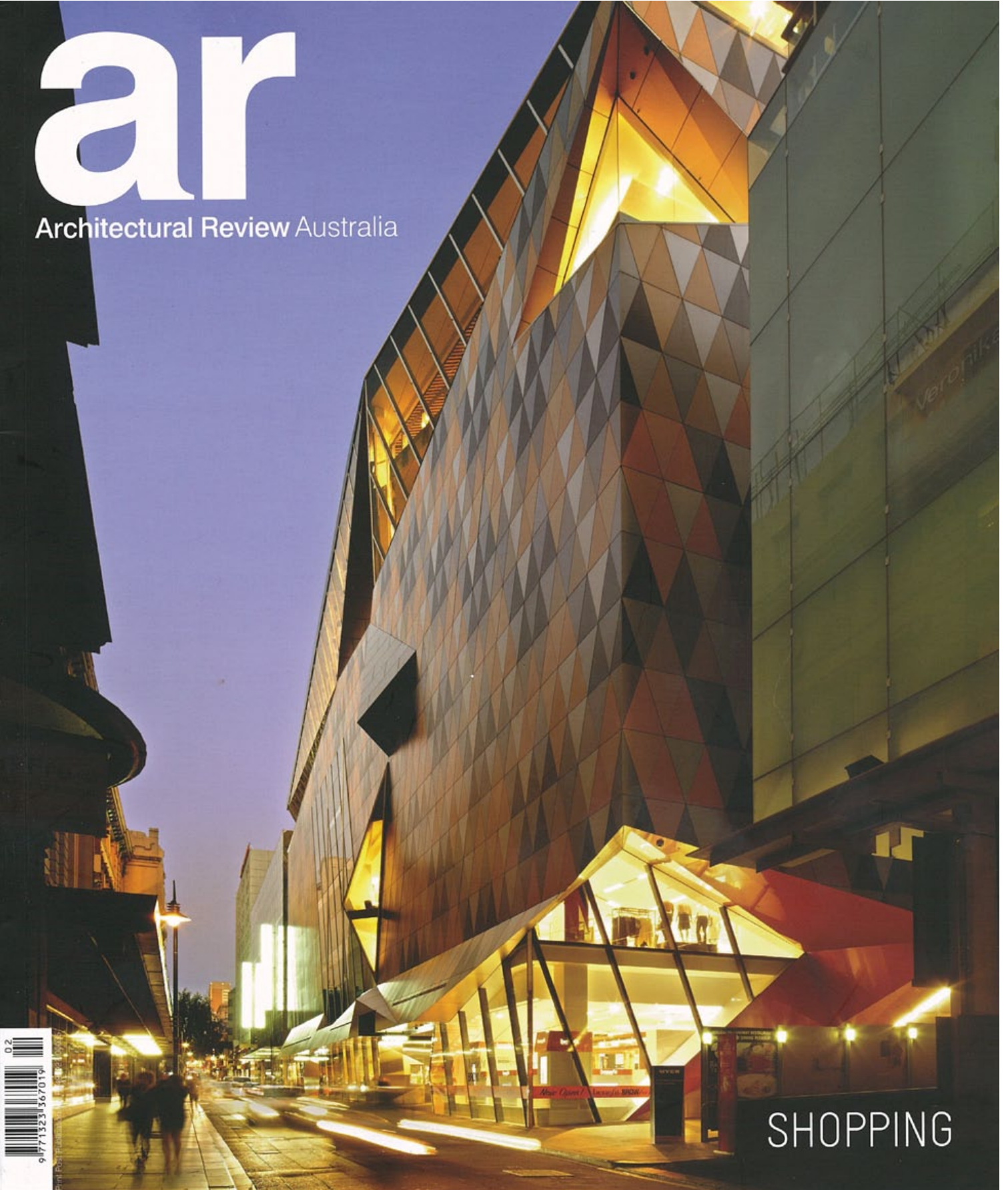


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SHOPPING





The latest 'green' addition to Melbourne's Chadstone Centre. Photo: Courtesy The Buchan Group

Shopping Around for the Five Senses

According to some, the shopping mall is responsible for almost 50% of all energy consumption in the commercial sector. From the perspective of embodied energy, its high rates of tenancy 'churn' also make it horrendously wasteful. Would a more efficient shopping mall make for a greener shopping mall, or is there something else at stake?

text Tone Wheeler

The 20th century spawned two great architectural typologies: the high rise in the first half and the shopping mall in the second. Just as the vertical form was only feasible as a result of the invention of the lift and the telephone, so the deep horizontal form of the shopping centre was only possible with the development of air-conditioning. The fully enclosed mall was the combination of two previous forms: the covered shopping arcade of the 19th century, such as the Galleria Vittorio Emanuele II in Milan, a prototype for the QVB in Sydney and The Block in Melbourne, and the shopping village or plaza, surrounded by carparking, developed in the 1950s in the US. The idea for the first large scale fully enclosed regionally based mall, the Southdale Centre in Minneapolis, St Paul, is credited to Victor Gruen who, for his efforts, has been called "the most influential architect of the twentieth century"^[1] and is commemorated in the title of the ABC's TV program on advertising, *The Gruen Transfer*. Spectacularly successful in the rapid development of post World War Two suburbia across the world, the shopping mall replaced the local village centre, internalising and privatising what had previ-

ously been a public space, rapidly growing in size as it served an ever-wider area than the local walkable streets. As large as the mall was however, it was swamped by a vast carpark accommodating the shoppers' station wagons, and later SUVs. Its treeless acres of black bitumen, with their patterns of regimented lines, have been elegantly captured in a series of aerial photos by Ed Ruscha, that belie its ecological impact and 'heat island' effects.

As its commercial success bred ever bigger buildings, and ever bigger carparks, by the end of the century the mall had grown to become the most resource hungry of all building types. The building form was inefficient with its high ratio of external area to enclosed floor space, the interior relied entirely on air-conditioning and mostly artificial lighting, the transport was totally car and truck dependent, the shops required constant updating and renewal, and, worst of all for the greenies, it was a temple to consumerism, signifying jumbo plastic bags at one end and clusters of stinking dumpsters at the other.

The 21st century has seen a gradual unpicking of each of these failings in sustainability, although not through the abandonment

of the type but through an address to the environmental issues through design – the creation, in short, of a green mall’.

Shopping malls are arguably the most energy intensive building type of all time. Firstly, air-conditioning is working hard everywhere: cooling or heating the shops, the open refrigerated cabinets in the grocery stores, the cafes in the food halls and, most difficult of all, the huge volumes of customary multi-storeyed void, which are capped with glazed roofs that leak heat out in winter and allow sun in during summer. The glass is there to offset the next energy demand for natural light, but by the time you are deep into the shops on the lower levels, and particularly the anchor stores at either end, there is no light other than the banks in the ceilings. According to recent estimates, retail property consumes 50 percent of all commercial property energy.¹⁰²¹

These issues are now being addressed in two ways: by reducing the need for air-conditioning through a greater reliance on natural ventilation, and by increasing the air-conditioning’s performance efficiency. The former is often achieved by reverting to traditional open streets within the centre, using shading to provide rain and sun protection. However, this approach was mostly adopted not as a result of energy considerations but in reaction to the ‘claustrophobic’ qualities the larger malls had engendered. Jon Jerde pioneered the idea of a centre based on colourful, entertaining streets at Horton Plaza in downtown San Diego (now owned by Westfield), which has had widespread influence on retail design. Significantly, the approach started in temperate southern California and has mostly continued in milder climates, such as the green roofed Namba Parks in Osaka, and notably in many recent Australian developments (although the first open air mall in Australia, Pacific Fair on the Gold Coast, predates Jerde’s work). But where the climate is more severe shopping centres remain enclosed: open streets in Montreal or Phoenix defeat the *raison d’être* of the mall.

For these locations the green way forward is a better performing building envelope with better performing air-conditioning, reflecting the rise of absorption chillers and tri-generation systems that are viable in large centres. Some malls, including the aptly named Green Circle in Springfield Missouri, and chains such as the Regency shopping centres, are using their green attributes in their marketing (Regency calls its efforts “greengenuity”), and leading architects, such as Massimiliano Fuksas at Europark Salzburg, are revisiting the traditional street in high performance materials. In the US, a prototype system has been developed to address both light and power issues: a sawtooth roof with high temperature solar thermal panels that generate power, built into a glazing system that provides light to the floor areas below.

In Australia, new and existing centres are adopting both energy-saving approaches: Rouse Hill shopping centre and the recent additions to Melbourne’s Chadstone Shopping Centre (incredibly, its 33rd expansion) designed by the Buchan Group in association with RTKL Los Angeles, which is the first mall to achieve a 5-star Green Star award. In comparison to a typical retail development, the Chadstone extension achieved a 61 percent reduction in greenhouse gas emissions, and a 63 percent reduction in potable water usage. It did this through the use of high efficiency central plant using VAV (variable air volume) AC systems, night purging of hot air layers, LED lighting throughout and daylight and occupancy sensing lighting control, rainwater harvesting and an air cooled (rather than water) cooled plant. Critically, the indoor air quality is a primary concern, with

improvements made through increased outside air delivery into the building, carbon dioxide sensing to increase inflow of outside air quantities in times of peak occupancy, as well as greater use of naturally lit space.

Chadstone has also addressed another of the big green concerns: construction material use. Like many new constructions with Green Star accreditation, it uses composite wood products, paints, and carpets selected to minimise off-gassing and eliminate OPD (ozone depleting potential) refrigerants and insulation products. To encourage better waste practices by the tenants, the centre also has well-positioned reuse and recycling facilities.

Nevertheless, the ‘churn’ remains in all centres: shop interiors in Australia are replaced on average every five years, often at the behest of centre management. This imperative to renew and update leads to the ‘midnight stealth waste extraction’: whole fit outs of timber, steel framing, plasterboard, electrics and lights are junked while the centre is closed and a new interior appears from behind the plywood panels in less than a week. In the 50+ year lifespan of a centre, these 10 churns will account for far more material than the centre itself and, together with the renewal in services, are the real measure of ‘sustainable material use’, rather than the Green Stars awarded at the outset.

In response, interiors have become more modular and knock down to assist recycling or downcycling, the maxim being low impact materials, loose-fitted within a long-life frame (see the discussion of the three Ls in ESD in *AR111*).

The materials used in fitouts are changing: from the currently popular use of recycled and worn materials (it’s a short step from ‘shabby chic’ to ‘green chic’) to the Melbourne City Council Retail Strategy’s more thorough consideration of impacts, which is used to guide approvals for the refurbishment of existing shops and the development of new shopping centres. It can be taken to extremes: in the ‘pop-up’ Greenhouse Cafes, developed by Joost Bakker in Melbourne, Perth and Sydney, every decision, from the roof top garden beds in recycled crates, to the flooring of rubber tiles made from industrial belts, to the walls of pressed magnesite, to the wooden cutlery that can be recycled (and, of course, the food) takes into account the green consequences. And of course, whole centres can be recycled: Canada’s first mall, Northgate in Seattle, built in 1950, has recently been rebirthed as a greened-up ‘mixed-use village’ combining residential and retail.



Perth’s permanent Greenhouse cafe. Photo: Tone Wheeler



The temporary Greenhouse 'pop-up' cafe at Melbourne's Fed Square. Photo: Courtesy Antarctica

The transport energy issues created by centralised shopping centres have recently been addressed in three ways: changing the form, the links and the zoning. The ever-increasing acreage of black carparking is not only environmentally detrimental, but also self-defeating: the cars become further and further from the shops, denying the mall's advantage over the high street. Car-parks are now consolidated, multi-layered affairs, positioned underground or on the roof above the centre and are likely to have more shade, if not trees. However, the cars may be better housed, but the energy demand is not reduced.

Increasing links to public transport is the next step, particularly if the centre becomes a transport hub, as at Rouse Hill, or built over the top of an existing one, as at Chatswood and Bondi Junction in Sydney. However, the revival of the mall in the CBD, particularly now that residential has returned to the centre of Sydney and Melbourne, brings the type full circle from its isolation in the suburbs to an integration with the city, from single zoning to integration with residential and commercial uses. All three approaches are now adopted in 'green malls': the 'Forum Duisberg' (Germany) is the redevelopment of an apartment store site into a mall and offices in the old city centre, and Cabot Circus shopping centre in Bristol, UK, has a public transport policy to reduce car dependence and includes 250 apartments.

Finally, we cannot discuss the greenness of shops without at least a glance at what they are selling: is there a parallel rise in green products and services? Again, the move towards greenness is often driven by factors other than purely being green. A good example of this seeming contradiction is the rise in 'experiential shopping': presenting a holistic lifestyle in one integrated store

(think Colette in Paris), or moreover addressing all the physical senses to heighten the enjoyment of shopping (think Whole Food Markets in the US) or an emphasis on well-being (think LOHAS: Lifestyles of Health and Sustainability and the rise of food co-ops). The threat of internet shopping (the so-called "bricks versus clicks" battle) where price and choice are leading indicators, is offset within these stores by an emphasis on physicality: the adage that you cannot get a haircut on the net.

A return to designing for the senses – the sight of beautifully presented goods, the smells of the produce, the sounds of the marketplace and the enjoyment of the experience – lie at the heart of what we have been calling "real green". All that energy in the old fashioned mall may have been misdirected: alienating the customers from the environment in constant temperature blandness, homogenising the experience in repetitive shops, unrelentingly and artificially over-lit. By contrast, a green shopping centre, integrated into the local community, with shops in exterior spaces and streets, selling goods and services that can't be experienced on the net, might be more about improving the experience for customers, a clarion call for honesty and authenticity, than saving energy and water. ^[03] ar

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FOOTNOTES

- [01] Mark Dery, 'Dawn of the Dead Mall', 11 November 2009, viewed 4 April 2011, DesignObserver.com
- [02] Lynne Blundell, 'Shopping Centres – the great energy gobblers take stock', 24 October 2009, viewed 4 April 2011, thefifthstate.com.au
- [03] Much of the material for this article is drawn from the work of Kirsty Maté at The University of Tasmania and research by Jan O'Connor of Environa Studio.