INTERNATIONAL BACCALAUREATE EXTENDED ESSAY

An Exploration into how Herzog & de Meuron designed the Tate Modern by considering the industrial attributes that affect the function of the museum.

How did the Bankside Power Station's former design effect the restoration and what effect did the changes have?

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Abstract:

This essay explores the approach Herzog & de Meuron took to restore and design the Tate Modern. The building being restored was the Bankside Power Station, designed by Giles Gilbert Scott in 1947. The Power Station was designed with an industrial purpose at its heart. I wanted to discover what procedure was necessary to adapt a former industrial building to serve a very opposing purpose, which led me to my research question: "How did the Bankside Power Station's former design effected the restoration and what effect did the changes have?"

I proceeded by analysing the original structure of the Bankside Power Station and in which ways Herzog & de Meuron changed elements of the building; especially the reasons for changing sections of the building. I analysed the single parts of the former Power Station were investigated to gather information about the approach, ideas and intended effects.

To investigate the structure of the Tate Modern, I was analysed various layouts and images. My main sources were online articles, essays and the homepages of the artists, the Tate and Herzog & de Meuron. Most articles were just documenting and informing the readers with the very basic information, but I found the website of Herzog& de Meuron reflected their thinking process. Since the topic is fairly new, there are not many books published, forcing me to use the internet as my main source.

I concluded that Herzog & de Meuron accepted the structure given to them, by embracing its character. The changes made were to adapt the buildings impression on the visitor and to provide places to host large and small artwork, while establishing the Tate Modern as a public space in London.

Word Count: 276

Content

Introduction:

The Bankside Power Station was built between 1947 and 1963, to supply enough electricity in a growing London. Unfortunately the iconic building was closed in 1981. London was left with an extraordinary building, lacking a purpose. The Tate choose the building for hosting their modern art gallery and decided on Herzog & de Meuron as architects because their concept left most of the galleries design and character untouched. Even though the building served an industrial purpose, generating electricity, it was not designed to host art or allow millions of people to visit it. To serve an opposing purpose as an art gallery, yet retain the Power Station's character in the final building, led me to my research question: "How did the Bankside Power Station's former design effect the restoration and what effect did the changes have?"

However, the enormous scale of the Turbine Hall and Switch House is due to their former function; housing the large machinery. Giles Gilbert Scott designed a monolithic building externally that matched the internals impressive power with the sublime scale and design of the machinery. It is essential to analyse the changes Herzog & de Meuron implemented in order to open the building to the public. By analysing the approaches of Herzog & de Meuron and Giles Gilbert Scott and the changes made. The essay will investigate how the former industrial attributes effected the final design of the Tate Modern by influencing the approach of the architects.

The Tate Modern

In 1994 the Swiss architecture office, Herzog & de Meuron, was chosen to create the Tate Modern in the old Bankside Power Station, London. The Power Station was built between 1947 and 1963[1], designed by Sir Gilbert Scott. Its location and size was critisesed[1], since it is in the heart of London. However, it was built with attention given to the height and the size[1]. The cooling tower should not have been higher than St. Paul's Cathedral since people were afraid it would dwarf the iconic building, which is on the opposite side of the Thames. Unfortunately this resulted in excess pollution as the tower was too low. It finally closed in 1981, because it was not economically and environmentally viable[1]. In 1996 the restoration work finally began and the building was reduced to its bare brick, steel and concrete structure[2].

Herzog & de Meuron had to deal with a unique task. The Bankside Power Station was enormous in scale, which made it outstanding, but also its form was quite different from other art galleries, be it old ones like the Tate Britain, a classical building, or modern buildings such as the Guggenheim Museum that has an abstract sculptural structure. Also, the situation was different because the building was not built to display art, but to generate electricity. It was meant to fulfil an industrial purpose. The size could not be decreased and the whole building structure had to be included in the design and suit its environment. By using a pre-existing building it could have limited their possibilities to fulfil the objective of delivering the best design with the best structural purpose. Even though it limited the architects to an extent, it allowed them to embrace aesthetical perspectives which could be utilised for a unique visitor

[1] http://www.glias.org.uk/gliasepapers/bankside.html [accessed 08.09.2014]
[2] http://www.herzogdemeuron.com/index/projects/complete-works/126-150/126-tate-modern.html [accessed 08.09.2014]

experience. The Turbine Hall is arguably the most iconic feature of the Tate Modern; Herzog & de Meuron saw from the beginning great potential by insisting on using its size to benefit the art galleries concept.[3]

The idea was to keep the atmosphere of the historical building by transforming it from a purpose building to a public building with a cultural heritage.

Fig. 1 Tate Modern

[3] http://www.herzogdemeuron.com/index/projects/complete-works/126-150/126-tate-modern.html [accessed 08.09.2014]

Bankside Power Station

Fig. 2 Bankside Power Station about 1985

The Bankside Power Station, prior to restoration, was a steel structure with brown and beige brick walls around it. It had simple cuboid forms consisting of the main building and the chimney shown in figure 2. The chimney stands centrally on the front-side of the building. People may argue that it's simple monolithic form and the size cause viewers to feel insignificant. Also its pale brick colours make it cold and dark building, blending into the industrial surroundings palette.

The exterior is a striking silhouette in the London skyline, shown in figure 2, illustrates Bankside Power Stations enormous size and unique form. The chimney is placed in the

middle of the buildings side, which is not the best place[4] since the fuel from the Oil tanks had to be carried across the building to be burned and it is placed outside the building, to enhance its size and form, shown in figure 3. For a functional purpose built building it is also odd that the building had the typical columns of art deco buildings on the side of the Switch house and the chimney. This implies aesthetics were important to Giles Gilbert Scott. It represented the modern and strong London in hand of the *'prestige and modernity of electricity'*[5]. In this perspective the design was important for the image of London.

The argument that Giles Gilbert Scott was building a Power Station in an iconic design is also evidenced by the way the Bankside Power Station was built. The 4.2 million bricks are supported with a two meter concrete wall[6]. Considering that the Bankside Power Station was built in 1952-1963 it could be argued that concrete, which was at the time one of the most modern material and could create more stable buildings in a shorter period of time, as it took less time than to lay bricks and had a modern aesthetic, therefore should have been used for the external aesthetics. An iconic Power Station was demanded and Giles Gilbert Scott gave his Power Station the powerful and modern look with its scale and simplicity, but the bricks allowed the Art Déco detailing. However, the building's chimney was not allowed to be taller than St Paul's Cathedral, because people were afraid it would *dwarf* St Pauls Cathedral.[7] After the oil crisis oil became uneconomical and with the pollution of the too small chimney, the Bankside Power Station had to be closed in 1981.[8]

[4] http://www.herzogdemeuron.com/index/projects/complete-works/126-150/126-tate-modern.html [accessed 08.09.2014]
[5] Hannah, L. (1979) Electricity before Nationalisation: a study of the development of the Electricity Supply Industry in Britain to 1948, Macmillan, p.134.

[6] http://www.engineering-timelines.com/scripts/engineeringItem.asp?id=973 [accessed 18.09.2014]
[7] http://www.glias.org.uk/gliasepapers/bankside.html#20 [accessed 18.09.2014]
[8] http://www.glias.org.uk/gliasepapers/bankside.html#20 [accessed 18.09.2014]

The impression of beauty in the Bankside Power Station can be compared to the philosophical concept: "The sense of the beautiful and sublime", by Immanuel Kant, which states two ways how we can be emotionally moved and be impressed: the *sublime must always be large; the beautiful may be small.*[9] The sublime *must be simple* and *the beautiful may be decorated and andorned.*[9]The theory suggests an emotional effect through enormous size, which the Power Station's simple, monolithic forms impress by simplicity and scale. The Bankside Power Station possessed such a style and effected the viewer emotionally by imposing its power and dominance. Furthermore, the concept defines three different kinds of the sublime. The terrifying including *melancholy*[9]; the noble *quiet admiration*[9] and the magnificent; which is *beauty spread over a sublime place*[9]. Due to its utilitarian design and size it expresses power and affects the viewer by including terrifying admiration, which is the first mentioned model of the sublime.

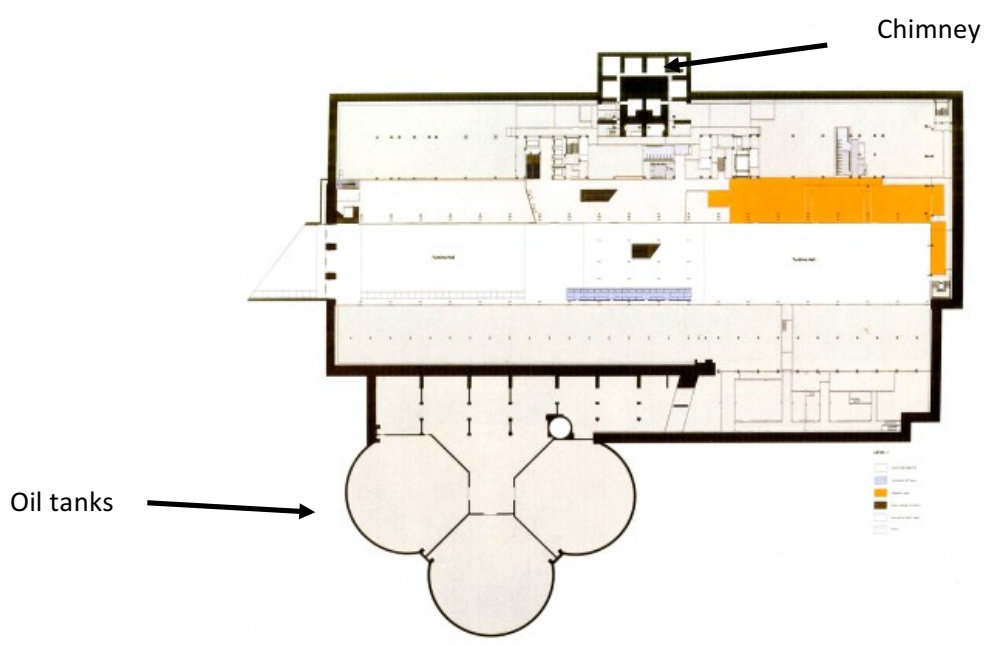

Fig. 3 Bankside Power Station Layout

[9] http://www.wisdomportal.com/Cinema-Machine/Kant-Beautiful&Sublime.html [accessed 24.09.2014]

The Tate consulted various artists about places they would prefer for an art exhibition space the Tate came to the conclusion that they needed an old building comparable to a *warehouse*[10] with *loft*[10] spaces. It was decided to build the new art gallery in the Bankside Power Station. After the machinery was removed, the whole building seemed an empty cavern, but Herzog &de Meuron *denied this 'empty' condition of the building*[10] from the start. They kept the structure of the building as the only architects in the competition[10] and developed a new concept while keeping the size of the Turbine Hall untouched. The layout of the building was divided into three parts. The Turbine Hall, the Switch House and the chimney.

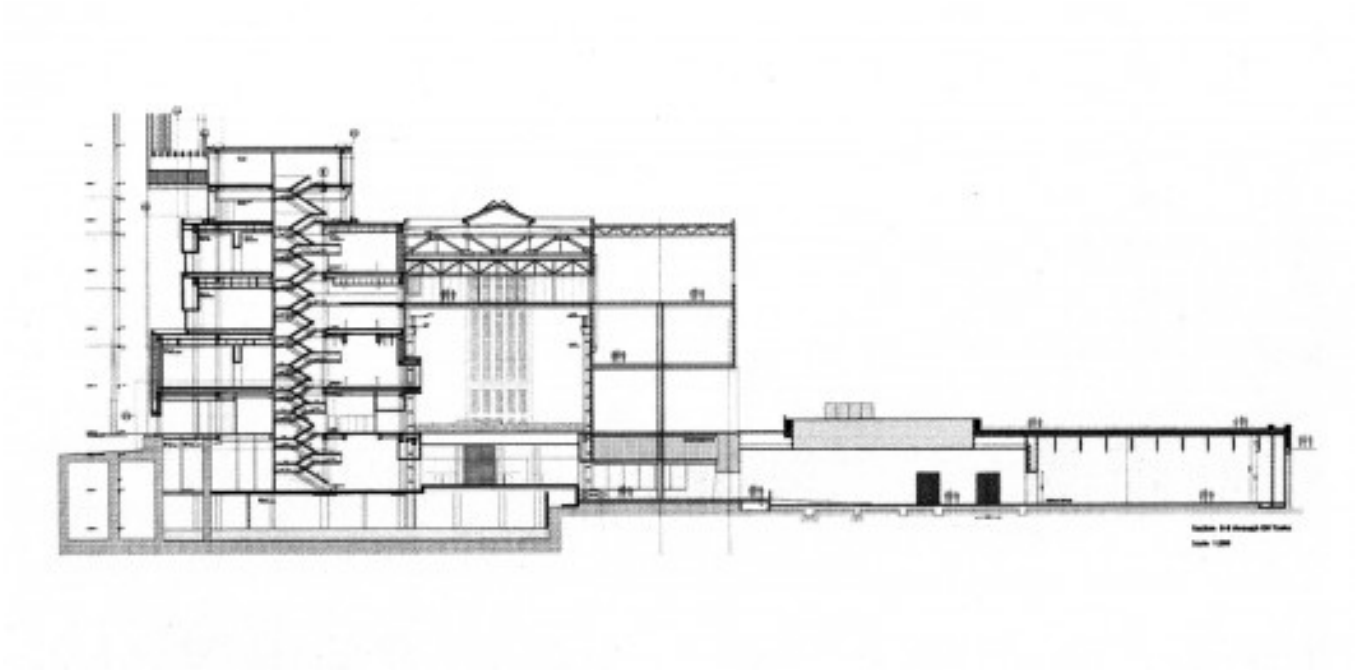

Fig 4. Side cut of the Tate Modern

[10] Davidts Wouter The Vast and the Void: On Tate Modern's Turbine hall and "The Unilever Series"

The Turbine Hall

The Turbine Hall carries the most of the buildings history and is its most impressive architectural part. Even so the other architects were afraid to use all of its size[11]; Herzog & de Meuron extended the space further by including a ramp leading from outside through the main entrance into the building and bringing the visitors und the sea level of the Thames[12]. In total the Turbine Hall is 155m long, 23m wide and 35m high.

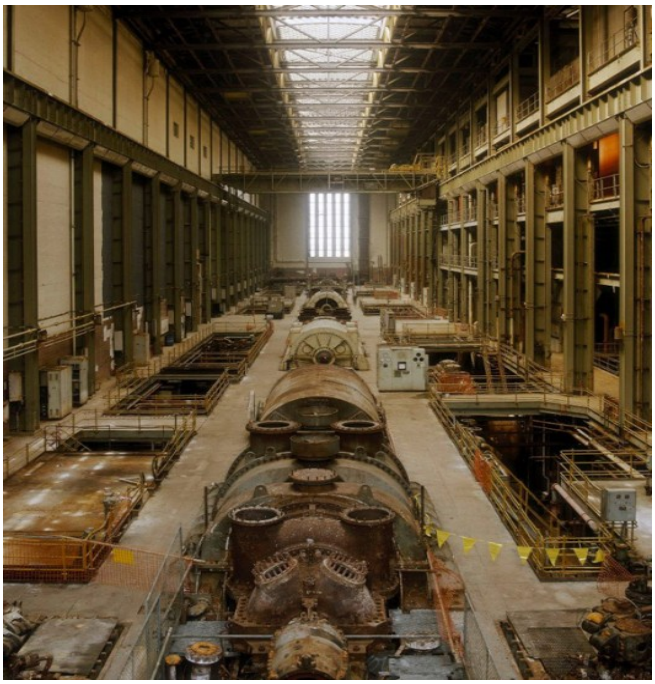

Fig. 5 Old Turbine Hall

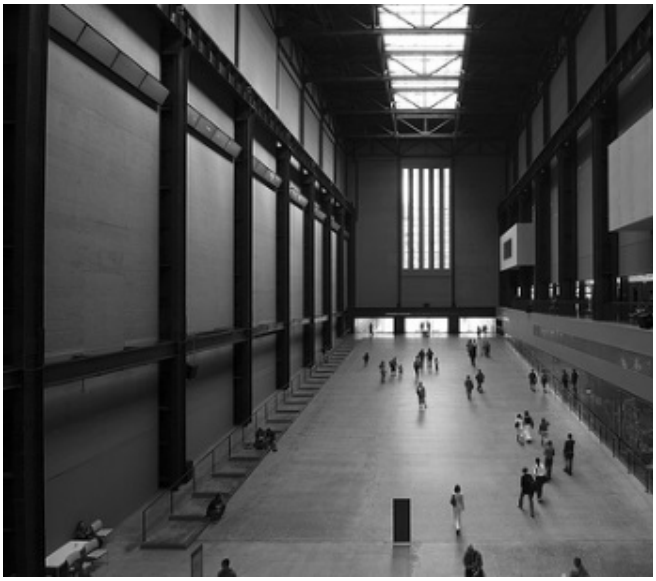

Fig. 6 New Turbine Hall

Compared to the old design, including still the machinery, the structure did not change a lot. The new Turbine Hall is bigger, but remained with the original steel frame, the brickwork, the top and bay windows. The colours of the steel frame was changed to black and the colour of the white brick wall was changed to grey. Also a new steel construction was built directly behind the old steel frame, to hide it[14]. In total

[11] Davidts Wouter The Vast and the Void: On Tate Modern's Turbine hall and "The Unilever Series" [accessed 26.09.2014]

[12] http://www.herzogdemeuron.com/index/projects/complete-works/126-150/126-tate-modern.html [accessed 18.09.2014]

the building received a darker Turbine Hall, which exemplified its original form. The dark colours are beneficial for displaying art, because they provide a neutral background which does not interfere with the most artwork. The only bright elements are the top windows and the bay windows. They project natural light and look like glowing bodies of light[13] standing in contrast to the darker Turbine Hall.

However, in which way does the Turbine Hall help to display art? The space was given, but the hall has multiple purposes. With its space, the gallery could decide to include any art piece they want or leave it up to the artist how to use the space as they did in the Unilever Series. The hall is also the main entrance and leads the visitors into the exhibitions and the gallery. It helps the logistics, since it is located in the middle of the building, all places are around and can be accessed through it and the hall provides the space for various workshops. Herzog de Meuron described it as *the buildings centre of gravity*[14]and *one of London's most new powerful public spaces.*[14] Even though the Tate Modern was expected to have a million visitors a year, it attracted 4.8 million visitors[15]. There are no reports concerning overcrowding, so it can be assumed that its due its long and wide entrance, giving the Tate Modern the logistic space to avoid overcrowding. The main entrance open view into the Turbine Hall is also unique, since the visitor does not find himself being in a labyrinth to find the artwork, he is confronted with it immediately.

[13] http://www.herzogdemeuron.com/index/projects/complete-works/126-150/126-tate-modern.html [accessed 09.09.2014]
[14] Davidts Wouter The Vast and the Void: On Tate Modern's Turbine hall and "The Unilever Series"
[15] http://www.alva.org.uk/details.cfm?p=423 [accessed 24.09.2014]

The Unilever Series:

The Turbine Hall is a revolution for an art gallery. As an exhibition space it was the first attempt to combine art with a room of that size and scale and like a white sheet of paper it gives the artists full freedom to be creative and display their interpretation in the way they want. The series was sponsored from 2000 until 2012 by Unilever who spent 4.4 million pounds for the exhibitions over the twelve years.[16] The Unilever series demonstrates significantly the use of sublime artwork of the three different types, which were stated in Immanuel Kant's concept.

Fig. 7 Marsyas in the turbine hall

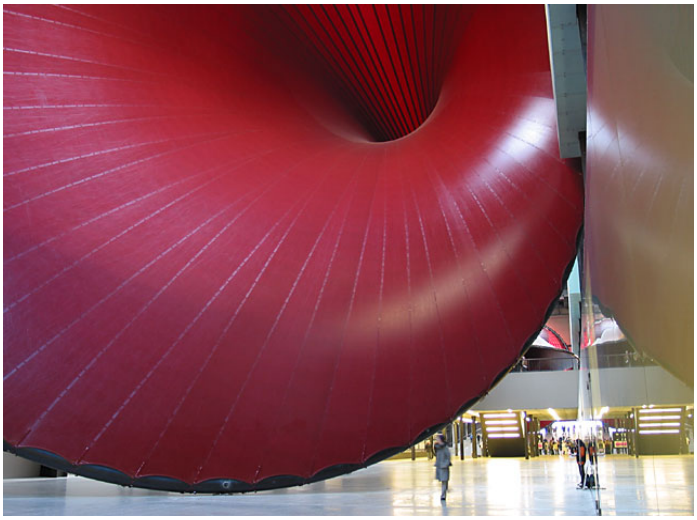

Fig. 8 Marsyas in comparison to a human

Marsyas, the artwork named after a satyr *flayed alive by the god Apollo*[17], by Anish Kapoor, was the third exhibition of the Unilever series. Anish Kapoor described the Turbine Hall as *'very complicated space that was not made to host art'*[18]. He tried to tackle the height of the

[16] http://www.theartnewspaper.com/articles/Tate+seeks+new+sponsor+for+Turbine+Hall+commissions/27009 [accessed 18.09.2014]
[17] http://www.tate.org.uk/whats-on/tate-modern/exhibition/unilever-series-anish-kapoor-marsyas [accessed 18.09.2014]
[18] Davidts Wouter The Vast and the Void: On Tate Modern's Turbine hall and "The Unilever Series"

Turbine Hall, by using its full length for his organic 'trumpet'[19], shown in figure 8. In the end he built an enormous sculpture consisting of PVC and three big steel rings in a monotonic red[19]. He used the terrifying openings, which let the viewer experience the three negative space, at the entrance and the bridge.[20]By entering in the Turbine Hall, visitors cannot avoid this experience, which is demonstrating his use of the sublime structure. Even though stating that the Turbine Hall was giving him problems he was most fascinated by the scale of his sculpture and wanted to find a place where it could stay after the exhibition ended, which shows that he liked his artwork and the effect it had in the Turbine Hall.[20]

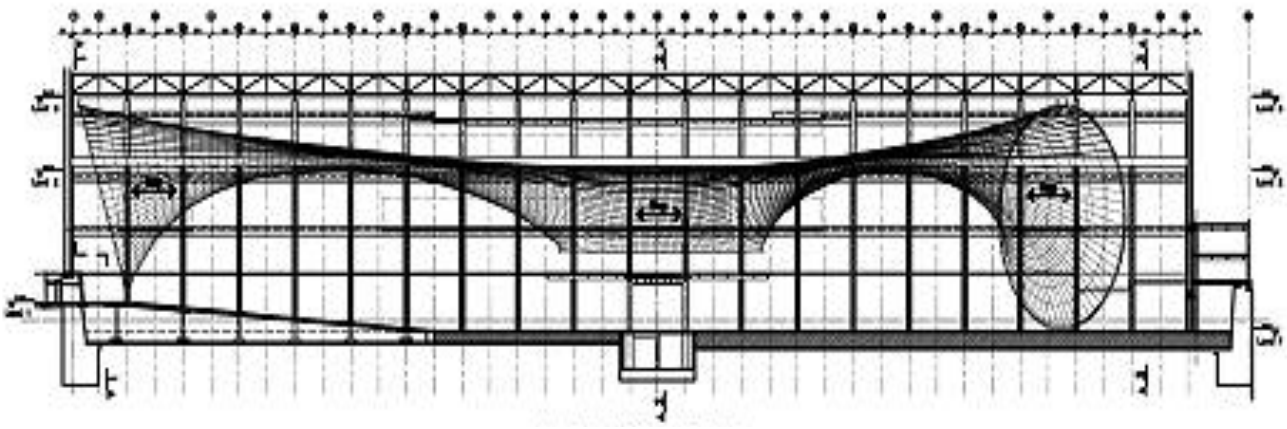

Fig. 9 Sidecut of Marsyas in the turbine hall

The Weather Project by Olafur Eliasson shows another way of using the colossal space of the Turbine Hall. Instead of using the space as a construction housing artwork, he used it as a sphere with a contrasting mood and atmosphere to the outdoors, resembling a sunset with fog and warm light as shown in figure 10 and 11. 'The Weather Project' asks: *'Has a weather*

[19] http://www.tate.org.uk/whats-on/tate-modern/exhibition/unilever-series-anish-kapoor-marsyas [accessed 18.09.2014]
[20] http://anishkapoor.com/156/Marsyas.html [accessed 18.09.2014]

phenomenon ever changed the course of your life dramatically?' [21] The hall allows the experimentation with our perception and changes in mood, because it is an enclosed space, isolated from the outside. It has the size in which people can interact with other people and the artwork, while conveying the sublime size of the weather. Together with the light he uses it gives a contrast to the outdoor environment and isolates the Turbine Hall as its own space. There is no other museum which could provide the possibilities for Olafur Eliasson to let visitors experience his *perceptual and sensory investigations.*[22] As Anish Kapoor he saw the space as *unfocused*[22] on art, but his exhibition was seen as extraordinary[22] and used effectively the space the Turbine Hall provided, to play with the visitor's mood and perception. His artwork is not passively in the space, it is interacting with it and makes people experience the noble sublime of quiet admiration.

Fig. 10 The Weather Project

Fig. 11 Interaction of people

Inspired by the Unilever series, other modern art museums such as the Guggenheim Bilbao took the idea of having a big space to display similar sculptures and house exhibitions as in the Unilever series. James Meyer, an American art historian, argues that the Unilever series

[21] http://www.olafureliasson.net/archive/artwork/WEK101003/the-weather-project [accessed 18.09.2014]
[22] Davidts Wouter The Vast and the Void: On Tate Modern's Turbine hall and "The Unilever Series"

success is due to its size, which *exceeds our perceptual understanding*[23] and does not fulfil its intentions from its content.[23]But the Unilever series is a success. The Weather Project alone had been visited by 2.3 million visitors in 6 months[23] and every single piece features a new unique idea, adapted to the extraordinary space.

[23] Davidts Wouter The Vast and the Void: On Tate Modern's Turbine hall and "The Unilever Series"

The Switch House & Light Beam

The Turbine Hall is not housing the permanent exhibition of the biggest modern art gallery in the world. Those works include paintings and life size sculptures, which had to be exhibited in a different place, suited to their size and would not be dwarfed by the scale of the Turbine Hall. In the former Switch House, where three levels are exhibition spaces, they were reduced to their empty shells[24] and designed to display art.

The levels of the Tate Modern vary in size. The minimum height is 5 metres, but as on level 3 it can reach up to 12 meters, to display larger artworks. The rooms are made in the same design and all are rectangular, but differ in size. The visitor will not have the feeling to move into different rooms since they are *uniform.*[24]

Fig. 12 Level 5 of the Tate Modern

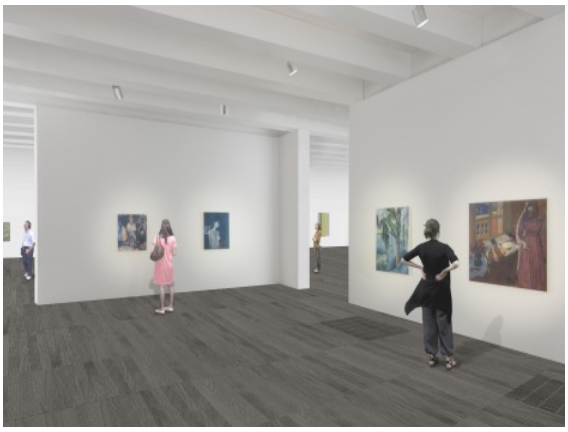

Fig. 13 Level 4 of the Tate Modern

[24] http://www.herzogdemeuron.com/index/projects/complete-works/126-150/126-tate-modern.html [accessed 09.09.2014]

As in the Turbine Hall the rooms were kept in a neutral design, using white as background colour and unfinished oak floors, which seem to have always been there[25], as the brick walls and the steel frames.[25] The room is illuminated with natural daylight through lateral windows on level 3-4 and the light beam on level 5, following the artists preference to work with natural daylight.[25] The artificial illumination is just directed on the artwork to let them stand out and avoid shadows[26]. The concept of the rooms in level three to five are similar to the Turbine Hall and represent a smaller, lighter version of it. The industrial design of the Tate Modern was kept by retaining its old windows and cast window frames and the same illumination through the old windows. Also the spaces seem as they are unchanged and belonged already to the old Power Station[25], but the rooms were changed to the loft like space, which the Tate wanted, without interfering with the buildings original atmosphere.

Fig. 14 Tate Modern at night

[25] http://www.herzogdemeuron.com/index/projects/complete-works/126-150/126-tate-modern.html [accessed 09.09.2014]

[26] http://www.engineering-timelines.com/scripts/engineeringItem.asp?id=973 [accessed 18.09.2014]

On top of the Switch House the Light Beam was built: A two storey glass box, projecting natural light at day and shines from inside out into the sky of London, making it seem to glow. The Bankside Power Station did not have as many windows as the buildings surrounding it, so was not illuminated and was standing in the dark, like a black spot between the glowing buildings of London. At day the Light Beam works with the buildings brickwork and form and creates a mix of Art Déco and modern architecture[27], by using glass as a contemporary building material and at night it enhances the Tate Moderns presence by letting it glow in the dark of London. With the Light Beam, the exterior illumination and the Swiss Light designed by Michael Craig-Martin, the Tate Modern is illuminated, which is enhances its unique form and size. As St Paul's Cathedral is illuminated at the opposite side of the Thames.

[27] http://www.herzogdemeuron.com/index/projects/complete-works/126-150/126-tate-modern.html [accessed 09.09.2014]

Accessibility and environment

To improve the Tate Modern as a new public place, gardens were created around it. They do not interfere with the design of the building, but make it open to the local community and give a place for visitors to relax. Also the green space allows the enormous size of the building to be softened brightens the atmosphere so that the visitor will not feel oppressed by the size of the building.

Fig. 15 Tate Modern garden

The gardens are public spaces open to everyone and used by the locals and students to relax and have workshops. Furthermore, the gardens decrease the original terrifying sublime impression of the building and soften it to the noble sublime, impressing by quiet admiration. The building used to convey power and dominance, but to fulfil its purpose as an art gallery and new public space, the powerful impression was not admirable and was adjusted by Herzog & de Meuron to impress by its creativity and atmosphere, which is passively present.

It can be assumed that the Power Station was built in the middle of London on the side of the Thames to supply it with water and it was more economically viable as transportation costs to London were reduced. Even though the location of the building was a problem, when it was a Power Station and polluted the neighbourhood with sulphur-dioxide[28]the problem did obviously not remain without the burning of oil and benefited the biggest modern art gallery in the world, by having a perfect location in the middle of London. The structure works together with the Turbine Hall, which is used as the main entrance and centre of the building. It made it possible to access the Tate Modern from two sides and does not hide its content. The previous industrial building was now opened in all directions to be accessed as a public space.

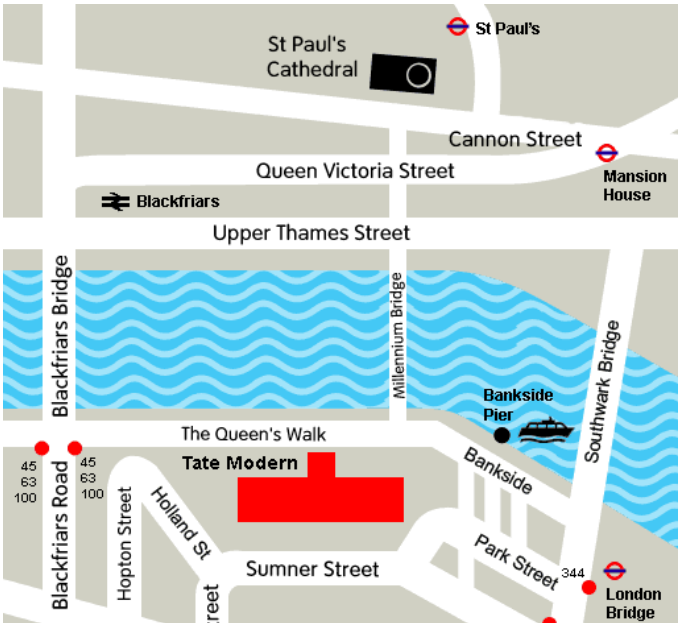

Fig. 16 Tate Moderns location

Due to its location the Tate Modern can be accessed by foot, bike, car and a river boat. The Southbank riverside tour features even a station stop at the Tate Modern. Also it has got its

[28] http://www.glias.org.uk/gliasepapers/bankside.html [accessed 09.09.2014]

own boat line: the Tate boat, which runs between the Tate Modern and the Tate Britain[29] and is accessible over the Thames by various bridges including the Millennium Bridge, shown in figure 16. Connecting the Tate Modern with other tourist attractions. Various bus, rail and metro stops are less than 0.5 miles placed around it.[29]

Other tourist attractions around the Tate Modern attract an impulse visit at the gallery and visitors of the Tate Modern spend their money at locations around it. Apart from the cultural advantages, it provides with its gallery, workshops and exhibitions, the Tate Modern also benefits London's economy with its 4.8 million visitors in 2013[30], which *generates an estimated 100 billion pounds in economic benefits to London annually.*[31]

The success of the Tate Modern leaded to planning an extension on top of the oil tanks. Herzog & de Meuron designed a tower in an abstract form, which is a crossover of a pyramid and a cuboid, consisting of similar bricks as the Tate Modern to fit next to it.

[29] http://www.tate.org.uk/visit/tate-modern/getting-here [accessed 26.09.2014]
[30] http://www.alva.org.uk/details.cfm?p=423 [accessed 24.09.2014]
[31] http://www.tate.org.uk/about/who-we-are/history-of-tate#modern [accessed 26.09.2014]

Conclusion

Herzo &g de Meuron had three major attributes to adapt from the Bankside Power Station:

- the intended terrifying sublime impression
- the size and dimensions
- the atmosphere and history.

The Bankside Power Station was an industrial building and was not meant to attract people inside. Instead it should impress them from a distance and show the power of industrialism as intended by Giles Gilbert Scott. Herzog de Meuron, therefore, changed it, while keeping its sublime impression, by keeping its dimensions. The terrifying sublime is unbeneficial for attracting visitors. The terrifying repelling industrial design, was opened with gardens to include nature and green spaces, welcoming the approaching visitors, by directing them through a wide ramp into the building. Furthermore, its industrial character was diminished with the Light beam and the Swiss Light, illuminating it at night, which enhances a noble sublime impression. These factors established the Tate Modern as a public area.

The size was needed for the Bankside Power Station. Even though the colossal size of the Turbine Hall was seen as a problem for an art gallery and did not fit the expectation of having loft like spaces, Herzog de Meuron used it to fulfil several functional purposes and left it open to the artists how to use the dimensions given to them. Even though the artists initially struggled to work in the enormous scale, they were challenged and it invited the interest of only the most creative installation artists. The very successful Unilever series demonstrates how a new approach from an architect can change the environment and creativity of an artist. Herzog de Meuron did provide the loft like spaces in the Switch House for hosting the

permanent exhibition, therefore, allowing the Tate Modern to house many different types of art.

The atmosphere of the building is unique and the common reason for restoring buildings is to retain their history and unique character. The history in the walls was kept, by leaving the structure untouched and mimicked in the Switch house to fit into the style of the building.

In my perspective, the Bankside Power Station had major problems, due to limitations of size and a poor functional design for a building which has to fulfil the specific purpose of a Power Station. However, the combination of aesthetic and industrial purpose led to a unique and impressive building, which must be kept.

Herzog & de Meuron did not compromise the existing architectural strength of the building. The Bankside Power Station allowed Herzog & de Meuron to embrace aesthetical perspectives which could be utilised for a unique visitor experience.

The Bankside Power Station's former design effected the restoration by influencing the approach to the concept of a contemporary art gallery resulting in the transformation to a public friendly building. They amplified the imposing Power Station in the London skyline by incorporating the Light Beam, yet succeeded in drawing the public in and through the Turbine Hall to a Cathedral of art.

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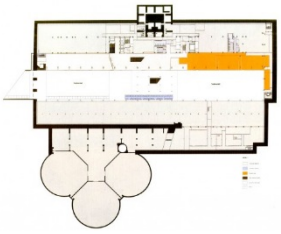

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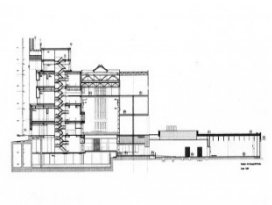

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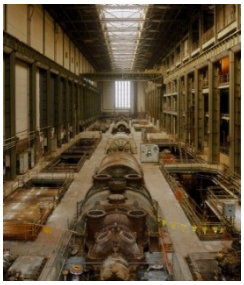

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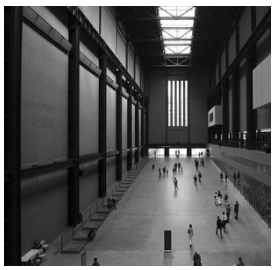

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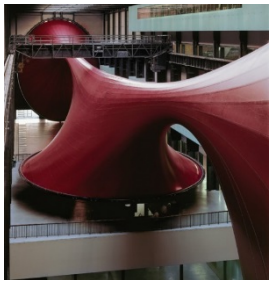

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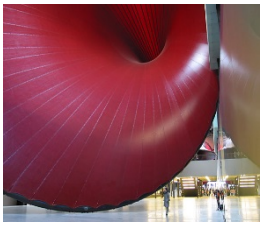

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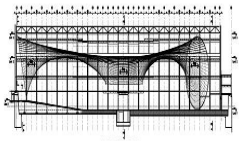

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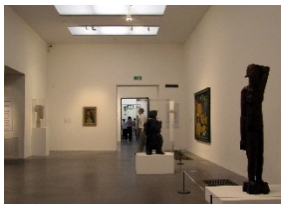

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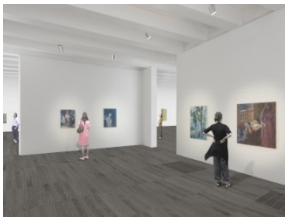

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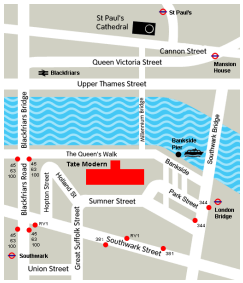

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