Sensing the State in Hot Houses

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Australian Indigenous housing, water and energy infrastructures are the unheralded achievements of Indigenous political action, representing an insistence on the right to live on or near country. Even so, when mitigating the sensory effects of infrastructural inheritances from fragmented state service histories and climate catastrophe, there is no wishing unbearable heat away by leaning on Indigenous political savvy and resilience (Whyte 2017). In remote Indigenous communities, houses are sweltering, and the settler state's infrastructural gestures remain partial (Weszkalnys 2017).

Take the Aṉangu Pitjantjatjara Yankunytjatjara (APY) Lands, a region in northwest South Australia, abutting the Northern Territory and Western Australian borders. Here, 371 houses across ten communities are managed by the South Australian Housing Trust (Housing SA), in conjunction with the Indigenous community-controlled health service, Nganampa Health Council. This unusual collaborative approach represents long negotiations driven by Indigenous lobbying—remote property maintenance is more usually characterised by reactive government-run programs that force residents to endure broken things (Lea 2020a; Grealy 2021; Arrigoitia 2014). Even so, the thermal prognosis is grim. Maximum temperatures are rising and the period of sustained high heat over summer is beginning earlier and lasting longer (Figure 1).

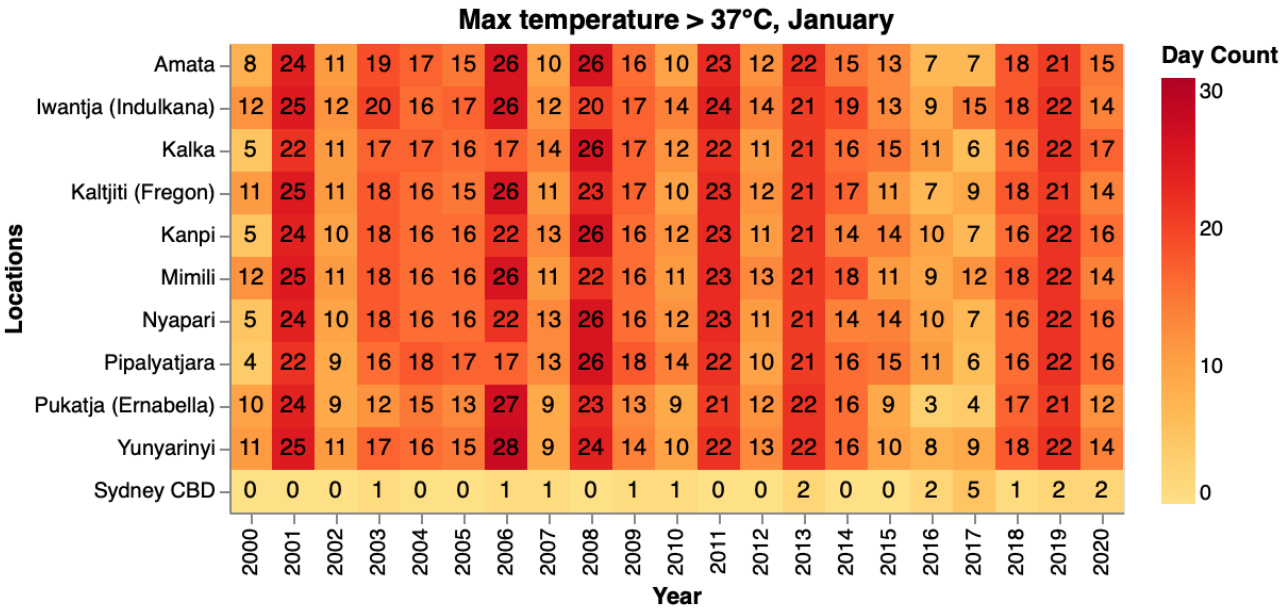

Figure 1. Number of days the maximum temperature exceeded 37°C in APY Lands communities, January 2000-2020. Image: Chao Sun (Sydney Informatics Hub Project Scheme) in Lea, Grealy, et al. 2021.

Yet, just as houses must afford greater thermal protection, the Australian national government—traditionally, the major funder of remote Indigenous housing—is extracting itself from funding obligations. Federal funding to the South Australian government can be used to replace derelict houses but not to increase needed stock, despite crowding pressures. While new builds might incorporate some thermal considerations (Figure 2), legacy housing stock is inadequately designed to protect residents from current and projected temperature increases (Lea, Grealy, et al. 2021; Green et al. 2009). Even as global warming is pushing remote Australia into new extremes (Race et al. 2016), the Australian government has no plans to alter its regulatory approach to thermal performance in housing (Moore et al. 2019). This is regardless of how widespread standards—such as those developed by the American Society of Heating, Refrigerating and Air-conditioning Engineers—are based on demographically narrow experiments in the first instance (Murphy 2006; Chang 2016; Shove 2003).

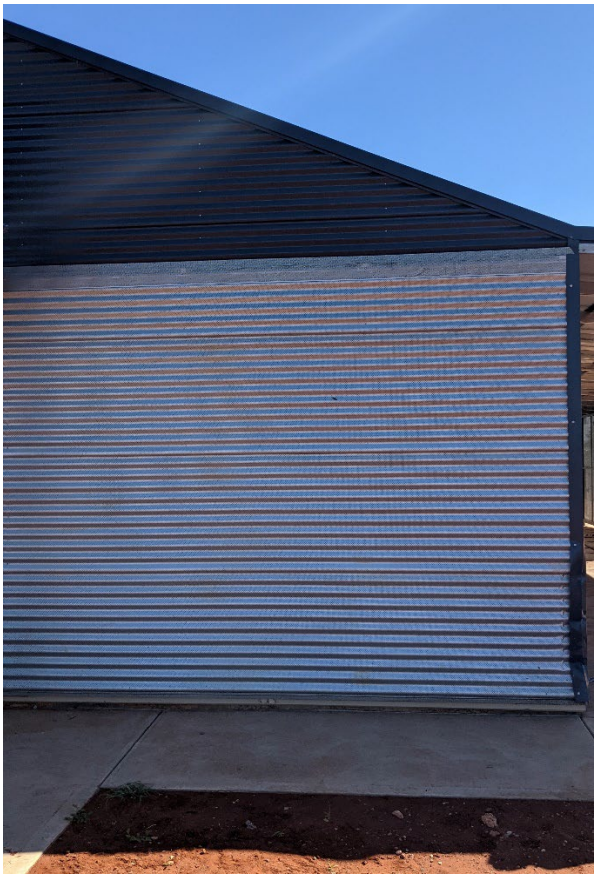

Figure 2. A perforated Zincalume custom orb skin is attached to the external wall of this new house on the APY Lands to reduce internal temperatures. Image: Liam Grealy 2021.

In dominant efforts to control the living environment by mechanical means, thermal comfort is presumed to align with non-recognition—as with noticing infrastructure (Leigh Star 1999), noticing temperature is an index of discomfort (Heschong 1979). But what of technologically induced infrastructural indifference? Domestic air conditioning units, and the energy infrastructures sitting behind them, have removed imperatives to design houses that protect from serious heat or adjust to local climates (Basile 2014). Indigenous communities across Australia showcase similar styles of building across radically different climate zones.

What does it mean to experience sustained high temperatures inside settler state-provided infrastructure, amid foreshortened design imperatives and the need to wrangle affordances from past and imminent techno-fixes bequeathed through fragmented policy offerings? Temperature is metabolised differently based on

multiple bio-variables and there are different population tolerances of high heat (de Vet 2017). Yet not only are there limits to acclimatisation (Opperman et al. 2020), there are known vulnerabilities. For instance, Indigenous people in the Northern Territory experience the highest Australian rates of Type 2 diabetes and relatedly, of lower limb amputations (Dillon et al. 2017), with renal disease being exacerbated by heat stress (Kenny et al. 2016). Sensations of fatigue, exhaustion, nausea, inertia, and chronicity also index state policy (in)attention: domestic infrastructures are in disrepair; climate-appropriate housing was never provided; and crowding exacerbates thermal discomfort given all round undersupply. To swelter at home in such contexts is to experience the cumulative infrastructural neglect of settler colonial geographies and infrastructural legacies. It is to sense an insensitive state.

At present, all Indigenous houses managed by Housing SA on the APY Lands have evaporative coolers, the techno-fix of earlier decades (Figure 3). 'Evaps', or 'swampys', are a mechanical cooling technology that draws in outside air through moistened pads to distribute cooler, moister, air into the house. Because evaporative cooling systems are far less effective as temperature, humidity, and crowding levels increase (when they are most needed), tenant presumptions of hardware failure during the hotter months often see tradespeople summoned to investigate broken units that may be fully functional—and fully ineffective. In general—and especially on the APY Lands where the artesian water is 'hard' from dissolved minerals—the evaporative cooler pads require regular flushing and replacement. Water is evaporated to provide the cooling effect and 'bled' to clean componentry from salt concentrations (Saman et al. 2009). Swampys consume water, but denuded alluvial groundwater also makes governments reluctant to build new housing without community bores guaranteeing water supply. Sensing the still-colonial state through its infrastructure is also to mark extraction legacies that First Nations people did not precipitate (Whyte 2017).

Figure 3. A water intensive evaporative cooler set adjacent to the house. This mode of cooling becomes relatively ineffective at high temperatures and high relative humidity. Image: Liam Grealy 2021.

Most Indigenous people in remote areas occupy leased social housing, where it can be difficult for tenants to either modify their accommodation or to have a say about the design features that would improve their thermal comfort. 'Thermal inequality' extends from household to community spaces (Parsons 2021): there are no enclosed shopping malls, movie theatres, water gardens, or libraries to retreat to; and green infrastructural commons are scant to non-existent. Within these limits, Indigenous tenants implement vernacular solutions to hot houses by painting windowpanes, attaching insulation to window frames, and hanging tarpaulins and DIY shade sails on verandas. Figures 4 shows the installation of a costlier-to-run but cheaper upfront 'window rattler' air conditioning unit, operated alongside an evaporative system. When operated simultaneously, neither a rattler nor a swampy works properly. Refrigerated air conditioning works

by dehumidifying sealed indoor environments, whereas evaporative coolers introduce humidity and require ventilation for warm air to escape.

Figure 4. A precariously installed refrigerated air conditioner, below a security screen. Image: Liam Grealy 2021.

Given the lack of government funding to improve the thermal performance of Indigenous housing, some state and territory jurisdictions are shifting to more controllable refrigerated air conditioning, in turn promising new state sensoria. For instance, the New South Wales Aboriginal Housing Office has been installing reverse-cycle split-system air conditioning units since 2016. To limit expenditure, the units are allocated by thermal

geography: sites within an isotherm range of 33°C or higher. In the few years since its inception, climate change has dramatically expanded this isotherm geography and, relatedly, the number of qualifying houses. Separate issues are faced on the APY Lands. Installation of refrigerated air conditioning units has been thwarted by inadequate budgets to manage the upfront costs of new hardware and the damage caused by dust and cockroach infestations during trial installations. Feral camels, introduced to freight goods for early settlers, are also drawn to the technology: "We have been stuck in stinking hot and uncomfortable conditions, feeling unwell, because all the camels are coming in . . . getting in around the houses and trying to get water through air-conditioners," says Marita Baker, a leading artist on the APY Lands.

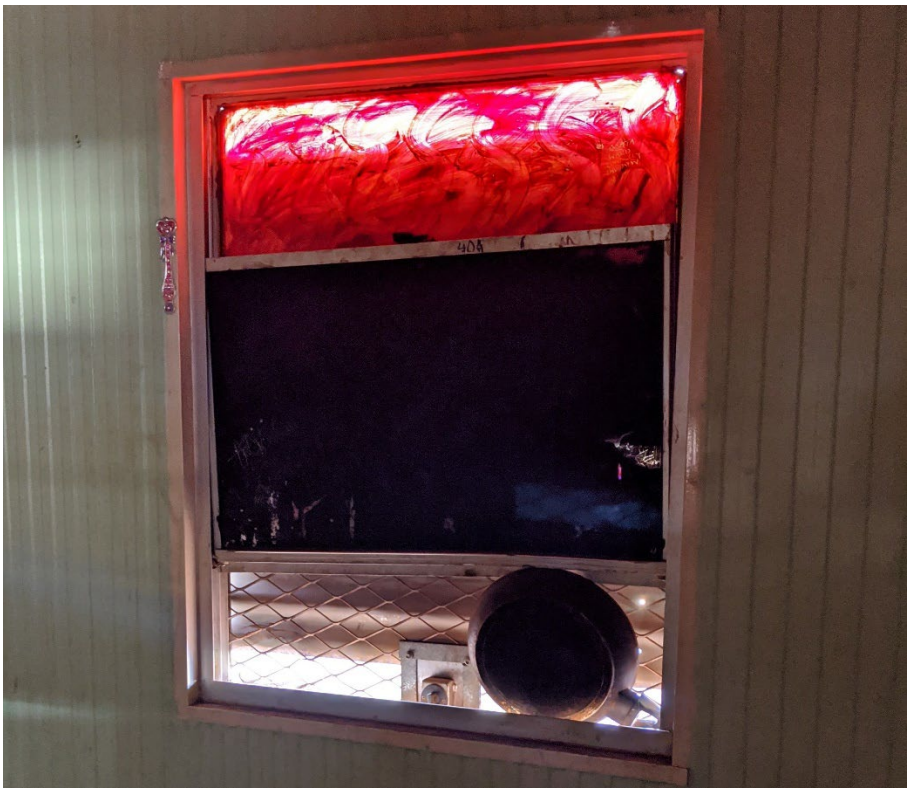

Figure 5. Window painted to reduce heat. Image: Liam Grealy 2021.

Then again, should a refrigerated air conditioning program somehow be universalised across remote Indigenous Australia, householder energy insecurity issues will intensify. Involuntary electricity disconnections from prepayment systems are increasing (Riley 2021). As an answer to sensed heat, then, and alongside low-cost householder fixes (Figure 5), refrigerated air conditioning offers new modes of sensing the state. With

energy poverty on the hotter horizon, policymakers and housing providers are turning to the next techno-fix: photo voltaic panels and household battery systems to generate and store renewable energy to offset the costs of power consumption (Fourth&Centre 2018). Such technological promises contain embedded naivetes about labour and stable state services in remote communities (Hong 2021), when all have maintenance requirements, aggravated by the harsh environmental conditions of the desert—necessitating ongoing inveiglement with state-administered infrastructural sensoria (Ramakrishnan et al. 2020).

If thermal comfort is not only a right but a health need, then mechanical air conditioning is essential. Yet a certain 'thermal moralism' can imbue discussions of increasing heat (Lea 2020b: 33). A masculine promotion of tolerating high temperatures (de Vet 2017), imbued by colonial ideas about the capacity of remote Indigenous residents to endure heat (Chang 2016), meets architectural arguments for the environmental benefits of passive cooling techniques, promoted by professionals enjoying air conditioned office spaces. Thermal moralists fail to address the heightened vulnerability of elderly and unwell tenants to sustained high temperatures in much Indigenous housing and happily ignore the increasing difficulty of remote regions to retain labour under high heat (Zoellner et al. 2017). But the ongoing efficacy of any technological installation requires infinite policy and infrastructural engagements and uncharismatic repair and maintenance. There is no magic to the technofix, more a return to the mundane issue of tending corroding materials to eke ongoing habitability from legacy infrastructures within partial policy attentiveness. As a felt state, overheating in remote housing is an infrastructural phenomenology of settler state attention, neglect, and material (non)provisioning.

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