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UTZON 100

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Abstract: *Jørn Utzon, the Danish architect genius would be 100 years old in 2018, and he passed away exactly 10 years ago. Although, he produced an unparalleled professional output (including a number of implemented projects, many not built plans and some writings) on five continents, he has remained relatively less known worldwide in general, and virtually unknown in Central and Eastern Europe in particular. The paper intends to salute his achievements with reviewing his life and professional carrier with some selected projects, including his 'brand', his impact and some lessons for contemporary professional practice. It is largely based on my recent research that concludes in the publication of a monography, due in December 2018, in Hungary.*

Keywords: *history of modern architecture, new tradition, additive architecture, Sydney Opera House, 'Utzon brand'*

'God is in the details' (Mies van der Rohe)

1. INTRODUCTION

To indicate to what extent it is almost impossible to do justice to the topic in a limited paper, there are some 25 thousand drawings (and other documents) in the Utzon Archives in Denmark, of which only a part has been processed so far (it is still an ongoing activity). Some new, earlier unknown drawings and projects have popped up even recently. In addition, the Archives is the custodian of only a part of the Utzon heritage, the other batch is taken care by the Master's eldest son, Jan Utzon (who is also an architect) in a store elsewhere.

To begin with, Sigfried Giedion, the eminent Swiss architectural historian and critic of modern architecture, inserted a new chapter into the fifth edition (1967) of his opus magnum, *Space, Time and Architecture* for the sake of Utzon, with the title 'The Third Generation, describing the young architect as the leading representative of the so called '*New Tradition'*. Utzon's contribution (i.e. combining modern technology with a fresh organic approach) had arrived at the right time as the modern movement was getting 'exhausted' by the late fifties with the boredom of hygiene and the right angle.

It is virtually unprecedented, that a young, internationally almost unknown architect registers with one single building in the universal history of architecture, in fact with one of the most photographed building complexes of the world that has become a strong sign in place-marketing and the symbol of an entire, relatively young multicultural nation.

It is worth noting right at the beginning that any significant achievement in art, architecture or science requires a set of essential components: a supportive family background, responsive education to foster creativity, talent, openness, hard work (easily leading to perfectionism) and a touch of luck. We are going to see the role of all these elements in the following discussion.

2. THE FOUNDATIONS: CHILDHOOD, EDUCATION AND EARLY YEARS OF PRACTICE

Utzon was born in 1918 in Copenhagen into a well-to-do Danish professional family. With his elder brother, they attended private (church) schools. (They had a younger brother, too.) However, our young protagonist was suffering much with his studies due to his dyslexia. (It is quite frequent that those who suffer from some handicap in their childhood, tend to overcompensate in some other fields, be it visual skills or sense for forms, for the sake of maximum achievement.) Thus, for the young boy nature represented not only a source of inspiration, but an escape, too.

The father (Aege Utzon), a fitness-committed man, was the chief engineer of a local (Elsinor) shipyard. He was an accomplished and much respected sailing-boat designer, whose boats had created a distinct era of Danish sailing. In his work, he was an uncompromised perfectionist. It is the father who was going to teach his son, who spent much of his time in the shipyard, how to tap into nature for inspiration and how to build mock-ups to test his ideas. The young boy was admiring how the boats were shaped by precise craftwork. In fact, boat building provides especially important lessons for sensitive architects: i.e. maximum client/user-orientation, the structure must withstand adverse weather conditions (sun, wind, water) while using minimum amount of material (to decrease weight) and, last but not least, the aesthetics of the slim and curving hull of these boats can often be arresting, providing useful analogies for design.

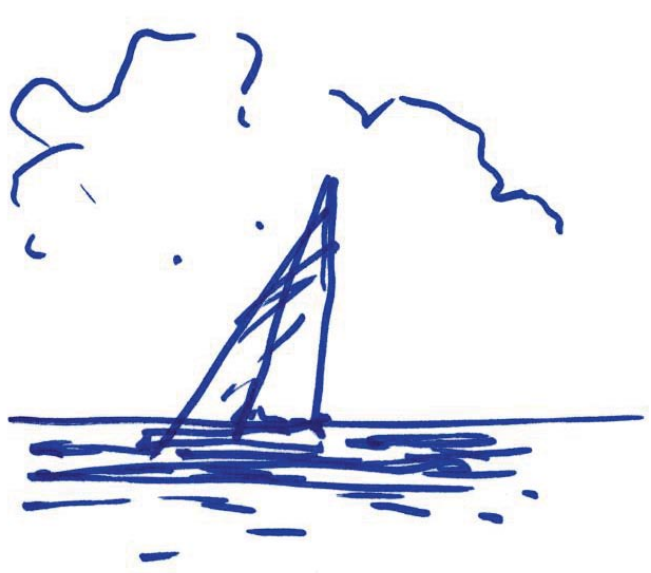

Figure 1. Sailing boat – a page form Utzon' sketch book

The boy had become an excellent sailor and up to his maturity he was contemplating a shipping career. In 1930, the family visited the Stockholm Exhibition, the main theme of which was modern design. Among the exhibits were the work of the foremost Swedish architect, Gunnar Asplund, too. This experience had had such a profound effect on the entire family, that, upon return, they rearranged their house, changed their furniture for quite simple one, and even changed their eating and sporting habits, as well. The essence of this fundamental experience was functionalism, with space, light and a natural and simple way of handling things in life.

Figure 2. The Stockholm Exhibition

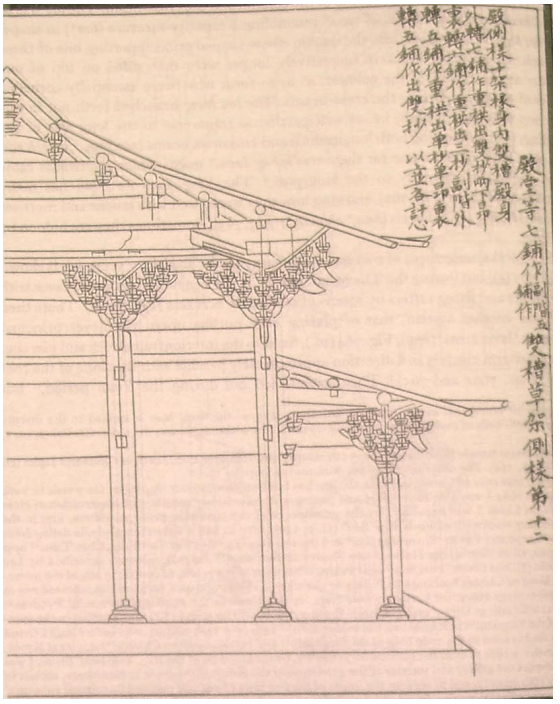

Figure 3. A page from the more than 900 year old Chinese Yingzao fashi

The growing boy gained more and decisive impressions in his grandparents' house who were art-loving people. There, he often met outstanding painters and other artists and got also acquainted with mysticism, philosophy and Hinduism. In addition, one of Utzon's uncles was a sculptor and professor of the Royal Danish Academy of Fine Arts. He had a large collection of Chinese artifacts and a copy of the *Yingzao fashi* (basically a twelfth century codification of Chinese architecture). Thus, after secondary school, he first decided to become a sculptor, but finally he had been convinced to rather choose the architecture course (because of his poor school result on the one hand, but excellent drawing skills and creativity on the other). Then, he studied architecture at the Academy under the supervision of Kaj Fisker, Edvard Thomsen and Eiler Rasmussen, among others. He especially liked to read about Chinese art and philosophy and to study the *Yingzao fashi* (the handbook explained how to build in a modular system anything from a hut to a palace with a limited numberof prefabricated and standardized parts). In overall, in the course of his studies, Utzon had developed a deep respect for his chosen profession. He graduated in 1942 with Gold Medal.

Upon graduation, to gain further experience and some practice, Utzon moved to the neutral Sweden with his friends for a while, There he got married and was working for several foremost architectural practices for some time, including Alvar Aalto's in Finland later, before returning home. (Still as a student, he named Gunar Asplund, Alvar Aalto and Frank Lloyd Wright as those architects who made the greatest impact on him.) After the War, he was assisting in the rebuilding of Europe with designing temporary accommodations in a few countries, including Holland. Having only very few jobs at home, with his friend Tobias Faber their favourite past-time was to study the different micro-structures that nature builds. Then came a short working visit to Morocco (there he admired the Berbers' mud buildings), followed by a number of study trips with scholarships to such places as Paris, Mexico, US, and years later (in 1957-58) to China, Japan, Nepal and India. (In fact, he visited China only once, while he was already working on the Sydney Opera House.) Although each visit had made significant impact on him, he wrote with details and enthusiasm about the pre-Columbian landscape only. He admired the Maya pyramids and temples build on high platforms (podiums), to free and raise their buildings and people above everyday life over the canopy of the dense vegetation, 'closer to Heaven'.

Figure 4. Maya platforms with steps

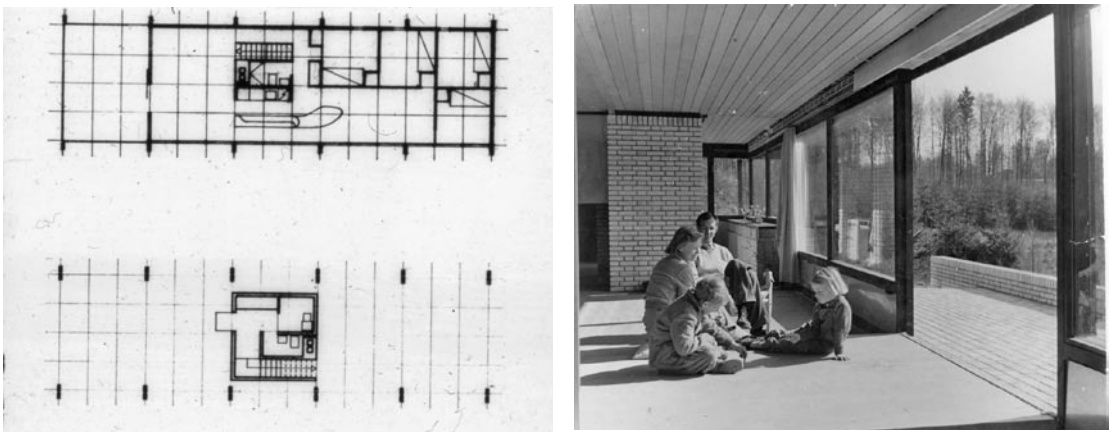

Figure 5. The Utzons' first custom designed family house

After returning to Denmark in 1950, he, with two of his Swedish friends, set up his first practice in a rented row-house in Hellebæk. In 1952, the family moved into their first, modest house designed by the Architect with much simplicity and an open plan (first in Denmark), including flat roof, floor-heating and large surfaces of glass walls. In his early years of practice, he was, with his friends and partners, mainly involved with architectural competitions, including the New Chrystal Palace (in London), the Langelinie Pavilion (in Copenhagen harbour), the Low cost housing (in Sweden) and as a result of his success in the latter, a built project in Denmark: the Kingo Houses (63 standardized courtyard homes, with a limited budget, very sensitively grouped and sited, providing variety, maximum sunlight and views for each unit).

Figure 6. The Kingo Houses in Denmark

3. THE SYDNEY OPERA HOUSE (SOH) SAGA IN A NUT-SHELL

To begin with, generally speaking there is always one single reality, while there are several truths. To map up the labyrinth of the Sydney Opera House story is a genuinely challenging task. However, I have attempted to do it in my latest research project (the outcome of which is a book on Utzon, due at the end of 2018 in Hungary). Nevertheless, it is much worth to do as there are many valuable lessons for the profession, including young architects and students, as well. They are about the intricate relationship between architecture and politics, the importance of thorough preparation works before the implementation of large projects, the never ending development of such large complexes, and how such pioneering pieces of architecture may become strong 'signs', among others.

In 1956, the Government of New South Wales (the 'premier state' of the far away federal Australia) announced an international competition for designing the 'Opera House of the Nation' (in fact, a large multifunctional cultural centre) at the exposed site of the Sydney's Harbour in the CBD, the unique Bennelong Point (which was then occupied by a huge tram depot). The principal design challenges of this planned complex included: the relatively narrow site (little room for side-stages), the shaping/hiding of the high stage tower (affecting the townscape/skyline) and the 360 degree exposure of the site (including views from above, too, due to nearby tall buildings, the elevated combined roadway and railway at Circular Quay and the Harbour Bridge).

The young Danish Architect (38), almost unknown outside Scandinavia, read about the competition first in a Swedish newspaper, and had been contemplating his participation for a couple of months. Finally, after six months of careful preparation and model-testing, he submitted an outline proposal (a vision without exact geometry and any ideas for the implementation)

among the 230 entries from 32 countries. Months later his first prize caught him totally unexpected; in fact it shocked the Architect who had not had any previous experience with large projects. On the jury panel was, among others, the Finish-American famous architect Eero Saarinen who, arriving late for the judging, picked Utzon's entry from a pile of the previously dropped ones and stated that it was the work of a 'genius'. The outlined 'anti-building' was so unusual (e.g. blurring the distinction between outer walls and roof) that the local jury members were hesitant for some time on (belatedly well justified) pragmatic grounds.

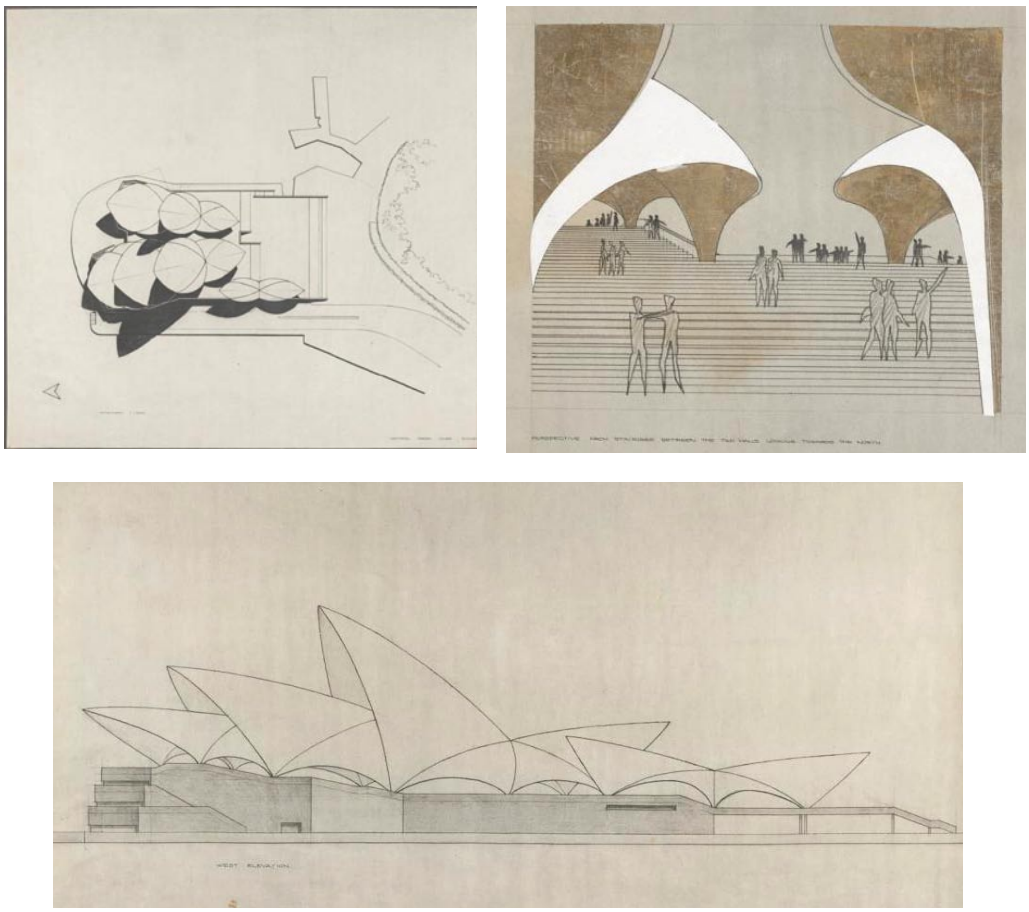

Figure 7. A few sheets from Utzon's entry

It was stated among the conditions of the competition, that the winner will get an invitation to develop the detailed design and to supervise the implementation/construction. Saarinen, who already knew the young Architect, talked him into it. The Prime Minister, however was urging to start the on-site works as soon as possible for good, political reason (without detailed plans and thorough calculations). Initially, Utzon was working on the details from his Danish office, travelling back and forth between the two continents. But by 1963, under pressure from the client, he moved to Sydney with his entire family with the intention of settling there permanently. They much enjoyed life (climate, friendliness, nature and recreational opportunities) there.

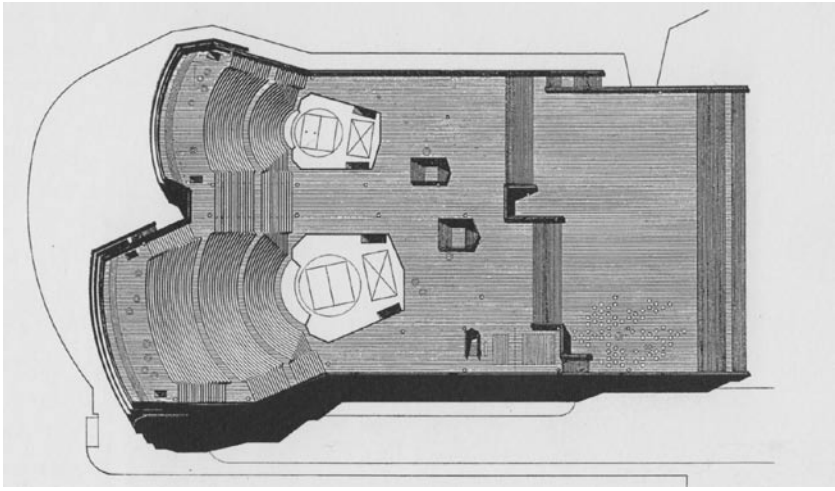

Figure 8. The tectonic base: the vast stepped ‘solid’ podium

The implementation process was divided into 3 simple phases: I) construction of the huge stepped, arena-like platform, which includes many rooms, too; II) the construction of the shell-like vaulted roofs; and III) closing the large roof openings with glass-walls with mullions and the development of the interior (acoustic ceilings, walls and finishes, seating, stages, equipment etc.). Structural engineering was provided by the London based renown Ove Arup and Partners. The biggest ’never before’ challenge was (while the building of the podium was already going on) to find the right geometry and the consequent structural solution for the gigantic roofs for the sake of the economical prefabrication, not to mention other (aesthetic and functional) considerations. After several years of struggle, experiments, conflicts, arguments, delays, intrigue and betrayal, finally it was the architect Utzon who discovered, that a simple sphere geometry (applying the ’slices ’ of a sphere with 75.2 m radius) would do a perfect job. The main point was that it allowed the (on-site) prefabrication of manageable concrete elements repeated many times in a module system. Even the roof’s chevron shaped lid panels, covered with white and yellow Swedish premium quality tiles, could be prefabricated

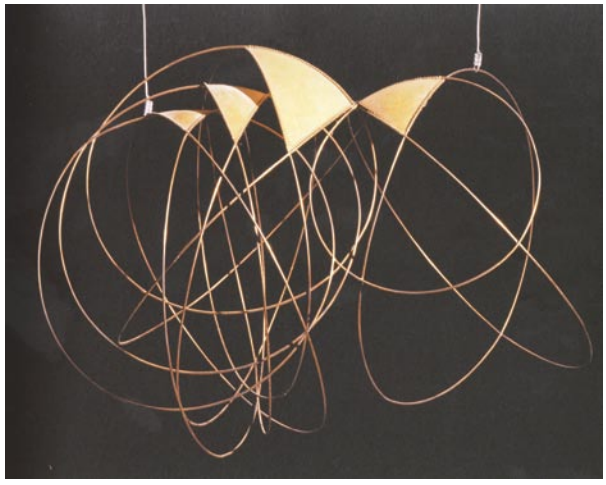

Figure 9. The sphere geometry of the roofs proved to perform perfectly

In the meantime, the client had changed: the forthcoming NSW election was lost by the Labours, and won by the Liberal (i.e. the conservatives) – Country Party coalition. The politically naive and professionally (almost 'stubbornly') perfectionist Utzon did not pay too much attention to the changing political 'climate' which very soon proved to be sinister. His freedom as project architect (in terms of cost and time) had been soon cut drastically, and the project had gradually become the focus of bitter political fights. Through false accusations ('he was an unrealistic dreamer') and intrigue, the brilliant and perfectionist Architect was step-by-step made a scapegoat for the escalating costs and excessive delays. It happened to the extent, that his due payment (his professional fees, the cost of some crucial modelling of the ceilings, as well as the operational expenses of his Sydney studio and staff) was stopped for several months (and, in fact, a major part of it has never been covered, due to an out of court settlement).

In 1966, after several explanatory reports, bitter arguments and 'behind the doors' negotiations, before phase II (i.e. the construction of the roof structures) was completed, the above circumstances forced Utzon to resign. Soon after, he left the country with his family (and deposited the several hundreds of detailed drawings of phase III in a secure storage) with the hope of a possible return in the foreseeable future. (For a couple of years, they were actually staying in the 'nearby' Hawai where the climate was similar. Utzon had a few, mainly residential projects there and was lecturing at the local university. In Sydney, he never did.) But in fact, he had never returned to the fifth continent and thus never seen his magnificent building ready. (In a rear interview, once he confessed that he was often dreaming of the SOH.)

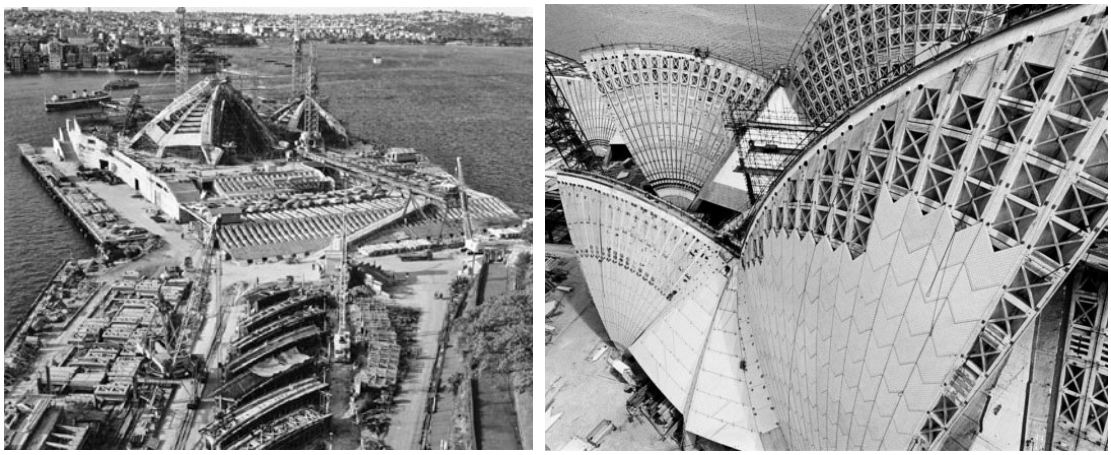

Figure 10. The construction of the gigantic roofs with on-site prefabrication

While the Australian media became split on the issue, soon the architectural élite of the world outcried for Utzon in some cables and letters to oppose and criticize the sacking of Utzon. Meanwhile, local professionals (including many government architects, too) and public supporters (activists, civil groups, academics, students, professionals) organised public lectures, street demonstrations and submitted a political petition to bring Utzon back to finish the job. However, the (Country Party) Minister of Public Works, in charge of the SOH project, did not care. Although, he did promise strict cost control and to accelerate the implementation significantly, certainly none of these had happened (on the contrary, both had further escalated significantly).

He appointed a small group of rather mediocre local architects, led by the young Peter Hall (who served previously as a government architect) to finish the job. A hell of a job was still waiting for them. With their (re)design proposals, they introduced major changes both for the support (i.e. the mullions) of the (French) glass-walls and the interiors, affecting the architectural quality and the aesthetic balance between the exterior and the interior. Nevertheless, the most fundamental and much late change was decided by the then ruling Government. Accordingly, the Major Hall was to become a single function concert hall (abandoning the original multifunctional concept), and the smaller hall with its limited space was to become the venue for opera (and drama) performances. The catastrophic and costly consequences included the redundancy of the expensive stage machinery and stage tower, the system of stages, the seating capacities and their arrangements, the suspended ceilings (including the sensitive acoustics), the wall finishes and the (originally bright) colour schemes, among others. In functional terms, the most absurd situation had come about due to the incompetent client and its committees: the space under the largest 'shell', composed to hide the high stage tower with a sculptural quality, has become partly void. (Much later, in the course of some reconstruction works, it has been finally utilised by a new drama theatre, a studio and a playhouse.)

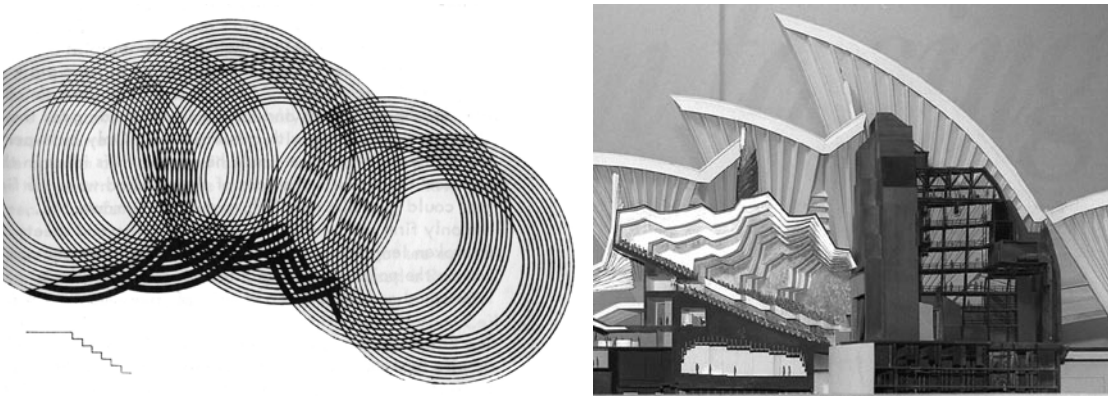

Figure 11. Utzon's proposal for the load bearing acoustic ceiling by undulating ply-wood beams using cylinder geometry

Finally, after 16 years of designing and 14 years of (discontinuous) construction (with 10 years of delay), and at 14 times of the initially calculated cost estimate (based purely on the outline proposal without any details, yet), the magnificent object was inaugural opened by Queen Elizabeth II (as Head of the State) in 1973. The whole ceremony took place without the presence of the Architect. His was not invited and his name was not even mentioned.

But, much has changed since in Sydney and in the world of architecture, as well:

- In 1985, Utzon received the highest Australian award: the 'Honorary Companion of the Order of Australia (AC).
- A contemporary opera was composed and performed about the SOH story. (1995)
- The old Master was made a Honorary Citizen of the City of Sydney (1998). The Lord Mayor personally travelled to Denmark to hand over the 'Key of the City' to Utzon, as a symbolic gesture of apology and respect.
- The biannual 'Jørn Utzon Award for International Architecture' was established in 1998 as part of the Australian Institute of Architects' national awards.
- Utzon became a honorary doctor of Sydney University. (2003)

- For his lifetime achievement, he was awarded with the 'Architectural Oscar', the Pritzker Prize (2003). The laudation was delivered by Frank O. Gehry.

- A smaller room (for chamber music and lectures) of the SOH was refurbished and named 'Utzon Room' in the honour of the Architect in 2004. The first one that fully reflects his design ideas.

- In 2007, the SOH was listed on UNESCO World Heritage List, still in his life.

- The night following his death, the lighting of the SOH was switched off for an hour. Subsequently, the NSW Parliament registered its sympathy in a resolution. (2008)

- Soon after, there was a 'peace-making' commemorative performance in his honour in the SOH. (2009)

Figure 12. The refurbished Utzon Room of the SOH

But more importantly, as a result of various smaller and bigger reconstruction works, there have been some changes made in and around this unusual building, most of which have either taken the complex a step closer to the original vision, or resulted in developments approved or designed by Utzon (father) and Jan (son). They are as follows:

- For the Bicentennial of the foundation of the Federal State of Australia (in 1988), a new covered walkway between the Circular Quay interchange and the entrance of the SOH, together with the awaited underground garage, were opened.

- The most significant step, however, happened in 1999. After some negotiations, the old Master accepted a new commission from the NSW Government to develop his 'Design Principles' for the improvements and further development of the SOH. The guidelines were delivered by his son, Jan in 2002.

- In 2006, with the Western Colonnades (including a new covered walkway and a line of shops) the massive podium was opened up on its western side.

- One year after his death (in 2009), the Western Foyer was renewed according to the design ideas of the Master and his son.

- There have been some reconstruction works inside the smaller hall (The Joan Sutherland Hall for operas) recently.

The SOH in numbers

- The complex, which is in fact a 'cultural supermarket', is one of the biggest building in the world. The site is 2.2 ha and its 'footprint' covers 1.8 ha. The total floor-space is 45,000 sqm. It is 185 m long and 120 m wide, with the highest point of 67 m. For making it a reality,

unbelievably large amount of drawings, (freehand sketches, outline concepts, competition proposals, technical studies, detailed contracting documents) and mock-ups had been produced just by Utzon's office. (Similarly large number of drawings were produced by the Ove Arup office, too.)

- There are some 900 different rooms in it, including six indoor halls for performing arts. The largest is the Concert Hall accommodating 2680 spectators, the smaller Joan Sutherland Hall for operas and musicals has a maximum capacity of 1550 spectators, while the Bennelong restaurant (under the smallest roof-structure) takes a maximum of 150 guests.
- The entire cultural complex can take a total of 6,000 visitors. On average, it offers some 1,800 performances annually, which are attended by 1.4 million spectators. (The complex is operated 24 hours, 7 days a week, except Christmas and Good Friday only.)
- Its economic output is also impressive. About 8.2 million people visit it annually, it sustains directly and indirectly approximately 2750 jobs, and its overall contribution to the Australian economy is about 1 billion dollar per annum. Furthermore, its 'digital footprint' is also very significant: in 2014, 4.2 million people watched the SOH performances either on YouTube, or on the own channel of the House.
- Technically speaking, its roofs consist of 2,194 pieces (with a total weight of 27 thousand tons) pre-cast reinforced concrete elements covered by chevron shaped pre-cast panels with some 1.056 million white and yellow tiles. The total weight of this superstructure is 161 thousand tons. The glass surfaces, covering the openings of the 'roof-shells' total 6,225 sqm. Its energy consumption equals with that of a small town of 25 thousand population.
- Socially speaking, some 10 thousand workers of 90 different nationalities were building it over the 14 years of its construction.

Figure 13. The SOH as it is from the outside

Finally, we must make it clear: if all the details and consequent costs had been worked out before the construction commenced, this magnificent House would have never come about. In addition, Utzon could have created it nowhere else; but the other way around, Sydney could not have it either without Utzon. And to conclude, the Sydney Opera House has proved to become such a strong 'sign' over the years, that it has, in fact, become the single symbol of a world city and a whole nation. The SOH project had changed Utzon's life forever. And he did not have to look for the 'Job', it had found him. But let us add that sometimes Fate does not apparently know what it wants!

4. SOME OTHER SELECTED SIGNIFICANT UTZON PROJECTS AND PLANS

Utzon professional activity covered a wide spectrum functionally as well as geographically. He designed furniture, glassware, sailing-boat, petrol station, church, residential developments, colleges, hotels, resorts, museums, theatres and other cultural establishments, bank office, shopping centre, recreational and sport facilities and even got involved in urban planning; And all these happened on five continents: besides Denmark and Australia, in Hawai, Kuwait, Teheran, Sweden and later in collaboration with his sons, in some African countries, too. For this study, eight more significant (both implemented and not built) post-SOH examples have been selected that represent his inspirations, design philosophy and conceptual approach well. They are presented in a chronological order below.

4.1 *The Fredensborg Housing Complex (1959-1963, Denmark)*

The client was a Danish charity organisation that, without an actual design brief and any ideas for the implementation, wanted to develop housing (and a community to share their experiences) for returning Danish business and government ex-patriots. As it was a pioneer project in its category, the Architect had to invent even the details of implementation.

The estate is a good example of (what Utzon coined) his 'additive architecture'. The 47 courtyard-houses and the 30 row-houses are sited sensitively on the terrain with much respect of the environment. These single family homes are grouped in a variety of clusters of three around a square from where their entrances can be accessed, too. The central facility includes a restaurant, a club-room, some offices and 9 guest-rooms as a mini hotel.

Figure 14. The Fredensborg housing estate

4.2 *Schauspielhaus Theatre (1964, Zürich)*

There was an international design competition for a new theatre in Heim Platz that Utzon won. In contrary to the other entries, his proposal integrated the entire square what was lined with an existing art institution and a school with some sporting facilities.

The entrance to the theatre protruded into the square with a huge canopy (awning) from where the visitors had access via raising steps into the foyer. There, from the top edge of the amphitheatre-like arena they were to descend to their seats (similarly to the SOH concept). These space-series (of flows) first gradually got narrow, then suddenly opened up inside to the distinctly different world of the theatre.

Although Utzon was working for 6 years on the project, which was enthusiastically welcome by the local media, all of a sudden it was stopped as part of a cost saving campaign of the Government. According to some critics, it was Utzon's 'strongest' and most 'mature' design.

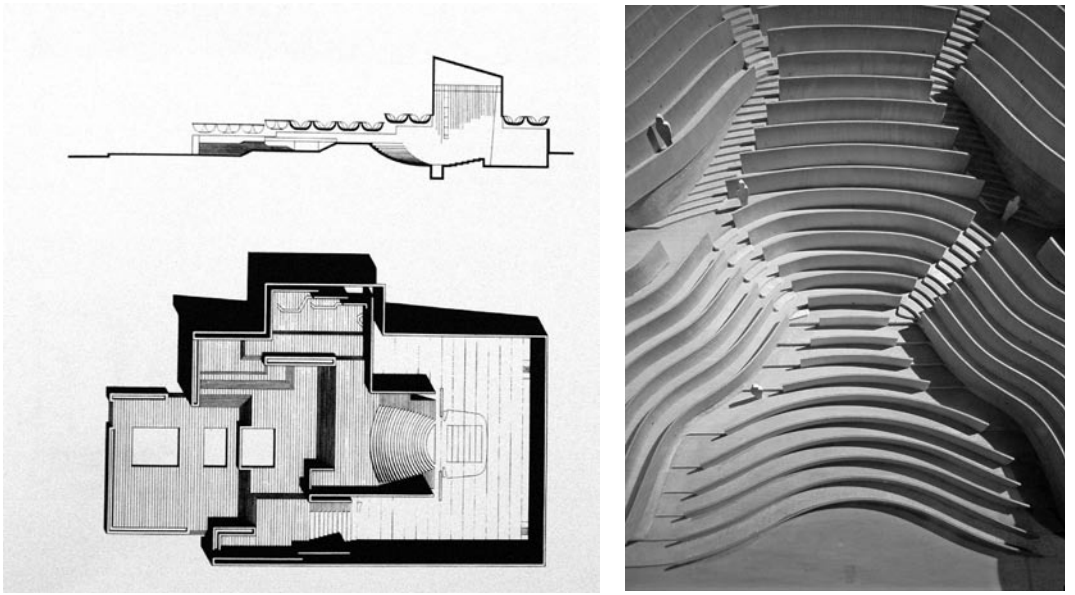

Figure 15. Utzon's proposal for the Zürich Theatre

4.3 *Espansiva building system (1966-1969, Denmark)*

A group of Danish timber-merchants decided to develop a building system of components for single family cottages. The brief included the main requirements: they had to be dominantly made of wood, with their combinations provide a great variety, be easy to handle and build (even DIY) and be relatively inexpensive.

Utzon's modules (based on the multiplication of 12 cm) were basically small pavilions with four posts at their corners connected with beams (see Gottfried Semper's 19th century 'generic hut'). Ceiling heights could be changed according to the size of the room. The materials of the roof and the outer walls could be chosen by the client, including traditional building materials, as well as, light structures. There were four different module sizes available in order to cater for the different space requirements of residential buildings, schools, motels, etc.

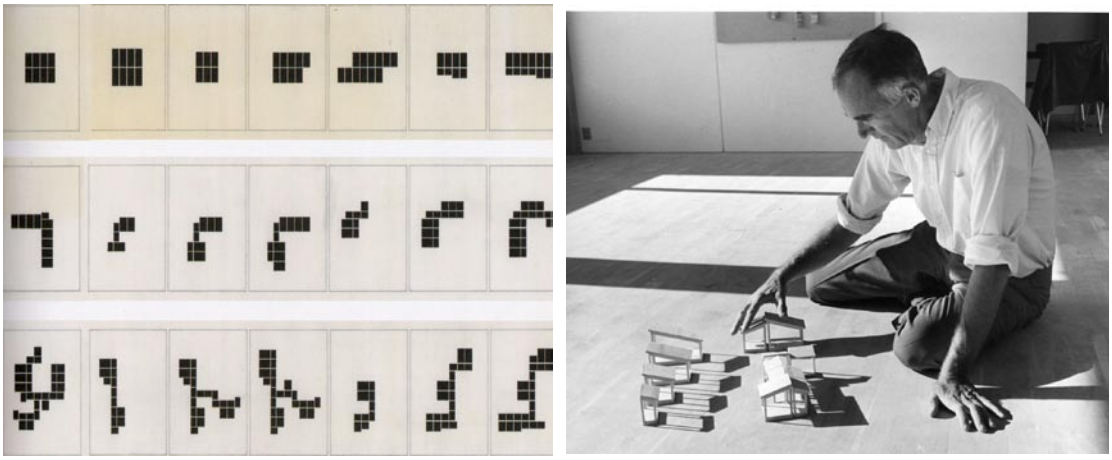

Figure 16. Utzon is experimenting with his Espansiva system

This project is the very example of additive architecture with a limited number of prefabricated elements but with a great variety combinations (similarly to the concept of the LEGO). The prototype was built in Hellebæk, Denmark. But there have been only half a dozen known applications elsewhere in the country.

4.4 *Jeddah Stadium (1967, Saudi Arabia)*

The design concept of this large sporting complex was driven by climatic considerations. Accordingly, the maximum number of spectators must sit in shade (e.g. the grandstand of the arena faces north to benefit from fresher breathes). Another fundamental feature of the siting was to correspond with the main flows of the spectator's masses. Hence, the masses are gently guided via covered and shaded bridge-like walkways that some 30 thousand patrons can move at one time without hindrance.

The proposal accommodates four main functions: a stadium, an open air swimming pool, an indoor sport hall and a servicing block (with restaurants, offices, fitness centre, etc.). It is another prime example of Utzon's additive architecture: using only a few structural elements, freely, with a kind of 'organic easiness', how he put this gigantic ensemble together. Due to this 'open ended' design, visitors never have an unfinished feeling during the different phases of implementation.

The five basic structural modules applied as follows:

1) pedestrian access 'bridges' (two storey ones on four pillars, dismantled into spare parts);
2) one-storey high roof elements following an open quarter of a cylinder geometry to include rest rooms, dressing rooms, offices and restaurants;
3) the grandstands of the stadium (with partly staggered and stepped rows of seats to provide perfect sight for every visitor); and
4) the single storey stand of the swimming pool (with a similar geometry to the previous one); and
5) the closed arena (with also prefabricated elements of 'folding' type forms).

If this grandiose facility had come about, it would have been another architectural masterpiece the 20th century.

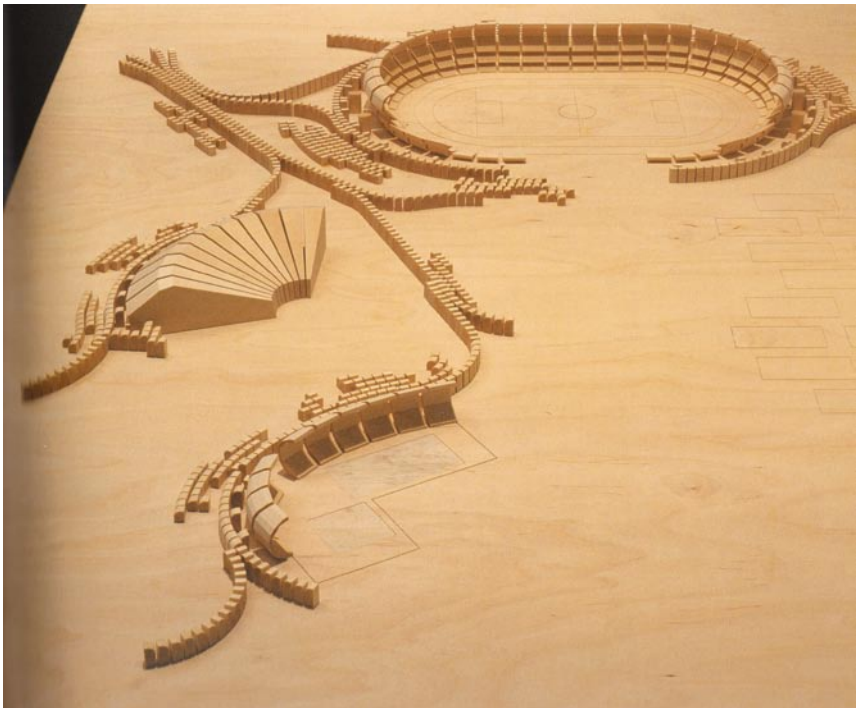

Figure 17. The mock-up of the Jeddah Stadium

4.5 *The Bagsværd Church (1967-1973-1976, Denmark)*

The Lutheran community principals of suburban Copenhagen had seen an exhibition of Utzon's works and as a result, they commissioned the Architect, in 1967, to design their long awaited church. The job was truly challenging, due to the limited budget and the unusually narrow site (40x100 m) abutting a noisy main road.

According to Utzon's philosophy, the main job of a Christian church was to link people more than anything else. His actual design concept was based on the contrast between the exterior and the interior of the building for two reasons: to enhance the spiritual experience and to cross-finance the more expensive interior. The building from the outside (with its precast concrete wall-panels between pillars) reminds one of a rather simple industrial facility, while the inside is awesome with its undulating ceiling and skylights and the consequently changing natural light effects (and perfect acoustics). The inspiration for the shape of the roof came from the special undulating clouds of Hawai, Utzon used to glaze often while lying on the beach. However. the dichotomy of the simple tectonic base and the light, curving/folding roof-structure above is also worth noting as it has also become an Utzon 'trade mark' (see the SOH for example, or his Zürich theatre proposal).

In fact, there is not any symbol (e.g. a cross, or a tower) applied what the Danish public associates with a church. The establishment is far more than a pure church; it also includes a chapel, rooms for confirmation and for the choir, offices, waiting and meeting rooms, a kitchen, a hobby room, rest rooms, a cloak-room and a youth centre. There is a landscaped central courtyard and there are trees planted around the complex to emphasize its isolation from everyday urban life. It can accommodate a total of 350 patrons.

Figure 18. The contrast of the inside and the outside of Utzon's only church

Utzon did this project in cooperation with his elder son, Jan. But the implementation process had some hick-ups here, too: there were some temporal stops in the making, mainly for financial reasons and some government intervention also occurred at one phase. Never-the-less, finally it has come about and the result represents a significant stage in Danish church architecture.

4.6 *The Kuwait National Assembly (1969-1977-1984)*

This project is the result of an international architectural competition that Utzon, in collaboration with Jan, won. The site is located along a main road, facing the sea, as part of a (then) new quarter of public buildings. It consists of four main representative parts: a covered (but open on its sides), huge gathering space (providing the much sought shade in this hot and dry climate), the assembly hall, a conference hall and a mosque, situated on the four corners of a grid. The spine of the layout is the system of access walkways that provide good legibility of the complex. The location of all facilities (including additional meeting rooms, offices, library etc.) along the main internal „streets" follows the logics of traditional Arabic bazaars.

The huge ensemble applies a combination of two distinct building systems: A) a series of 15 storey high 'folded' columns supporting a baldachin-like gigantic roof that reminds of a wind-blown curving canvas (which has, in fact, become the symbol of the whole institution) and B) various units of equal height but of different sizes, made of prefabricated elements and set in an 'additive' module system. Thus the contours of the complex create a sense of unfinished (open ended) state. Overall, Utzon has managed to create a 'regional quality' that provides an Islamic atmosphere without clichés.

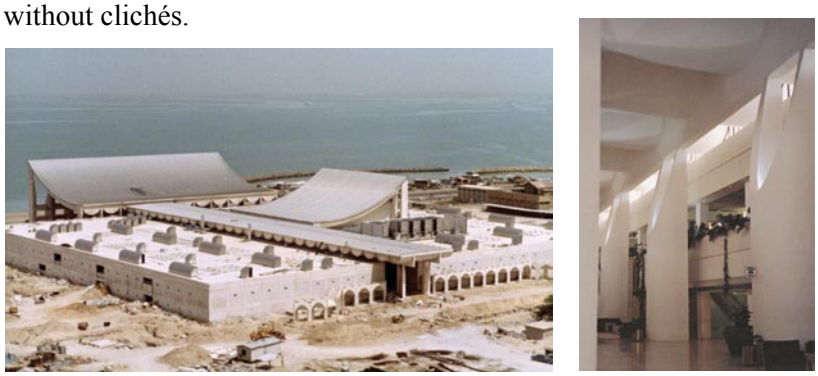

Figure 19. The Kuwait Parliament House is a good example for the 'theme and its variations', a distinct feature of Utzon's additive architecture

Implementation from the first sketches to the end took 15 years, not without hindrance and halts. Unfortunately, during the Gulf war the Iraq troops, withdrawing from the US lead coalition army, set the complex on fire and, as a result, the interior had burned out completely. Since, it has been reconstructed, but some internal details are unfortunately different from the original design.

4.7 *Two houses in Mallorca (Can Lis, 1971 and Can Feliz, 1994)*

In a short visit to the Spanish island in 1966, Utzon was so impressed by the landscape that he had decided to build a holiday cottage there for his family. The house is situated on a 20 m high rock cliff next to the shore in Porto Petro. The design concept was more or less the one he wanted to build for themselves still in Sydney. The long building site is parallel with the waterfront, thus the building consists of four loosely connected units side by side: an outer space with colonnades, a large living room with flat roof, and two bedrooms each with its own patio.

Following the local traditions, the dominating building material is sandstone (alike in Sydney). For the actual construction, the Master produced only a few sketches and rather personally directed its execution (experimenting with the proportions and the dimensions on the site) in cooperation with the local trades-people involved,

Figure 20. Can Lis

But after a while the Utzons could not hide from unwanted visitors (architects and tourists) down at the seaside, and the Architect decided to move and built another cottage up on the hills. Although the two houses were built with 23 years apart, their design concept is very similar. Can Feliz consists of three distinct units around a large terrace: the dining-kitchen section, a two-storey living room-study unit, and the bedrooms-block, separated by inner courtyards. The middle section terminates in a semi-covered porch. The well-known motif of podiums (with different heights) provides a base for the ‘mini Acropolis’ of a true spiritual ambience.

Figure 21. Can Feliz

5. THE UTZON 'BRAND': CONCLUSIONS AND IMPACTS

Generally, architectural design methods can be split into two broad categories:

a) the *analogue* one (deductive in nature and results a closed composition; it is about working from the outside [i.e. overall, rather intuitive form] of the building towards the inside [i.e. functional program]; the product of this is what Robert Venturi symbolically called the 'duck') and

b) the *digital* one (inductive and additive in nature, often results an open-ended design that can be continued; it is about working from the inside [program] to the outside [form]; the product of this is the 'decorated shed' by Venturi's terms).

It is well justified to state that Utzon managed to master both creative processes and was able to switch from the one to the other, depending on the actual task (e.g. the SOH and the Jeddah Stadium, respectively). He even managed to combine and integrate the two approaches successfully in some of his projects (e.g. the Kuwait Parliament).

As far as the substantial aspects of his unique, 'etalon' architecture are concerned, the following unmistakable features are the most striking:

- an extraordinarily great respect of the actual environment (i.e. the genius loci) which surrounds the site and his future building;
- in many cases, a tectonic massive base (a raised platform or a series of them) with a curving or undulating 'light' roof-structure of sculptural quality, floating over it;
- working with modular systems of a limited number of elements to allow economical prefabrication, however a great variety of combinations, too (i.e. a non-repetitive additive architecture); and
- the contrast of almost monochrome exteriors and bright colour schemes inside the building (to highlight that the user enters a different world); in fact, a maritime analogy of the blue water and colourful underwater world.

The procedural features of the 'Utzon brand' are summed up as follows:

- combining modern technology with rather organic forms, while stretching the boundaries of the technically almost impossible;
- devotedly experimenting and checking design ideas on large scale mock-ups; and
- in case of smaller (residential) projects, finalizing some aspects of the design (exact dimensions, proportions and some details) on the site during the actual building process ('experiments' at the scale of 1:1).

Utzon and his office (in some cases in collaboration with other fellow architects) have produced a great number of (implemented) projects, (not built) plans and competition entries. Based on the present state of the Archives, they add up to some 150 design jobs altogether. Besides, time to time he has published his ideas (these publications are listed in the Appendix).

To conclude, Jørn Utzon has so far been the most influential Danish architect internationally, who has significantly contributed to the development of Modernism with a new paradigm called the 'New Tradition'. He had distinct (almost provocative) and powerful visions. He managed to master the integration of apparent dichotomies: the traditional (vernacular) and the modern, the organic and the new technologies, the inspirations of nature and craftwork (such as boat building) and the elements of ancient (mainly Oriental) cultures.

REFERENCES

Andersen, M. A. and T. Faber (2004) *Utzon's own houses*, The Danish Architectural Press, Denmark.

Bartholomew, R. (1981) *Jørn Utzon: His Work and Ideas,* BArch Thesis, UNSW, Sydney.

Brooks, G. (2005) 'Unfinished Business, Jørn Utzon returns to the Sydney Opera House', *The New Yorker*, 17 October.

Carter, A. (2014) 'Transcultural Tectonic Connections: The Utzon Paradigm', Aalborg University, Denmark.

Chiu, C.-Y. (2016) 'China Receives Utzon: The Role of Jørn Utzon's 1958 Study Trip to China in his Architectural Maturity', *Architectural Histories*, 4(1), 12., Ubiquity Press.

Daily Telegraph (1966) 'Sydney Architect Panel to Complete Opera House', *Daily Telegraph*, March 2.

Deloite Australia (2015) 'How do you value an icon? The Sydney Opera House: economic, cultural and digital value', *Deloite Access Economics*.

Drew, Ph. (1999) *The Masterpiece: Jørn Utzon: A secret life*, Hardie Grant Books.

Duek-Cohen, E. (1967, 1998) *Utzon and the Sydney Opera House*, Morgan Publications, Sydney.

Duek-Cohen, E. (1968) 'Two and a half years without Utzon', *The Bulletin*, November 30, Sydney.

Dunlop, S. (1973) 'See you in Australia', *Woman's Day*, April 30, Sydney.

Ellis, E. (1992) 'Utzon Breaks His Silence', *Good Weekend Magazine, The Sydney Morning Herald*, October 31.

Faber, T. and J. Frederiksen (1991) *Jørn Utzon: House in Fredensborg*, Ernst & Son, Berlin.

Forés, F. J. (2006) *Jørn Utzon. Works and projects*, Editorial Gustavo Gili, SL, Barcelona.

Frampton, K. (2004) 'Between Artifice and Nature', in Louisiana Revy, Vol. 44, No. 2, *Jørn Utzon: The Architects Universe*, Louisiana Museum of Modern Art.

Giedion, S. (1967) *Space, Time and Architecture*, Harvard University Press, Cambridge, Mass.

Jones, P. (2006) *Ove Arup, Masterbuilder of the Twentieth Century*, Yale University Press.

Keiding, M., K. Dirckinck-Holmfeld, eds. (2005) *The Utzon Library: Utzon and the New Tradition*, The Danish Architectural Press, Copenhagen.

MacCallum, M. (1967) 'Utzon: 'Let me complete the job'', *The Australian*, February 28.

Mikami, Y. (2001) *Uzon's Sphere*, Shokokusha, Tokyo.

Murray, P. (2004) *The Saga of the Sydney Opera House: The Dramatic Story of the Design and Construction of the Icon of Modern Australia*, Taylor & Francis, London.

Pitt, H. (2018b) *The House: the dramatic story of the Sydney Opera House and the people who made it*, Allen and Unwin, Sydney.

Prior, J. (1991) 'The Opera House, From a joke to a national monument', *The Sun-Herald*, October 20.

St. John Wilson, C. (1995) *The Other Tradition of Modern Architecture: The Uncompleted Project*, Academy Edition, London.

Stenfeldt, L. and K. Grønbæk (2014) 'Vision of an interactive Utzon Archive: Tangible, visual and interactive experiences of Utzon works', in *What would Utzon do now? Fourth International Utzon Symposium*, Sydney.

Stübe, K. and J. Utzon (2009) *Sydney Opera House: A Tribute to Jørn Utzon*, Reveal Books.

Susskind, A. (1996) 'A House Divided', *The Sydney Morning Herald*, February 10.

The Australian (1968) 'Utzon: Opera House still my job, A voice from Denmark', *The Australian*, February 20.

Toon, J., J. Falk eds. (2004) *Sydney, Planning or Politics, Town Planning for Sydney Region since 1945*, The Planning Research Centre, University of Sydney, Sydney.

Tyrrell, R. (2011) *Introduction – the Utzon paradigm*, www.utzonresearchnetwork.org, May.

Watson, A. ed. (2006) *Building a Masterpiece: The Sydney Opera House*, Powerhouse Publishing, Sydney.

Webber, P. (2012) *Peter Hall: the Phantom of the Opera House*, The Watermark Press.
Weston, R. (2002) *Utzon: Inspiration, Vision, Architecture*, Edition Bløndal, Hellerup.
Yeomans, J. (1973a) *The Other Taj Mahal*, Longman Australia.
Yeomans, J. (1973b) *Building the Sydney Opera House*, Hornibrook Group, Australia.

www.utzoncenter.dk./en/home
www.utzon.dk/publications/
www.pritzkerprize.com
www.canlis.dk/en/jorn-utzon
www.utzon.dk
www.danesinaustralia.com
www.danishnet.com/design
www.theoperahouseproject.com
www.dk/portfolio-item/various-unrealized-projects/
www.unesco.org
www.architectmagazin.com/design/culture

APPENDIX: Utzon's major publications

Books, book chapters and other documents

Jørn Utzon (1958) Sydney National Opera House (Red Book), Atelier Elektra, Copenhagen.
Jørn Utzon (1967) The Sydney Opera House, Kunstakademiets Nytårshæfte.
Jørn Utzon and Philip Drew (1995) Sydney Opera House, Phaidon Press, London.
Kenneth Frampton and Jørn Utzon (1996) Transcultural Form and the Tectonic Metaphor, Studies in Tectonic Culture, MIT Press, Cambridge, Mass.
Jørn Utzon (2002) Sydney Opera House Utzon Design Principles, Sydney Opera House Trust, Sydney.
Jørn Utzon (2004) The Courtyard Houses: Logbook Vol. I, Edition Bløndal, Copenhagen.
Jørn Utzon (2004) Two Houses on Majorca: Logbook Vol. III, Edition Bløndal, Copenhagen.
Jørn Utzon (2005) Bagsværd Church: Logbook Vol. II, Edition Bløndal, Copenhagen.
Jørn Utzon (nd.) 'The Essence of Architecture', in Forés, F. J (2006) Jørn Utzon. Works and projects, Editorial Gustavo Gili, SL, Barcelona.
Jørn Utzon (2008) Kuwait National Assembly: Logbook Vol. IV, Edition Bløndal, Copenhagen.
Jørn Utzon (2009) Additive Architecture: Logbook Vol. V, Edition Bløndal, Copenhagen.

Papers in journals, studies and other publications

Jørn Utzon, Tobias Faber (1947) 'Tendenser i nutidens arkitektur' (Tendencies in contemporary architecture), Arkitekten, Nos. 7-8-9. Copenhagen.
Jørn Utzon (1948) 'The Innermost Being of Architecture', Arkitekten, Nos. 7-8-9.
Jørn Utzon et al (1959) 'A survey of Utzon's work', Zodiac 5, Milan.
Jørn Utzon (1962) 'Platforms and Plateaus: Ideas of a Danish Architect', Zodiac 10, Milan.
Jørn Utzon (1964) 'Silkeborg kunstmuseum', Arkitektur, 1.
Jørn Utzon et al (1965) 'Utzon's descriptions of The Sydney Opera House, The Silkeborg Museum and The Zurich Theatre', Zodiac 14, Milan.
Jørn Utzon (1970) 'Additiv arkitektur', Arkitektur, 1., Copenhagen.
Jørn Utzon (cca. 1975) The importance of architects, Words from the past, www.utzon.dk.
Jørn Utzon (1991) 'The Vision of Nature', World Architecture, No. 15.

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