# steelprofile

*Architectural steel innovation with BHP Steel Limited*

***number 79, june 2002***

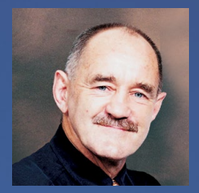
# steelprofile

*number 79, june 2002* *published by BHP Steel Limited*

To honour Pritzker Prize laureate Glenn Murcutt, Steel Profile devotes the first two major features of this issue to the man and his work.











**NUMBER 79, JUNE 2002. PRODUCTION:** Sean Moylan **PHOTOGRAPHY:** Hyatt & Associates, Anthony Browell, Warren Kirby and Brett Boardman **ART DIRECTOR:** Natasha Krncevic **CORRESPONDENCE:** Steel Profile, PO Box 961, Crows Nest, NSW 1585 AUSTRALIA. Email steel.profile@theprojectgroup.com.au 

(cover photograph) "It is a fantastic skill to know how and where a building should sit. Glenn Murcutt has the ability to find the perfect intersection of land and sky," says Stella de Vulder of the Royal Australian Institute of Architects. The Bowral House illustrates the point. Page 002.

(this page) Shear Outback rises from the Hay Plains as a beacon for travellers. In form and fabric it provides an appropriate setting to honour the back-breaking toil that's part and parcel of the wool industry.

BHPSTEEL
INSPIRED SOLUTIONS

# 002

**Project** Bowral House
**Architect** Glenn Murcutt
**Builder** C & C Symonds Pty Ltd
**Engineer** James Taylor and Associates

## TAKING SIDES

**Set on 11 acres of former pasture land, and completed in August 2001, the Bowral House is a clear embodiment of the continuum that is Glenn Murcutt's work. The glimpse carries a firm instruction: note the detail.**

Some of us like to imagine the Southern Highlands of New South Wales as our own little bit of Europe. In the towns, the leaves turn golden and fall; the undulating pasture is green and dotted with cows. (We cunningly close our eyes to the spreading housing estates, blonde brick bungalows and ersatz mansions.) And when suddenly the weather changes - the sun shrivels, a bitter wind gusts and the fog rolls in – ah! The fantasy is confirmed.

But not for long: turning off the road towards the Bowral House is a positively rousing experience. At first sight, the structure sits long and low in the landscape - a solid, protracted sheath of corrugated steel (sixty metres long!) – this really is a shed, the proportions suggest chooks. The European reverie is in pieces on the ground; this must be Australia. Equally, it must be Glenn Murcutt, because, even from a distance, this is no common or garden shed.

"My interest is in trying to build something appropriate," he says. "This was a big house. I didn't want it to read as a

(above and below) With its back to the wind the Bowral House takes on the colour of its surroundings.

bloated-looking thing; I wanted it to have a sleek quality and I wanted it to be strong.
Most of us look at sheds in the landscape and think that they sit pretty reasonably. That's because the steel takes on the sky light in a most extraordinary way. On a very blue day they have an incredible blueness about them; on a dull day they have a real cloud quality.
Set in a lot of greenery they take on the green quality as well. You're dealing with a material that takes on these qualitative factors. I'm much more interested in producing a shed-like quality in the landscape, than I am in producing an edifice."

The orientation of the house runs along equally established lines. It overlooks, and opens out to, a rural landscape to the north, presenting a blank, unperforated face to the southern, heavy-weather side, where even the entrance has been concealed. The plan - no surprises here - is linear. In fact, says Murcutt, "My conscience doesn't allow me to do it any other way. Everything - living, dining, kitchen, bedrooms – has the sunlight coming into the space, beautiful sun penetrating in winter. In summer there's no sun coming in, but the quality of light produces a sense of optimism, of joy and energy. Essentially it's the best way you can go."

The plan is straightforward. A long hallway runs the entire length of the southern wall, leading onto bedrooms and bathrooms at each end and living spaces in the middle. In effect, two completely self-contained living areas sit side by side: the main space used by the clients themselves, with kitchen, dining and living areas combined, and the other smaller space designed to accommodate the needs of extended family members when they come to stay.

A slate terrace runs the length of the house on the northern side and window walls slide away to open up both living areas. As one of the clients recalls, "In the early stages we'd talked about having a verandah, but we realised it was a waste of space. These two rooms can become verandahs if we want them to." Two bedrooms and bathrooms adjoin the living space for visiting family. At the other end of the house, short corridors lead to, and interconnect, three large identical bedrooms with

(above and below) Curved corrugated steel kicks the wind from the Southern Alps up and over the house.

bathrooms between them – private suites, with lots of flexibility. A utility module – laundry, computer room, sewing room, guest toilet – slots in between the bedrooms and the living area. Neatly positioned underneath the house, the rainwater tanks keep the water cool and moderate the temperature of the slab.

Another fundamental design driver, again not surprisingly, was (that European!) climate. "Wind was very much an issue," says Murcutt. "The wind straight off the Southern Alps is very cold and very powerful." In response, he angled the south-facing wall inward, continued it up as roofing then added an extra wind deflector above that.

"The idea is to push the wind up over the house, and when it hits the ridge, the next roof kicks it up again." The client reports the effect is quite wonderful.

"It can be really unpleasant out there on that side, but you go out onto the terrace at the front and it's absolutely still," says the client. You wouldn't even know there was a wind blowing."

A line of deciduous Australian white cedars planted in front of the terrace will shelter the space even further, says Murcutt. "Once those trees grow it will become, in a sense, a semi-internal room."

Interestingly, he says, he has only just realised that this resolution of the wind problem on the site was similar to the approach he'd used at the Nicholas farmhouse at Mount Irvine, back in the seventies. In both instances too, north-facing windows were used to enliven the spaces made by the protective south-facing walls.

(opposite) Skylights add warmth to the hallway which runs the length of the house.

(below) The Dutch barn profile keeps living spaces large and airy.

(above and below) tuned to its environment, the Bowral House works with rather than against the wind and sun.

In the Bowral House, the long hallway has skylights running the length of it, the starkly white capsule contained at either end by classic Murcutt steel-framed doors. The nebulous presence of the inward-curving wall (a fine test for spatial awareness) adds to a feeling of almost religious asceticism. "What would ordinarily be a very cold space has a great degree of luminosity," says Murcutt. "It was very important to me to keep the hallway absolutely quiet - the living spaces have much more going on in them - so this is almost a cleansing space. It's like the sorbet between courses."

The clients' insistence on stone flooring and underfloor heating led to another fundamental aspect of the design. The flooring throughout is of Italian porphyry. "Very fine stuff," says the client, but "having decided on this, the house had to be properly seated on the ground outside." The client believes the slate terrace and surrounds not only help to visually integrate the structure into its setting, but that, combined with the back-to-the-wind design, it has been extremely effective in maintaining a stable ambient temperature in the house, in both summer and winter. It was also a practical solution to the problem of staining from the local red earth splashing onto the building in heavy rains. "It's like having a little skirt," says Murcutt.

Many familiar elements in the Murcutt vocabulary recur here: the layering of sliding screens and windows, the discreet kitchen plan with its island bench, the fireplace separating living and dining areas, small ancillary windows in bedrooms for airflow; an opportunistic approach to views. The dutch barn profile keeps the living spaces large and airy. Lowered ceilings in the bedrooms make them feel more intimate and create a bulkhead for storage above.

Because the clients have a Japanese background, other features of the design were derived from their cultural heritage. (They remained intensely involved in the design process throughout.) There's an area in the entry, for instance, where shoes are removed. Bathrooms are planned around the idea of showering before you bathe. Access between the bedrooms allows for flexibility as well as privacy. Storage is provided in abundance – a wall of cupboards runs under the large box gutter on the south side for the whole length of the house.

Despite its obvious Australian setting, a Japanese sensibility is also evident in the landscaping. For Murcutt, who worked closely with landscape architect Sue Barnsley, the landscaping was another definitive aspect of the project. Although it's hardly apparent, the precise setting and environs have been meticulously crafted. The house was tucked into a grassy mound at the eastern end, with the west concealed in a sleeve of slate that leads to the entrance. A large lake was created between the house and the road and the silver-grey of the steel is mirrored in the water.

The approach to the house (even more than the passage through it) is a highly orchestrated journey. Curving around the lake, the drive closes into a parking area, delineated by a line of trees. The muted steel façade is softened further by the blue-green of snow gums planted in front of it.

The entry behind the smooth slate wall ends in a blank – brought to life by a pebble pool, the water bubbling around the edges in a distinctly Japanese reference. Then with a gentle u-turn you enter, pad in slippered feet into the long white hall, through the living space and out to the terrace on the other side – you've definitely arrived somewhere else.

The two sides of the house could easily be construed in opposition: cold versus warm; closed versus open, simple as against layered and complex. They naturally work as one, of course - the yin and yang of the linear plan - although conceptually, the juxtaposition is nice: the utterly utilitarian notion of the shed rubbing shoulders with the absolutely urbane. This may well be the crux of its initial impact, that first glimpse of the house that raises a smile.

The rigorous attention to detailing we've come to expect of Murcutt is amply evident; the most minor issues minutely resolved. Given that his clients here were every bit as interested in the detail as Murcutt himself, they were fortunate to have engaged Chris Symonds as builder. "He's an extraordinarily good builder. It's beautifully finished, a fine job," Murcutt says.

In every detail, not only in the building but in the landscaping around it, the consideration that created it is clear. Just as every pebble in the pool has been turned and polished, it's easy to imagine that every cloud has been fixed in place, every cow planted in its paddock. But why should it be otherwise? It's just the Murcuttian way.

**Jan Howlin**

**Project:**
Bowral House
**Architect :**
Glenn Murcutt
**Builder:**
C & C Symonds Pty Ltd
**Engineer:**
James Taylor and Associates
**Steel Fabricators:**
Antax Steel Fabrications, Bellambi
Corrugated galvanised steel, .86 gauge.
**Landscape Architect:**
Sue Barnsley
**Cost**
$3,340 per square metre
**Photographer**
Anthony Browell

(below) The glimpse carries a firm instruction: note the detail.

# 010

## SINGULAR SUCCESS

**Glenn Murcutt is the 2002 Pritzker Prize for Architecture laureate. His triumph in world architecture's biggest prize will only surprise those who have failed to look below the world's girth. Since the Pritzker Prize's inception in 1979, Murcutt is only the second architect south of the equator so honoured.**

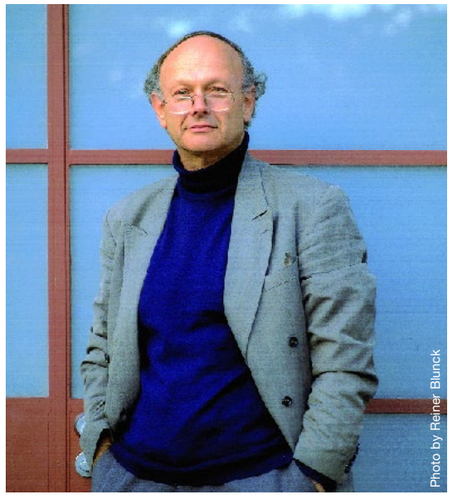


Photo by Renee Blunck

A growing audience of architects, clients and students has come to recognise what the Sydney architect Lindsay Clare describes as Murcutt's "humanity and talent for sincerity". Glenn Murcutt's achievements have been created almost entirely alone and without the usual army of staff. To further confound the few remaining sceptics, he is not on email, has no mobile telephone or electronic organiser and will go to the grave having never designed on computer.

Pritzker Chairman J. Carter Brown summarised Murcutt's selection as its 2002 Laureate thus: "(He) occupies a unique place in today's architectural firmament. In an age obsessed with celebrity, the glitz of our "starchitects", backed by large staff and copious public relations support, dominate the headlines. As a total contrast our laureate works in a one-person office on the other side of the world from much of the architectural attention, yet he has a waiting list of clients, so intent is he to give each project his best. He is an innovative architectural technician who is capable of turning his sensitivity to the environment and to locality into forthright, totally honest, non-showy works of art. Bravo!"

Glenn Murcutt was the lead story of Steel Profile's first issue in March 1981. He was already a name then, but not the national and international figure of today. The story, "Cat on a Hot Tin Roof", offered a number of clues as to the direction his life would take. There had already been recognition of the talent with local and national awards in the '70s – but few could have guessed where his persistence and talent would lead.

A reputation for bullocking toughness in the face of adversity and planning courts, not to mention originality, was already being forged.

His modernity is influenced by rigorous


Photo by Anthony Browell

(above and below) The Arthur and Yvonne Boyd Education Centre, Riversdale, New South Wales 1996 -1999, by Gelnn Murcutt, designed with Wendy Lewin and Reg Lark.


Photo by Anthony Browell


Photo by Peter Hyatt

(above and right) The Magney House, Bingie Bingie, South Coast, New South Wales 1982-1984.

European lines, notably Alvar Aalto, Mies van der Rohe and Pierre Chareau. But these were way finders only, not overseers of imitation. Murcutt quickly claimed his own mighty voice.

In 1992 he won the RAIA's Gold Medal and Finland's revered Alvar Aalto Medal. Impressed by what they saw and heard, architecture schools and competitions the world over have made Glenn Murcutt a wanted man. None of this came easily or without expense. "If you haven't been through the planning appeals tribunal at least a dozen times by my age then you're not really trying," said Murcutt after winning the Alto medal.

In the early days he travelled extensively and absorbed what he needed but consistently shunned the flood of magazines selling architectural style and fashion. He remained steadfast in the belief that architecture should be borne of first principles and not treated as a consumable package.

Other honours have flowed since, including architecture's Grand Slam - the Richard Neutra award for Architecture and Teaching in 1998, the Green Pin International Award for Architecture and Ecology in 1999, the Thomas Jefferson medal for architecture in 2001 and Denmark's new international award for an architect Who Most Influenced the Thinking in Architecture.

Now he joins an elite level of Pritzker superstars. Among those to have won the annual award are Philip Johnson (1979), Luis Barragan (1980), Sir James Stirling (1981), Kenzo Tange (1987), Oscar Niemeyer and Gordon Bunshaft (1988), Frank O.Gehry (1989), Aldo Rossi (1990), Sverre Fehn (1997), Renzo Piano (1998), Sir Norman Foster (1999) and Rem Koolhaas (2000).

Murcutt was intuitively practising a sustainable architecture at least 30 years before the recent flush of interest in ecologically sustainable design.

Pritzker juror and author Ada Louise Huxtable says of Murcutt: "(He) has become a living legend, an architect totally focussed on shelter as the environment, with skills drawn from nature and the most sophisticated design traditions of the modern movement."

NSW Government architect Chris Johnson says Murcutt's win would have been difficult to predict. "I guess you could say he is a bolter," Johnson says with a laugh. "There is no doubt that in the big picture and major world projects, someone who is an individual practitioner has a very difficult task. To rise and match it with the world's best is a remarkable achievement."

Murcutt's ability to read and appropriately respond to the land is a telling point according to Johnson. "It puts Australia on the map as a place of individual talent at one level, a place of architecture related to nature and landscape and a sense of integration between building and landscape. That's a pretty strong image of Australia to project to the world."

His earlier work in particular did not have automatic or wide appeal, but it won recognition as idiosyncratic and one-off. Plenty of people remained unconvinced. Numerous court battles with planning authorities plagued so much of Murcutt's early experience that there must have been times when he wondered if it was he, rather than the bureaucrats, who had it all wrong.

But he has continued to design with no less white heat to his art and craft. The Arthur and Yvonne Boyd Centre at Shoalhaven completed in 1999 and designed with Wendy Lewin and Reg Lark, is Murcutt's major public building. Built to celebrate the memory of Boyd's art, the centre provides young artists, painters and musicians the opportunity of an inspirational learning environment. Pritzker Prize committee head, J.Carter Brown described the project as "transcendental".

Stella de Vulder of the Royal Australian Institute of Architects feels that one of Murcutt's underrated strengths is his ability to site buildings beautifully every time. "It is a fantastic skill to know how and where a building should sit. He has ability to find the


Photo by Anthony Browell


Photo by Anthony Browell

(right and below) The Ball-Eastaway House, Glenorie, Sydney, New South Wales 1980-1983.


Photo by Anthony Browell

perfect intersection of land and sky," she says.

One of Murcutt's greatest admirers is wife and collaborator, architect Wendy Lewin. "Many people will call him bloody-minded but there is that relentless search for the poetic in solutions," she says.

Lindsay Clare says that if he had to describe Murcutt's work in one word it would be "elegant". But Clare adds, "the secret of his success is not to be found in any dogma or style. There are talented people who don't go anywhere. They seem to lack Glenn's discipline and focus. He shows a great sincerity to his clients, fellow architects and students. Such a level of sincerity bridges all sorts of problems. That is a big part of his difference."

Murcutt's relentless curiosity and desire to avoid formula is a key to understanding how his designs are one-offs rather than resulting from pre-cooked solutions. "He's not the guy who walks around with a bag of tricks to create something," says Clare. "The buildings are very related to the context. There are plenty of architects swanning around with fabulous curves or formula boxes in their briefcase. He doesn't have that sort of attitude. He discovers and finds things and I think that's far more courageous. That is one of his best legacies - that you can make architecture from the problems at hand."

From a "style" viewpoint little has changed about Murcutt's work between the early '70s and today. Perhaps the most obvious is the use of skillion and butterfly roofs to open up his interiors. In this regard his work appears more exuberant and extroverted as it has developed and been refined. The Marie Short Farmhouse at Kempsey (1973) appears every bit as elegant today as the day it was completed.

Later projects such as the Bingie Bingie (1984) and the Mount Wilson (1993) houses reflect a dazzling touch where occupants are transported by his art as effortlessly as by his architecture.

Murcutt's work demonstrates simplicity carried through with great sophistication. Doors pivot to act as breeze and light deflectors, walls and windows retract or close to create "privacy or prospect". Comfort levels are not left to sumptuous furnishings or a flotilla of gadgets, but to the inherent quality and value of spaces. For Murcutt it is the invisible qualities of bush scents, breezes and vaguely perceptible light shifts that contribute a sense of well-being and connectedness.

Taking corrugated sheet steel from a position of some disdain within the architectural community, Murcutt imbued it with a new-found meaning that elevated it above dust, rural squalor and sheep drenching. The pioneer's hut, shearer's shed and outback dunny were exquisitely adapted; cut, stretched and sculpted to create an object of desire.

He reinterpreted basic traditions into an architecture of elegance and eloquence. He took the sharp, industrial, brilliance of Mies' Barcelona Pavilion and Farnsworth House and invented a vigorous offshoot. Using principally corrugated steel sheet he articulated an expressive language. In such polished hands it provided a forerunner of a vital new confidence that has emerged in Australian architecture.

In 1981 when Steel Profile was launched, he was one of the few voices in the quest for intelligent and appropriate material usage. At the time masonry construction was all the rage. But it was Murcutt who picked up on the Australian

(below) The Simpson-Lee House, Mt Wilson, New South Wales 1989-1994.


Photo by Anthony Browell


Photo by Anthony Browell

Photo by Anthony Browell

Photo by Anthony Browell

(above) C.Fletcher and A.Page House, Kangaroo Valley, New South Wales, 1997-2000.

(below) Museum of Local History and Tourist Office, Kempsey, New South Wales, Phase One, 1981-1982.

Photo by Peter Hyatt

Aboriginal consciousness and urged architects and the rest of the planet to "touch the earth lightly".

At the RAIA's 2001 national architecture awards it was revealing that of the 14 category winners, 11 used coated steel as the principal or primary cladding material. "Lightweight", climatically-tuned structures left no room for ambiguity. Such architecture could never be confused with the insubstantial or trivial.

Suddenly it was re-presented in a way that entered the nation's psyche – a shimmering, steel gem. Style magazines suddenly fell over themselves in the rush to publish the latest rural chic set on a grassy knoll.

Murcutt's Pritzker partly recognises the return to an architecture of honesty and clarity. As a cultural export, he has emerged as the one-man show; a tour de force who has made giant strides by influencing North America's national consciousness.

His trademark has become "floating" pieces of silver, often a stunning counterpoint in the dusty green eucalypt as at the Simpson Lee House, Mt. Wilson, Arthur and Yvonne Boyd Centre, or the seminal pavilion-on-a-grassy-knoll with the Marie Short Kempsey Farmhouse.

His design for a holiday house at Bingie Bingie on the New South Wales South Coast embodies the organic metal shell that became an exemplar for a generation of architects attempting to create poetic, elegant form with a spare, sculpted utility.

Shaped by the land and spirit instead of regulations, Murcutt's architecture connects with the landscape in a way impossible for the blockbuster or monument.

The resultant verandah and pavilion form creates an archetype of narrow-bodied, linear forms, each a highly sculptural shelter precisely tuned to its environment.

Murcutt's artistic influences include Arthur Boyd and Fred Williams whose interpretations capture the intrinsic legibility of the flora and Australian landscape. Murcutt says this art "shared my approach to architecture by connecting with the rhythms of the land".

At an age when most career architects have long since given up design, Murcutt shuts out any thoughts of retirement: "I consider I have a good future in architecture," he explains, noting that his career is a way of life, rather than a phase forgotten or abandoned.

**Peter Hyatt**

# Q&A

**Contributing editor Peter Hyatt interviewed Glenn Murcutt on the eve of his departure for Rome and the presentation of the Pritzker Prize at Michaelangelo's Campidoglio on May 29th.**

***You have had enormous success but you have had some terrible, anonymous critics. Does the Pritzker provide the ultimate last laugh?***

I don't think of it like that. I don't have any anger or bitterness in me in that regard. They might be tough at the time, but I say to myself if you have stirred people up in that way, it is something architecture hasn't done too much.

***There must be some advantages to your growing celebrity... better restaurant tables, front row seats at opening nights?***

That part is just not me. I might use it to try and get my views and position across when it comes to conveying ideas to councils and authorities, but that's about all I would try to get from it.

***Has winning the Pritzker provided mainly a sense of exhilaration or does this sort of success create fear and anxiety as well?***

My life has been lived on the basis of understanding that failure is a necessary component of progression. I'm always terrified. Fear doesn't leave me for long. You can get into a lot of trouble in this occupation at so many levels. You know those dangers so you have to work with them, not against them.

***Are there repercussions from the win for Australian architecture?***

Let's call it architecture in Australia, not Australian architecture. I'm not interested in an Australian architecture at all. They are very different. I am far more interested in an architecture that responds to place, culture, technology and climatic conditions. This means a response to the geology, geo-morphology, topography, altitude, latitude, flora and fauna and I care about all of those things very deeply. There is also cultural context and availability of materials. Once we better understand these issues we might produce something that responds to the place for very tangible, clear reasons. This doesn't make it an Australian architecture.

***You have long advocated a greater environmental attitude.***

For me architecture needs to respond to its place. I say to the North Americans, "You pump buildings silly with air-conditioning. Most get out of their air-conditioned houses, into their car, into an air-conditioned office building and finally return to their air-conditioned house to look at the news to see what the weather was like."

***How difficult is it to be so resolute, yet remain open to new opportunities and ways of working?***

You have to know that dogma is the worst thing that can happen to architecture. Most "isms" lead to dogma and then you're in trouble. I work with ideas that have been formulated over a long period and know that they work. One tries to extend those ideas and make each project one step on from a calculated order so that you don't end up in the land and environment court or civil court.

***Are there any unfulfilled ambitions?***

Even at nearly 66 years of age I consider that I have a good future. All that I've expected is that my clients give me room to move to try to discover a way of working that is appropriate in this time in history, in the conditions present in this country.

***You oppose the use of technology as a solution in itself?***

I love technology and working with it. But don't ever ask me to make technology decorative. There's too much architecture in the world where technology has taken over. It's become so self-referential that you can forget about space, light and so many other qualities. The whole thing becomes an object in cleverness. I'm not into that at all and I have no respect for it. Much of it is just incredibly perverse. I love the idea of being able to solve problems in a very simple way.

***You have achieved great success with a restricted palette – namely corrugated sheet steel.***

Some materials simply perform better in the way that I want. I could use concrete instead of metals if I wanted to and achieve some very plastic forms - but at what cost? I try to make architecture, not merchandise.

*Peter Hyatt attended the Pritzker ceremony for a new documentary on Glenn Murcutt. He produced the 1993 BHP Steel sponsored documentary "Touch the Earth Lightly." Since 1981 he has reviewed and photographed numerous Glenn Murcutt projects. ha@hyatt.net.au*

Photo by Peter Hyatt

(above) Magney House, Bingie Bingie, South Coast, New South Wales 1982-1984.

# 018

**Project:** Shinawatra University, Thailand
**Co-designers:** Professor Dr Soontorn Boonyatikarn, DCM 2000 Co. Limited
Mr Nipat Suetrong, Nipat & Associates
**Builder:** Thai Obayashi Ltd.

## TAPERING AFTER THE OLYMPICS

**Thirty kilometres northeast of Bangkok, Thailand's newest tertiary institution is preparing to welcome its first intake of students. The Pathumthani campus of Shinawatra University exhibits learning curves that are already causing comment about the academic centre's impressive design.**

Shinawatra University sits in open agricultural land, yet another example of a rapidly changing society. A school of the Built Environment will be among the five disciplines to begin undergraduate degree programs at the new campus in September this year. Telecommunication Engineering, Software Engineering, Computer Science and Business Administration students will also begin their studies.

The university campus was founded by Thailand's prime minister, Dr Thaksin Shinawatra and Dr Purachai Piumsombun, Thailand's interior minister.

To date, the circular, five storey Lecture Building, the fan-shaped, five storey Laboratory and Canteen Building, a six storey residential slab-block, the tall central water tower with viewing deck and the Library Building have been completed. The initial impression is of a compact but somewhat unbalanced assemblage of architectural forms. The scale of the water tower seems excessive for the present development and the administrative and lecture facilities appear out of proportion to the size of the residential accommodation.

When other residential blocks and additional academic facilities are completed this criticism may be allayed. But the development raises a number of questions. Why I wonder build a new university so far from a major population centre? Why construct a Department of the Built Environment in a rural location when the major role of architects and planners in Asia today is to work in densely populated urban situations? Where do the academic staff come from and where do they reside?

However there is very different agenda driving the design of the new campus and this is articulated by the architect, Professor Dr Soontorn Boonyatikarn who is himself a full-time academic in the School of Architecture at Chulalongkorn University. Professor Soontorn is a product of a rigorous research culture at Ann Arbor University in Michigan in the USA and he argues with unshakeable conviction for an architecture that is propelled by ecological considerations.

Tapered rollforming of LYSAGHT® LONGLINE 305® steel sheeting solved the roof cladding challenge presented by the fan-shaped laboratory and canteen building.

Higher learning - the "Skylink" which provides pedestrian access to all buildings.

(above) A water tower with observation deck looks down on the fan-shaped steel roof of the laboratory and canteen building, connected to the campus administration building by a third level pedestrian "Skylink".

The light-filled dome of Shinawatra University's administration building.

The design of Shinawatra University, he explains, is generated by a desire to reduce energy consumption. Accordingly research has been carried out into appropriate building geometry, life-cycle costing, embodied energy in materials, micro-climate modification, zoning of activities into controlled, semi-passive and passive zones and the use of a thermal chimney. Professor Soontorn presents data explaining the choice of materials, energy inputs and outputs. Thus there is pragmatic justification, for example, for the use of four different types of glass.

The individual floors of the circular administration and lecture theatre building project outwards as the building ascends, so that the glass on one level is protected by the cantilevered slab of the floor above it. The type of glass changes as one ascends the building and different glass is used depending on the orientation of the facade.

The nearby library building is in the form of a pavilion over three floors with the lowest floor being the library and the upper floors housing a multipurpose area. Here the conduction property of glass is used to release heat from the upper part of the pavilion.

The sloping steel roof over the Laboratory and Canteen Building which contains the computer centre, information technology centre and the communal dining facility, has wide overhanging eaves in response to the hot humid climate.

Consideration of the thermal mass of this building led Professor Soontorn to choose ZINCALUME® steel cladding in LYSAGHT KLIP-LOK® 406 profile supplied by BHP Steel (Thailand) Ltd. for the roof. The insulation beneath the sheets is three layers of 50mm (total 150 mm) thick glasswool with a density of 16 kg/m$^3$, with foil on the underside of the bottom layer, laid over wire mesh.

"This is a very good steel roofing solution for use in Thailand," says Professor Soontorn. "During the monsoon season there was no leakage and the appearance is excellent."

One other factor which influenced the architect's decision was BHP Lysaght (Thailand) Ltd's ability to deliver and install tapered sheets to roof the fan-shaped plan form.

"The BHP Steel product was most appropriate for the canteen because the tapering steel sheets serve the form of this building," says Professor Soontorn. "The product is efficient, allows prefabrication and easy installation, and is relatively inexpensive."

The technology to achieve these tapered profiled steel sheets by roll-forming was initially developed by BHP Steel for the Olympic Games 2000 venues in Australia. The scale of the Olympics projects, particularly the Sydney Superdome, created the opportunity for BHP Steel in Australia to harness the resources of its own Equipment Engineering Department at Noble Park in Victoria to pioneer the computer controlled tapered roll former. Previously the only way to taper sheets to create a curved roof was to brake press and individually cut transition pieces.

"The Olympics project made it worthwhile to put in the engineering effort because so many of the buildings incorporated designs specifying LYSAGHT LONGLINE 305® roofing, which required tapered sheets to achieve the various roofing forms," says Cam Seccombe, research and development manager at BHP Steel Lysaght in Australia, who pioneered the new process.

All the campus buildings at Shinawatra University are connected by a covered "Skylink" at third storey level so that (at present) no building is more than three minutes walk from the lecture building and administration centre. Roads and car parks are kept to a minimum, thus reducing radiated heat from paved surfaces.

Two, large, two metre deep water bodies incorporated in the campus plan are used to release heat from the air conditioning system.

Shinawatra University was three years in the research and development stage and took one year to design. Construction took just 12 months.

Professor Soontorn suggests this is a 'new breed' of design where the aesthetic arises out of the resolution of environmental design criteria. Physics, natural forces and human factors are integrated in this aesthetic.

While this approach may result in a demonstrably efficient building I question if it will produce architecture that elevates the spirits? A similar discourse has been promoted by the work of Dr Ken Yeang of Malaysia and while Yeang has also maintained that the aesthetic of his buildings results from the rigorous application of ecological design principles, critics would argue that there is nevertheless an aesthetic which he manipulates which is independent of these principles.

Be that as it may, the Pathumthani campus lays claim to being a state-of-the-art facility in terms of design, materials and construction and it offers excellent teaching and learning facilities including a hi-tech library with on-line access to journals, and wireless internet access in classrooms and laboratories.

The architect is of the opinion that the design methodology reflects the University mission, to develop socially responsible entrepreneurs and managers for the knowledge-based economy.

With the new roll forming technology for achieving tapered profiles, the range of future opportunities for roofs of almost any shape holds great potential. Unlike the athletes and swimmers in Sydney in 2000, BHP Steel has continued to taper after the Olympics.

**Robert Powell**

**Project:**
Shinawatra University, Thailand
**Co-designers:**
Professor Dr Soontorn Boonyatikarn, DCM 2000 Co. Limited
Mr Nipat Suetrong, Nipat & Associates
**Builder:**
Thai Obayashi Ltd.
**Photography:**
Warren Kirby

# 022

**Project:** Shear Outback and the Shearers' Hall of Fame, Hay, New South Wales

**Project Architect:** Paul Berkemeier

**Builder:** Balegna T/A KW & PD McDonnell

## OUTBACK AND UP

**Drive half way between Sydney and Adelaide, or part way between Melbourne and Brisbane, and you could find yourself in Hay – not the middle of nowhere, but definitely out there.**

Up there in the rankings for the flattest terrain on earth, the Hay Plains lie under what seems an impossibly vast sky, the land vanishing fast and low. The climate is extreme: over 40 degrees is not uncommon; neither is freezing point. Moving through the landscape, the presence of the Murrumbidgee River is evident only by the line of trees that punctuates the aptly named plain, a relentless stretch of sparse earth, dry grass and saltbush, with a smattering of sheep.

While Hay is a relatively thriving rural centre with a strong local community (3,500 people), it recently hit on a neat development scheme that would boost the local economy by creating a monument to the under-sung heroes of the wool industry, the shearers. The venture began with a plan to re-erect a number of disused woolsheds in Hay but evolved, with the injection of $4.66 million of Centenary of Federation funding, into the creation of Shear Outback, which opened to much fanfare on Australia Day this year.

Heat extractors or teeth from a shearer' s clippers? Shear Outback' s architecture brings contstant reminders of the wool industry' s tools of trade.


The 42 acre site (set, not coincidentally, beside the roundabout where all the highways meet), combines a new museum and interpretive centre dedicated to the shearing industry past and present, the relocated Murray Downs woolshed, a water-tower, windmill, dams and levee banks, and an oval for dog-trials. (To complete the picture, stages two and three of the development are set to include a rural education and convention centre, shearers' quarters, long-drop toilets, a meathouse and a shearers' mess.)

The design brief for the museum was put together with assistance from the New South Wales Deputy Government Architect, Peter Mould, and after a review of preferred firms the NSW Public Works Department shortlisted three to submit designs. Paul Berkemeier was selected as project architect in March 2000.

The key question, he says, was "How do you design a building on a site that is probably the flattest and most featureless place on earth?" The brief suggested answers. As the General Manager of Shear Outback, Austin Smith, puts it, "The town's objective was to build an icon to attract visitors and [promote] tourism. It had to have the wow factor."

Berkemeier's strategy for site planning confirmed this direction. Since woolsheds were traditionally set apart from homesteads he resolved that the Murray Downs woolshed would be isolated from the new museum building, in order to preserve its authenticity in the landscape. He also determined that the museum should be positioned close to the highway for

(above, below and opposite) At the heart of an industry and now at the heart of Shear Outback, blades attract visitors, temper the heat and shear the fleece.

maximum exposure to passing traffic. To create a barrier against the noise and disturbance caused by the road (there's also a truck parking bay in front and a petrol station opposite) he structured the building, firstly as a protective wall to shield the exhibition space behind, and then as a billboard to proclaim its presence and flag down passers-by.

In such a landscape, the line of gleaming blades that rises 13 metres into the sky doesn't go unnoticed.

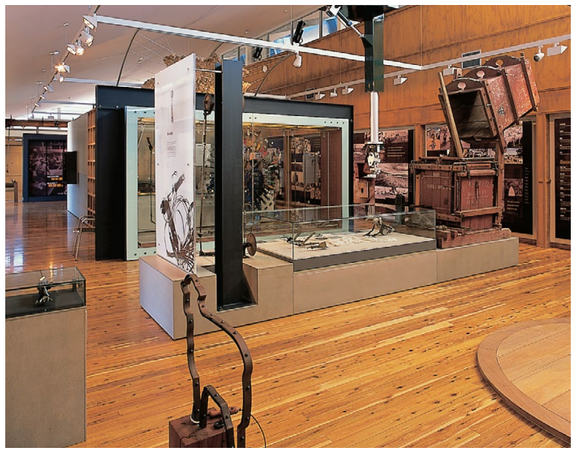
The main roof of the complex sweeps out from that line of blades – staff call it 'the wing-wall' - the intersection forming a symbolic crossroads.

So in principle, the scheme provided a tall wall to the highway with the exhibition spaces behind it, then in contrast, a long, low, uninterrupted verandah that overlooks the woolshed, positioned as an object in the landscape.

Hay has a surprising rich architectural heritage with a notable collection of 19th and early 20th century corrugated steel clad buildings. In developing his design for the museum, Berkemeier wanted a forceful contemporary solution that would embrace the tradition of Australian building, the local heritage and environmental considerations, and also, somehow, reflect an understanding of the position of the shearer and the shearing industry in Australia's development.

"When we went to Hay for the first time," he says, "we went into a huge woolshed, 120 years old, and the quality of the light, the space, the power of the place - it was almost like a religious experience. That stuck in my mind as the benchmark, the character we had to achieve."

With all these precedents, steel was the obvious choice of



material. As Berkemeier says, "We would have needed a pretty good reason not to use it." Given the large steel sheds and structures erected around the country for agricultural purposes, the towns often have highly skilled steel fabricators, and Hay, he says, was no exception. "A local firm did the steel work, a fabulous contractor. It was a complicated job and it went together without a glitch, a tribute to the guys who were making it."

ZINCALUME® steel cladding in LYSAGHT KLIP-LOK® profile is used with unpainted galvanised steel framing and the detailing is simple and direct. "The materials are logical for the place and the area," says Berkemeier. "Obviously corrugated steel sheeting is appropriate because it gives you fantastic economy. The way it responds to the light is great. And then everything else is really infill – timber and plywood. All good woolsheds had that combination of timber and steel as their core."

Not surprisingly, economical construction was almost a given. The brief and the site demanded a certain scale and presence, but the capital and operating costs of building to contemporary museum standards in Hay's extreme climate are high. To reconcile the ambitions of the project with the limitations of the building budget – it came in at a little over $2.3 million – two distinct types of exhibition space were created. The first, restricted to the 300 square metres of temporary and permanent exhibition space, provides for full temperature and humidity control. Containing the extent of this space also allowed the exhibition designers to concentrate their own limited budget.

The second kind of exhibition space was formed directly behind the blade wall, a bonus of the design. The dramatic proportions of this space - long, narrow, and between six and nine metres high -

(left) Corrugated ZINCALUME® steel sheet and timber flooring in the museum refernce typical Australian woolshed building materials.

(opposite) Exhibition space behind the blade wall benefits from heat extractor boxes which deal with the worst of Hay's high temperatures.

## Murray Downs Woolshed

When the original plan to reconstruct a number of redundant woolsheds in Hay as a tourist attraction was in its first flurry of activity, the Murray Downs woolshed - architect designed and built in 1927 - was the first to be demolished. After Federal funding was allocated to the scheme, the Historic Houses Trust and the National Trust became involved, alarm bells ringing loudly. The idea of uprooting and transplanting woolsheds to create a shearing theme park flies in the face of accepted conservation practice. There was also doubt whether the woolsheds alone could impart adequate information about the shearing industry and its history, so with assistance from Peter Mould and the New South Wales Department of Public Works, the project was totally recast under the guidance of Project Director, Sara Hector.

The dismantled Murray Downs woolshed, however, had already been transported, in 16 semi-trailer loads, from its original location near Swan Hill and deposited in a Hay backyard. Its 16,500 odd components had simply been numbered.

The carpenter who had dismantled the shed rebuilt it, and with his innate understanding of traditional construction, did so without plans. Timbers that were damaged were replaced with local hardwood. Damaged galvanized steel was replaced with appropriate second-hand material. After 18 months, and at a cost of over $300,000, the Murray Downs shed was re-erected. It retains the authentic feel of an operating shed: worn slatted floors and tables, black with lanolin, are crossed with dramatic shafts of light. There are old shearing lines, holding pens, fleece baskets and baling equipment. The shed is a museum object in its own right, with additional exhibition work fitted to help bring its history to life.

Several times a day, in this evocative atmosphere, a local shearer gives shearing demonstrations, a rundown of a shearer's tools of trade, a history of the shed and snippets about fleeces, sheep and the shearing industry today. The space is also used for training and associated industry and social events.

Paul Berkemeier believes the Murray Downs shed creates a valuable counterpoint to the new building. He also hopes that its inclusion at the Shear Outback site will raise public awareness of our rural heritage and lead to other significant woolsheds being conserved in their existing settings.

were suited to large and more robust exhibits such as cars, presses and steam engines. In contrast to the controlled museum space, the intention here was to capture the character of a woolshed, and create an appropriate atmosphere for the Shearers Hall of Fame. The space is unlined, with louvres between the blades and only insect screening at low level, and naturally cross-ventilated although evaporative cooling has also been installed. The sloping blades also work on an environmental front. Behind them, large heat extractor boxes draw hot air out of the Hall and roof cavity, with cooler air being drawn in from underneath the building.

By reducing the extent of high-cost exhibition space, but retaining generous proportions overall, the building encompasses nearly 2,000 square metres of undercover space at a cost of around $1,200 per square metre. "That's pretty amazing for a public building," says Berkemeier.

Austin Smith measures the museum's success. "We're averaging 150 [visitors] a day, and 85 percent of our throughput is straight off the highway. People really want to see what's inside this main building because of the way it looks. If they're from the industry they want to see the content. We're probably running 15 or 20 percent above budgeted figures, and we are seeing the flow-on effects from Shear Outback to businesses in Hay." He quotes more figures, then continues: "This was a community project right from the start and the stuff that I take to heart is mostly from the locals. They say they're really noticing what's happening in the town - people are walking up and down the street and no-one knows who in the hell they are – in a place like Hay everyone knows everybody."

**Project:**

Shear Outback, incorporating the Australian Shearers' Hall of fame, Hay New South Wales

**Architect:**
Paul Berkemeier Architect Pty Ltd

**Design Team:**
Paul Berkemeier, Brent Trousdale, Susannah Potts, Matt Day, David Gowty, Miriam Green.

**Project Manager:**
Department of Public Works and Services, Hay

**Project Director:**
Sara Hector

**Consultants:**
Structural: Birzulis Associates. Mechanical: Richard Duggan and Associates, Civil, Hydraulic and Environmental: Acor Consultants

**Builder:**
Balegna T/A KW & PD McDonnell

**Principal steel Components:**
Galvanised steel structure and framing, corrugated ZINCALUME® sheet, ZINCALUME® KLIP-LOK® sheet, GALVABOND® flat sheet.

**Area:**
1,960 square metres

**Cost:**
$2.3 million

The Murray Downs woolshed (background) plays a supporting role to Shear Outback.

# steelprofile

"....Glenn Murcutt is a modernist, a naturalist, an environmentalist, a humanist, an economist and ecologist encompassing all of these distinguished qualities in his practice as a dedicated architect who works alone from concept to realization of his projects in his native Australia. Although his works have sometimes been described as a synthesis of Mies van der Rohe and the native Australian wool shed, his many satisfied clients and the scores more who are waiting in line for his services are endorsement enough that his houses are unique, satisfying solutions....."

***- from the 2002 Pritzker Architecture Prize Jury Citation***