

CHURCHILL FELLOWSHIP

## In search of passive architecture

**W**hen American engineer Willis Carrier invented the world's first air-conditioner in 1902, the "man-made weather apparatus", as Carrier called it, began to change the face of architecture for ever.

Carrier's invention soon enabled architects to overcome the constraints of extreme climate conditions. Freed from the need to find shade or a cooling breeze for their buildings, architects were able to push the bounds of design and location, particularly in the building boom after World War II.

But sixty years later, with the spectre of climate change casting a long shadow, many architects are having second thoughts about such energy-intensive practices. Among them is Carol Marra, a Sydney architect who teaches design to second-year students at the University.

Ms Marra is an exponent of green or environmental architecture using passive design methods. "Very simply put, using an air conditioner is an active system; installing a window that can be opened to provide ventilation is a passive system," she explains.

Her research has been boosted by winning the AV Jennings Churchill Fellowship, worth \$25,000, which will enable her to travel to Japan, China and the Philippines for two months in the New Year to study traditional methods of dealing with severe climate patterns.

She is seeking out regions that are familiar with extremes of weather such as typhoons and monsoons, including Fujian province in China, the northern Philippines and the Kyoto region of Japan.

She will be looking at the location of buildings – often on high ground, away from flooding, where there is more wind for ventilation – and at buildings that can



Carol Marra

accommodate differences in temperature between winter and summer by having sections that can be closed down or opened up.

She will also be looking at regional differences both in the building materials available and the level of craftsmanship employed.

"People have been finding answers to these problems for hundreds of years, long before modern technology was available," she said. "But I don't think it appropriate to simply copy traditional buildings – it's a case of learning the principles and reapplying them."

"The aim is to make buildings that use less energy or can maintain a comfortable temperature without added energy input."

Ms Marra was born in Argentina and educated in America, where she first started working on environmental projects as an architect. She moved to Sydney

seven years ago, and has been teaching at the University for the past three years.

She contends that many of the issues associated with climate change are already here, such as increased, intense rainfall. "It's not something that's in the future, it's something we have to deal with now," she said.

"Even if we stop our emissions tomorrow, the consequences are going to last and in the next 50 years we are going to be living with climate patterns that we are not used to."

"So we somehow need to design buildings that address the causes of climate change, by making them less energy intensive, and also build them in a way that mitigates the consequences."

Ms Marra is one of 106 Australians awarded travelling fellowships, valued at more than \$2.6 million, by the Churchill Trust in 2009.