

RE-LIGHTING AND RE-POSITIONING THE *TEMPLE OF BAAL*

– Russell Commins & Daniel Cove*

“In all the world there is no stillness so solemn, so suggestive of the silence of eternity, as that of a river lying in deep pools beneath the rock walls of an underground cavern” *Wonders of Jenolan*, circa 1915.

“...an entrancing piece of nature’s unrivalled workmanship” *The Jenolan Caves*, 1905.



Old light fixture in the Baal showing cabling, drill holes and proximity to fragile crystal

Guidebooks to Jenolan written in the late 19th and early 20th century share a definite fondness for flowery description and poetic allusions, very much in contrast to the far more stark and scientific emphasis that has become more common in recent times.

In a similar manner, the emphasis on presenting a cave through the ‘tour’ format has become increasingly directed towards the presentation of facts, figures, fantasy and history. In every case it is the guide who tells the visitors what it is that they are looking at and what they should be looking for.

While there are a great many merits to the guided tour format, it must be argued that it has come to ignore exactly the point that these early writers were so passionate about expressing. Almost every early account of visiting Jenolan mentions the presence of the guide, and always with admiration, but never is the guide the focus of the tour, nor is the information conveyed that is memorable.

Rather it was the caves themselves that communicated to them on a very personal level and that this personal sense of wonder and discovery conveyed an emotional intensity and a sense of rediscovery common to every journey into the underworld.

Understanding the importance of this emotional connection had greatly influenced our approach in the relighting of the Lucas Cave, completed in 2004. However, due to the central position of the Lucas in Jenolan’s product range, our vision had necessarily been tempered by the need to encompass a diversity of themes that would still be presented by a guide in ‘tour format’.

While the Lucas redevelopment certainly transformed the tour, the challenge with the Temple of Baal was to actually attempt to move beyond this contemporary tour format and achieve an emotional response vastly different from anything else currently available at Jenolan.

BACKGROUND

The Temple of Baal was officially discovered in 1904 by Guides James “Voss” Wiburd and Jack Edwards. By 1909 the cave had enough infrastructure installed for tours to begin and the cave was opened. The original development consisted of drawn steel cable handrails, an electric lighting system, some cement stairs and compacted mud floors.

The cave has seen a number of infrastructure upgrades over the past hundred years most notably from 1954 to 1958 with the completion of the Binoomea Cut access tunnel and lighting upgrade made possible by the installation of a new mains cable, and in the 1970’s when the cave was given new concrete flooring and galvanised hand rails. The Temple of Baal currently attracts 20-25 thousand people in an average year who undertake a tour of one and a half hours duration.



Gabriel’s Wing. Light fixtures are located some 15 metres from the actual shawl.

WHY RE-DEVELOPMENT

The need for redevelopment of the Temple of Baal had been clearly identified, primarily along two lines:

Environmental. As a result of its location and with minimal airflow humidity in the Temple of Baal is naturally very high (often exceeding 99%). Biota survival and crystal growth has been occurring under these conditions conceivably for tens of thousands of years. Even small changes in the temperature and humidity can adversely affect the natural processes taking place.

The existing infrastructure was old and made from materials that were breaking down in the cave environment. Zinc coated hand rails were releasing not only visibly damaging pollution (rust and other flake) but leaching cadmium, which is toxic to cave biota. Light fittings were drilled directly onto active formation leaving behind great scars of rust and copper carbonate and, in some cases, obstructing natural hydrological process.

The lighting was 110v using standard incandescent globes. These old inefficient globes ran very hot for their minimal light output (approximately 10% of total energy output) and would heat sections of crystal causing barren areas of evaporite covering previously waxy active crystal. To further exacerbate the problem, wires were run across the ceiling allowing lights to be placed very close to formations of interest, usually the finest helictites and thinnest shawls. While such lighting may have made certain features look pretty, it was ultimately to their detriment. Shawls with sixty-watt light globes attached to them were found to be layered with moss and dry crystal, helictites dry and chalky. As well as the crystal suffering, the heat from lighting will change the entire ecosystem as has been well documented in the scientific literature.



Battery Bank (12 X 2v Sealed gel-cell batteries)

Efficiency and Safety. Jenolan Caves is situated at the end of a long electrical supply line meaning the likelihood of a power cut is higher than in your average suburban grid. The cave system utilises hydropower generated on site whenever possible. It cannot, however, supply enough power to run all the caves in their current inefficient configuration. When the grid fails and the hydro cannot cope, a diesel generator will be started to supply the shortfall. The process of changing from grid to diesel and hydro is labour intensive and does not deliver immediate results,

thus tourists may be left in darkness for periods of up to twenty minutes.

The electrical infrastructure was an aging, unearthed 110v system with no Earth leakage breakers. Many fittings were within a child's reach of the track constituting a potential burn or electrocution risk.

DESIGN PHILOSOPHY

Certain aspects of redevelopment were straightforward and reasonably easily achieved, such as the replacement of the galvanised handrails with stainless steel throughout the cave. But the identified need for redevelopment provided us with an opportunity to do more than merely remedy these obviously important issues. It allowed us to continue the redefinition of Jenolan's product range which had been the ideal objective from the commencement of the Lucas project. This led to the obvious question of what niche the Baal should fill. How should it be defined and why? Once again we took this to be the fundamental question and built our entire conceptualisation from this beginning.

Arriving at a philosophy for the Baal was relatively easy. The actual length of passageway through the cave is not overly long, and as such the tour had always been one in which there had been a reasonable amount of time to linger. The route through the cave also necessitates a return journey, allowing multiple viewings of the same areas.

The majority of the tour is spent in a single chamber (the 'Temple') of impressive size with formation that is large and rich in colour. The air is still and humid, and the natural acoustics amplify the sounds of water, generally creating a quieter group environment. Taking all these points we decided that the cave was ideally suited for contemplation and an experience that would encourage reflection. We further hoped to be able to return to the emotional reaction so evident in those early writings.

Returning to this emotional state is not necessarily easily achieved in a show-cave in the early 21st century. For the early visitors, the experience was dramatically different and their state of mind upon entering the Temple of Baal would likewise have been different. These visitors would have been tired, their lighting was dim and often unreliable and they would not necessarily have had a prior frame of reference for what they were seeing or about to see, thus the cave experience was new, wondrous, even confronting.

Today this is not the case. Visitors walk in ease along well-developed and 'safe' paths. The lights are bright and comforting, illuminating features that are often already familiar, seen previously in a thousand photographs or other media forms. We were keen to return to the intensity of emotion of the early visitors but realised that with today's tours this was difficult. What we needed was to create something that was immediately and tangibly different, that would not be familiar or match the preconceptions of today's visitors.



“The Temple” – new lighting

This formed a challenge that took us beyond that which we had set ourselves in the Lucas cave when the all important question had been; what do we want people to see, and why did we want them to see it? Because of the integral nature of emotion to the experience, the new question had become; how do we want people to feel, and why do we want them to feel this way? (And how on earth were we going to achieve any of this?????)

CREATING THE EXPERIENCE

At the outset we realised that we should have three major objectives:

1. To create a cohesive experience that included a clearly defined beginning, middle and end.
2. To attempt to tell as much of the story of the cave as possible through a non-verbal medium.
3. To utilise technology to its fullest capabilities not only as an interpretive tool but also in reducing environmental damage.

We began by lighting the first chamber, essentially an antechamber to the ‘Temple’ area, emphasising the extreme fragility of the environment. The effect is subdued with walls of helictites and straws lit only with softly ramping and fading LEDs (developed specifically for this project). The concept of not over-lighting a cave is now, generally, fairly well recognised as an important aspect of redevelopment and this was particularly true of our intentions as we were attempting to emphasise the difference of the cave environment. Over-lighting in a cave does more than environmental damage, and more than simply making a section of cave look ‘flat’, it removes any sense of the cave being a uniquely different and mysterious environment. Hence we began with a sense of fragility reinforced by the atmosphere of an environment removed from the everyday.

Conventional theory currently holds that the Temple of Baal was once filled with water that slowly dissolved the limestone over millennia. Ultimately there is a certain tranquillity to this theory of development that fit perfectly with our reflective objective, and that fit perfectly with the evocation of the “*stillness so solemn, so suggestive of silence of eternity*”. We wanted this to be a

central concept of the experience but one that did not require elaborate explanation. Instead we decided that the simplest way to make people appreciate the wonder and beauty of the idea of a cave such as the Temple of Baal full of slowly moving water was...to actually fill it with slowly moving water. To achieve this we adapted a lighting effect commonly used in theatres and clubs of light projected through two rotating filters (the unit being a ‘*Martin DB-1*’). The lighting effect alone was good but it needed more to exact the emotional response of tranquillity. This is where we decided to use sound. The use of music on cave tours is often seen as unnecessary gratuity however, used under appropriate circumstances, music becomes a very powerful emotional tool.

Entering the main chamber (the ‘Temple’) visitors are given almost a full ten minutes to enjoy the scene, lit only with cool LEDs and the soft blue gently cascading water effect (which does not actually illuminate any of the main features of the chamber). The selection of music was careful, the piece chosen being the *Adagio*, 3rd movement of the *Queen Symphony* (a slight in-joke as the central musical theme is derived from “*Who wants to Live Forever*”, a reference to the theme of eternity in the cave). The music and water light accompany the visitors as they walk to the far end of the cave.

At the far end of the cave we have the historical discovery point of the cave. As we had done in the Lucas Cave we wanted to use lighting to illustrate the efforts of the first explorers but again we needed to surpass this and to actually somehow make visitors feel a part of the moment. Once more we used a combination of lighting and sound effects to do this.

A script was written and performed by the Parramatta Lyrical Ensemble to depict the arrival of Voss Wiburd and Jack Edwards and their corresponding excitement. Accompanying the sounds of the explorers the lighting illustrates the movement of candles through the boulder pile below and culminates in the lighting of a ‘magnesium flare’ (actually a High Intensity Discharge lamp). The effect is followed by complete darkness and silence and is particularly striking.

Following the discovery of the cave the Temple of Baal was immediately developed and shown. This evolution is mirrored in the lighting used following the discovery sequence. The chamber is lit sequentially, section by section slowly building to finally display a ‘scene’. There is the scope in doing this to actually provide a traditional look at how sections of the cave were interpreted and displayed in the past, but the conclusion of this is very different again.

A part of the traditional method of interpretation, as previously discussed, was that visitors were told what they were looking at, rather than being allowed to draw their own conclusions. Thus a section of the new Baal experience lights traditional features. However, unlike the previous era of lighting, this is not the end of the story.



Touch-screen control panel for the new AMX control unit

The final stage of the experience is designed to move from the traditional presentation to one which attempts to amplify the individual's imagination and again to evoke individual emotional responses. This was achieved by carefully choreographing lighting that would provoke imagination without imposing any traditional ideas or cave fantasy. This was another appropriate place to feature a musical sequence, though of a very different nature to the first. The entry musical sequence features genuinely moving emotional music, the second piece has a more ethereal and magical feel (*The Aquarium* by Saint Saens, a piece quite reminiscent of the theme from the *Harry Potter* movies) intended to complement the imagery presented by the lighting. Once again the final note of the piano coincides with a fade to absolute darkness, and the end of the journey.

THE TECHNOLOGY

As in the case of the Lucas Cave we looked at the available technology very carefully in the context of what it could achieve for us. Owing to the more complex nature of the tasks performed in the Temple of Baal the 'Minder' system used in the Lucas Cave was overlooked in favour of the more advanced AMX control system. This system can handle not only complex light and sound sequences but also scientific monitoring functions (logging CO₂, temperature, humidity etc) and any security and surveillance requirements.

Once again we selected Clipsal C-bus, as it has proved a robust and versatile switching system in our other caves. Control is via IR remote controls with multiple receivers and backup switching.

The power supply was a complex issue, as the Temple of Baal currently relies on a 190v 3Ø main which also supplies the Orient, Ribbon and River Caves. Dave Rowling, Jenolan electrician and general cave lighting guru, rose magnificently to this challenge devising a way for these tours to continue uninterrupted whilst maintaining future currency for the Baal. This resulted in the use of three chargers, switchable between 110v and 240v, with equal load placed on each phase. These charge a bank of 12 2V sealed lead-acid gel cell batteries which in turn supply power to the cave. The batteries directly supply a 24v system which runs all of the LEDs throughout the cave. It

also supplies a 3000w inverter which delivers 240v to the rest of the cave circuitry and C-Bus components. The entire system is completely uninterruptible, representing a further evolution from the Lucas Cave. The Lucas was designed to support the majority of cave function in the event of an external power outage. The Baal is entirely self-reliant for up to 6 hours uninterrupted operation.

Selection of luminaries was diverse, dependent upon requirement. LEDs were used for all track lighting throughout the main body of the cave and for areas of delicate feature lighting and to enhance the natural whiteness of clean formation. These LEDs were specifically designed by Weidmüller; indeed the main 6w unit used in the cave has the official company classification "*Enviro-cave 1*". 24v 32wHID lamps were used where impressive illumination was required but low power consumption and heat output were maintained. Halogens IRC dichroics and 12v 30w pin-spots were also used, and still represent the best option in certain areas due to their versatility and compatibility. All fittings for the halogen dichroics were made of stainless steel and hand fabricated by Jenolan staff.

Naturally all cabling is hidden, and only one single feature light is visible throughout the entire cave. Not a single drill hole was made into any crystal or natural rock surface. Total power consumption is now less than that required to run two toasters and roughly 20-25% of previous.

CONCLUSIONS

The Temple of Baal is rightly described as "*an entrancing piece of nature's unrivalled workmanship*". The cave was officially reopened on 12 April 2006 with Russell Commins escorting the VIP tour to immediate critical acclaim. The response from visitors subsequently has equally been overwhelmingly positive, so much so that it prompts a significant conclusion; that it is increasingly evident that the concept of the traditional "cave tour" is quite literally becoming an antique. This statement may initially seem harsh, but it recognises that times have changed since Oliver Trickett wrote the above-quoted description in 1905. The emotional response of the first visitors must have been far easier for the guides of the day to elicit, as a trip to the cave was genuinely a privilege and the stimulation it represented was like nothing within ordinary experience. Today this is simply not the case. Modern visitors are accustomed to constant everyday sensory stimulation and an information overload. For the guide to achieve the desired emotional response from modern tourists therefore must require careful forethought and interpretive design facilitated through the use of cutting edge technology.

The Temple of Baal has been repositioned in Jenolan's product range and is truly unique. Its difference is entirely deliberate and designed to elicit, to the greatest possible extent, the reaction of wonder and awe in visitors reflected in early writings, and to allow visitors their own time in which to experience the 'Wonder of Eternity'.

*All images by Russell Commins

