

AWNINGS and CANOPIES

Learning from the past

ROBYN PENDER

W **WE** ARE in lockdown London: it is pouring with rain and the queue snaking along the footpath, waiting patiently to enter the supermarket, shelters gratefully under the canopies put out by the cafés and small shops. There are gaps in the queue where shopfronts have been modernised and have lost their awnings. In these gaps one or two people huddle under umbrellas, but most prefer to wait under the kindly shelter of the awnings, idly reading menus and window shopping.

In a small office overhead, the manager (who has been reading the government health bulletins urging offices to ensure plenty of natural ventilation) is trying to prop open the modern casement windows in a way that does not let in the rain and wind. Her neighbour is luckier: his windows still have the original sliding sashes and although these have been neglected and lost their sash-cords long ago, it is still possible to wedge them open at the bottom, and a little at the top. That has made things in that office much less steamy, but the gap at the top is letting in rain and may have to be shut. At the top of the frame on the outside is a painted metal panel that helps a little and the manager wonders why it isn't larger, to keep out more of the rain. Yesterday it was sunny, but neither office fared much better: the winter sun came straight in through the glass in the mid-afternoon, instantly overheating all the staff, and making it impossible for them to read their computer screens.

But the metal panel is not in fact a rain guard: it is actually an awning hood, and it shows that the upstairs windows, too, once had canvas awnings. When these fell out of fashion in the middle of the 20th century, their mechanisms were removed. It is often only the protective hood, and perhaps the cleats on the frame once used to fasten the awning cords, that remain from what was once an all but ubiquitous fitting.

It often surprises people when they look at early photographs of cities like London to realise just how many windows did have awnings – even on buildings such as Buckingham Palace. But a visitor from a country where the use of awnings has never stopped, such as Holland or Sweden, might be still more surprised by their disappearance in Britain: because awnings really are an unparalleled way of dealing with the problems of glass windows. They prevent the sun overheating the glass, cut direct solar radiation (with all its associated problems of glare, overheating and UV damage), and they allow windows to be kept ajar for ventilation in all but the most-windy conditions.



A Georgian door in London with a surviving awning, which not only stopped sun penetrating the transom light, but also served as rain protection (Photo: Robyn Pender)

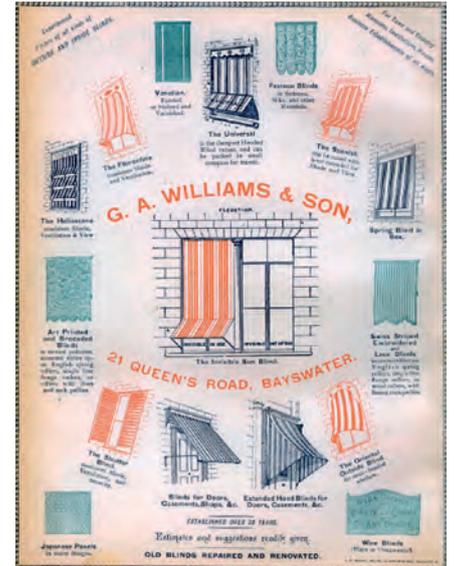
The need for awnings must have become obvious as soon as glass became cheap enough to allow for large areas of glazing. The Georgians quickly discovered that once a building envelope incorporates sizable areas of glass, overheating becomes a greater concern than cooling, even in the winter and in a cold climate such as the UK. As well as causing the occupants immediate discomfort from heat and radiation, the sunlight also causes fading and other degradation of organic materials such as timber and fabric.

In contemporary paintings and prints we can see that plain cloth awnings appear on windows soon after the invention of the vertically sliding sash, and from these simple beginnings the awning developed quickly in sophistication. The Victorians in particular

proved themselves to be brilliant innovators, coming up with a myriad of special forms that worked closely with sash windows to give occupants fine control not just over light levels, but also over ventilation. As contemporary advertisements make clear, many awnings were specifically designed to encourage through-draughts, even when they had been completely lowered to protect the window from the sun or rain. With the right awnings in place, even in the rainiest summer weather windows could be opened top and bottom to flush heat from the building. Awnings also helped retain warmth in winter.¹ There were even portable awnings that could be carried with you on your travels, to improve the conditions in your room should you be staying in hotels or guest houses that did not already have their own. All could be



A Buckingham Palace garden party in 1897, with all the window awnings down on the south-west elevation. Sarah Khan's research report for Historic England includes a painting of Queen Victoria's sitting room with the awnings down. (Photo: Wikimedia Commons)



Advertisement showing a selection of the many special awning designs produced by Victorian manufacturers (Image: Historic England)



Hoods and fixings for window awnings on an Edwardian house in Bath: hoods are a very common survival, but rarely recognised as such. (Photo: Jonathan Taylor)

quickly adjusted by occupants according to their needs: rolled back when the sunlight and warmth were welcome; furled or unfurled in response to changing angles of sunshine (this flexibility makes them much more effective than fixed shading such as *brises-soleils*).²

The ease with which awnings could be operated must have been another reason for their popularity. Building environments are always dynamic, fluctuating with the changing seasons, the weather and the time of day, but also whenever occupants make adjustments according to their tastes or what they are doing in the space at the time. When people are moving about and exercising, or cooking, they need cooler spaces than when they are sedentary. Researchers have shown time and again that if we are to feel comfortable, we

need to have a measure of control over our own environment. Occupants wish to react to improve conditions when they hit 'crises of discomfort', and if they know they can take that action quickly and effectively, they will be much happier in the space.

Since the second half of the 20th century, unfortunately, approaches to making buildings usable and comfortable have concentrated on controlling air temperature and excluded dealing with more important sources of discomfort. As a result, retrofit actions to reduce energy and carbon use have been forced to focus on sealing the building to retain the temperature-conditioned air. This has had poor consequences for both the fabric and the indoor air quality of buildings of all periods,³ and especially for traditional construction

(which was, after all, designed to be operated in quite a different manner). It is perhaps also why retrofitting has manifestly failed to deliver either reliable comfort or the reduction in space heating and cooling that we need if we are to become sustainable.

Another serious concern is that since one of the outcomes of climate change will be much longer summers with much higher temperatures (particularly in cities), overheating will be increasingly problematic, especially if we continue to use large areas of glazing in facades. This seems likely to greatly increase the demand for air-conditioning systems. Alas, air conditioning is not just enormously expensive in terms of energy and carbon, but detrimental to building fabric. It has also now been linked to the spread of diseases such as Covid-19 in interiors. The current consensus among environmental health experts is that we will almost certainly need to encourage a return to natural ventilation in building regulations.

Fortunately, our pragmatic predecessors bequeathed us many low-energy low-carbon tools for improving comfort which could be as useful as they ever were, from internal partitions to wall cloths and floor mats. Awnings are potentially one of the most valuable.⁴ Their enormous energy benefits cannot be doubted. The US Department of Energy estimates they can reduce solar gain alone by as much as 77 per cent, saving 33 per cent of the energy required for mechanical cooling in temperate climates (where they can be enough to make air conditioning unnecessary). Factoring in the additional reduction in direct heating of occupants and surfaces, the benefits are even greater, so it is not a surprise that awnings remain ubiquitous in hot sunny climates.

In certain cases, awnings might also help us with one of the trickiest problems in conservation: keeping listed modern buildings with highly glazed facades in use, without having to rely on air conditioning. In England we have tended to try to deal with overheating



A late-19th century shopfront in Harwich with the once ubiquitous stripey canopy (Photo: Jonathan Taylor)

by applying window films, or adding blinds to the interior, but these are not the most effective solutions: they do not prevent the glass heating and radiating that heat into the room, and they obstruct the views and external appearance of transparency that may well have been one of the reasons the architect chose glass in the first place.

In The Netherlands, conservation architect Wessel de Jonge was able to recuperate the listed HUF building in Rotterdam (designed by Van den Broek and Bakema in 1953) by adding the awnings that he found had been included in the original concept drawings, but never installed. Overheating had caused the building to quickly fall into disuse, but thanks to the awnings it is now considered not just much more comfortable, but arguably more beautiful. That awnings were a viable answer to the building's long-standing problem has been proved over the ten-plus years since the renovation, as the building continues to host not just shops and offices, but a residential apartment.

Since they are so effective, why did awnings disappear? Was it merely a change in fashion? Perhaps they were so ubiquitous that people simply stopped thinking about why they were there and what benefits they offered; and perhaps nobody really noticed they were disappearing, building by building, until it was too late. But a more pertinent question for us now must be: how do we bring them into popular use again?

Traditional designs are still available, and indeed some of the original Victorian manufacturers are still operating. Obtaining permissions may prove a more serious impediment. The British Blind and Shutter Association had to fight hard to overturn a ban on awnings by the Ministry of Housing, Communities and Local Government after the Grenfell Tower fire, although awnings had not been used on the building, and there is no evidence anyway that they are a cause of fire spread on any facade. Meanwhile, external insulation (strongly implicated in the fire) continues to be strongly advocated

by the UK government. It is true that, to safeguard significance for listed buildings, conservation officers and statutory inspectors will need to carefully consider the arguments for reinstatement, even when there is good evidence that the building once had awnings. In doing that, however, we need to balance the aesthetic value of a building as it appears today (which reflects, among other things, current fashion) with the benefits of restoring the building's traditional functional performance, which can deliver long-term gains for the building and its occupants as well as wider public benefit in the form of reduced carbon and energy.⁵

The arguments supporting awnings on windows subject to solar gain are indeed so strong, especially in the face of climate change, that there would be a case for installing them on some listed buildings (and of course on many unlisted ones) even where there is no positive proof that they originally existed. Reinvigorating the love affair the UK once had with these practical and beautiful building elements would seem to be an obvious contribution to effective retrofit. By making the buildings much more usable, they can tick both conservation and sustainability boxes.

A typically low-energy low-risk low-carbon traditional approach to effective building operation, awnings are also a perfect demonstration of the untapped potential of the historic built environment to contribute to sustainability and effective climate action.

¹ Bessoudo, M, Tzempelikos, A, Athienitis, AK, and Zmeureanu, R, Indoor thermal environmental conditions near glazed facades with shading devices – Part I: Experiments and building thermal model, *Building and Environment*, 45 (11), 2506–2516, 2010

² De Luca, F, Voll, H, and Thalfeldt, M, Comparison of static and dynamic shading systems for office buildings: Energy consumption and cooling load assessment, *Management of Environmental Quality*, 29 (5), 978–998, 2018



The case for reinstating canopies is clear, not only where the original fittings survive. (Photo: Robyn Pender)

³ Underhill, LJ, Dols, WS, Lee, SK, Fabian, MP, and Levy, JI, Quantifying the impact of housing interventions on indoor air quality and energy consumption using coupled simulation models, *J Exposure Science & Environmental Epidemiology*, 30 (3), 436–447, 2020

⁴ Kohler, C, Shukla, Y, and Rawal, R, 'Calculating the effect of external shading on the solar heat gain coefficient of windows', *Building Simulation 2017, San Francisco CA*, Laurence Berkeley National Laboratory Report No LBNL-2001057

⁵ Khan, S, *Learning from History*, research report prepared for Historic England, Historic England, London, 2020

Recommended Reading

Historic England, *Practical Building Conservation: Glass & Glazing*. Routledge, 2012

Kyle Normandin and Robyn Pender, 'A window of opportunity', *Building Science and the Physics of Building Enclosure Performance*, ASTM STP 1617, ASTM, Hanover, PA 67–87 For information about where to source new or replacement awnings, contact the British Blind and Shutter Association <https://bbsa.org.uk/>.

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