



“Nurungi” (Remembered)

Official Newsletter of the City of Canada Bay Heritage Society

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GENERAL MEETINGS and Guest Speakers

1st Saturday of month
(except January)
at 2:00 pm in the
City of Canada Bay
Museum
1 Bent Street, Concord
9743-3034

Museum Committee

Meets on 2nd Wednesday of
month at 10:00 am at museum
(everyone welcome)

Chairperson

Lorraine Holmes, 9743-2682

Walker Estates Committee

Meets as required

Chairperson

(vacant)

CITY OF CANADA BAY MUSEUM

1 Bent Street, Concord

Open Wed & Sat
10am to 4pm

Guest Speaker

on 1st Saturday of each
month at 2:00 pm

Phone: 9743-3034
during museum hours
or email

museum@canadabayheritage.asn.au

No.208

DECEMBER, 2013

An Engineering Walk around the Sydney Opera House

In a one to two hour walk around the outside of the Opera House you will see all the main features of its unique structural design. The narrative in this guide outlines how the concept that won Danish architect Jørn Utzon an *international* competition in 1957 became a reality.

The walk commences at the Opera House forecourt on Benelong Point.

How it began

In 1946 Eugene Goossens came to Sydney as Conductor of the Symphony Orchestra and soon began a campaign for an opera house on Benelong Point. The idea caught the imagination of the Premier of New South Wales, Joe Cahill, who in 1956 announced an international design competition for an opera house to be built by the government.

The design was to be for a multipurpose auditorium to seat around 3,000, as proposed by Gossens, plus a smaller hall for around 1,200. There were over 200 designs submitted in the competition. Utzon's winning design, little more than a series of sketches, differed from almost all other entries in having the two auditoria arranged side by side on the site. His entry was also unique in conceiving the commission as a giant symbolic sculpture.

In 1957 the government commissioned Utzon as architect and obtained a cost estimate of \$7.2 million. Utzon thought this was probably too low. By the time it was completed in 1973 the cost, entirely met by the proceeds of lotteries, was over \$100 million.

In mid-1957 the government, with Utzon's agreement, appointed the London firm of Ove Arup as consulting engineer for the project.

The podium

Start the walk in the forecourt and climb the steps of the podium to the platform in front of the entry to the two main auditoria..

The Mayan temples of Mexico provided Utzon's inspiration for the podium. His concept was for spectators to walk up the steps, then enter the building to view a completed work of art in the theatre. All the

preparation for the opera performance takes place beneath.

Visually the two theatres under the shells would be separate from the platform, as if cut with a knife. The shells would touch the platform only at the springing points, and the infill would be glass appearing to hang from the shells. As you stand on the platform, you see Utzon's concept realised in the completed building.

Completed podium

Premier Cahill was anxious to start construction before the state election in 1959 so Arup advised separating the construction into two stages: Stage I, the podium, and stage II, all the rest. Australian firms were invited to tender for stage I and in February 1959 the contract was signed with Civil and Civic, which had submitted the lowest tender. On 2 March 1959 a ceremony marked the official start of construction. Utzon said that all the details of construction had now been worked out; the problems had been overcome; there would be no more alterations. Civil and Civic finished their work on the site in March 1963 with the concrete structure of the podium completed and the construction of the shells about to begin.

The shells

Look into the restaurant to see the structure of the fan-like shells, built as a series of prestressed concrete ribs joined together to form arches.

Each of the shells consists of a set of concrete ribs, joined together laterally by bolts and prestressing cables. The ribs themselves were built from precast segments, prestressed after erection.

Utzon's original freehand sketches showed concrete sails that soared out and over the two auditoria. He imagined that these would

DIARY DATES

DECEMBER 7 - Christmas Party at
Museum at 2:00 pm.

JANUARY - no meeting

FEBRUARY 1 - Sam Everingham, "Wild Ride
- the rise & fall of Cobb & Co."

be concrete shells, very thin in relation to their size – like egg shells – as had been used in other buildings around the world, and were known to be very strong. But thin concrete shells are only possible if their shape is appropriate, and Utzon's shapes were certainly not appropriate, though this was not immediately obvious to either the architects or the engineers.

For four years Arup's engineers in London struggled with the design of the shells. They concluded that a practical design would be a double skinned shell with a strong internal steel structure. However serious structural problems with the design were still to be worked out.

Then Jack Zunz, a senior Arup engineer who had not been involved in the project, proposed a different solution: build the shells as a set of arches formed from precast concrete ribs. At meetings in London late in August 1961, Utzon reviewed the alternative design concepts with Zunz and Arup. Utzon disliked the double shell concept because its main structural elements would be hidden from view, but the rib design appealed to him. But casting the ribs would be a major problem unless they could be geometrically all of the same shape. This had to be a sphere. Arup returned to Denmark with the problem unresolved.

Shortly afterwards, Utzon phoned Arup to say that he had found the solution. All the shells would be segments of a sphere of 75 metre radius. All of the concrete segments could be cast in the same moulds. By the end of September 1961 the way ahead was clear.

In November 1961 the government, on Arup's recommendation, appointed the Australian construction company Hornibrook to build Stage II of the Opera House on a cost plus fixed fee contract. Hornibrook selected its NSW construction manager, Corbet Gore, to manage the project. Gore first briefly met Zunz and Utzon in Sydney during March/April 1962.

Zunz took charge of the detail design for the shells at Arup's London office, and kept in close touch with Gore, who was in Sydney working out how to construct the shells.

In 1963 the Sydney media learned that parts of the podium would need to be demolished so that footings could be built for the heavy concrete shells. Arup, on a visit to Sydney, said in an off-guard moment to a reporter *'It's only one of a million troubles. The Opera House is being built on a trial and error basis.'*

The first rib section was placed in position in November 1963, the last in

January 1967. Altogether there were 224 ribs made up of 2194 separate precast sections.

The tiles

Now take a close-up look at the tiles. There are over a million tiles on the surface of the shells. All of them were made by Höganäs in Sweden, just a short distance from Utzon's home in Denmark.

In Utzon's original design for the Opera House, the outer surfaces of the shells were to be completely covered by white tiles. Later, he considered many alternative possibilities for the tiling, with combinations of matte and glossy tiles, white, black and various colours. Höganäs produced all the sample tiles.

At that time it was planned to place the tiles individually on the completed shells. Once it had been decided to build the shells in spherical form from precast rib sections, Utzon proposed that the tiles should be set in precast panels, called 'tile-lids'. Höganäs had developed and marketed a system for cladding buildings with precast tiled panels, which demonstrated the practicality of the concept. Hornibrook conducted many experiments at the Opera House site to perfect the construction technique.

On the construction site, the tile lids were cast by placing tiles in the base of a mould and pouring concrete on top. The completed lids were fixed to the shell ribs by bronze brackets and bolts.

The vehicle concourse and folded slab

Walk part way back down the steps towards the forecourt, then follow the sign pointing through the glass doors to the box office. Just near the sign is a bronze model, based on one made by Utzon, that shows how the shells are all formed from segments of a sphere. Inside, you can see the concrete beams that support the stairs and platform. In the box office foyer there are toilets, an information desk and a small shop. Now walk down the stairs from the foyer to the vehicle concourse.

Utzon planned that vehicle access to the Opera House should be completely separated from pedestrian access. His original design for the vehicle concourse included a central line of columns, but he asked Arup if a single span would be possible. Arup's answer was predictable. Utzon wanted the depth of the concourse beams be kept to a minimum, and the depth of the beam section to be uniform across the span.

Arup's design solution was a set of prestressed concrete beams, with a T-section at midspan, changing to a channel section at the ends. The contractors, Civil and Civic, experienced great difficulties with construction, and their contract ended in arbitration. In the end, Utzon achieved the visual effect he was seeking.

The glass walls and the bar areas

Walk along the broadwalk towards the harbour. Inside the podium are three public performance spaces, the drama theatre, playhouse and studio, along with offices, services and back-stage facilities. Walk around to the end of the concert hall.

Utzon resigned from the Opera House project in 1966 and the government appointed a new, Sydney-based team of architects, Hall, Todd and Littlemore. The main auditorium, originally intended for both concerts and opera, then became a concert hall, and the stage machinery, already delivered to Sydney, was never installed. The smaller auditorium was adapted for staging grand opera.

The new team, not Utzon, were responsible for the design of the interiors. In conjunction with Arup's structural engineers, they also designed the glass walls with steel supporting structures that enclose the ends of the shells. Utzon had proposed a plywood supporting structure for the glass walls; the government's refusal to allow Utzon to contract with the Sydney firm Ralph Symonds for development work on the plywood structure was just one of the conflicts that led to Utzon's departure.

Seeing more of the Opera House

Before you leave, climb the stairs of one of the galleries at the base of the glass walls. Look inside to the foyers. If you visit the Opera house in the evening when there is a performance you can enter the building and climb the stairs alongside the auditoria to the foyers and see from inside the stunning views of Sydney Harbour at night.

Every day there are guided tours that include the foyer areas and the interiors of the opera theatre and concert hall. Advance booking is not essential. There are occasional guided tours of the backstage areas.

(This information is from a brochure issued by Ashet Self-Guided Tours and is published with permission. See elsewhere for more information on other Ashet Self-Guided Tours.)

John Watson Visits His Past

(We recently published John's tribute to his friend, Graeme Senior, reminiscing about growing up in Concord. He mentioned he'd like to come back to trace his old footsteps, and this is his journey.)

Yes, I did the trip ... on a scooter! I bought one at Broadway, rode it to Central Station; caught a train to Rhodes and then scooted along the track beside the lines next to what used to be Bergers Paints to Harrison Avenue, then Killoola Street, Fremont Street, Hospital Road and then Nullawarra Avenue to Cabarita Park. My back was killing me and I went into cramps at Burwood after getting off a bus.

But yes, I went through the gates at Thomas Walkers, for the very first time in my life and it was a wonderland to me. I loved it. I scooted along the asphalt drive then turned left at the top and headed down to the river because I wanted to see the boathouse, as I refer to it, and asked Joe Manuele who was fishing there to take my photo. I scooted around the grounds then headed down to the Hospital Shop, as I refer to it, and was amazed to find Tommy Cincotta not only alive but also hale and hearty. Had my photo taken with him, reminisced about Graeme Senior and explained the purpose of the trip (to say goodbye to Graeme and for me to finally put him to rest) then headed off to Cabarita.

It was a wonderful day. The date was December 27 and I was overwhelmed with memories. I wrote up the trip when I returned to Kinka Beach and even though it has nothing to do with this area, I have had a remarkable reaction. You can go back to the past; you can revisit your youth and Spectator News Magazine readers have responded favourably with calls and people telling

me at the shops they loved it. Most, by the way, think it amazing that I rode a kids' scooter. I have a follow-up article for the next issue because so many asked about the scooter side.

Tommy Cincotta gave me a copy of *Lest I Forget* by Lerryn. I knew Lerryn when I was a cadet journalist on the Aeroplane Press, when it was owned by Cumberland Newspapers (Rupert Murdoch). I think I worked there about 1965 or 1966 or part of both. Lerryn was always trying to get into parliament but reckoned he was beaten by the "Donkey Vote" because Tom Murphy was the sitting member and came above Lerryn on the ballot paper. I know he toyed with the idea of hyphenating his name to become Lerryn-Mutton but I remarked that he would then deserve the donkey vote! Politics makes people think in strange ways.

When I was at Concord West Primary the Mayor of Concord, or at least an Alderman, was Mr Slee. Some years later I was started work at Kennard Bros (wholesalers) in O'Riordan Street, Sydney and Mr Slee was the bloke who taught me selling. He was in charge of the showroom. He was a good teacher, knew his stuff and taught me things such as how to approach Catholic Nuns ("never walk between them John, it's rude").

Many years later, working in Innisfail, I read a death notice for an entertainer in Cairns called Harry Slee and realised it had to be his son. I contacted the funeral parlour to ask why Carolyn Slee was not mentioned in the newspaper advert and was referred to Ruby Slee, Mr Slee's wife when I was going to school. She told me Carolyn had died of lung cancer. She blamed smoking and said it had claimed both her children and her ex-husband.

Carolyn was NSW schoolgirls' cham-

pion squash player. Graeme Senior and I used to play her at the old Odeon Cinema after it became squash courts. We were the sort of competition she needed because she was so good. I really liked Carolyn. We were friends at primary school and could take up a conversation any time we met. The news of her death hit hard. My problem was that I left Concord West without notice.

I went to work one Monday, was told I was being transferred to a newspaper in Surfers Paradise where the staff had walked out and I left that afternoon in my car heading north. No chance to say goodbye, no way of knowing who married who, who was going out with who, what was happening. It didn't matter at first because I was engrossed in saving the newspaper (I was 21). I did . . . was promoted . . . met and married Suzy . . . was made editor . . . editor-in-chief and general manager over a time span of two years . . . then quit at age 30, moving north to the Capricorn Coast.

My father died, my mother died and, without my knowing it, school friends died. I am a wonderfully happy married man with two sons, one, named Rhodes, who runs his own successful solar business here and was Citizen of the Year last year in this region and the other, Rhett, is night editor of the Daily Telegraph and is married to the chief of staff of Channel 10. Everyone is happy ... but every now and again my thoughts turn to Concord West. Staying with Rhett gave me a chance to do my scooter trip. I carried a copy of that magazine I wrote for Graeme's funeral and left it with Tommy Cincotta. When Graeme died he took my youth with him. I suddenly realised he was the only one who knew me as a boy, as I knew him. That's what the trip was about.

City of Canada Bay Heritage Society

requests the pleasure of your company at our

Christmas Afternoon Tea

on

Saturday, 7th December, 2014

at 2:00 pm at our Museum

Family, friends and supporters are all welcome.

(Please bring a small contribution towards the catering - B.Y.O. liquid refreshments)



ASHET self-guided tour

The Opera House Tour is only one of a series describing self-guided tours to places of engineering and technological interest in the Sydney area.

All of the brochures are published in pdf form on the ASHET website www.ashet.org.au where they may be viewed and downloaded for printing on a desktop printer.

In addition to the Opera House Tours the following can be downloaded: The Sydney Harbour Islands; Ryde to Tempe - discovering the history and industrial heritage of Rhodes, Concord, Canterbury and the Cooks River; Sydney's Colonial Fortifications; Sydney Harbour Bridge; The Engineering Heritage of Sydney's Maritime Industries; Steam at the Powerhouse; Parramatta River Bridges; Sydney Water; Engineering and industry on three Sydney Harbour Islands.

Some are walking tours, others by ferry, car or bicycle.

If you are looking for something to do over the Christmas holidays why not check these out and do your holiday sight seeing at home.

Water Skiing in Australia

In 1934, during the month of either July or August, Edward Arthur (Ted) Parker of Earlwood became the first person in Australia to water ski. This epic event occurred in Hen and Chicken Bay, Concord, behind a three pointed boat powered by a 22 horsepower Johnson outboard motor. The boat was driven by Carlisle Arlington Rochester of Burwood. The skis were made by Ted Parker's neighbour, Doug Facoral, who was a patternmaker by trade and the skis were made from photographs seen in an American Magazine, Popular Mechanics. The design was copied and a pair of shoes securely fastened onto the skis for foot grips. Ted Parker was aged 20 at the time and was born in Sydney on the 11th February, 1914.

Editor's Note: Our Society is anxious to obtain more information about Water Skiing on the Parramatta River. We would also like to find information and photographs about the Cabarita Speedboat Club which was situated in Concord. Can anyone help?

From the Secretary's Desk

MUSEUM NEWS: We will be closing the museum from Sunday, 15th December to allow us to give the place a good spring clean and to organise our next display, "Fun & Games for Young & Old".

If you can help during this time, please let us know.

We will re-open on Wednesday, 15th January with our new display.

NEXT MUSEUM DISPLAY will be "Fun and Games for Young and Old". We will be meeting every Wednesday and Saturday during the time the museum is closed to get this display set up ready for the new year. If you'd like to come along to see what we do, please feel free to drop in on those days.

CHRISTMAS PRESENTS: Just a reminder that we have books and small gifts for sale here at the museum at very reasonable prices.

REMINDER: There will be no meeting or speaker in January. Guest speakers resume in February with the story of Cobb & Co.

MUSEUM ROSTERS: Over the last couple of months some members have not been turning up for their rostered days. This could well be because of illness, other commitments, etc. If you know you will not be able to attend could you please let us know so we can arrange a replacement.

Would you like us to print a reminder in each Nurungi for those next on roster?

If you no longer wish to be on the Museum Roster also please let us know. We will send an email to you all shortly and ask you to reply with a "yes" or "no" about staying on the roster.



... and they claimed they were too old to learn to use a computer!



One thing so simple a child could operate it is a grandparent.

I find the best committees are composed of three people - two of whom are absent.

After you hear two eyewitnesses' accounts of an accident, you begin to wonder about history.

Two Christmas revellers, waiting for a cab outside a suburban hotel. One of them spots a truck loaded with turf and turns to the other. "That's what I'm gonna do when I win Lotto." "What?" "Send my #&?#+& lawn out to get mowed."*

I felt really old when I discovered that my daughter was studying in history class what I had studied as current events.

There are two Santa Clauses coming down the chimney. Which one is Irish? The one with the sack of Easter Eggs.

Welcome ...

In November we welcomed new members Dinah and Richard Harvey from Randwick.

We look forward to getting to know you in the coming months.