

## WHERE AUSTRALIA SEES THE UNIVERSE

Enter Mount Stromlo Observatory, Australia's oldest and most elaborate, the place where "Australia sees the universe," and a wall of posters and video displays informs you about its exploration of the furthest frontiers and the deepest mysteries of the cosmos. Of particular pride are exhibits that describe recent work on interstellar gaseous blobs and clouds, and streams of gas jetting out of black holes. It is a facility committed to looking out, mapping the Southern sky, and yet in doing so, also looking in, plotting humanity's longing to know its place in the Great Scheme of Things. The instruments that scan the very borders of light itself also peer into the depths of the human soul. At such sites macrocosm and microcosm fuse.

On 18 January 2003 the cosmos returned that gaze. A conflagration powered by the volatilization of the vast Australian bush blew over Mount Stromlo. Streams of combustible gases jetted out of pine plantations that clothed the Mount, building to a crescendo at its summit, amid billowing clouds of raw gases that could pass for nuclear pillars of fire in a far nebula. A successful evacuation ensured that no lives were lost, but the site was seared; only three of a dozen buildings survived, and four telescopes melted, leaving husks that resembled sacked mosques; the immolated forest became a biotic black hole on the landscape, subsequently salvage-logged or scalped, piled, and burned. That spiral of flame turned the observatory's gaze inward, and in doing so it created a lens by which Australians, and humanity at large, might contemplate the elemental forces that sculpt the material world and might ponder their place within it. At that moment of impact, microcosm and macrocosm fused.

The resolve to rebuild was instinctive. Almost before the ashes cooled, even as a fight over insurance claims promised to be long and bloody, the governing institution, Australian National University, announced it would replace the losses. Too much was at stake to abandon the facility: it was too deeply a part of international science and the heritage of Canberra, its loss too damaging to Australian prestige. Australia might fret over its global standing in the arts and humanities, but at Mount Stromlo it contributed boldly to the scientific quest to understand the ultimate standing of humanity in the cosmos. The telescopes would rise again.

The question about reconstructing the surrounding landscape was trickier. The panorama from the summit encompassed three broad scenes. There were the belt of national parks and public lands along the mountains, the pastures and fields of a rural economy, and the dense forests of exotic *Pinus radiata* that dappled the countryside in thick patches. The parks, the paddocks, the plantations – the fire surge had struck them all, but with vastly different outcomes. The native bush rebounded briskly, stalled only by a stubborn drought. The pastoral country brushed off the burn, its primary losses in livestock, a resilience made possible in part because drought and overgrazing had shorn it of the woolly combustibles that fed the most ferocious flames. The pines, however, were immolated, and the landscape they once clothed, mauled. The scorched trunks were logged, or felled and dragged into windrows, the soils gouged and then shoved around to retard erosion. The densest woods had sparked the most savage burns.

There was reason to pause before reinstalling what might well lead at some future time to another fiery self-consummation. That had, in truth, happened hugely once before when the pineries fell to the last regional conflagration, in February 1952. Then some outbuildings had burned, along with the workshop stocked with delicate and nearly irreplaceable machinery, and a desperate staff stood before the observatory itself with wet blankets and a sense of doom as the electricity and pumps failed. Then a light rain providentially dampened the flames and spared the facility. The workshop was rebuilt, the road reopened, and the blasted pine forest hauled away and replanted. At Mount Stromlo conflagrations were not a visitation from an alien galaxy but an emanation from within the landscape itself.

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The choice of what to do next on those scalped slopes, of course, is for Australians to decide. But what grabbed my mind's eye – the vision of a fire historian and visitor - was not the once-blackened trees or the now-stripped hillsides, but the ephemeral yet ineffable fire. That is surely a topic as worthy of hard scholarship as the deep forces hundreds of millions of lightyears distant. The observatory's visitor's center could do well to match its exhibit about the nuclear dynamics of nebulae with one about the combustion dynamics of the place from which we observe those scenes.

Flame is as elemental to Earth as gaseous clouds and dark matter are to the dynamics of the universe, and it is no less fundamental to humanity's place in the biosphere, for we are truly a uniquely fire creature on a uniquely fire planet. The intellectual challenge of fire far exceeds that of stellar origins and extinctions. It is not simply that fire is a product of the living world, its chemistry and complexity far greater than anything astrophysics might conceive, but that fire, through humanity's species monopoly over it, has entered a moral universe before which the most profound mathematics and complex instruments stand dumb. The character of future fires will depend on the character of the landscape, and that will depend on the character of the people who must choose what the place should be and what they can or can't do (or do by accident) regarding that decision. The cosmos of values is far more formidable than that cosmos of red giants, white dwarfs, and blue streamers about which astronomy can speak. There is not much we can do about the Creation. But with regard to landscapes and fire, we are a Creator.

There are good reasons to point lenses to the heavens. There are also solid reasons to point them to the Earth. And where the macro and the micro merge into a single cosmos, there we might well want to pause and contemplate. Especially on a continent so prone to burning as Australia, where fire's removal can be as ecologically powerful as its presence, where no aspect of life is unaffected, where fires can roam on a scale visible from space, there is justification for an infrastructure of scholarship about free-burning fire equivalent to that at Mount Stromlo for the rhythms of stars. Here is a subject in which Australia can contribute with genuine force to the world. Here Australians see the universe, and, it would seem, the universe is prepared to reply.

We can hope that the 2003 conflagration will be Mount Stromlo's last. But if the fires come again, humanity will see its own face in the flames.

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