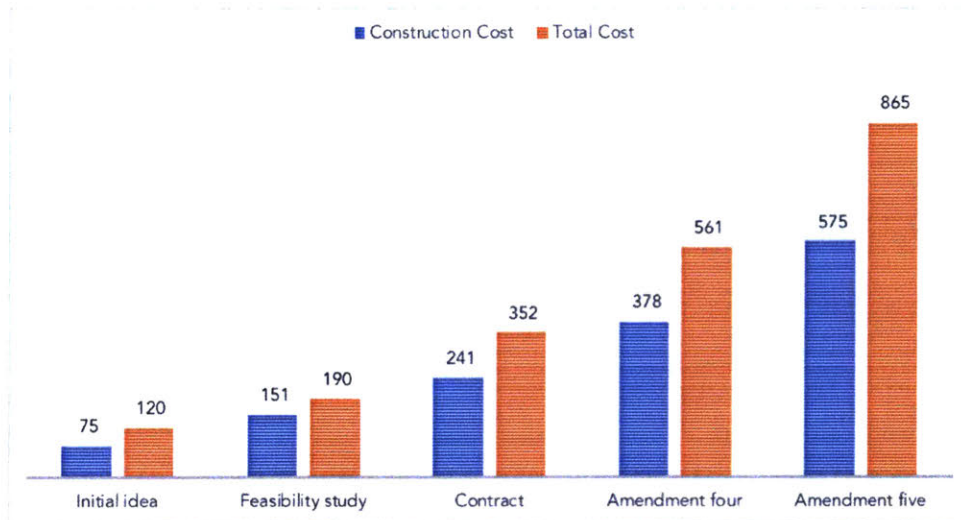
After completion of the Elbphilharmonie, the ownership of the concert area has been transferred to HamburgMusik gGmbH, which is also responsible for the operation of the concert halls; the ownership of the residential area has been transferred to Skyliving. The hotel is leased to Arabella of Starwood that at present runs the hotel under the Westin brand; the catering area is leased to Nordmann GmbH while the car parking area APCOA Autoparking. Consequently, now the two concert halls are owned by the city via HamburgMusik gGmbH, the residential area is held by Skyliving, and the remaining hotel, catering, and parking areas are property of the city but leased to different operators.

The city being the owner of the project helped to obtain loans from financial institutions at a lower interest rate. However, the expected and actual costs surged tremendously during the decade of planning and construction, accompanied by schedule delays. As showed in Chart 1, the total construction cost<sup>2</sup> went from Euro 120 million when the idea was initiated to Euro 865 million after the construction contracts were amended five times. The cost and time overruns were mainly caused by “insufficient risk management, unfinished planning at construction start,” and “weak oversight” (Fiedler & Schuster, 2016). A more detailed description of the project planning and development from 2004 to 2017 is in Appendix on page 74.

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<sup>2</sup> The construction cost refers to the pure building cost of the Elbphilharmonie; the total cost also includes other items such as the planning cost by the architects, project management cost, financing cost, taxes, and fees, et cetera (Fiedler & Schuster, 2016).

Chart 1: Project Budget (in Euro million) (The Free and Hanseatic City of Hamburg, 2014) (Fiedler & Schuster, 2016)



## Values Created

With 17,000 visitors each day to the plaza, the Elbphilharmonie today has successfully established itself as a must-go place in HafenCity, Hamburg and wider area. The grand concert hall is the central feature and value creator for the Elbphilharmonie development. It provides cultural elements, frontage, address, and brand for the other uses, and defines the scale, character, and sense of place for the entire project.

**Attendance.** The most direct revenue for the Elbphilharmonie is derived from the ticket sales. The grand hall mainly hosts orchestral music, chamber music, and opera, while the smaller recital hall is more versatile with other genres such as jazz & world, rock, pop, and electronic music. The performances of other genres are not held as frequently as classical music but are arranged regularly as a complement to the classical theme. There will be at least 150 concerts for the 2018/2019 season; the concerts are so popular that the tickets are usually sold out six or even twelve months in advance. The NDR Elbphilharmonie Orchester is the orchestra in residence in the grand hall, and the Ensemble Resonanz resides in the smaller hall; the Deutsche Kammerphilharmonie Bremen, a chamber orchestra based in Bremen, also has its

Hamburg residence in the Elbphilharmonie. Majority of the concerts are played by orchestras from Hamburg, but international top orchestras around the globe are also adding highlights, including the Philharmonic from Vienna, Berlin and Munich, the Philharmonia Orchestra London, the Boston Symphony Orchestra, the Budapest Festival Orchestra, the Czech Philharmonic, et cetera.

**Diversification and participation.** The Elbphilharmonie is constantly refining the programming so that it is arranged to the taste of audience from different background or age groups. Curated festivals cover the themes from the seventeenth or eighteenth century to the twentieth and twenty-first centuries, from Europe to the USA, and from classical to Jazz, among others. There is also School and Kindergarten Program to offer children the opportunities to experience and make music via visits and workshops in the studio and the museum. Social media also plays a key role in the promotion and events of the Elbphilharmonie. Facebook, YouTube, Instagram, Twitter, Issuu, and Spotify are parts of the communication channels. As of June 2018, the Elbphilharmonie has more than 230,000 fans on Facebook, 45.9k followers on Instagram, and 20k followers on Twitter; it posts news or video clips to publicize its programs and the features of the building itself. These online advertising campaigns enable the Elbphilharmonie to monitor the click-through to its websites, observe which news or video clips are the most read or watched, and evaluate the impact of these efforts in the online age.

**A gathering place.** The value of the Elbphilharmonie is also greatly supported by the plaza, which is open to not only the concert goers and hotel guests but the whole public. Visitors are free to come up to the plaza to enjoy the view from 9am to midnight every day. The plaza provides a meeting point for people to meet, walk around, have coffee or snack, and see and feel the unique architecture of the building, increasing footfall to this building and creating a vibrant neighborhood in HafenCity.



Being the identifiable center of the building, this plaza affects the business environment within this small "city." It helps to secure more active participation in other real estate product types in this building, while the experience of visitors to concert area and commercial area will be reinforced by the interaction in the central plaza. The pleasure offered by the plaza is closely related to the experience of listening to the music, and it makes possible to get in touch with arts on a level of pure pleasure. It adds character and makes the building feel welcoming, and acts as the connective tissue for both the building itself and HafenCity. Visitor circulation is created and improved in this civic space.



Figure 25: Hotel lobby that faces the stairs to the concert area. Retrieved from <http://www.starwoodhotels.com/westin/property/photos/gallery.html?propertyID=3579>.

**Hotel market.** Located above the concert area, the hotel named Westin Hamburg is in the position of being both a major contributor to and benefiting from the concert hall and the redevelopment of HafenCity. The office buildings, restaurants, residential development, and retail stimulated by economic and cultural resurgence in the area have attracted both locals and tourists. The hotel has a foyer that faces the plaza (Figure 25), and its distinctive location makes it a blend of restoration, culture, and social place and a reflection of the belief that arts and commerce can drive each

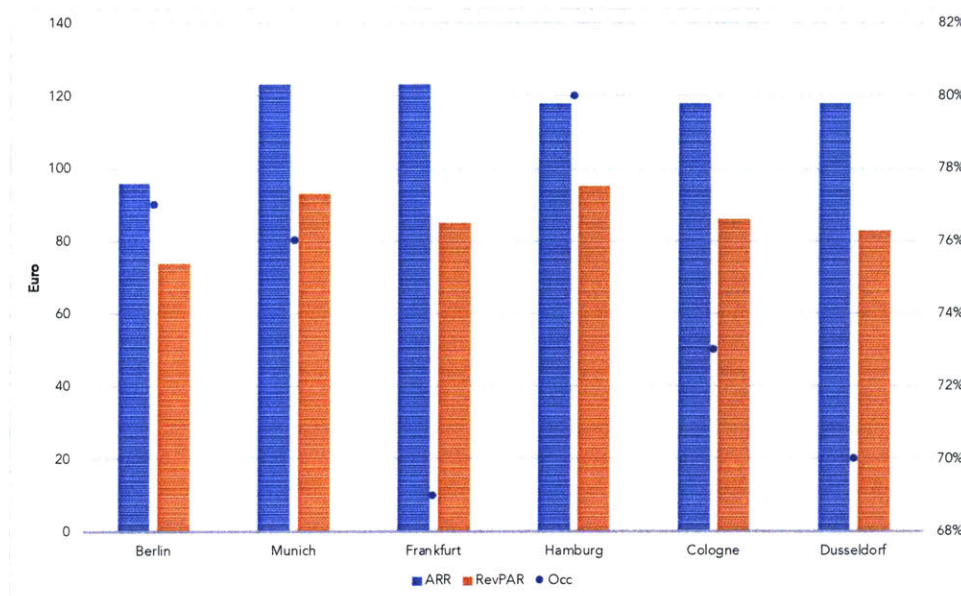
other. The hotel is the 2018 German Design Award<sup>3</sup> winner under the category of Excellent Communications Design Interior Architecture; in the website of German Design Award, the webpage is entitled "The Westin Elbphilharmonie." The jury states that the design is "influenced by the exposed site of the Elbphilharmonie concert hall, is carried over to all areas of the hotel, which it endows with a distinctive character and cosmopolitan atmosphere with a maritime feeling" (German Design Award, 2018). Residents and visitors of the hotel can enjoy not only the 244 guestrooms and suites, but also the 1,300-square-meter wellness area and the 630-square-meter meeting and event space. The opening of the Elbphilharmonie helps to boost the Hamburg hotel market, which experienced strong increase in average room rate (up by 6.8% year-over-year to Euro 118 in 2017) and revenue per available room (up by 7.8% year-over-year to Euro 95 in 2017) with high occupancy rate (80% in 2017, up by 0.9 percentage points)<sup>4</sup> (Christie & Co, 2018); as showed in Chart 2 below, Hamburg is a top hotel market player within major cities in Germany.

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<sup>3</sup> Established on the initiative of the German Bundestag (the lower house of German parliament) as a foundation in 1953, the German Design Council bestows the German Design Award and aims at generating an added brand value through design. The German Design Award recognizes both contributions to the German and international design landscape and the overall commercial success. For more information please refer to <https://www.german-design-award.com/en.html>.

<sup>4</sup> The author does not have the specific average room rate, revenue per available room, and occupancy rate of the Westin Elbphilharmonie. The market data are used for reference, and according to the research report, it is inferred that the revenue stream from the Westin Elbphilharmonie should be satisfactory with the support of the opening of the concert hall.

Chart 2: 2017 Hotel Market Performance (Christie & Co, 2018)



Note: ARR = average room rate; RevPAR = revenue per available room; Occ = occupancy rate.

**Residential market.** Last but not the least, the Elbphilharmonie Residences that provides a novel experience of living in a landmark. These 45 apartments, ranged from 120 square meters to 380 square meters, are located on the eleventh to twenty-sixth floors above the concert area with unblocked view of the river and the city. Besides the prominent address, the apartments also enjoy absolute privacy. There is an exclusive entrance at the western part of the building, a private parking space, and a private lobby. The residential area is separated from the other sections of the building. The conceptual inclusion into the Elbphilharmonie and the geographical detachment from the public area make the residential part one of a kind. As of June 2018, among the 45 units, only two units are still available. According to Engel and Völkers, the local agent of these apartments, this might be a project that “will never happen again in the city;” the price of these apartments goes from Euro 6.5 million to Euro 11 million (Latham, 2016). There is no detailed information about average price per square meter; based on these prices and the sizes of the apartments, it is estimated that the average price per square meter might be around Euro 30,000 to Euro 50,000, much

higher than other apartments in HafenCity: for example, in July 2018, a 119-square-meter apartment represented by Grossmann & Berger is listed for sale at Euro 949,000 (approximately Euro 8,000 per square meter), and a 202-square-meter apartment represented by Engel and Völkers at Euro 2.85 million (approximately Euro 14,110 per square meter).

### **The HafenCity Model**

The Elbphilharmonie has helped to stimulate and revitalize HafenCity, thanks to a great location, a compelling design, and a unique mixed-use concept, despite the cost overruns and construction delays. The project offers valuable insights into building mixed-use concert hall to shape a cogent user and visitor experience.

For the purpose of this thesis and based on the definition of mixed-use development in *Mixed-Use Development: New Ways of Land Use* published by Urban Land Institute, the author defines the Elbphilharmonie case as the HafenCity model characterized by:

- 1) development in conformance with a major cultural (concert hall) theme that specifies the quality of design, type and scale of uses, densities, and relevant items;
- 2) at least 25% of gross floor area occupied by cultural area, and around 50% of gross floor area by commercial revenue-generating uses;
- 3) two or more revenue-generating uses such as hotel, residential, retail, and parking;
- 4) generous public space for both visitors of the project and the general public;
- 5) and physical integration of different components in a single building.

The metrics the author would use to the success of the HafenCity model in an urban renewal context are outlined as follows:



**Change the vision and make a special place.** The mixed-use project clearly makes an effort to be an integral part or even the center of a neighborhood. Relationships with the community are strong so that current residents can feel the good effect the project has on the area. It is important that given the special characters of concert hall, this kind of mixed-use project needs to have the determination to attract the attention of passersby and arouse the spirit of pride and excitement in the neighborhood. Of course, it is mission impossible to use one mixed-use project to solve all potential problems in a neighborhood, but the complex can help to strengthen the cultural identity and image and to catalyze other development. Prime location and creative urban design can upgrade a mixed-use project to be more than a concert hall. Preserving the historical architecture element, if any, can help a mixed-use project to be modest in scale. While the concerts and other music related programs attract both citizens and visitors to the site, other uses such as the residential, hotel, plaza, and retail parts can make the project not just a display but a real live place and further integrate into the neighborhood and the city.

**Create social impact and reinforce social value.** In the HafenCity model, the open plaza free to all visitors and citizens is people-oriented and is an appealing destination for pedestrians with comfortable and easy access. It creates a place for gathering and encourages the viability of music and culture in the community. This help the mixed-use concert hall to establish a multi-layered relationship with the area where it is located. The mixed use makes the diversity of programming possible, from the concert hall itself to other education programs in the hall, the museum, or the open space, and can serve to involve many different age groups. It may also improve the employment by providing various job opportunities in the project itself and other relevant industries activated by the project. A mixed-use concert hall usually grows out of the desire of citizens to connect music or arts to the community, and this remains

the fundamental mission of the concert hall and music programs curated there. There can be other programs evolved in response to the commitment to retain the flexibility to respond to the needs of the community and the city, reflecting an extended sense of mission and values.

**Quality design to make a statement.** The building in the HafenCity model not only provides cultural and commercial facilities but also makes a visible and strong statement of music or arts via unique physical design. While integrating different uses within one building, the design creates an image that enhances the surrounding area and fosters a public perception of music and architecture that is consistent with the central theme of the building. The statement of arts and culture is made clearly by the form. The densities may be lower than they would be if a more traditional or conservative approach were adopted, and the site might not be developed at its “highest and best use,” but these compromises are made to strengthen the concert hall’s visibility. Although limited by the size of the site, the design translates the scale and the image from a horizontal perspective (different uses allocated in different buildings) to a vertical one (one tall building) to make as much use of the spatial enclosure as possible.

From the outside to the inside, despite the aim to be both a cultural symbol and an iconic building, the priority of the concert hall in the HafenCity model is given to the maximization of concert goers’ experience. It is essential for the acoustics of the concert hall to be as great as possible. The design of the concert hall is a collaboration between the architects and the acousticians to improve or fine-tune the layout and the shape of the hall, no matter the shoebox or the vineyard or some other innovative style, to bring the best sound quality to the audience. The effect to the performances caused by traffic and other noises from the outside streets is also considered due to the central location of the building.

**Mixed use and funding resources for financial feasibility.** In any mixed-use concert hall project, it is important that the concert area should be completely acoustically detached from the rest of the building. An iconic design and perfect acoustics requirement mean the project will not be cheap. Consequently, a mixed-use concert hall project may operate on a relatively long funding horizon, and its developer should recognize the vulnerability in this respect. In the HafenCity model, the project meets the citizens' demand for a high-quality concert hall and follows the market trend in tourism and the potential growth in the regeneration of a particular area. The combination of concert hall with hotel, residential apartments, plaza, and garage creates a synergy between the project and its environment, and the development of the commercial area is intended to provide a steady revenue stream to the project besides funds from various public foundations or private donations, and to develop a source of long-term funding and stable investment capital to assure project security.

**Independent ownership and operation structure.** A mixed-use concert hall might start from the vision of one person, but as the project evolves, it should be owned by a committed and diverse group of developers, designers, contractors, planners, government officials, citizens, and other professionals and supports needed. The concert hall, hotel, and residential units in the HafenCity model are like neighbors under one roof. The concert area and the commercial area are managed under a relatively simple transaction structure. Being a public project, the planning and construction of the project is led by the city; after the project completion, concert area is owned and operated by the symphony foundation, the residential units are sold to individual buyers, and the hotel is owned by the city and leased to and operated by a well-known brand. The public sector mainly focuses on the public policies for the benefit of arts and culture, while the private side provides its expertise in commercial

real estate. The cultural section and the commercial section share the building with mutual interests, and at the same time maintain independent and clear management structures in accordance with their different business nature.

## Chapter 4: Transferability to China

The Elbphilharmonie case provides learnings of the mix of uses for concert hall and the value creation from the dynamic relationship among different components and between the project and its surroundings. Could the Elbphilharmonie case, or the HafenCity model defined in previous chapter, be transferable to China? Actually, the mixed-use concert halls are not unicorns in the West. A total gross floor area of 142,250 square meters, the Urban Concert Hall (to be completed in the end of 2018; Figure 26) by Gerkan, Marg & Partners in the center of Chengdu, the capital city of Sichuan Province, consists of an opera hall with 1,600 seats, a concert hall with 1,000 seats, and smaller buildings of art gallery and art theme hotel (gmp, 2016); the press release of Gerkan, Marg & Partners does not disclose detailed breakdown of the gross floor area into different uses, but based on the floor plans, the hotel and gallery seem to occupy only a fraction of gross building area.



Figure 26: Render of the Urban Concert Hall in Chengdu. Retrieved from <https://www.gmp-architekten.com/news/1977gmp-architects-win-competition-for-the-urban-concert-hall-in-chengdu/>.

In Nanjing, the capital city of Jiangsu Province, there is also a mixed-use complex (Nanjing International Youth Cultural Centre) opened several years ago in a new town near a river. This project could be used for comparison with the Elbphilharmonie to examine how the mixed-use model could be adapted in China. This chapter will first briefly describe the general concert hall market in China and then focus on Nanjing.



## Concert Halls in China

In recent years, China's embracing of Western classical music, together with the increasing household disposable income, has brought about fast-growing construction of concert halls all around the country, from first-tier cities such as Beijing and Shanghai to second- and third-tier cities such as Chengdu and Xi'an. Some of them are designed by star architects: the Oriental Art Center in Shanghai (completed in 2004; Figure 27) and the National Grand Theater of China in Beijing (completed in 2007; Figure 28) both by Paul Andreu, the Guangzhou Opera House (completed in 2010; Figure 29) by Zaha Hadid, the Shanghai Symphony Hall (completed in 2014; Figure 30) by Arata Isozaki, among others. Majority of them are stand-alone pure concert halls.



Figure 27: The Oriental Art Center in Shanghai. Retrieved from <https://paulandreu.wixsite.com/paul-andreu/oac-shanghai>.

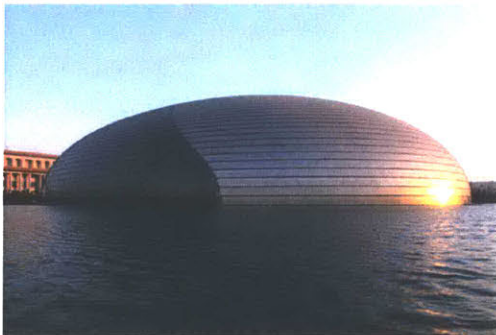


Figure 28: The National Grand Theater of China in Beijing. Retrieved from <http://www.paul-andreu.com/>.



Figure 29: The Guangzhou Opera House. Retrieved from <http://www.zaha-hadid.com/architecture/guangzhou-opera-house/>.



Figure 30: The Shanghai Symphony Hall. Retrieved from <https://www.istructe.org/structuralawards/previous-shortlisted/arts-or-entertainment/2015/shanghai-symphony-orchestra-building>.

Despite concert halls are mushrooming in China, their operations are struggling against growing pains, especially “weak management at performing arts institutions and insufficient efforts to educate audiences” (Qin, 2016). Residents in Beijing and Shanghai may have abundant concerts every year to choose from, but concert halls in second- and third-tier cities are facing the challenges in inviting top orchestras to perform in their glamorous concert halls, not to mention attracting audience, who are not mature enough to accept new music except the mainstream composed by traditionally well-known classical composers. Cities have neither regular concert seasons nor sufficient funding, and China has neither the culture nor the policy to incentivize personal or institutional donations to support orchestras. The National Grand Theater of China receives thirty percent of its annual budget from the city, but this kind of funding is very rare for other concert halls; cities may have strong

willingness to build iconic venues but not commitment to support their continued operations (Eichler, 2014).

What's more, the concert halls lack strong professionals who are equipped with both musical knowledge and management skills to bridge the gap between musicians and audience and between the city and the buildings. The National Grand Theater of China is not home to any of Beijing's top orchestras; the China Philharmonic, which is one of China's best, needs to rent its own rehearsal and performance space (Eichler, 2014). The only exception to date seems to be the Shanghai Symphony Hall that is self-managed by the orchestra in residence, the Shanghai Symphony Orchestra (Eichler, 2014).

### **Concert Halls in Nanjing**

Nanjing, a second-tier city in the southeastern China, is facing the similar challenges. Located near the Yangtze River, Nanjing is one of the four Great Ancient Capitals of China, the other three being Beijing, Luoyang, and Xi'an. Nanjing used to be the capital of six dynasties in the history of China and has been the capital of Jiangsu Province since 1949. It has population of about 8.3 million, GDP of USD 160 billion (approximately Euro 135 billion), GDP per capita of USD 19,200 (approximately Euro 16,400), and unemployment rate at around 3% (Nanjing Municipal Bureau of Statistics, 2017). It ranks No. 9 in the 2017 list of Chinese Cities with Strongest Comprehensive Strength compiled by the National Development and Reform Commission of China.

Nanjing is economically supported by service industry, manufacturing, information technology, and energy. It is also a cultural center and a gateway city with long history. In terms of classical music, the city is the home of Jiangsu Symphony Orchestra established in 1979. The orchestra has an assemble of more than eighty professional members, and its music director is a world-famous conductor; it has

visited many countries and cities around the globe and has cooperated with plenty of accomplished musicians.

Currently the city has three major concert venues: the Zijin Grand Theatre, the Jiangsu Grand Theatre, and the Nanjing International Youth Cultural Centre.

Completed in 2000 and renovated in 2011, the Zijin Grand Theatre (Figure 31) is located about 1,500 meters away from Xinjiekou, the traditional CBD of the city. The theatre is owned and managed by Jiangsu Performing Arts Group, a province-owned cultural company set up in 2001; the group is responsible for the management and operations of not only the Jiangsu Symphony Orchestra but also other nine troupes (such as Jiangsu Peking Opera Company and the Jiangsu Suzhou Kunqu Opera Troupe) and six subsidiaries (such as Jiangsu Asset Management Company and Jiangsu Media Center), covering twelve performing arts genres. The theatre is a multi-functional venue for concert, drama, conference, event, et cetera. The design of the theatre follows the shoebox style and can house 948 audience. However, the acoustics of the venue is not that satisfactory.



Figure 31: The Zijin Grand Theatre. Retrieved from [http://www.jssypw.com/suyan\\_function/2](http://www.jssypw.com/suyan_function/2).

The Jiangsu Grand Theatre (Figure 32) is located in the Hexi New Town – the city’s new CBD – and is an ambitious large-scale cultural complex with gross floor area of more than 270,000 square meters. It looks like a lotus formed by four water drops. It is designed by Shanghai-based East China Architectural Design & Research Institute.



The construction of the project went from early 2013 to mid 2017. It is one of the largest performing arts centers in China opened in the past decade. The project consists of six performing halls: an opera house (2,037 seats), a concert hall (1,476 seats), a drama theater (1,014 seats), a multi-functional conference hall (2,540 seats), a small conference hall (746 seats), a small multi-functional hall (325 seats), and two small art galleries, a movie theater, and several studios. A pure cultural center, the building aims to be a complex with mixture of performance, operations, production, communication, education, and conference for various categories of arts, for instance music, movie, painting, recording, and photography, to name just a few. The project is also a non-for-profit public project invested by the provincial government; it is managed by the operating company wholly owned by Jiangsu Cultural Investment Group.



Figure 32: The Jiangsu Grand Theatre. Retrieved from [http://jiangsu.china.com.cn/html/jsnews/around/10321789\\_1.html](http://jiangsu.china.com.cn/html/jsnews/around/10321789_1.html).

The new CBD also saw a concert hall opened in 2014, but this one is relatively small with only 500 seats. It is used for orchestra performances and other types of shows that use audio equipment. It is part of the conference center in Nanjing International Youth Cultural Centre (Figure 33) designed by Zaha Hadid; the Youth Cultural Centre includes hotel, office, and basement parking as well.





Figure 33: The Nanjing International Youth Cultural Centre. Retrieved from <https://www.archdaily.com/796087/sneak-peek-zaha-hadid-architects-nanjing-international-youth-culture-center>.

The Nanjing International Youth Cultural Centre shares several similarities with the Elbphilharmonie. Both of them are public projects, designed by world famous star architects, equipped by a mixture of different real estate product types, and sit in a new town along a major river. The Hexi New Town is located in the southwest part of Nanjing and covers 56 square kilometers of land and 38 square kilometers of islands and water (Figure 34). Same as the Elbphilharmonie, the Youth Cultural Centre aims to be a central point for connectivity. With the highest point at 314 meters, the Youth Cultural Centre anchors itself in a significant position “within the urban grid of Hexi New Town and on the Nanjing Skyline,” creating “a dynamic transition from the vertical of the urban CBD to the horizontal topography of the river” (Zaha Hadid Architects, 2018). It connects the urban environment in the new CBD, the river, and the rural landscape of islands nearby.

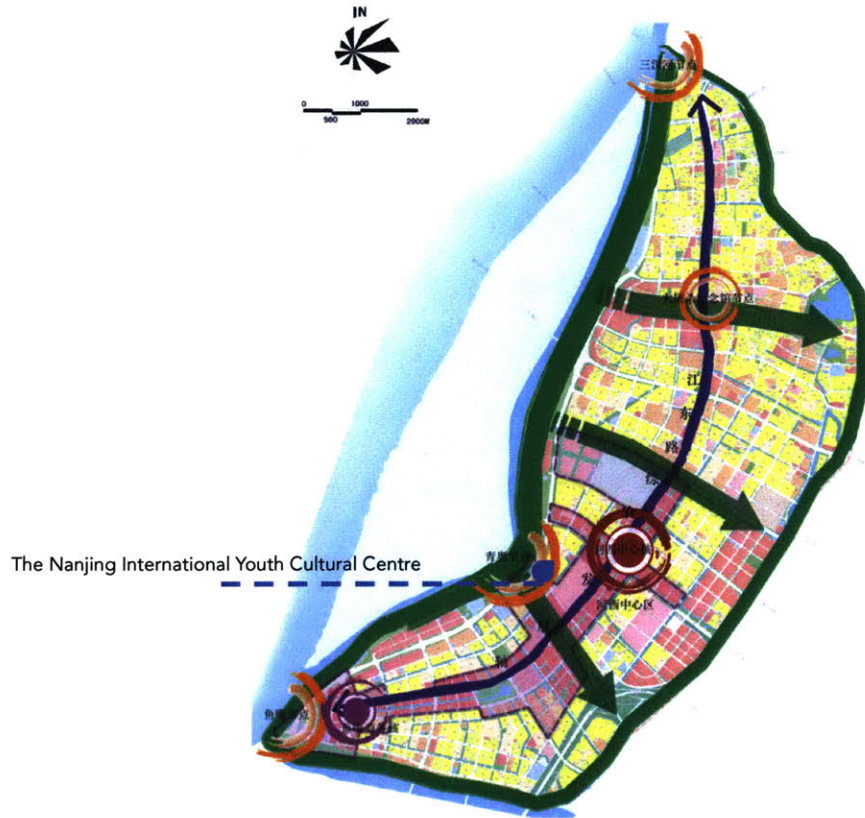


Figure 34: The Hexi New Town (Hexi New Town Planning Bureau, 2017).

In terms of scale, the Youth Cultural Centre is considerably different from the Elbphilharmonie. The Youth Cultural Centre's gross floor area is 465,000 square meters, mainly including two office and hotel towers totaling 258,500 square meters and a 106,500-square-meter conference center (Table 2). The conference center is formed by four independent volumes that surround a courtyard; it houses a multipurpose conference hall (2,100 seats) for cultural and theatrical events, a concert hall (500 seats), a small multifunctional hall, and VIP zone. The conference center is named Nanjing Poly Grand Theater, and the city authorizes Poly Culture Group to manage its operations. Poly Culture Group is a subsidiary of China Poly Group, which is a state-owned conglomerate with businesses in trading, real estate, culture, and minerals; Poly Culture Group is a country-wide theater management company that manages 37 theaters around China. The concert hall here is optimized for orchestral

performances but also maintains the flexibility for other shows; there is no orchestra in residence at this venue.

Table 2: Uses of the Gross Floor Area (Zaha Hadid Architects, 2018)

Function	Gross Floor Area (square meters)	% of Total Gross Floor Area
Hotel	136,000	29%
Office	122,500	26%
Conference Center*	106,500	23%
Basement Parking	100,000	22%
Total	465,000	100%

Note: \* Conference center includes a multipurpose conference hall, a concert hall, a small multifunctional hall, and VIP zone. Detailed area breakdown of the conference center is not available.

### The Hexi New Town Model

In this thesis, the Youth Cultural Centre case is defined as the Hexi New Town model. Following the logic of the HafenCity model, the author lists the characteristics of the Hexi New Town model as follows:

- 1) large development with both cultural and commercial themes that specify the quality of design, type and scale of uses, densities, and relevant items;
- 2) around 20% of gross floor area occupied by cultural area, and around 80% of gross floor area by commercial revenue-generating uses;
- 3) two or more revenue-generating uses such as hotel, office, and parking;
- 4) limited public space for both visitors of the project and the general public;
- 5) and physical integration of two or more buildings assembled into a single parcel of land.

**Vision of the project.** Chapter 3 introduces the major idea of arts and culture behind the HafenCity model, here the Hexi New Town model is perceived as an economic-socio connecting point in a new urban area. It has two parallel goals: a

strong cultural identity for the new town and a self-contained domain for people to work in a new CBD. The planning is not concerned with saving old buildings as there is no irreplaceable vintage resource; the character and distinction of the new town are given by the new. A center with strong economy and complementary cultural element can bring various economic and social forces and is the key to the activity of the development of a new town. While the business and tourism (office and hotel) draw people to the place, the cultural facilities create more sense of participation and involvement and add more ingredients into the one-stop experience.

**Social impact and social value.** Through the implementation of various real estate elements, values of a business center with cultural facilities are magnified to a whole district. The cultural halls are manifested as a focal point for people in and around the new town to enjoy as a social space, using elements of the concert hall and the multipurpose conference hall as drivers for these activities. Different performance themes such as community concert, drama & dancing, pop music, autumn & winter, and educational programs provide a variety of choices and experiences for the citizens; the cultural center cooperates with world-class orchestras, directors, singers, pianists, et cetera, educates the audience from different ages, and cultivates the cultural market together with the support from the city.

**Design.** Comparing with the HafenCity model in which different real estate types are put under one roof and the image of concert hall is nearly 100% manifested from the architecture, the Hexi New Town model assembles two towers that share a podium. Figure 35 shows the design strategy to capture different commercial elements (hotel and office from left to right), efficiency, and the interrelation to cultural reference (the podium). The tip contributes to the position of the project on the skyline, while the podium on the lower level is the realization of cultural space.



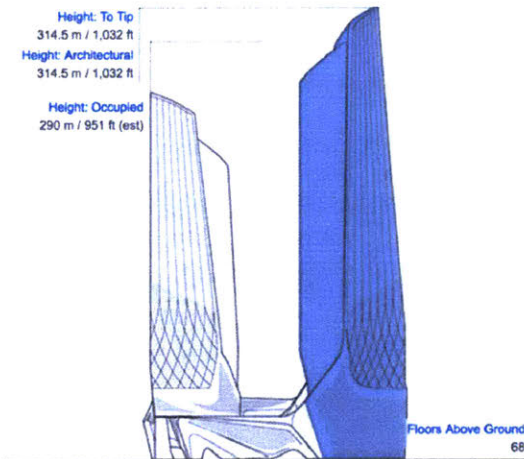


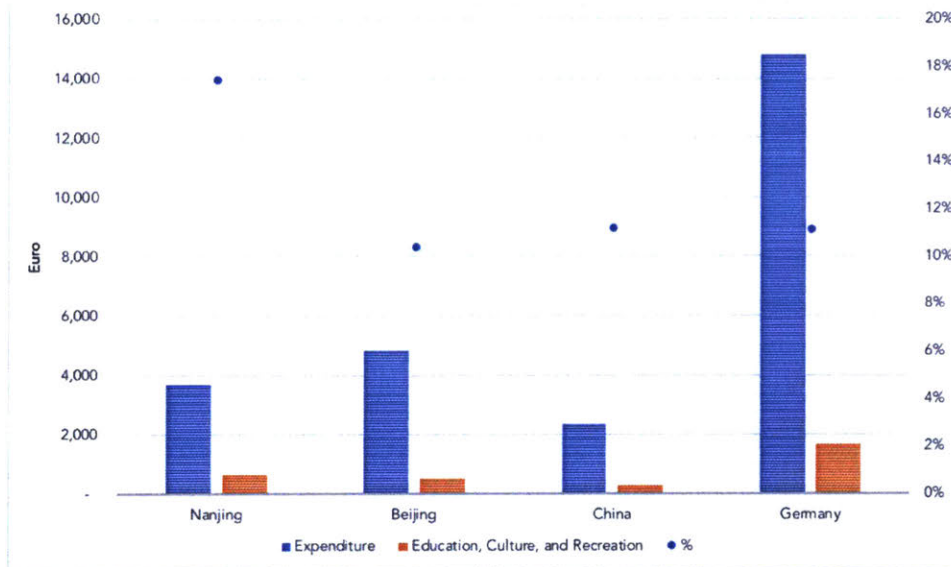
Figure 35: Section of the Youth Cultural Centre. Retrieved from <http://www.skyscrapercenter.com/building/nanjing-international-youth-cultural-centre-tower-1/14401>.

From the outside to the inside, the concert hall is multi-functional to stage other performances besides orchestra concerts. Catering for pop concerts, fashion shows, corporate events, to name just a few, may particularly require the auditorium floor to change “from raked – sloped upwards and away from the stage – to flat” (Davis, 2017). This adaptation of space and acoustics design to suit multi-use purpose of the stage should be considered with great care due to the risk in increasing costs but compromising audience experience. Ideally, it is best for the stage of the hall to be single-use for orchestra concerts only, as the high acoustic quality can also help to strengthen the reputation of the concert hall among world-class orchestras, who play an important role in the operations of the hall. However, the risk of insufficient market revenue from a single music genre and squeezed government subsidy for continuous operation may pressure the concert hall to be multi-functional. As showed in Chart 3 below, in 2016, the expenditure on education, culture, and recreation accounted for 17% of total private consumption expenditure per capita in Nanjing, the highest comparing with Beijing (10%), China as a whole (11%), and Germany (11%); nevertheless, the absolute value of consumption and the absolute value of expenditure on education, culture, and recreation in Germany were about three times



of those in Nanjing or Beijing. This indicates that the recreation and cultural consumption in Nanjing is restricted by the relatively lower level of income and consumption than mature markets and still has a long way to go.

Chart 3: 2016 Private Consumption Expenditure per Capita, Expenditure on Education, Culture, and Recreation per Capita, and the Percentage Expenditure on Education, Culture, and Recreation of Private Consumption Expenditure (Nanjing Municipal Bureau of Statistics, 2017) (Beijing Municipal Bureau of Statistics, 2017) (National Bureau of Statistics, 2017) (Statistisches Bundesamt, 2018)



**Mix of uses and funding.** In terms of blending cultural and commercial in one project, it is crucial for the city to clarify the functions at early stage. The city needs to make a convincing case for the choices of different uses to optimize the civic benefits. Feasibility study needs to be performed to identify the supply and demand of the concert programs and other commercial activities, and to evaluate their implications and risks with corresponding risk mitigation strategies. In the HafenCity model, the hotel and the residential units are expected to witness healthy growth in their value, as this cutting-edge and striking building can provide hotel clients and apartment residents the unique experience of “I am living in the top concert hall in the CBD of the new town.” What’s more, the concert hall and the hotel occupy about half of the gross floor area, meaning that the numbers of hotel rooms and the residential units are both quite limited. This perception of the building and the positioning of uses in

the market due to the scarcity of hotel rooms and residential units can help to boost the profits of the project.

In comparison, the Hexi New Town model deals with the constraints in the cultural market but also relative generosity in the scale of the project. The scale of the whole project and the breakdown into different product types are decided based on expected cost and revenue and calculation to make sure that the project will generate sufficient profit. The concert hall is subject to the new town's overall strategy regarding economic efficiencies and resource allocation in its developments. Given the long development phase of the new town, the concept of the project and the investment idea should be long-lasting and sustainable. Considering the immature classical music market, the lack of professional management personnel, and the inherent risk of massive and complicated public project, it is reasonable for the Nanjing government to allocate the cultural part only 20% of the gross floor area and put the remaining 80% of the area to other commercial uses. The concert hall can help to increase the attractiveness of the new town, for inhabitants and guests alike, but the office, hotel and relevant residential markets are currently the essential elements to strengthen the commerce and set the stage for further development in the area. The abundance in the land supply means there is no need to compress all uses within one building. There is an exquisite balance here: the low densities in the cultural area are complemented by the high densities in the commercial area, which helps the project as a whole to stand out as a cultural symbol of the new town or the city.

**Ownership and operation.** In both the HafenCity model and the Hexi New Town model, the concert halls are owned and managed by public organizations that are mainly owned by the city or the province, and civic programs receive subsidies or support from the government, whose income is sourced from the commercial operations. Different from the Elbphilharmonie which has an orchestra in residence,

the Youth Cultural Centre does not have its own resident orchestra. Resident orchestra pays rent and also has first priority in the hall's use. Nevertheless, the orchestra-in-residence model might not suit the concert hall project in Nanjing given the fact that the Jiangsu Symphony Orchestra does not have the world-class fame to attract enough concert goers and the classical music market in Nanjing still needs education and cultivation.

In terms of the quality of operations, several factors may come into consideration. First, the operating organization should have an experienced management team to provide services to the concert hall on a relatively long-term and stable basis. The management team should have a reasonable and practical operating cost budget in advance and have the budget reviewed regularly, and the team should be responsible for the operating cost overruns. The management team needs to initiate the operating plans that identify the number and types of performances planned each year, and the plans should be consistent with historical standard performance practices but may also bring new elements to the audience. Second, the operations are an art of both collaboration and compromise. If there is no orchestra in residence in the concert hall, the management team and the symphony orchestra may have different opinions on the performance arrangement or choice of themes, and the management team may be aggressively pursuing rental income by leasing the stage out for other performers. Less profitable concerts may be less frequently arranged by private owners due to these concerts' high production costs and potentially low return, and the productivity is difficult to improve as concerts are live shows with intense human capital requirement. Subsidies from government or financial support from commercial area may help the orchestra in the production of less well-known but more valuable programs to cultivate the audience and the market.

## The Macau Model

From the perspective of the scale and the mix of uses, although being a public project, the Nanjing International Youth Cultural Centre to a certain extent resembles the Macau model.

Located in Southern China, Macau is famous for its resorts and casinos and has obtained a nickname “Las Vegas of Asia.” Two major pillars of its economy are tourism and gambling. The city is small with population of less than 700,000 but has at least five world famous casino branches: Sands, Wynn, Venetian, MGM, and Galaxy. The resorts constructed and operated by these brands are mainly mixed-use complex with casinos, hotels, restaurants, retails, and performance venues.

**City of Dreams.** Take City of Dreams (Figure 36) as an example. Opened in 2009, this integrated project is adjacent to Sands Cotai and opposite to Venetian Macau. City of Dreams is developed and owned by Melco Resorts & Entertainment Limited, which is a developer, owner and operator of casino facilities and resorts across Asia; the company was listed on NASDAQ in 2006. Besides about 475 gaming tables and 670 gaming machines, City of Dreams also brings together four 5-star hotel brands: Crown and The Countdown each offers approximately 300 rooms, the Grand Hyatt Macau approximately 800 rooms, and Morpheus – designed by Zaha Hadid – approximately 770 rooms, suites and villas; City of Dreams also has about twenty-five restaurants and bars (some are Michelin-starred dining places), ninety-five retail outlets, and other fitness, health and entertainment facilities and venues (Melco Resorts & Entertainment Limited, 2018).

One of the jewels on the crown is the Dancing Water Theater (Figure 37), a wet-stage performance venue that houses about 2,000 seats. The theater is purpose-designed by Sandi Pei of Pei Partnership, and the stage is tailor-made for an award-winning world’s largest extravaganza named “The House of Dancing Water” produced

by Franco Dragone. The stage is a pool that holds 3.7 million gallons of water, “equivalent to 5 Olympic-sized swimming pools” (City of Dreams, 2018). The production costs HKD 2 billion (approximately USD 255 million) and was honored the Excellence Award of the Most Valuable Brand Award in Macau in 2015.



Figure 36: City of Dreams (left: four towers before 2018 without Morpheus; right: five towers after June 2018 opening of Morpheus). Retrieved from <http://arquitectonica.com/blog/portfolio/hospitality/city-of-dreams/#> and <https://www.scmp.com/magazines/style/people-events/article/2115725/countdown-down-zaha-hadids-morpheus-macau-made-larger>.



Figure 37: The Dancing Water Theater. Retrieved from [https://en.wikipedia.org/wiki/The\\_House\\_of\\_Dancing\\_Water](https://en.wikipedia.org/wiki/The_House_of_Dancing_Water).

Similar to the Elbphilharmonie and the Youth Cultural Centre, this Dancing Water Theater is designed by famous architect and located within an iconic complex, and the show in residence is a must see that is only performed at the theater. As showed in Table 3, nevertheless, it is obvious that in contrast to the Elbphilharmonie and the Youth Cultural Centre cases in which the cultural area occupies an important portion of gross floor area, the theater in City of Dreams takes probably only 1%. The whole City of Dreams project is defined as a designed area for casino and resort that has a special and desirable commercial character. Revenue-producing uses are incorporated in five standalone tall buildings, while the theater is hided at the lower



levels of the Grand Hyatt hotel (Figure 38). There is no visibility of this cultural element from the outside architecture of City of Dreams.

Table 3: Uses of the Gross Floor Area\* (Arquitectonica International Corporation, 2018) (Zaha Hadid Architects, 2018) (Leigh & Orange, 2012)

Function	Gross Floor Area (square meters)	% of Total Gross Floor Area
Hotel**	469,509	89%
Gaming	39,000	7%
Retail	16,300	3%
Theater***	4,650	1%
Total	529,459	100%

Note: \* There is no detailed gross floor area breakdown, and the numbers are for indication only. \*\* The square meter of hotel is calculated by adding the four towers designed by Arquitectonica and the fifth Morpheus by Zaha Hadid. \*\*\* The square meter of the theater is calculated by adding the foyer designed by Leigh & Orange and an estimated square meter for a 2,000-seat theater.

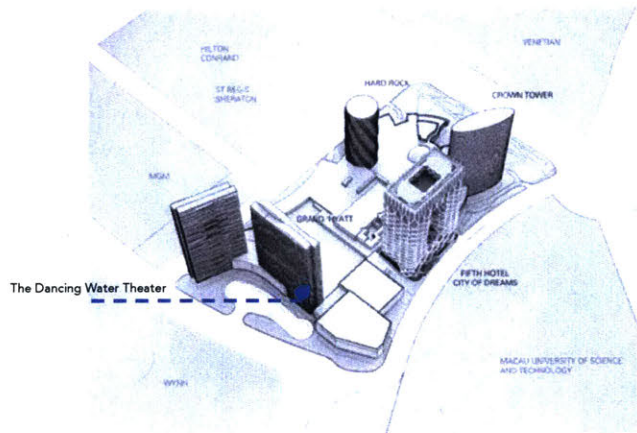


Figure 38: Site diagram of City of Dreams. Retrieved from <https://www.melikaaljukic.com/ga-document/>.

Given the scale of the hotel, retail and casino areas, the developer has sufficient capital to fund the construction and operations of the theater. The theater is a purely private project constructed, financed, owned, and operated by the casino developer whose priority is the profit maximization. Even though the theater and the show are advocated as the highlights of City of Dreams, they are not the main theme of the casino-oriented complex. To make most of the theater, the permanent show is in

general performed five days every week and twice every day, and the House of Dancing Water extravaganza charges relatively higher ticket prices than those of the concerts or programs in the Youth Cultural Centre or the Elbphilharmonie. Rather than setting the tone for the complex, the theater itself is more positioned as a creative complement to the businesses of the large project by providing extra leisure and entertainment choices to the casino visitors and hotel clients. Due to its commercial and entertainment nature and the lack of diversity or programming, the theater may not be taken as a symbol of culture or civic value; it does add attractiveness to the whole project, but the business of the casino, hotel and retail might not be much negatively influenced if there were no such theater or if the program were changed for another show. The success of the complex mainly depends on the interplay among the casino, hotel, and retail.

**Broadway Macau.** Another case is Broadway Macau (Figure 39), a complex that consists of a 3,000-seat Broadway Theatre, a 320-room Broadway Hotel, a hawker-style street market, and several restaurants. It is also a one-hundred-percent private project and is linked by a short pedestrian bridge to the main body of Galaxy Macau (Figure 40), one of the largest casino resorts in Macau. Speaking of just the hotel part, Galaxy Macau has 3,600 rooms, suites, and villas operated under luxury 5-star brands including The Ritz-Carlton, Banyan Tree, Hotel Okura, JW Marriott, Galaxy, and Broadway.



Figure 39: Broadway Macau. Retrieved from <http://www.galaxyentertainment.com/en/properties/bw>.



Figure 40: Galaxy Macau. Retrieved from <https://www.booking.com/hotel/mo/galaxy-macau.html>.

Similar to the Dancing Water Theater within City of Dreams, the Broadway Theatre within Galaxy Macau is also in essence icing on the cake and aiming at profit maximization. Given different branding and positioning strategies, far from being an eye-catching building and rather than the home of only one show, the multi-functional Broadway Theatre hosts a variety of concerts, events, conventions, and sports tournaments. It does not advertise itself as a cultural center either; the theater is for fun and for Asian and international entertainment.

If examined alone, the scale of Broadway Macau could be comparable to the Elbphilharmonie. However, being part of a private project, the theater is commercial-oriented, so that it cannot represent the identity of the project, not to mention the bigger Galaxy Macau.

**The Macau model definition.** Based on City of Dreams and Broadway Macau, the author summarizes the Macau model as

- 1) large-scale development in conformance with a major commercial theme that specifies the quality of design, type and scale of uses, densities, and relevant items;
- 2) at most 5% of gross floor area occupied by for-profit cultural area, and more than 90-95% of gross floor area by commercial revenue-generating uses;



- 3) two or more revenue-generating uses such as gaming, hotel, retail, and entertainment;
- 4) no public space, and no visibility of cultural element in architectural design;
- 5) and physical integration of different components in more than four independent buildings.

The private theaters in Macau are profit driven, thus they are hidden in large casino resorts that could provide abundant sources of support, from financing and construction to operation and marketing. The business nature of the private developers determines the rationale for this approach. Developers are creating large mixed-use resorts or entertainment districts with a fraction of arts or cultural facilities wrapped by clustered tall buildings to give the entire districts a cohesive identity of leisure or entertainment and a public image of luxury consumption and life style.

The Macau model includes a number of separate buildings that may be partially linked at lower levels by pedestrian bridges or common plaza. The number of stakeholders involved may be high. Each building may have its specific function, architect, designer, contractor, operator, funding provider, and brand. This will definitely make the whole project more complicated and add another layer of pressure and challenge over the developer to coordinate various interests and objectives to meet one larger goal. Consequently, the Macau model will take longer to create than the HafenCity model and the Hexi New Town model, and the projects are usually constructed in phases to mitigate the market uncertainty during the development process. The private developers, no matter how many financial resources they have already accumulated, are facing extremely challenging risks from planning and design to financing and management. The pursuit for the highest and best use drives the developers to build as many densities and as many revenue-generating properties as

possible. Intangible cultural value gives way to the tangible commercial value supported by the economic pillars in the local market.



## Chapter 5: Conclusion

The Elbphilharmonie represents an outstanding mixed-use concert hall that achieves world-class acoustics and architectural design. Being a public project, it plays a key role in the redevelopment of HafenCity and helps to boost the cultural and social development of the area. It also brings new ideas and features into concert hall market, which has a long history but may lack creativity and change. From the private project perspective, the performance venues in the casinos in Macau achieve good commercial return for casino developers, but have to sacrifice some aesthetic and civic value in order to maintain efficiency and profitability.




Nanjing, a second-tier city in China, sees increasing cultural consumption and growing demand for high-quality orchestra performances, and offers opportunities for development of mixed-use concert halls. Currently the city has a mixed-use project with the size similar to some private casino complexes in Macau but much more cultural identity and civic value. The relevant Hexi New Town model may be recognized as an innovative and important model that has the potential to be replicated in China market.

### Model Comparison

The projects described in this thesis mainly fall into four general classifications. From the traditional to the complex and from the public to the private, they are: 1) stand-alone pure concert hall; 2) the HafenCity model; 3) the Hexi New Town model; and 4) the Macau model.

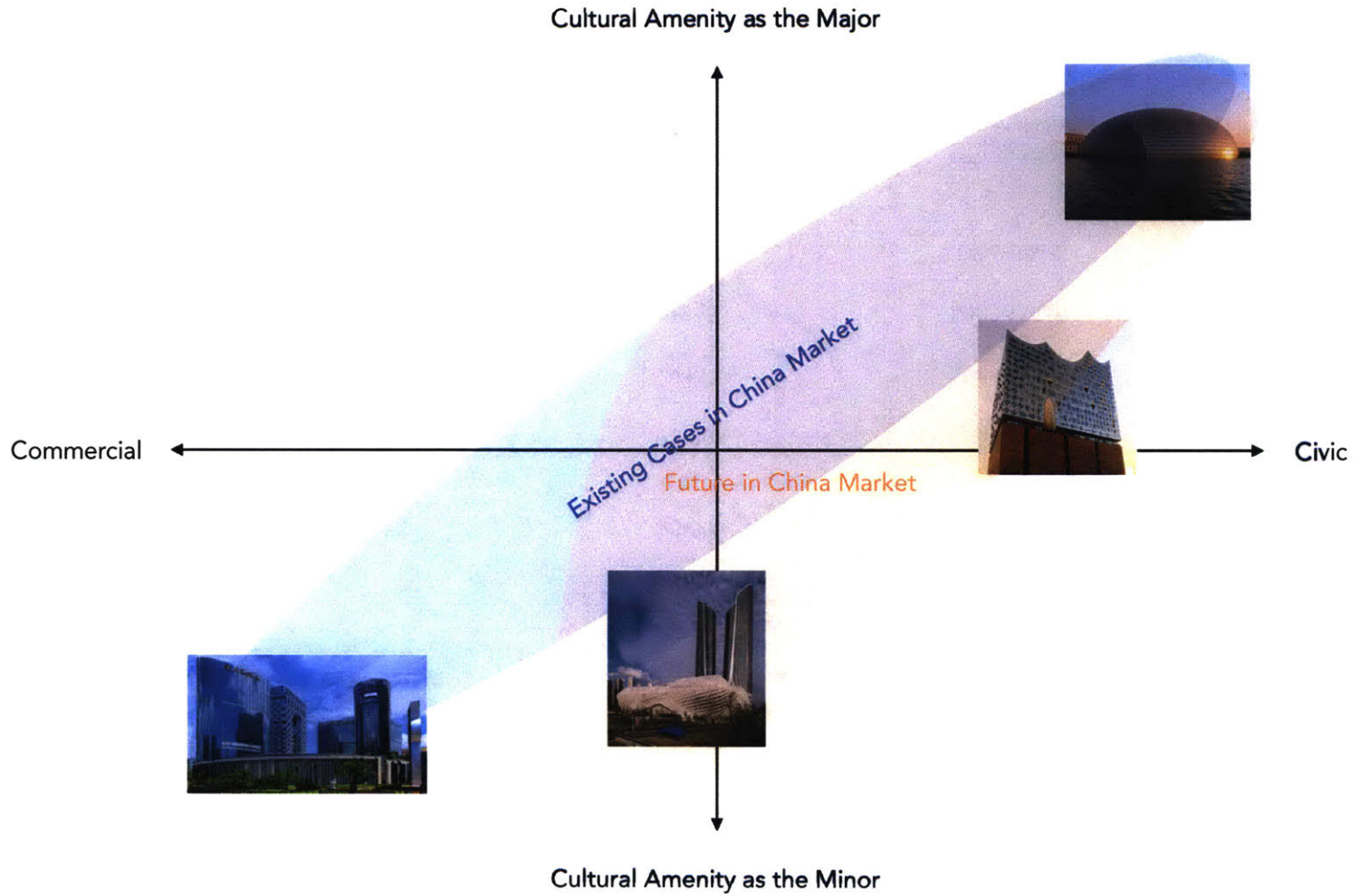
A comparison of the classifications is presented in Table 4, and a four-quadrant diagram of the classifications is presented in Chart 4:

Table 4: Comparison of Classifications

Classification	Traditional	HafenCity Model	Hexi New Town Model	Macau Model
Representative*				
Nature of Project	Public; Single-purpose	Public; Mixed-use	Public; Mixed-use	Private; Mixed-use
Architecture and Scale	Single Building; Small to Mid-size	Single Building; Mid-size	Two Buildings with Podium; Mid-size to Large	Five Separate Buildings; Large
Cultural/Civic Amenity	Concert Hall	Concert Hall; Plaza	Multi-purpose Hall	Theater (Commercial)
Commercial Uses		Hotel; Residential	Hotel; Office	Hotel; Gaming; Retail
% of Cultural/Civic Amenity in Total GFA	100%	25-30%	20%	1-5% (Commercial)
Visibility of Cultural/Civic Amenity	100%	75-80%	30-40%	0%
Density	Low	Low to Mid	Mid to High	High
Cultural Identity/Civic Value	High	High	Mid to High	Low
Source of Revenue	Limited	Diversified	Diversified	Diversified
Number of Stakeholders Involved	Low	Low to High	Low to High	High

Note: \* The orange area refers to the concert or the theater area and is for indication only. The section of National Grand Theater of China is retrieved from <https://www.architectural-review.com/essays/typology/typology-opera-houses/8653735.article>. The section of the Elbphilharmonie is retrieved from <http://www.area-arch.it/en/elbphilharmonie-hamburg/>.

Chart 4: The Four-Quadrant Diagram of Concert Hall Classifications



Various forces in the arts or cultural industry, in the public sector, and in the private real estate sector are working towards more mixed-use projects in urban development. Symphony orchestras and many other arts organizations need professional venues for rehearsal and performance and adequate financial support for operation. Cities have realized the power of arts or culture in the development or regeneration of new towns, and the key role that mixed-use cultural projects could play as a center to the economic and social revitalization. Private developers see arts or cultural programs as a useful tool that brings about good reputation and public participation, both of which may help to push the projects' commercial value higher.

### **Challenges of the Hexi New Town Model in China**

In China market, existing concert halls are mainly traditional single-purpose buildings, such as the National Grand Theater of China in Beijing, designed by star architects and supported by ticket sales and public subsidies. There are also many large-scale mixed-use complexes represented by the Macau model pursuing the highest and best commercial values with arts as a fractional complement.

Facing the opportunities from immature but growing cultural market and the risks from relatively weak continuous financial commitment from the public and insufficient professional managers for arts institutions, the HafenCity model with arts as the major theme may pose too much a fiscal burden for the public side and a financial pressure for the developer; as a result, China may not be the suitable market for this model.

The Hexi New Town model creates mixed-use cultural projects that could bring positive impact for the citizens and the area, but the projects are usually very complicated with large expenses, long development timeline, and high risks. It would be misleading to advocate that the Hexi New Town model is the perfect solution for a mixed-use arts project in China. Some challenges in this model might include:

- 1) the complexity in this mixed-use model adds a layer of difficulty in the coordination of planning, the choice of mixture of uses, and the integration of different functions. If a mixed-use project features relatively large portions of gross floor area for arts or public open spaces, which are usually less profitable than commercial amenities, the project will be unlikely to achieve their highest and best use as defined by the real estate market;
- 2) being a complicated project, a mixed-use project with low-profit arts program but high technical and aesthetical requirement might take ten to twenty years from plan, design, financing, construction and operation to final exit with profit. This whole project cycle may be much longer than the term for a single-purpose project;
- 3) a mixed-use cultural project is difficult to initiate and finance and needs the support from the public side. Collaboration will be hindered if the public sector is plagued with bureaucracy and lengthy procedure. The ambiguity in the definition and calculation of public benefits or civic value might complicate the negotiation and allocation of costs and risks accordingly among different stakeholders;
- 4) allocation of the management of commercial and civic portions may give rise to operation issues. The arts components may be owned by public side but share some space and facilities with the commercial components. Then how to well manage the revenue and cost while at the same time maintaining the independence of arts need to be carefully dealt with, or else might cause conflict of interest. Some compromises might need to be made regarding the quality of arts to cater for the commercial market. The arts institutions may need to face “practical and philosophical dilemmas” and “the fear that



artistic products dependent on marketplace factors for their existence could be aesthetically compromised” (Snedcof, 1985);

- 5) the creation and maintenance of active participation and diversified arts programs are continuous tasks through the whole life of the mixed-use project. Which entity should be responsible for the programming of arts and how to maintain the sustainability of the cultural elements in a long term, especially when the cultural elements are not expected to be profitable? Should the complex be promoted as a whole or separately based on function? The final exit might be easier but also harder in the unforeseeable future given the uncertainty of a variety of business components;
- 6) when the market value of property is upgraded by the revitalization from mixed-use cultural project, relatively low-income residents that used to live in the area may be forced to move. How to ease the hidden social problems, minimize the negative impact, and solve the housing needs by low-income citizens should not be ignored.

### **Benefits from the Hexi New Town Model in China**

The HafenCity model and the Macau model are two extremes on the diagram of mixed-use concert halls, and could be extended to represent some mixed-use cultural projects. While it seems very difficult to replicate the HafenCity model in China and the Macau model is commercial-oriented with limited civic value, and despite the challenges listed in the section above, the Hexi New Town model in between participated by both the public and the private sectors may still be a practical template for future mixed-use cultural projects in China: the commercial revenue-generating uses will dominate the mixture of real estate product types, but the arts or culture will occupy a substantial portion and be visible from the iconic architectural form.

Multiple benefits are possible from this Hexi New Town model:

- 1) the area where the project is located could be strengthened with “real” civic facilities of arts or culture. The presence of arts or culture is substantial and of high design standard, and enthusiastic citizens and visitors will be attracted by the landmark architecture and be willing to go there and participate;
- 2) the mixed-use project could not only provide amenities needed by the community but also make a statement of the prestige of being part of an iconic cultural element and stress the importance of the arts to the neighborhood; it will create a strong identity for the project itself and the area where it is located;
- 3) the planning and design need to follow the guidelines by the public side. The iconic nature of a mixed-use cultural project means that the city may “often want to retain authority over design of the work (architectural concept);” a public-private partnership could help to separate the project design from the private sector to award to an architect directly by the city via design competition (Bergere, 2016). This unconnected competition for project design may enable the city to pick the most suitable plan and make sure the image of the project is consistent with the city’s master plan;
- 4) the project can help to revitalize the area and introduce arts to places that lack civic activities. Cultural programs for the public will give a new life to the atmosphere and create a synergy with the adjacent commercial element. At the same time, nonprofit arts institutions will enjoy more opportunities to face the audience;
- 5) private developers involved can create a unique image or brand in the market and deepen the relationship bond with their customers who value

and appreciate arts; the presence of culture and the increasing footfall brought by diversified facilities could result in more revenue and increased revaluation property value;

- 6) public private partnership has the advantage in risk sharing and diversification. The project could benefit from both the construction and funding expertise of the private developer and the planning and policy support from the public sector, such as incentives from zoning, land concession, tax abatements, municipal bonds, and lower interest rates. The operations of the cultural area might be handled by the management company authorized by the city, by the private developer, or by the arts institution (for instance, symphony orchestra) itself. Private developer as the major operator might reduce the chance of bottleneck at profit making, but management by the professional symphony orchestra may have advantage in establishing the reputation of both the orchestra and the hall. The reputation and professionalism can help educate the arts and cultural market that is still at an early stage.

In general, every mixed-use cultural project needs to face the complexity of the cooperation among stakeholders and requires negotiation, compromise, and tradeoffs by key players. In spite of the challenges in the Hexi New Town model, this model is likely to suit the market and business conditions of China and might provide mutual benefits for all participants. This model, or the mixed-use cultural projects as a whole, is relatively new, and its lasting effects won't be crystal clear in a short period of time. However, it is worth the recognition as an innovative and important project model for research, experiment, and hybridization.

## References

- Arquitectonica International Corporation. (2018). *City of Dreams*. Retrieved from Arquitectonica: <http://arquitectonica.com/blog/portfolio/hospitality/city-of-dreams/#>.
- Beijing Municipal Bureau of Statistics. (2017). *2016 Quannian Beijing jumin renjun xiaofei zhichu qingkuang 2016 年全年北京居民人均消费支出情况 [2016 Beijing private consumption expenditure report]*. Retrieved from Beijing Municipal Bureau of Statistics: [http://www.bjstats.gov.cn/tjsj/kshcp/201702/t20170210\\_368397.html](http://www.bjstats.gov.cn/tjsj/kshcp/201702/t20170210_368397.html).
- Beranek, L. (2004). *Concert Halls and Opera Houses: Music, Acoustics, and Architecture*. New York: Springer.
- Beranek, L. L. (2016). Concert hall acoustics: Recent findings. *The Journal of the Acoustical Society of America*, 139(4), 1548-1556.
- Bergere, F. (2016). Ten years of PPP: An initial assessment. *OECD Journal on Budgeting*, 15/1, 31-123.
- Bruns-Berentelg, J. (2014). *HafenCity Hamburg – Identity, Sustainability and Urbanity*. Hamburg: HafenCity Hamburg GmbH.
- Bruns-Berentelg, J. (2017). *HafenCity, 21st Century, Urban Development, Continuity & Transformation*. Brussels: HafenCity Hamburg GmbH .
- Cameron, S., & Coaffee, J. (2005). Art, Gentrification and Regeneration - From Artist as Pioneer to Public Arts. *European Journal of Housing Policy*, 5, 39-58.
- Christie & Co. (2018). *The German Hotel Market: Overview of 6 key cities*. Christie & Co.
- City of Dreams. (2018). *The House of Dancing Water*. Retrieved from City of Dreams Macau: <https://www.cityofdreamsmacau.com/en/enjoy/entertainment/the-house-of-dancing-water/index.html>.
- Davis, P. (2017). *Cost model: New-build concert halls*. London: AECOM.
- Eichler, J. (2014). *Culture under construction: China's new concert halls*. Retrieved from Boston Globe: <https://www.bostonglobe.com/arts/music/2014/05/31/culture-under-construction-inside-china-new-concert-halls/w38ZPw9DRUGm8EMgwKbh1J/story.html>.
- Fiedler, J., & Schuster, S. (2016). The Elbphilharmonie Hamburg. In G. Kostka, & J. Fiedler, *Large Infrastructure Projects in Germany: Between Ambition and Realities* (pp. 39-85). Palgrave Macmillan.
- German Design Award. (2018). *The Westin Elbphilharmonie*. Retrieved from German Design Award: <https://www.german-design-award.com/en/the-winners/gallery/detail/18083-the-westin-elbphilharmonie.html>.
- gmp. (2016). *A new stage for the prestigious Sichuan Conservatory of Music gmp Architects win competition for the Urban Concert Hall in Chengdu, China*.

- Retrieved from gmp-architekten: [https://www.gmp-architekten.com/uploads/media/160520\\_PM\\_Chengdu\\_en\\_01.pdf](https://www.gmp-architekten.com/uploads/media/160520_PM_Chengdu_en_01.pdf).
- Grodach, C., Foster, N., & Murdoch, J. (2014). Gentrification and the Artistic Dividend: The Role of the Arts in Neighborhood Change. *Journal of the American Planning Association* (80(1)), 21-35.
- Guetzkow, J. (2002). *How the Arts Impact Communities: An introduction to the literature on arts impact studies*. Princeton: Princeton University.
- HafenCity Hamburg GmbH. (2018). *The HafenCity project*. Retrieved from HafenCity: <https://www.hafencity.com/en/overview/the-hafencity-project.html>.
- Hamburg. (2018). *Economic Clusters*. Retrieved from hamburg.de: <https://www.hamburg.com/business/clusters/>.
- Hamburg Marketing. (2018). *Speicherstadt and Kontorhaus District: Facts and Figures*. Retrieved from Hamburg Marketing: <https://marketing.hamburg.de/fact-sheet-unesco-world-heritage-speicherstadt-und-kontorhausdistrict-with-chilehaus.html>.
- Hammond, M. (2006). *Performing architecture: opera houses, theatres and concert halls for the twenty-first century*. London; New York: Merrell Publishers Limited.
- Hardy, H. (2006). Organization: Process and Team. In H. Hardy, *Building Type Basics for Performing Arts Facilities* (pp. 155-161). Hoboken, N.J.: John Wiley.
- Hardy, H. (2006). Planning the Theater. In H. Hardy, *Building Type Basics for Performing Arts Facilities* (pp. 1-5). Hoboken, N.J.: John Wiley.
- Heathcote, E. (2016). *The problem with building concert halls*. Retrieved from The Financial Times: <https://www.ft.com/content/08332854-4ceb-11e6-8172-e39ecd3b86fc>.
- Herzog & de Meuron. (2017). *Press Kit Project Description*. Hamburg: The Elbphilharmonie.
- Hexi New Town Planning Bureau. (2017). *Zongti guihua 总体规划 [Master plan]*. Retrieved from New Town Nanjing Gov: [http://newtown.nanjing.gov.cn/xcgh/ztgh/201703/t20170315\\_4397553.html](http://newtown.nanjing.gov.cn/xcgh/ztgh/201703/t20170315_4397553.html).
- Holden, M. (2016). *Acoustics of multi-use performing arts centers*. Boca Raton: CRC Press.
- Latham, L. (2016). *The uniquely spectacular Elbphilharmonie in Hamburg: "An outstanding project the likes of which will never happen again in the city"*. Retrieved from City A.M.: <http://www.cityam.com/239602/the-uniquely-spectacular-elbphilharmonie-in-hamburg-an-outstanding-project-the-likes-of-which-will-never-happen-again-in-the-city>.
- Leigh & Orange. (2012). *The House of Dancing Water Theatre Foyer*. Retrieved from Leigh Orange: <http://www.leighorange.com/project/house-dancing-water-theatre-foyer/>.



- McCarthy, K. F., Ondaatje, E. H., Zakaras, L., & Brooks, A. (2004). *Gifts of the muse: reframing the debate about the benefits of the arts*. Santa Monica, CA: RAND Research in the Arts.
- Melco Resorts & Entertainment Limited. (2018). *Annual Report 2017*. Hong Kong, Macau: Melco Resorts & Entertainment Limited.
- Nagata Acoustics. (2017). *Elbphilharmonie Hamburg, Grosser Saal*. Retrieved from Nagata: [http://www.nagata.co.jp/e\\_sakuhin/factsheets/Elbphilharmonie.pdf](http://www.nagata.co.jp/e_sakuhin/factsheets/Elbphilharmonie.pdf).
- Nanjing Municipal Bureau of Statistics. (2017). *Nanjingshi 2016 guomin jingji he shehui fazhan tongji gongbao 南京市 2016 年国民经济和社会发展统计公报 [Nanjing 2016 economy and development statistical report]*. Retrieved from Nanjing Gov: [http://www.nanjing.gov.cn/gointonj/developnj/countport/201703/t20170328\\_4414170.html](http://www.nanjing.gov.cn/gointonj/developnj/countport/201703/t20170328_4414170.html).
- National Bureau of Statistics. (2017). *Zhonghua renmingongheguo 2016 guomin jingji he shehuifazhan tongji gongbao 中华人民共和国 2016 年国民经济和社会发展统计公报 [China 2016 economy and development statistical report]*. Retrieved from National Bureau of Statistics: [http://www.stats.gov.cn/tjsj/zxfb/201702/t20170228\\_1467424.html](http://www.stats.gov.cn/tjsj/zxfb/201702/t20170228_1467424.html).
- Philharmonie de Paris. (2018). *Press kit*. Paris: Philharmonie de Paris.
- Puu, T. (2006). *Arts, sciences, and economics: a historical safari*. Berlin: Springer.
- Qin, A. (2016). *China's Smaller Cities Struggle to Cultivate an Interest in Classical Music*. Retrieved from The New York Times: [https://www.nytimes.com/2016/04/21/arts/music/chinas-smaller-cities-struggle-to-cultivate-an-interest-in-classical-music.html?\\_ga=2.12279664.513110358.1529933160-1277340969.1529933160](https://www.nytimes.com/2016/04/21/arts/music/chinas-smaller-cities-struggle-to-cultivate-an-interest-in-classical-music.html?_ga=2.12279664.513110358.1529933160-1277340969.1529933160).
- Rose, K., Daniel, M. H., & Liu, J. (2017). *Creating Change through Arts, Culture, and Equitable Development: A Policy and Practice Primer*. Oakland: PolicyLink.
- Rybczynski, W. (2016). *The Concert Hall, Reimagined*. Retrieved from Architect Magazine: [http://www.architectmagazine.com/design/culture/the-concert-hall-reimagined\\_o](http://www.architectmagazine.com/design/culture/the-concert-hall-reimagined_o).
- Snedcof, H. R. (1985). *Cultural Facilities in Mixed Use Development*. Washington: Urban Land Institute.
- Snowball, J. D. (2008). *Measuring the value of culture: methods and examples in cultural economics*. Berlin : Springer.
- Statistisches Bundesamt. (2018). *Consumption expenditure - Germany*. Retrieved from Statistisches Bundesamt (Destatis): <https://www.destatis.de/EN/FactsFigures/SocietyState/IncomeConsumptionLivingConditions/ConsumptionExpenditure/Tables/Territory.html>.

- The Elbphilharmonie. (2014). *Elbphilharmonie Hamburg*. Hamburg: HamburgMusik gGmbH - Elbphilharmonie und Laeishalle Betriebsgesellschaft.
- The Elbphilharmonie. (2018). *Key Figures*. Hamburg: The Elbphilharmonie.
- The Elbphilharmonie. (2018). *The Elbphilharmonie Hamburg: A new architectural landmark for the Hanseatic City of Hamburg*. Hamburg: The Elbphilharmonie.
- The European Commission. (2018). *Hamburg*. Retrieved from The European Commission: <https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/base-profile/hamburg-0>.
- The Free and Hanseatic City of Hamburg. (2014). *Bericht des Parlamentarischen Untersuchungsausschusses "Elbphilharmonie"*. Hamburg: The Free and Hanseatic City of Hamburg.
- UNESCO. (2015). *Speicherstadt and Kontorhaus District with Chilehaus*. Retrieved from UNESCO: <https://whc.unesco.org/en/list/1467/>.
- Webb, D. M. (2006). The Business and Art of Theater Management. In H. Hardy, *Building Type Basics for Performing Arts Facilities* (pp. 163-173). Hoboken, N.J. : John Wiley.
- Witherspoon, R. E., Abbett, J. P., & Gladstone, R. M. (1976). *Mixed-Use Developments: New Ways of Land Use*. Washington: Urban Land Institute.
- Zaha Hadid Architects. (2018). *Morpheus Hotel at City of Dreams, Macau*. Retrieved from zaha-hadid: <http://www.zaha-hadid.com/architecture/city-of-dreams-hotel-tower-cotai-macau/>.
- Zaha Hadid Architects. (2018). *Nanjing International Youth Cultural Centre*. Retrieved from Zaha-Hadid: <http://www.zaha-hadid.com/architecture/nanjing-culture-conference-centre/>.

## Appendixes

### The Elbphilharmonie Development from 2004 to 2017

In 2004, the developer failed to reach an agreement with the city on the funding of the construction so he left the project. After the developer gave up the project, the city took over the architectural contract with the architect firm. After a Europe-wide tendering procedure, the city awarded the construction of the whole project to Adamanta. Based on the contracts between the city and Adamanta signed in 2007, Adamanta was responsible for the construction work, the operation, the transfer of ownership of the concert area and the residential area after completion, and the leasing of the remaining commercial area.

Despite the architectural beauty of the Elbphilharmonie, the financials of the project could be called a disaster. When the developer presented the draft design by Herzog & de Meuron, the construction cost was estimated at Euro 75.3 million and the total cost Euro 119.8 million, and there would be no financial burden on the city. In 2005, during the tendering, total cost increased to around Euro 190 million; it was estimated that the commercial area would cost Euro 69.7 million and the concert area would cost Euro 117 million, which would be financed by private donations (Euro 30-35 million, collected by the Elbphilharmonie Foundation), the city (Euro 70 million), and cross-financing from the commercial profit (Euro 10 million). Meanwhile, there were also some design changes to decrease the floor height to add more hotel rooms and apartments to increase profit margin, which led to new construction estimates.

2006 was the year when the original cross-financing model was finally given up to another model: the city took ownership of the commercial part (except the residential units), obtained favorable interest rates from banks, leased the commercial area to Adamanta/Hochtief Construction AG for twenty years after construction completion, and planned to use the leasing income for interest payments and the exit

from commercial area at the end of twenty years for remaining debt (The Free and Hanseatic City of Hamburg, 2014). This “forfeit model” looked attractive as it reduced cost due to better interest rates, provided the city a higher control over construction and management of the commercial area (such as the right to select new tenants), and seemed to promise a higher operation standard (Fiedler & Schuster, 2016). When the contracts were signed with the construction company, total cost climbed higher to approximately Euro 352 million. In retrospect, this number still underestimated the total cost of the project.

April 2007 saw the foundation stone ceremony but also the start of contract amendments due to many construction interruptions caused by incomplete plans, a lack of capacity by ReGe for claim verification and management, and unfriendly work relationship among stakeholders. The 2008 reelection of the mayor of Hamburg led to several key personnel changes; despite four amendments (the third one was not successful) from 2007 to 2008 with rising budget, interruption notifications still kept on coming in in 2009; the project began to negatively influence the reputation of Herzog & de Meuron and the construction company between 2010 and 2011, and a new mayor was elected in 2011. After construction stop in 2011, all parties attempted to reestablish the cooperation and trust among stakeholders and to push the project forward. In April 2013, the fifth amendment was signed for a new total budget (as showed in Chart 1 above on page 31), a clearer responsibility allocation among all parties, and a fixed schedule with contractual penalty. Since then, the construction progress went on as scheduled with no new financial claim. The Elbphilharmonie was opened as planned in January 2017.

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