Cynthia Davidson

Raised to Observe: Glenn Murcutt

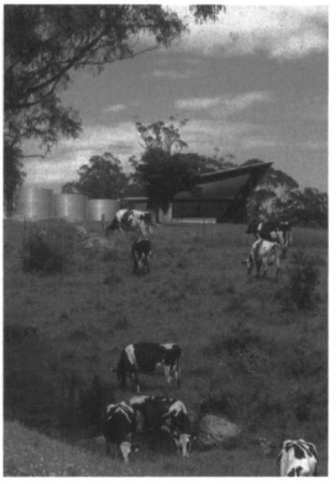
The Australian architect Glenn Murcutt shuns certain technologies – computers and their accoutrements, for one thing – but he is a modern man nonetheless, jetting about the world to teach and lecture and, in 2002, to collect the Pritzker Prize in Rome. He only builds in Australia, however, which, with its generally temperate weather, behooves his climatic, or regional, approach to design and to things sustainable. Log *caught up with Murcutt on a snowy December 2005 day in New Haven, Connecticut, at the end of his semester as the William Henry Bishop Visiting Professor at the Yale School of Architecture.*

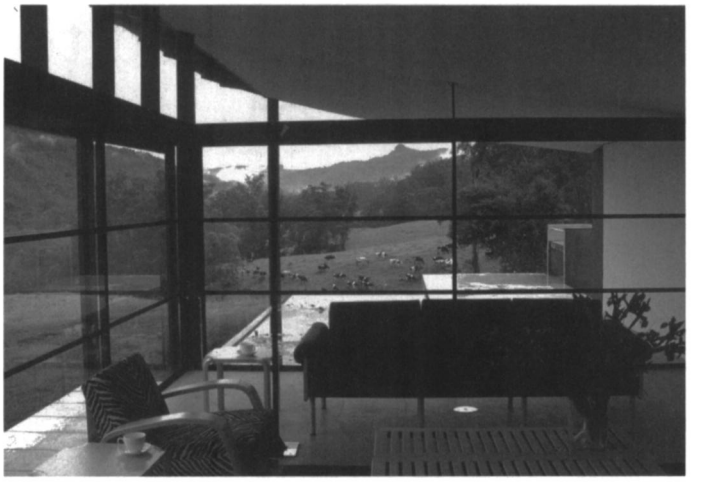
CYNTHIA DAVIDSON: *What does "sustainable" mean to you, especially with regard to your work?*

GLENN MURCUTT: It is to maintain or keep going; to continue. Living things can be sustainable if allowed to grow in balance with other organisms and not to consume at a greater rate than is sustainable, as we currently do when we over harvest or poison the land. We don't plan adequately for the future. Australian aboriginal people have the longest continuous recorded culture on the planet. They have survived for at least 40,000 years – not through competition but rather through cooperation; they worked with the land and not against it. Traditional aboriginal peoples have been living and working in a very sustainable way.

Today, many of us wake up in our air-conditioned houses, drive to work in our air-conditioned vehicles; we look at the TV news to see what the weather is like rather than experiencing it. We have become alienated from our environment and no longer learn about it from deep observation. In our idea of sustainability we have resorted to instruments of all kinds to measure the environment's physical aspects, ignoring its psychological aspects. I have learnt most things through observation, questioning, and understanding. Take, for example, clothing, how we dress. When it's cold we add layers and when it's hot we remove layers. In this way we do, in fact, respond to our various climates and seasonal changes quite well. So the question is: Why do we not design buildings that we can adapt to climate variations in the same way as we adapt our clothing? Why should we not involve ourselves with operating our environments by making adjustments to the cooling winds, the sunlight, and the humidity?

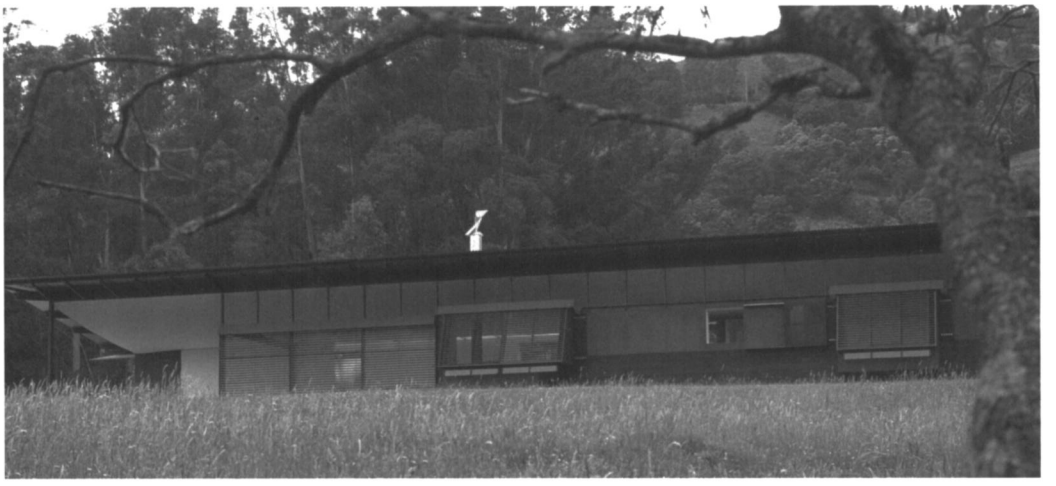
OVERLEAF: SCENES FROM THE WALSH HOUSE, A DAIRY FARM 35 DEGREES SOUTH OF THE EQUATOR. SILOS ARE USED FOR HARVESTING AND STORING RAINWATER. THE NORTH ELEVATION OPENS TO THE SUN. PHOTOS: GLENN MURCUTT.





So do you see your buildings as machines, devices, or instruments that perform and adapt?

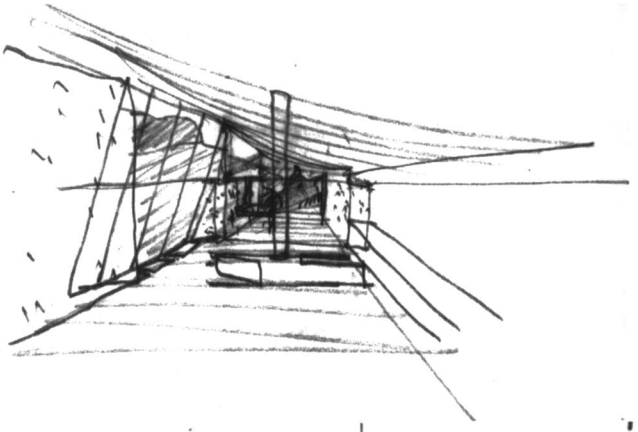
I'm suggesting that when you think of music and a composer, the mind of the composer through the conductor, then through the orchestra to the audience, it results in this terrific music that we perceive. Well, I look at a building as the instrument that makes this experience possible. We have around us the beautiful flowers and their spring perfumes. I can put scented flowering plants to the northeast of my building: lemon trees, orange trees, or water lilies, and in the summer, on the shore, northeast breezes pick up these scents, and bring them into the building. Then there are light and shading techniques and air-cooling techniques. My buildings open and close – like an instrument. I'm conscious when I'm designing to include prospect, refuge, observation, and reception. One designs buildings to perceive the changing light levels, temperatures, wind patterns, and sun positions; to perceive all these things so that the building performs as an instrument of the cycles of the day and year. For example, I have designed sunscreens with angled, fixed slats fitted to external roof glazing that include the winter sun and exclude the summer sun. Each slat is three millimeters thick; they are spaced 25 millimeters apart and are angled to the winter sun, overlapping to the sun's angle at equinox. At the midwinter solstice, the slat makes a shadow of three millimeters at noon. As the shadow gets wider you know it is getting closer to the summer equinox. Then at the summer equinox the direct summer sunlight is completely excluded. In midwinter, when it's fully included, you can have a blind underneath the glass roof if you don't want so much light, without diminishing the warmth. So the system, in a sense, becomes the modifier of light and warmth according to the seasons – an instrument – and we're the preceptors, as we are when we hear music, as we are in the landscape, as we

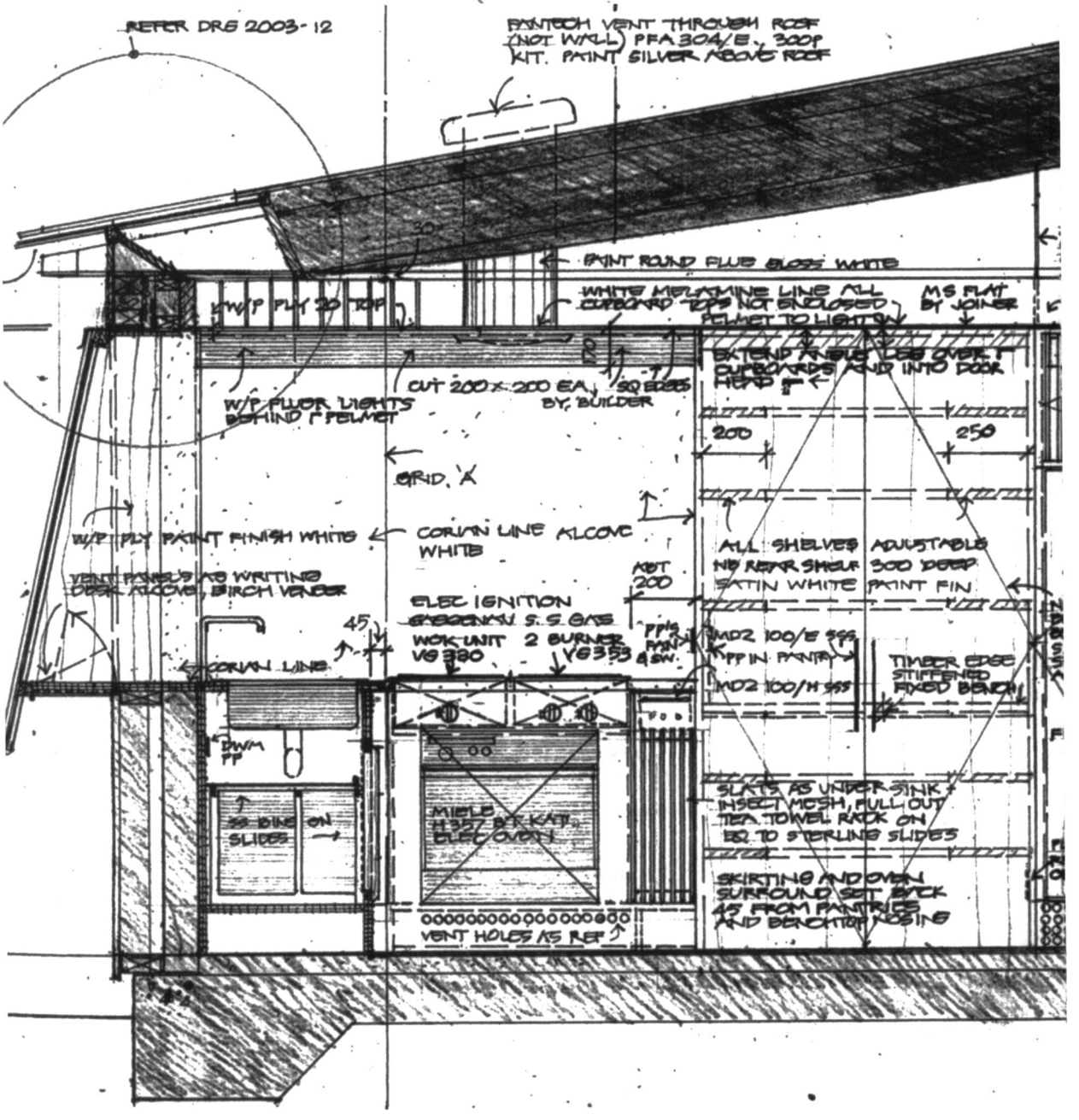


are in our climate. These are important things to me.

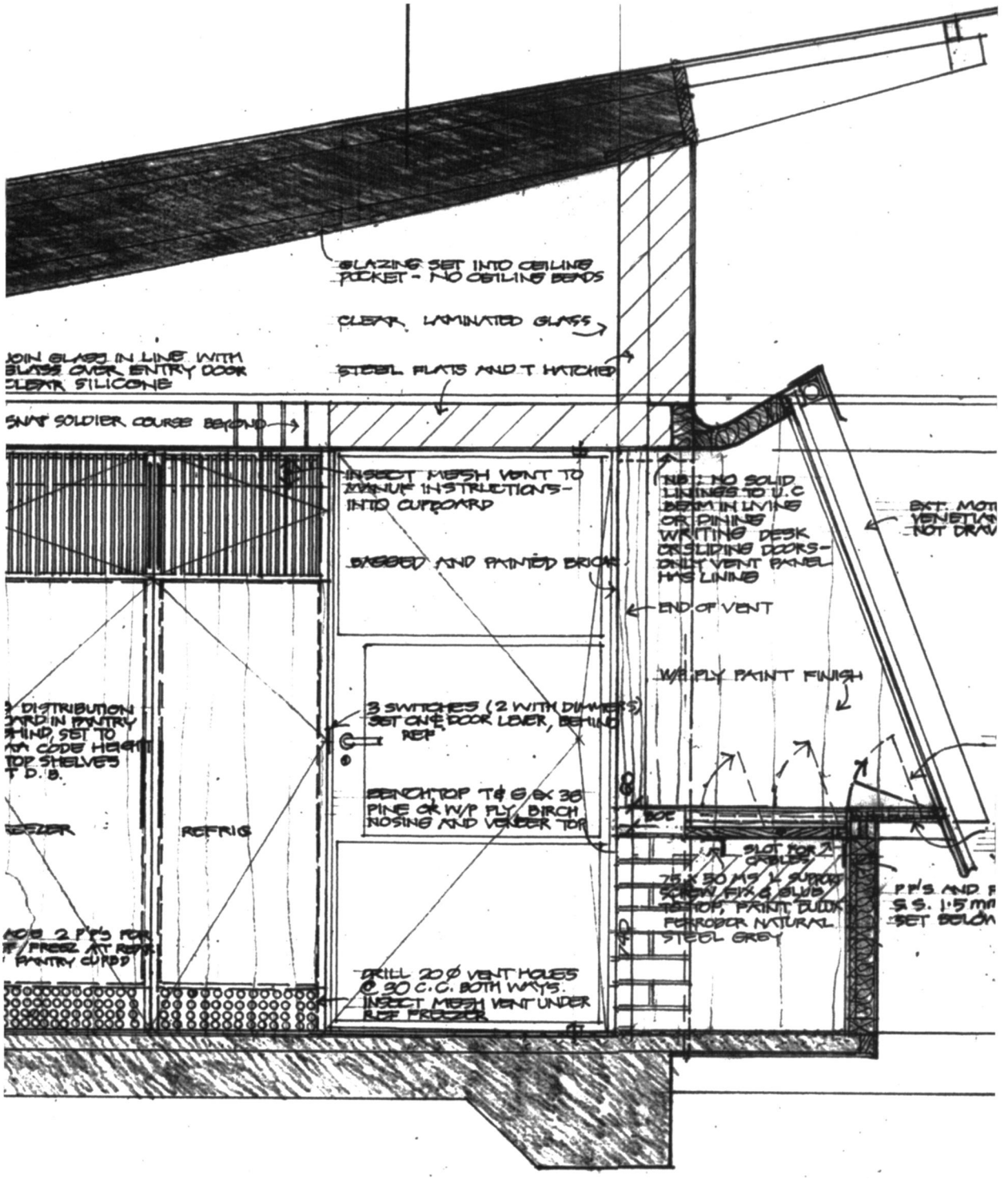
Has this always been your attitude?

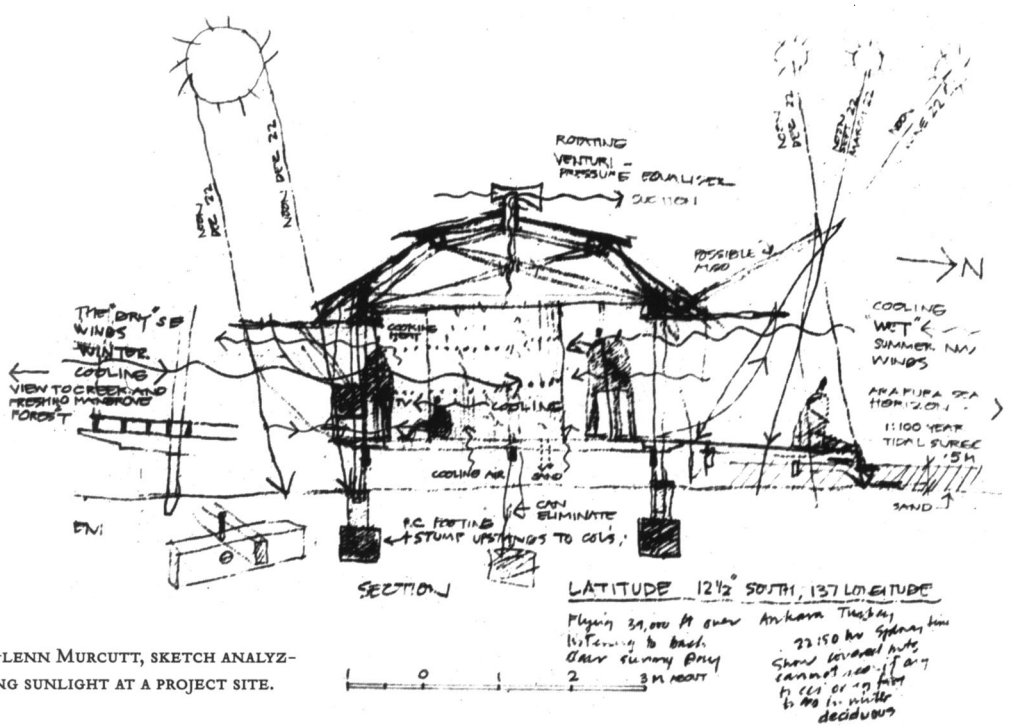
Yes, I was raised to observe. My father was a builder. He designed very good buildings and he imparted to me the importance of senses of light and the scents of native flowering plants. When I was very young, my father would bring me onto our neighbors' properties at night and take small pots of soil from their properties. The soil, you see, had too many nutrients in it for the local plants to grow because of the septic tanks that served the area. We would then propagate native plants that would withstand the high nutrients by firing the seeds in the oven or pouring boiling water over some hard-shelled seeds. We'd then plant the seeds in the high nutrient soil. A catalogue of where all this soil came from was kept. We would have had at least 150 pots. Then, we'd go back out at nighttime with the young plants and sticks for labels saying what the plants were and return to the neighbors' properties to plant the tube stock we had propagated. People had no idea where the plants came from, but today there are 20-meter-high trees growing on the hillsides around our old house. It was very eccentric for me, but in 1946 those were very important things. My father was very interested in reducing pollution. We had our own composting and vegetable garden. If he saw people throwing stuff out of their car, he'd pull up to gather their rubbish and then he'd give chase. He'd pull them over and say, "Look, you've dropped this rubbish," and they'd say, "No, we didn't want it," and then he'd say, "And nor does the planet want it," and he'd give it back to them. As children, we were so embarrassed by his forthrightness. But this was the childhood I had, and I can't help but be affected by it. And eventually you become a little bit like it yourself.





Glenn Murcutt, joinery details for kitchen/living of Walsh House, Kangaroo Valley, New South Wales. January 13,2005. Detail from original section drawn at 1:20 scale. Opposite: Study sketch framing views from house to landscape. Courtesy the architect.





GLENN MURCUTT, SKETCH ANALYZING SUNLIGHT AT A PROJECT SITE.

Why do you build only in Australia?

To know your own place is to know how to build; how to work with the culture. Through observation I've learnt much from scrutinizing the Australian land, its flora and fauna. The flora is tough and durable, yet supremely delicate. It's so light at its edges that it connects with the deep sky vault. The sunlight is so intense in Australia that it separates the elements in the landscape. The native trees read as groupings of isolated elements rather than interconnected elements. With the high oil content of so many of the trees and the strong sunlight, the foliage ranges in color from silver to weathered grays and from pink-browns to olives. The foliage outside the rainforests is not dense and so casts dappled shadows.

My architecture attempts to convey something of this discrete character of elements in the Australian landscape. I attempt to interpret some of the characteristic elements in our landscape in built form: the legibility of structure, transparency, dappled shadows, and the lightness of all the elements toward the edges. I often think of something Juhani Pallasmaa once wrote about Ecological Functionalism: "After decades of affluence and abundance, architecture is likely to return to the aesthetics of necessity in which elements of metaphorical expression and practical craft fuse into each other again." ["From Metaphorical to Ecological Functionalism," *The Architectural Review*, June 1993.]

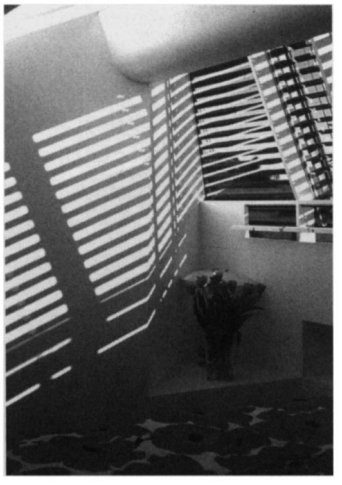
What are the native building materials of Australia?

We have huge reserves of iron ore, so steel is a material that is produced locally. Then timber, which is a marvelous, renewable resource. For the first 20 years of its life a tree takes in carbon dioxide and produces an excess of oxygen. After about 20 years the carbon/oxygen ratio is about equal because the fallen old bark and leaves require oxygen to decompose, which cancels out the oxygen excess the tree initially produced. The decomposing bark and leaves produce compost for soil and nutrients for future plants.

What about the energy required to build your buildings?

I use lots of timber. Timber can be a truly sustainable resource, because the materials I'm using I put together in a way that they can be taken apart. I use bolted connections so that we can pull the elements apart and put them together again in another way. For example, in the Boyd Center all of the columns and beams are Australian hardwood – brush box (Tristania). This material would have been cut from the wet chlorophyll forests of the north coast of New South Wales about 100 years ago and now it's recycled. All the plywood I use is plantation-grown material; in using new timbers it is important to know its source. The timber floors I lay are screwed, because if you nail them you can't reuse them. I use lime mortar in brickwork because it can be scraped off and the bricks can then be reused. I did this in my own house. All the paving bricks are laid on a sand bed with only the outer bricks laid on mortar. The bricks set between those edges can be relocated or reused. If one brick is removed, they all fall apart because they rely on one another for support rather than on a cement mortar bed.

I designed a house for a client, which I bought 10 years later. I needed to alter it, and because I had thought about the reuse of materials and methods of assembly at the time of designing the house, I was able to take the external timber veranda, 20 feet by 15 feet, and roll it out into a new position on 44-gallon drums. I took the gable end and put that in a new position and brought out the sliding and louvered glass walls – reusing all the old louvers. Even the timber stairs and stringers linking the ground to the veranda were relocated. I was testing myself during the whole thing as to how much I could reuse and how seamless I could make the reworking of the elements. Not a single building component was lost. It's a way of thinking. The process for determining how elements are connected is also knowing how they can be retrieved and how they can be reused. I'm interested in that because there's very little embodied energy lost in reworking the building material elements. I think that's sustainable.



Slats at the windows of Murcutt's own house cast shadows that change in width as the seasons turn. Photo courtesy the architect.

I have to say, though, that humans are probably not sustainable because we're such destroyers of our environment. If our populations consumed and polluted the earth's resources in balance with the ability of nature to renew, then we'd be sustainable. But we're not sustainable. We destroy. The fact that the planet is in such difficulties shows that we're simply not, as a species, sustainable. Native animals of Australia have soft, padded feet. Domestic sheep, however, are cloven footed animals. Their cloven hooves cause soil compaction and erosion. This occurs because our soils are shallow. The ground becomes compacted, and with the addition of oil from the sheep and tremendous heat and sunshine, a crust forms on the groundplane, so water and wind erode the soil. The rabbit is another introduced species in Australia that is out of balance with its environment. The rabbit creates erosion by burrowing, and when it rains – an inch and a half of water in half an hour is not uncommon – the burrows start deep erosion with a resulting huge loss of soils.

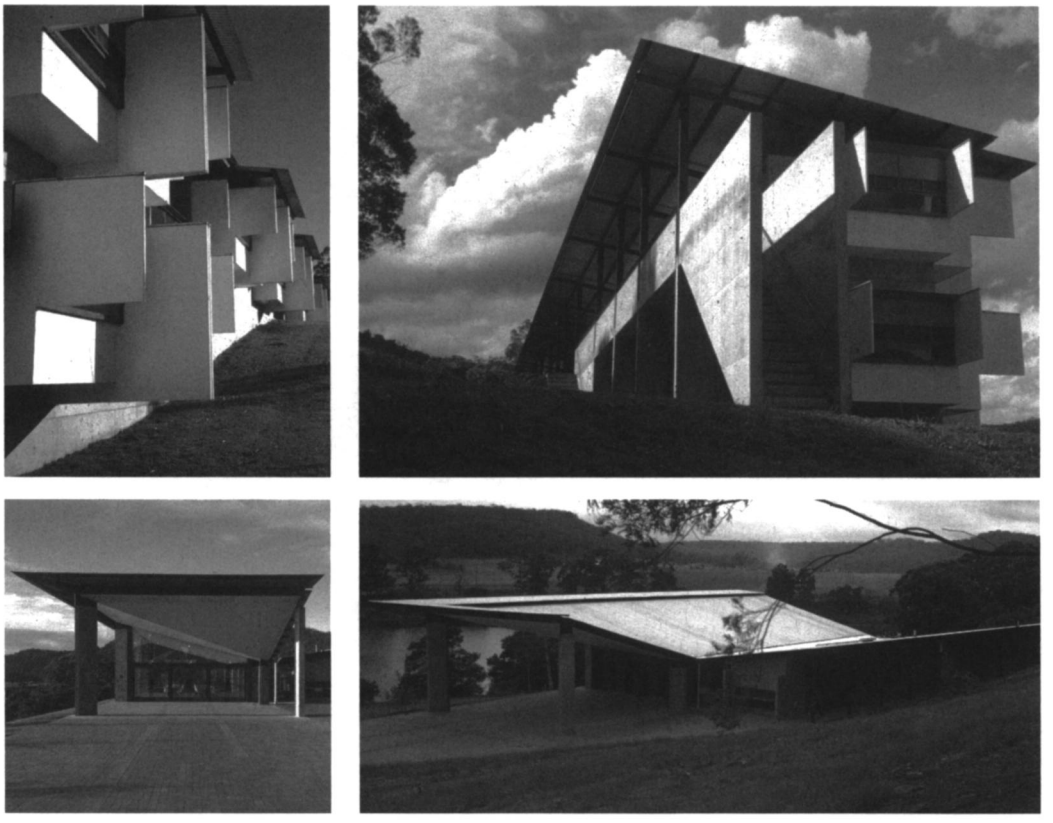
The rain in Australia is really incredible; when it falls it is heavy. My buildings have pitched roofs because of this heavy rain. My early buildings had flat roofs, but I learnt early that water has to be shed quickly, and in remote areas it has to be collected in water storage tanks for later use.

Do you design rain catchments?

Sure, the roofs of my rural buildings are designed to catch rainwater for use: for drinking, extinguishing fire, flushing the toilets, and watering the garden. In some remote, larger projects waste water is processed for reuse in gardens through rotating biological digesters, an aerating system for gray and black water, which releases the nutrients during aeration – not carried into the groundwater. This system delivers pretty clean water, which can be stored in a lake where ultra violet light and reed beds continue the purification process. The purified gray and black water can be returned to wet toilets, so there is no need to add fresh water to the toilet system.

How do you approach all these issues when making a building? Are there hierarchies of importance?

There are so many issues that need to be considered simultaneously in making architecture, especially an architecture responsive to a specific place: the geomorphology of a region, the geology and hydrology and topography, which affect water drainage; the latitude and altitude, which define the sun position and influences temperature; the relationship to the coast, which influence humidity, dryness, temperature, rainfall, and snowfall; the flora, which respond differently to different soils and climates; the fauna, which respond to the



Glenn Murcutt, the Arthur & Yvonne Boyd Education Center in Riversdale, NSW (1999). Clockwise from top: Sun blades along the east facade also frame views, capture breezes, and reflect light into the interiors. South elevation features a stairway; entry is from the north. The folded roof collects rainwater for reuse. Photos courtesy the architect.

flora as well as to the soils and climate; the water, which differs in availability; the waste, which needs management; the materials, their ability to mediate the environment, and their methods of production and assembly, which impact the environment; the structure and its appropriateness; the space and its qualities; the natural heating, ventilating, and cooling strategies; the local culture and how one works with the needs and aspirations of the people one is designing for. All these issues must be included in the thinking about an architecture that is responsive to place – an architecture of response rather than of imposition.

There has been a resistance by architects to environmental design, as many regard climate-responsive architecture as being unable to create beautiful work; they see much of the work as ugly. Working with the environment is viewed as a negative constraint. However, from my experience, and by understanding my imposed limitations, I have found that the opportunities have increased.

Cynthia Davidson is editor of *Log*.