



Wade Graham's Walden

Old constructs need reviving for new age of conflagration

The era of cataclysmic climate change, long prophesied by scientists, is now well under way. As predicted, wet places are getting wetter, with new rainfall records set by the week. Flooded towns and railways killed hundreds across the UK and Europe this summer; there were also flooded cities across Asia, flooded subways in China and New York, and flooded conurbations all along the 1,300-mile-long track of Hurricane Ida, wreaking havoc and taking lives from New Orleans to New England.

On the flipside of the climate coin, we are waking to a bad, new, superheated world. Hot, dry places are burning up, while climate-driven drying brings flames on its heels to new territories. In America's Pacific Northwest, green rainforests – where every branch is coated in a six-inch-deep sweater of moss and won't normally kindle with a blowtorch – have been baked this summer by unprecedented 46C/115F heatwaves, then ignited by lightning storms, burning hundreds of thousands of acres at a time. More forests are burning across Siberia, Canada, Indonesia, the Amazon and even Greenland.

Terrifyingly, entire towns are being wiped from the map by firestorms, sometimes in a few, hellish moments. This summer, four towns in Oregon were partially or wholly torched and Walden, Washington, was 80% destroyed. In drought-stricken California, where each year brings new and bigger holocausts, with individual fires in 2021 consuming more than a million acres apiece, the towns of Greenville and Berry Creek were flash-incinerated, with thousands of structures gone and numerous fatalities (imagine an area larger than Suffolk burning one day and one-fifth of Wales the next). This was not far from the site of the town of Paradise, which was near-completely devoured by fire in 2019, killing 85 people.

It's the same story in Australia, where towns are burned and rebuilt, on repeat. Versions of Victoria's Black Saturday of February 7, 2009, which killed 173 people, have been re-enacted yearly across the

country, burning 17 million hectares and killing 33 people in 2019-2020. In the Mediterranean, memories of the 2018 fire that killed more than 100 in a seaside settlement east of Athens (in which some drowned trying to escape by sea), were rekindled this summer as hundreds of fires burned across Greece, Spain, Italy, Turkey, the Balkans and Algeria.

It seems like a never-ending downward spiral, but there are reasons for optimism: a global search for better resilience through design. Communities suffering the worst damage have typically been inadequately built to handle the newer, hotter, faster fires. They usually have wood construction and are set far apart from one another, nestled in trees and greenery. It's not hard to build smarter by limiting combustible materials such as wood decks, deep eaves, rain gutters that catch leaves and needles, wood piles and vegetation near buildings.

Fire must be accepted as normal, as inevitable as sun or rain, and equally impossible to suppress or "fight"

It amounts to learning the lesson of *The Three Little Pigs*: brick is better than wood or straw. We learned it in the Great Fire of 1666, after which timber buildings were banned from London. Similarly, after Chicago burned on October 8, 1871, losing 17,500 buildings and one-third of its wealth, new kinds of fireproof construction, including safety elevators and low-cost steel frames, allowed it to be rebuilt upwards, and the skyscraper was born. Neither city has suffered large conflagrations again.

Aggressive building codes can produce hugely more fire-resistant structures. Australia is a leader, with its new bush fire standards predicting risk and mandating defences like metal fire shutters and water reserves. But new build, requiring the latest technical innovation and extensive permits, is expensive. Most homeowners can't afford it and are left vulnerable to

expanding wildfire zones. Their lack of financial resources and inability to fight for adequate insurance payouts has led to a new rural homelessness. In Northern California, for example, hundreds of survivors of the Paradise fire moved to nearby towns or forests, many reduced to living in RVs or cars, only to be swept out again by the latest fires.

This suffering has ushered in a new era of "fire gentrification", as rebuilding costs force homeowners to sell out to richer people, able to afford the newfangled fire protections. These include automatic sprinklers, water cannons, retardant guns that shoot goo and foam, metal shutters and even private fire-fighting services, paid for by insurance companies.

This capitalist Social Darwinianism addresses the fire threat at the level of individual building structures, through the language of construction codes. It leaves the market to sort out who will survive and who will burn when the fire comes. Not surprisingly, you can already see designers, investors and insurers converging on a set of responses that can only be described as collective. They've begun their lucrative task by accepting some new normals.

The first is that fire is to be accepted as normal in a growing section of the planet, as inevitable as sun or rain, and equally impossible to suppress or "fight".

Secondly, it no longer works to see the landscape as a problem to be managed by cutting vegetation. Extreme wind is now the enemy that drives fires; flying embers (not burning bushes) ignite structures. Therefore, structures must be addressed as the real problem. In the 2016 Tubbs fire in Sonoma, California, 5,600 structures burned, mostly in dense, urban neighbourhoods nowhere near wild vegetation; each burning house ignited its neighbours. And a K-Mart "big box" superstore located in the middle of a tarmac parking lot burned to the ground after being barraged by wind-driven sparks that jumped an eight-lane freeway.

Thirdly, we can no longer set ourselves apart in splendid isolation from our neighbours – even in a country as rich in



Flooding at Abingdon-on-Thames, Oxfordshire, February 2021



New Brunswick, New Jersey after Hurricane Ida, September 2021



Wildfires in the Pacific Northwest – Photos: Forest Service NW

land mass as Australia. As one of their experts put it: “Everyone wants to live like the nobleman, have their own little duchy or their own little barony, even if it’s just a quarter-acre or less... but it’s not sustainable.” Instead, we need to build homes closer together to make communities safer and more defensible.

Emerging designs for hotels, industrial parks and communities around the world increasingly obey these new imperatives – by clustering buildings, using “hardened” materials, and going partly underground, with the aim of creating separation between the human-built environment and the landscape. It’s about letting fire pass around, or over, us.

This approach was tested in 2018 when, driven by gale-force hot winds, the Woolsey fire burned through Malibu, California, consuming nearly 40,000 hectares, destroying 1,643 structures, causing \$6 billion in damage, killing three people, and prompting the chaotic evacuation of tens of thousands. But at the largest set of buildings in the city, the campus of Pepperdine University, where I taught at the time, there was comparative calm. Several thousand students and staff

sheltered in in the university’s central gymnasium, which had been specifically designed for their protection by the architect William Pereira, back in 1970. He had modelled the campus on Patmos, Greece, and other communities of the fire-prone Mediterranean, where clustered buildings enclose central, open spaces in which people can shelter together. The hardened backs of the buildings were designed as a shield against all threats, whether invaders, pirates or fires.

Built with fire-proof materials such as steel frames, concrete, stucco and tiled roofs, the Pepperdine campus has no exposed wood and no deep eaves to catch flying embers; its buildings cluster around paved plazas and lawns. It emerged from the Woolsey fire essentially unscathed, even though flames consumed the surrounding mountainsides, invaded parts of the campus and blackened its walls in numerous places. In fact, the campus has survived six fires since its construction. If only Pereira’s 1965 master plan for the development of Malibu had followed the same principles.

Humanity has lived with fire for millennia, by respecting it and preparing

for its passage. Native American tribes think of fire as a liquid that periodically flows through the landscape, and so prepare that landscape in advance – often using low-intensity fire to clear combustible debris as one might use a broom to clean the sidewalk – and clustering their own dwellings to allow fire to flow around them. It was only in the last century that confidence in our ability to “fight” fire with militarised equipment led to the use of bulldozers, parachuted “smoke jumpers”, and bombing aircraft dropping chemical weapons. Recent disasters have taught us that this approach doesn’t work. But we can relearn the ancient knowledge of traditional practices that do make a difference. Our survival on Earth’s expanding firescapes depends on it.

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