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Comfort in chaos: A sensory account of climate change denial

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Abstract
This paper argues that sensory practices that insulate individual bodies from the effects of climate disruption may enable and perpetuate a distinct form of climate change denial. Existing scholarship has established the ways in which climate-modifying technologies, such as air conditioning, reconfigure socio-ecological relationships through sensory norms. This paper extends this analysis by relating these sensory norms to contemporary discourses on climate denial. Drawing on a heatwave case study in Western Sydney, Australia, the paper explores how practices of thermal comfort for particular, often privileged, bodies may be understood as sensory enablers of climate change denial. This work encourages theoretical movement beyond the scientific and political disembodiment that often characterises contemporary climate change denial discourse, and urges greater attention to the sensory drivers of climate-related behaviours, experiences, and perceptions. This sensory approach may allow theoretical and strategic engagement with otherwise hidden social barriers to sustainable climate interventions and action.

Keywords
Climate change denial, heatwaves, comfort, embodiment, climate, privilege

Introduction

Climate change is disrupting the atmospheric patterns and material environments in which we live, resulting in increasingly extreme weather events. The sensory experiences associated with these events directly shape the ways in which communities and individuals interpret, negotiate, and respond to them. Despite this, the role of the senses in shaping the social, political, and environmental dynamics underpinning and perpetuating climate change is largely absent in scholarly climate discourse. This absence creates a barrier to recognising

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and engaging with the significance of personal sensory experiences in shaping climate change politics. This paper argues that explicitly locating the political influence of sensory drivers is necessary in generating climate scholarship that more comprehensively reflects and responds to lived climate dynamics.

A sensory account of climate experiences must be prefaced with the core premise of sensory theory: it is through the senses that social life is enacted, experienced, and expressed. Key here is the recognition that our senses are not mere transmitters of external stimulation, but "mediators between meaning and materiality" that connect and merge the physical with the emotional and the cognitive to shape personal experiences of the world (Hsu, 2008: 433). In short, our bodily senses shape our everyday interpretations, experiences, and responses to the world around us. Sensory experiences are also culturally specific and political. Rather than conceiving of sensory experiences as passive or impartial data input, sensory theory recognises them as bi-directional conduits of social order, action, negotiation, regulation, control, and action (Vannini et al., 2013). As Howes and Classen (2013) argue, sensory experiences are informed by both the personal meaning a particular sensation invokes as well as the social value it carries, centring the senses in socio-cultural orderings of class, status, and power.

In this paper, an engagement with sensory experiences is directed towards the politics of bodily comfort within the context of extreme heat and heatwave events. with a focus on differentiated practices and experiences of keeping cool. Comfort is understood as a "desirable corporeal sensibility" (Bissell, 2008: 1697), and involves practices of attaining and maintaining that desired state of the body. This work draws on and extends existing scholarship around the socio-political influence of the senses, particularly in relation to air-conditioned environments. Shove (2003) argues that processes of indoor climate change have been occurring in tandem with global environmental climate change, reflecting a social shift towards reliance on thermal technologies and the companies that provide them. This shift in embodied atmospheric experiences from a dynamic environmental condition to one controlled and stabilised by technology has obvious implications for human-environment attention and responsiveness. Chappells and Shove (2005) illustrate how default air conditioning supplants the need for active processes of bodily attunement, and is a powerful mechanism of wider cultural conditioning. For example, office temperatures tend to be set around the assumption that specific workplace dress codes will be consistently adhered to. On a larger scale, the normalisation of air-conditioned space in geographically warm climates can lead to population-scale preferences for indoor and often commercial leisure space (Hitchings and Lee, 2008). This may underpin processes of sensorial disengagement with local climate (Hitchings, 2011) or perceptions of the natural climate as threatening and artificial space as soothing and necessary (Day Biehler and Simon, 2011; Walker et al., 2014).

Recent work highlights that these issues are more pressing than ever, with Davis et al. (2021) finding that over 10,000 new residential air conditioners are sold every day, with these sales overwhelmingly in high-income nations and/or high-income households. As they emphasise, the inequality with which this climate-modifying technology is available around the world and within communities is likely to exacerbate existing vulnerabilities and disparities in society. This increasing thermal inequality is based on pre-existing socio-economic inequality, and exacerbated by factors of race and class (Dialesandro et al., 2021). Air-conditioning technology has merged with economic inequality to influence economic, cultural, and political trends, with Wilson (2021) arguing that in the United States artificial cooling has led to the prioritisation of personal comfort at the expense of connection to environments and community.

This paper's contribution develops these relationships between climate, sensory comfort, and forms of denial. In considering how and why individual bodies achieve thermal comfort during a heatwave, it explicitly situates climate denial within a framework of sensory comfort. It draws on these terms in particular ways. Climate denial has traditionally been considered a political and/or knowledge problem (Berry et al., 2016; Naustdalslid, 2011; Prasad, 2019). Within a climate context, denial is most often framed as specifically an "unwillingness to believe" existing scientific evidence about the causes and impacts of climate change (Björnberg et al., 2017: 237). Primarily studied in Anglo-American countries, the causes of this denial of science are varied, and may be attributed to psychological defence against a perceived intractable problem, sociological factors of scientific literacy, the influence of shared social and cultural groups, individual ideological priorities and worldviews, and political campaigns of denial (Björnberg et al., 2017). These drivers of denial can be understood as distinct cognitive and perceptual frameworks that influence how new information is processed and responded to. This paper argues that recognising the role of sensory experiences in climate denial is helpful in understanding the ways that such frameworks are formed and perpetuated. Expanding beyond cognitive and scientific foundations, climate denial can and must be located more literally and materially through the direct sensory experiences and environments of the body. Denial in this sense is located in practices and strategies that minimise or eliminate lived experiences of, and significant exposure to, the physical and emotional discomfort of climate extremes.

There are tensions inherent in this approach, including the recognition that heatwave impacts are potentially harmful as well as uncomfortable, and that strategies of seeking relief from extreme heat are necessary. The intention here is to recognise the strategies available to different bodies, and to explore their social, environmental, and political implications within a climate change context. In doing so, this work draws on resident experiences of a heatwave to explore how the practices and experiences of comfort, defined here as a state of desirable physical and emotional stability, provide an important insight into individual and structural responses to climate extremes. This approach offers a way of thinking through elements of everyday sensory climate change denial with curiosity rather than with the judgement that, as Lucas and Davison (2019) point out, often impedes rather than supports genuine climate engagement across communities. In considering the relationship between sensory comfort and climate change denial, this paper hopes to encourage greater scholarly attention to how sensory experiences may relate to climate perceptions, politics, and actions more broadly.

Denial

There is growing recognition that denial is embedded in and emerges through favoured bodily realities. The case study works of Norgaard (2011) and Bowden et al. (2019, 2021) highlight that denial is an active social and emotional process anchored in the maintenance of existing priorities and privileges that are valued by individuals in their daily lives. As Norgaard (2006a, 2006b) demonstrates, denial insulates individuals from the troubling or uncomfortable realities that these priorities and privileges are inescapably tied to larger scale environmental and social harms, and that addressing these harms may require a fundamental shift in day-to-day norms. Such work extends an analysis of climate denial as an overt political or knowledge problem by situating it within favoured physical, emotional, and sensory everyday experiences. This paper continues this trajectory by bringing climate denial as a political and social concept into direct conversation with literal sensory denial,

or the distancing or insulation of the body from uncomfortable atmospheric environmental conditions.

This is an important shift for two reasons. First, it recognises denial as a strategy of maintaining comfort through privilege. Rayner (2012: 113) defines denial as the "persistent refusal to act on information or even accept its existence", and identifies it as a strategy of distancing oneself from uncomfortable knowledge. Complex problems such as climate change prompt individuals and organisations to develop simplified, self-consistent versions of the world so that they can maintain their day-to-day life (Rayner, 2012). This requires excluding knowledge that contradicts those simplified versions and threatens to disrupt them, which he terms "uncomfortable knowledge" (Rayner, 2012: 107). The ability to successfully exclude knowledge, to put uncomfortable realities out of one's mind, is itself a reflection of the immunity from direct impact that privilege provides. Privilege in the context of undesirable environmental change is framed variously as "a sense of safety in the face of troubling events and information" (Norgaard, 2012: 80), and the "economic, political, and cultural power that enables the construction of exclusive environmental amenities" (Sun-Hee Park and Naguib Pellow, 2019: 397). It is this ability to access states of emotional and physical comfort in the face of climate disruption that is incorporated here within a sensory engagement with denial.

It is important to recognise that these experiences of comfort through privilege are often invisible to those who have access to them in everyday life. One of the challenges of climate change is its global influence, and the inequality of its impacts around the world and within communities. There are millions of people for whom the distress, discomfort, and danger of directly experienced climate change impacts are inescapable. In this context, remaining physically unaffected is a direct reflection of privilege, and is strongly related to race, gender, and socio-economic class along with geography. As Norgaard (2012) points out, climate change apathy is most prevalent among relatively wealthy people in the Global North, in communities who simultaneously contribute most emissions to the catalyst of climate change and who are least likely to experience the most disruptive impacts of those emissions through changing weather patterns.

Second, it speaks to the mobilisation of knowledge within climate discourse as specifically scientific knowledge. There is a general dismissal of knowledge produced through every day norms and an assumption that "traditional and conventional forms of knowledge will sooner or later be displaced by scientific forms of knowledge" (Adolf and Stehr, 2016: 115). This approach jars with Lucas and Davison's (2018) research into the absence of concern about climate change, which they argue cannot be separated from the complex webs of competing priorities and concerns in individual lives. Critically, they find that "social relationships, discursive processes, moral values and embodied experiences" tend to be absent in much climate denial research, resulting in narrow and often polarising framings of how and why people think and act around climate change. This echoes Goeminne's (2012: 1) analysis that climate denial across the spectrum is "first and foremost a political struggle over what to be concerned about", rather than simply a scientific knowledge or policy translation problem. These approaches call for greater attention to the experiential and social conditions in which concern about climate change is resisted or overcome, as a way of more accurately and effectively engaging public discourse and action.

Denial as a set of practices

This work draws on practice theory to locate sensory climate denial in heatwave conditions, by engaging with the capacities and strategies of individuals to successfully distance or

insulate themselves from the sensory discomfort of extreme heat. Practice theory seeks to understand and explain social and cultural systems by locating and engaging the practices that ground them in daily life (Reckwitz, 2016b). This bridging of macro and micro level social dynamics is made possible by practice theory's ability to make visible the political and social significance of events, actions, and contexts that often go overlooked (Reckwitz, 2016b). A key recognition in practice theory is the importance of individual experiences of sight, touch, sound, smell, and temperature. Through these and other senses, individuals perceive, are affected by, and respond to their environments, making sensory information crucially influential in how and why individuals experience the world (Pink, 2011; Pink et al., 2017).

Scholars have been called to engage with the sensory dimensions of place-based climate experiences (Brace and Geoghegan, 2011), and have done so. In Australia, both de Vet (2017) and Oppermann et al. (2020) situate embodied climate cultures in specific place and time, and extract key insights into mechanisms of coping and maladaptation. Yet such work remains only peripherally tethered to central debates around the systemic political drivers and barriers of equitable climate change action, particularly around issues of denial. It is the intention of this work to probe the connection between the sensory contexts of different bodies and the implications of emotional and physical responses to climate disruption further. Reckwitz (2016a) argues that sensory information and perception underpin and shape social practice, and therefore social theory. We explore this approach by situating distinct sensory experiences of heatwaves as directly relevant to the social and political discourse on climate denial. Important here is a recognition that sensory denial is not inherently 'bad', and indeed is fundamental to many aspects of human well-being. Rather, the emphasis here is on articulating the maladaptive social and environmental dimensions of sensory denial, and specifically as they may relate to and influence climate politics through daily practices of comfort. As Madsen and Gram-Hanssen (2017: 86) argue, comfort is a critical element in "understanding how the senses are incorporated in embodied and routinised social practices" and thus central to social and political engagement.

Heatwaves

The biophysical impacts of extreme temperature on the body are well established, including heat stress, heat stroke, dehydration, and critical disruption to the biological function of heat-sensitive organs, including the cardiovascular and respiratory systems (see Cramer and Jay, 2016; Ravanelli et al., 2015). Particular pre-existing medical conditions, as well as factors of age and general health, place certain bodies at greater risk of harm than others. In addition, pre-existing social conditions, such as financial stability, quality of resources, and social status shape the degree to which bodies are exposed to, and disrupted by, heat. For example, differences in the quality of housing and mobility options, social support and access to services, and financial and energy security lead to uneven exposure to the disruptive impacts of heat within communities (Bolitho and Miller, 2017; Waitt and Harada, 2019). As many extreme weather events do, heatwaves lay bare the inequalities already present in our societies, such that individuals and communities already relatively disadvantaged in terms of wealth, health, and privilege are likely to experience the greatest disruption, instability, and harm as a result of climate change impacts (see Bolitho and Miller, 2017; Gibson et al., 2020; Pachauri et al., 2014). It is clear that the systemic, invisible, and intangible disruptions of extreme events have the capacity to radically destabilise communities over time (Della Bosca et al., 2020; Schlosberg et al., 2020). A close examination of heatwave impacts thus requires close attention to what it means to be exposed to

intersecting and invisible threats, suggesting a need for more nuanced engagement with the heated body and attendant coping mechanisms.

Such nuance may be captured by expanding impact analysis from a focus on well-being and harm to one of comfort and discomfort. Much of heatwave research centres its lens on morbidity and mortality, as in Klinenberg's (2015) 'social autopsy' of a heatwave, and Keller's (2015) 'fatal isolation'. Research that extends beyond mortality and morbidity impacts and into broader forms of social well-being often does so within particular limits, for example focusing on a thematic theoretical framework (Nobert and Pelling, 2017) or specific identity community (Zografos et al., 2016). While research into broad community experiences of heatwaves is increasing, these approaches often retain scientific knowledge and official disaster risk reduction approaches as the standard against which community knowledge is compared and evaluated (see Chowdhury et al., 2012; Cornes and Cook, 2018), or else rely on service provider expertise as a proxy for community experiences (Bolitho and Miller, 2017; Ibrahim et al., 2012; Saniotis et al., 2015). As Oppermann et al. (2018) note, there is a tendency for the body to be either absent in heat-related research, represented as a singular human experience, essentialised as the shared experience of a 'type' of body, or represented as a static site of one-sided exposure. These caveats limit the capacity of wider implications drawn from embodied research, and it is here that there is a need to expand critical engagement with the heated body. In drawing on concepts and technologies of thermal comfort, this paper hopes to demonstrate the utility of engaging with bodily politics beyond well-being and harm, shifting the lens to the mundane experiences that fall somewhere in the middle.

Air conditioning

Heatwave experiences in large urban communities are often shaped by access to air conditioning. In the United States there was an 80% drop in heat-related mortality following the commercial emergence of air-conditioning technology in the 1960s (Barreca et al., 2016), and distinct air-conditioning cultures exist throughout the world in hot climate cities (see Hitchings, 2011, 2020; Hitchings and Lee, 2008). Air conditioning is now deeply embedded within commercial spaces, workplaces, and many modern homes, and yet as heatwave events escalate in frequency and duration, the politics of air conditioning are becoming increasingly evident. Air conditioning presents a climate conundrum with respect to both energy and climate practices and perceptions. On one hand, air-conditioning supports the physical and emotional well-being and stability of individuals living in hot environments, and more pressingly so during potentially dangerous heatwave conditions. This is particularly true for the elderly and those with the physical health conditions outlined above, and there is growing evidence for the relationship between exposure to extreme heat and serious mental health impacts, including suicide (Florido Ngu et al., 2021).

On the other hand, air conditioning is increasingly recognised as maladaptive with respect to climate change. Energy and climate literatures identify distinct forms of maladaptation related to practical, technical, and equitability issues around air conditioning. These include: air-conditioning electricity demand that overwhelms the energy grid in periods of extreme heat and leads to localised blackouts (Schlosberg et al., 2019); structural and political reliance on private air conditioning to make urban housing developments liveable (Haynes et al., 2021; Lopes et al., 2018; Lopes and Healy, 2021); the consumption of large amounts of energy that meets the needs of some, while exacerbating anthropogenic climate heat for others (Chappells and Shove, 2005; Salamanca et al., 2014; Tremeac et al., 2012; Viguié et al., 2020); and inequitable access amongst urban populations, with lower-income

households legally or financially unable to install or run air-conditioning units (Hansen et al., 2011; Nicholls et al., 2017; Waitt and Harada, 2019).

The dimension of maladaptation associated with air-conditioning practices explored here is the sensory insulation and comfort provided by air conditioning, and the degree to which it may inhibit or influence deeper recognitions of changing climate realities. Scholars such as Shove (2003) and Hitchings (2011) emphasise that air-conditioning norms are themselves strong forms of cultural and social conditioning that can and do shape lived experiences through notions of comfort. As Seamon (2013) notes, even in increasingly virtual, materially-modified environments shaped by technology, human bodily senses continue to be the arbiters of each person's experience and perception of the world. This "inescapable corporeality" is the foundation of the everyday – and often taken-for-granted – context of individual spatial and environmental understandings (Seamon, 2013: 162). The connection Seamon makes here between technology and inescapability highlights that while the body itself is not escapable, technology may shape environmental–corporeal relationships that effectively disconnect individuals from the atmospheric realities of the places they live.

Recognising this disconnection and the maladaptation air conditioning poses does not, as Strengers and Maller (2017) point out, require romanticising extreme weather, or advocating for a world without the health support and comfort of air conditioning. Rather, the point is to critically identify the ways in which these technologies are incorporated in policy and planning as the go-to climate adaptation, and the ways in which they are socially normalised in ways that ignore both their environmental unsustainability and the inequality of access for different parts of affected communities (Strengers and Maller, 2017). Air conditioning fulfills a critical role in terms of bodily health and safety during a heatwave, and it is the intention of this work to reflect on the role that air conditioning plays in the sensory politics of heatwaves rather than to deny or denigrate the real need that many have for it. Indeed, it is exactly these tensions that warrant more critical attention.

2016–17 Western Sydney heatwave

This research emerges from a wider study on community experiences of disaster types likely to be exacerbated by climate change in Greater Metropolitan Sydney (Schlosberg et al., 2019). The case study presented here refers to a heatwave that occurred in the Penrith area between December 2016 and February 2017, which brought with it an unprecedented streak of 26 days of plus 30°C (86°F) weather, 11 of which exceeded 35°C (95°F). An affected suburb, Penrith Lakes, recorded their highest summer temperature of 46.9°C (116.4°F) on 11 February. The mean temperature of this period was 2.8°C above average, and led to energy surges and resulting blackouts. The Australian Energy Market Operator issued blackout warnings, and the NSW Energy Minister issued a statement calling on residents to curb power use. The heat also exacerbated ozone and other pollution levels in Sydney, with NSW Health issuing a warning that residents with respiratory problems stay indoors during daylight hours. NSW activated a heatwave action plan in Dec 2016, with NSW Health Department publicising a list of precautions for the public to take.

As part of the larger project run between Sydney Environment Institute and Resilient Sydney in 2018, two focus groups were conducted with Penrith area residents, with 16 participants in total. Nine female and seven male residents participated, with ages ranging from 18 to 65+, with six participants younger than 34 and 10 older than 45. The average annual income ranged from under $20,799 to $91,000–$155,999, with two thirds of participants making less than $45,599. Two thirds of participants rented through private rental or public housing, while one third owned their own home.

The purpose of the focus groups was to understand resident experiences of the 2017 heatwave, using the System Effects method (Craven, 2017). Participants were to asked three open-ended questions and prompted to document and discuss aspects of their experience that affected them. These were (i) what were the impacts of the heatwave in your day-to-day life; (ii) what factors made the heatwave easier to experience; and (iii) what made the heatwave more difficult to experience.[1] Focus group discussion was recorded, transcribed, and thematically coded using NVIVO. Although neither climate change nor denial were mentioned explicitly to or by participants, this analysis draws on practice theory to understand how daily behaviours and sensory experiences interact to produce social patterns that shape the socio-political dynamics of both.

Heated bodies

This section will convey two key themes that emerged throughout the accounts of living in and with a heated body: the relationship between sensory and emotional discomfort as residents stayed at home or navigated their urban environments during the heatwave; and the ways in which sensory and socio-economic contexts intersect to shape how residents were able to find relief from that discomfort.

Lack of access to air conditioning in the home emerged consistently in focus group discussions on what made the 2017 heatwave harder to cope with. These participants shared their experiences of being physically hot during that period, and these accounts frequently detailed aspects of interrelated sensory and emotional discomfort.

> *I know a couple of times I actually fainted at work due to just getting a bit too hot and overstressed. Yeah. It's quite stressful.*

> *I become very agitated. My body blows up, as in feet and hands. I find it very difficult to cope. My cognitive thinking goes off to the point where I can be – you know, I can't think straight. The heat is just so bad. And sometimes I feel like I'm just breathing in hot air.*

> *Well, when the heatwave hit . . . I was renting through social housing, so it actually did quite get hot in that set of units, so it's affected my health a lot . . . I suffer with eczema and asthma, so over that heat period, the sweat and everything affected my skin and I ended up with a lot of infections and my eczema flaring up and stuff due to sweating and stuff like that. What made it worse is probably the sweating, no matter what . . . because my skin was that flared, infected and stuff, like I got looked at. So you try and wear something to cover up but still try and keep cool and it's just like – and then even if you did, because of just sweating, you start to get the sweat marks and the blood marks and everything else – people still looked at you funny . . . my depression and anxiety just skyrocketed in that period. Stress.*

Statements around depression, anxiety, sensitivity, and stress occurred frequently, and came coupled with heat-related issues around reduced day-to-day bodily capacity, fatigue, inflammation, nausea, lethargy, and exhaustion. While climate literature tends to approach thermal comfort from an energy consumption sustainability perspective, statements such as these reflect the ways in which the sensory feedback of bodies construct and underpin experiences of climate-as-an-experience in the first place. The physical intensities reflected by these statements highlight that heatwaves are often, at minimum, both *physically and emotionally* uncomfortable to experience. Taking comfort as our lens allows these otherwise hidden dimensions of heat impacts to be included when engaging with community level

impacts and responses. The frequency of such statements during participant discussion serves to articulate the relationship between the sensory experiences of heat and the complex lived impacts that accompany them.

A primary strategy employed by households without access to private air conditioning was seeking out air-conditioned public spaces. While some participants mentioned going to a library or a friend's house to access air conditioning, the most dominant strategy was to go to a commercial space, particularly a shopping centre. Striking throughout participant conversations was the recurring sense of escape, particularly escape *from* heat, and escape *to* large shopping centres whose air conditioning was often the only source of bodily relief available.

> *[I was] forced to escape to shopping centre if heat too intense.*

> *One of my favourite tricks is going to the plaza* [local shopping centre].

From these comments it is evident that private homes, ostensibly places of comfort, are transformed by heat into sites to be escaped. In contrast, the spaces sought out in heatwaves are dictated by the comfort afforded by heat avoidance. This exemplifies Shove's (2003) point that renewed attention to how and why the commercial provision of thermal comfort relates to the mobilisation and manipulation of human bodies is increasingly critical. It also reinforces Waitt and Harada's (2019) finding that energy poverty destabilises experiences of home as a place of safety and well-being, and is often experienced by community members for whom that stability is most tenuous and most critical. A tension emerges here between the lack of financial and material resources motivating participants to seek thermal refuge at the shopping centre, and the fundamentally commercial intention of the space.

Access to this thermal strategy was often limited by the intersecting material, emotional, and physical capacities of those disrupted by heat. For example, participants with children emphasised that spending time at the shopping centre was both expensive and stressful, and a participant caring for a wheelchair-bound partner found it too awkward to manoeuvre. Heat exposure presents particular emotional-physical dilemmas for some residents, evident in this participant's experience:

> *Well, I suppose some of the major impacts for me – for me it was, because I suffer from depression, and the heat – basically you're baking. And I have autism at times issues, social anxiety issues and things. And so you think, "How do you escape the heat? You go to the shopping centre where there are loads of people" whereas you absolutely hate crowds. So it's kind of like going from one form of hell to another . . .*

This dilemma illuminates the way that heat reshapes spatial community dynamics, and the intersecting invisibilities that exacerbate exposure to both harm and discomfort. Participant responses suggest that in Western Sydney, air-conditioning technology can be understood as a sensory, socio-cultural funnel into commercial spaces, with residents who lack private access to cool spaces more likely to use this cooling strategy despite its emotional drawbacks. The dominance of this type of participant response emphasises the mobilising power of the sensory and emotional discomfort of heat, as well as the vulnerabilities of the people who seek to avoid it.

A recurring theme of non-private mobility was also highly discussed in focus groups as a barrier to day-to-day function in heatwave conditions. Comments reflected a focus on

physical discomfort, heat-related delays, and lack of access to a car resulting in increased discomfort for children and families needing to move around.

For me, the biggest thing was having a non-air-conditioned bus . . . And the problem I had was I couldn't call a cab because I had a baby under 1. You need a special car seat for bub under 1 in the car and no one was willing to – like no one there had a car seat and when you called up the company they put you on hold and I had to pick up my daughter. So I had no choice. You don't think the bus is going to be hotter than the outside.

It kind of made an existing situation worse for us. So the biggest issue that we usually have is mobility. We don't have a car. I usually walk everywhere or use the public transportation and doing that in 35 degrees Celsius is not fun at all.

Lopes et al. (2018: 45) state that "many indoor environments, from the home, to the office block, to the shopping (and data) centre, and car, would be uninhabitable or grind to a halt without [air conditioning]". Participant responses demonstrate that heat does not render the urban uninhabitable, but rather significantly disrupts the accustomed sensory comfort of everyday routines. Focus group discussions revealed the day-to-day lives of those who very clearly do live with heatwaves, and yet they do so at their own physical and emotional expense. While our focus here is on the non-morbid impacts of heat, it is important to note that during discussions residents did share experiences of not only discomfort but risk of serious harm incorporated in daily practices of mobility or indeed just staying at home during the heatwave.

Cooled bodies

This section will convey resident experiences of achieving everyday comfort during the heatwave, and the different practices and technologies that residents drew on to do so. For some participants, cooling down was achieved through low-cost strategies. This primarily involved items like personal fans, refrigeration, wet towels, and spray bottles, objects which played a particularly significant role for participants without home air conditioning. Several times during small group discussions, participants shared low-cost cooling strategies with other participants, for example lying on cool concrete in the garage or tips for cooling down children in a blackout. This suggests that there is a commonality in the experience of heat, as well as a pool of local experience and knowledge about overcoming it in the absence of air conditioning.

So what I do is I get a wet hand towel and I run it under cold water and I put it around my neck and I leave it there until it needs to be done again. I get a spray bottle with ice water in it and just spray it on my face and I do that to the cat as well.

I mean, you do what you know and you do what you – like, for me, putting wet cloths on the kids' heads, lots of water, ice-blocks and things. And normal temperature showers and just let the kids cool down, so I did all that, but you still don't have control over the heat.

Sort of wet the towels as much as I can, cold water, put it over the fans and it doesn't do much . . . and another one, face washers in the freezer. They're good too.

These strategies rely on cooling the body directly rather than the air around it. Jay et al. (2021) point out that while this strategy is often the only one available to low-income individuals, cooling the person is a more sustainable cooling strategy than cooling the surrounding environment. And yet these comments also reflect that these strategies, while helpful, did not allow residents to completely control their discomfort, making the heat bearable but not eliminating it entirely.

In contrast, participant accounts of more thorough sensory insulation from heat correlated directly with access to private air conditioning. Higher socio-economic status was required to access this strategy; yet, this access also shaped a distinct set of emotional, physical, and spatial impacts. For example, the expense of running air conditioning was often seen as a source of financial concern and could be seen to moderate use.

> *I mean, if it goes over 35, I will put the air-conditioner on for no more than an hour at a time just to give some relief. You've got to have relief. I mean, you can't spend your day down at the plaza.*

This reflection that "you can't spend your day down at the plaza" highlights the divergent participant realities around seeking bodily relief from the heat. Returning to Lopes et al.'s (2018) comment that without air conditioning many urban spaces are rendered uninhabitable, we see a disconnection between a widespread reliance on the shopping centre as a primary strategy of seeking sensory comfort in other resident experiences, and this participant for whom that was an unimaginable reality.

> *. . . we've got air-conditioning back in now, but it's not ducted. It's just reverse cycle, but it's pretty good. The car's got air-conditioning in it, so I'm pretty well set.*

> *Yes, I do [have air conditioning]. Yeah. So I was reasonably comfortable once I got home . . .*

For participants with private air conditioning, these sentiments of being 'pretty well set' or 'reasonably comfortable' reflect the subtly taken-for-granted experience of comfort once achieved. In contrast to the behavioural disruption, spatial displacement and sensory 'escape' to commercial spaces visible in previous participant comments, participant comments on being "pretty well set" and "reasonably comfortable" illustrate the mundane nature of thermal privilege. Bissell (2008) points out that rather than a passive state, comfort is achieved by constantly monitoring and responding to sensory intensity. Paradoxically, while achieving and maintaining sensory comfort requires considerable effort and negotiation, it often becomes a neutral "background condition" (Bissell, 2008: 1703), especially when it is achieved through routine technological conveniences. This speaks to the notion that in environments of comfort or normality, the sensory state of the body tends to "recede into the background of our awareness" with little conscious awareness or reflection (Leder, 1990; Vannini et al., 2013: 8). Denialism in this context is less a mechanism of conscious or cognitive intention, and more a function of distancing from the body itself, and from the sensory awareness that discomfort demands. The implication here is that it takes real and sustained effort to achieve and maintain neutrality in a world of constant sensory intensity. Neutral in this sense does not mean impartial, nor unbiased, nor an absence of feeling, but rather the boundaries of a specifically situated 'normal'. As the boundaries of ecological normality start to shift, additional work is required to maintain the comfort of neutrality. This neutral normality and thermal comfort are both "highly negotiable social constructs" (Chappells and Shove, 2005: 1466), and it is posited here that this additional work to

maintain unnegotiated, static, and increasingly brittle historical norms is the active yet unconscious work of denial.

The relative invisibility of the economic, social, cultural, and physical affordances each person draws on to achieve comfort in their daily life holds "deep importance for the underlying assumptions that structure social and political life" (Pink et al., 2017: xii). Pink et al. (2017) point out that practices in the home strongly influence identity and normalised worldviews along socio-economic and cultural lines. The distinct experiences of cooled bodies in this heatwave highlight a link between the (often invisible) privilege of comfort, particularly when achieved through air conditioning, and a disconnection from the experiences of those who don't have the same access.

> *That's one thing, but I don't think I saw too much of my neighbours because everyone just stayed inside . . . put the air-con on and shut the door.*

As this statement demonstrates, air conditioning within the home insulates the body from the heatwave as well as insulating these households from to the realities faced by those exposed to the disruptive impacts of heat. These participant statements highlight that when we talk about exposure to or insulation from a heatwave, we are not simply referring to the thermal body. Rather, to be exposed is to have limited options in avoiding the discomfort, disruption, and sometimes danger of extreme heat impacts, which resident accounts highlight to be both physical and emotional. Conversely, to be insulated is not only to have the agency to keep cool during the heatwave, but it is to be able to "shut the door" on the realities of these discomforts, disruptions, and sometimes dangers faced by other households and other bodies. In this context, it is critical to recognise that modern expectations of comfort – and the physical and emotional 'shutting out' that may be required – have been systemically and socially constructed, normalised, and commercialised.

Making sense of climate denial

When we think about climate change denial as *only* a conscious and cognitive stance, we obscure the ways in which it emerges through the practices and experiences of the body in day-to-day life. Climate science is continuing to produce an array of data that confirms the reality that our global climate patterns are changing and intensifying as a result of human actions. This message is reinforced in news media and social commentary. Every year there are increasing accounts of extreme weather events that are disrupting and endangering people's lives and livelihoods around the world, as well as more mundane experiences and observations of changing seasonal patterns. And yet we know that these experiences of disruption are inequitably distributed between and within different communities. In thinking through the connection between heatwaves and cooling technologies in this climate context, the question asked here is: what are the social and political impacts of *not* experiencing physical or emotional disruption during a climate extreme? This research suggests that this lack of disruption is a mechanism of climate denial, which manifests as a sensory disconnection from the threats posed by climate change via the experiences of comfort and normality that privileged bodies are able to maintain during extreme events.

Central to this argument is a recognition that sensory climate change denial is distinct from cognitive or conscious forms of climate denial. The argument made here stems from an engagement with resident practices and experiences during a heatwave, rather than with their cognitive perceptions of climate change and its connection to heatwave intensity and frequency. In thinking of climate change perceptions through a sensory rather than

a cognitive lens, this research is interested in lived experiences of disruption. In other words, it focuses on what participants without access to air conditioning noticed and reported on, and the ways in which these accounts differ from those of participants who did. Resident accounts of the 2016–17 heatwave support our argument that sensory denial is a central part of managing the effects of heat during a heatwave, with all participants employing strategies of sensory relief and comfort according to their own agencies and capacities. And yet largely absent in the accounts of participants with air conditioning is the degree of physical and emotional discomfort experienced by those without consistent access to this climate-modifying technology. The sensory control afforded through the material privileges of air conditioning equates with a reduction and even elimination of experiences of heat-related discomfort and suffering. As a result, there is a direct reduction in the lived experience of climate change impacts. The spaces and technologies that afford this kind of physical and emotional insulation are not equally available to residents in this community, either by the same means or at all. Expanding this recognition to a global scale underscores the way in which sensory climate denial may have significant political and cultural implications, as it maintains physical and emotional comfort in the face of inherently uncomfortable climate realities. In thinking of denial as literal, inhabitable, and sensory spaces that support physical and emotional comfort, we can begin to ask what these spaces looks like, who has access to them, and what they mean for our shared future.

Brighenti and Pavoni (2018) draw on German philosopher Peter Sloterdijk's observation that social existence is defined by a desire to inhabit physical and emotional zones of comfort, and they identify air-conditioned interiors as a prime example of social bubbles. The concept of the bubble is a useful one in that it captures the invisibility of the privilege required to maintain a desired atmosphere, and emphasises that just as the outside is excluded, so too is the individual contained and isolated within. Brighenti and Pavoni (2018: 75) consider the dualism of the air-conditioned building wall, one side of which is considered uninhabitable and inaccessible while the other offers "confine[ment] inside the protected, encapsulated bubble of systematic consumption and delegation". Considering the implications of the literal and affective insulation afforded by private comfort bubbles in the form of air-conditioned homes, workplaces, and cars, this delegation may refer to the task of technology in maintaining comfort, or to the bodies of unseen others who will bear the cost of that comfort. Such delegation is central to a sensory politics of denial in which specific assemblages of technological, cultural, and socio-economic contexts shape atmospheric realities.

It is for this reason that a range of scholars including Chappells and Shove (2005) and Wilson (2021) argue that a shift to low-carbon technologies is not enough to address the maladaptive implications of air conditioning. Instead, attention must return to the bodies seeking comfort, by what means and standards, and the costs at which comfort is achieved. Hitchings' (2011) review of thermal comfort preferences in widely air-conditioned regions around the world engages directly with these issues, and yet the analysis remains prospective and apolitical. Similarly, Hitchings and Lee (2008) explore air-conditioning practices as part of a "material culture of thermal encasement"; yet, the critical linkages of such encasement with climate change and climate futures remain underexplored. It is here that the conditions of heat exposure and insulation can be bridged with not only personal preferences and well-being but with larger socio-political issues of planetary inequity and the forces that enable them.

When we are committed to comfort, our aim is to avoid unpleasant, inconvenient, or uncontrolled experiences and feelings. In a climate context, comfort becomes political when it is enabled and perpetuated by invisible and inequitable privilege, both structural and

individual. For many people, comfort is a neutral state, unnoticed as being anything other than the norms enabled by mundane, everyday practice. As our case study demonstrates, the comfort of neutrality is selectively available throughout communities, and often tied to material privilege. The thermal agency afforded by air conditioning suggests that with enough technology, money, and opportunity, the bodily realities of increasing heat can be placated, and the disruptive cultures of disembodied and displaced consumption ignored. This is the work required to achieve and maintain what Bissell (2008) identifies as the neutral intensity of comfort. This neutrality and its largely subconscious function within daily life make its effects difficult to identify and name, yet becoming aware of its political influence is critical when the desire for comfort is met in ways that disconnects individuals from shared climate realities.

There is an inherent precarity in climate adaptation through sensory denial. Spaces of artificially-enabled comfort may be considered 'monuments of the Anthropocene' (Szerszynski, 2017), personal atmospheres controlled through technological capacity and enabled by material resource abundance. The linkage of these forms – from air-conditioned car to air-conditioned home and workplace – ensures that particular individuals can remain insulated even as they move through the urban system. This reframes mechanisms of class and wealth as means of keeping the bodily spectrum of response – and any physical or emotional discomfort – at bay. And yet Brighenti and Pavoni (2018: 143) point out that achieving bodily comfort and "existential assurance" through these spaces bring with it the stressful possibility that they will be taken away and reality finally confronted.

Divergent participant experiences of the heatwave highlight that the choices available to and enacted by individuals around their mundane bodily experiences are inherently political. Strategies of attaining comfort may be socially and environmentally inequitable and maladaptive, and come bundled with sensory denial. This extends the socio-political boundaries of climate denial beyond knowing or not knowing (Norgaard, 2006a) and into the realm of experiencing or not experiencing, sensing or not sensing, feeling or not feeling. Technological consumption provides a more comfortable and convenient strategy of extreme heat avoidance than systemic action on climate change, just as the acceptance or ignorance of social inequality is a more comfortable and convenient strategy than systemic socio-political action. Recognising air-conditioning technology as a source of not only physical but emotional comfort suggests that normalised comfort-through-denial is effective because of, not despite, its irrationality. As Brulle and Norgaard (2019: 886) observe, "social inertia on climate change is not an irrational or unexpected response, but rather the normal and expected functioning of existing social control mechanisms". Exposure to heat, then, is exclusion from the normative affective socio-economic manipulations of both comfort and denial that are enabled by insulation. This strategy of problem avoidance as opposed to problem reduction can and does normalise the continuation of systemic, political, and social drivers of climate change, resting upon the belief that technofixes can and will continue to insulate those privileged enough to access them.

The comfort afforded by technologically and economically enabled atmospheres masks rather than addresses the core drivers of consumption-driven climate change. Critically, it does so in ways that obscure the disruptive realities of exposure in the lives of those who lack the ability to do the same. In arguing for a sensory approach to climate denial, this work urges attentive and nuanced engagement with normalised mechanisms of privilege that perpetuate climate crises while simultaneously insulating global elites from their impacts. Recognising denial as a set of everyday sensory practices rather than only a set of intellectual or political beliefs helps broaden the analysis beyond a focus on intention to include a focus on effect. This shift expands theoretical and strategic engagement with community

climate dynamics by recognising the socio-political significance of lived experiences of disruption *and* comfort during extreme events. Future research may benefit from a recognition that sustainable climate transitions will require not only disrupting maladaptive and inequitable strategies of resource access and consumption, but identifying and engaging with the concepts and practices of comfort that drive them.

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Note

1. System Effects is an intentionally broad methodology centred on a participant-driven mapping exercise. Participants were encouraged to connect direct impacts with any secondary impacts triggered by the heatwave. An example of this would be: 'the electricity blackout led to the food in my fridge spoiling' (direct impact), and 'I couldn't afford to replace to food I had lost and ate poorly in following weeks' (secondary impact). The mapping exercise was followed by small group discussions in which participants detailed what they considered the most pertinent aspects of their experience for each question.

References

Adolf M and Stehr N (2016) *Knowledge: Is Knowledge Power*? London: Routledge.

Barreca A, Clay K, Deschenes O, et al. (2016) Adapting to climate change: The remarkable decline in the US temperature-mortality relationship over the twentieth century. *Journal of Political Economy* 124(1): 105–159.

Berry BJ, Bihari J and Elliott E (2016) The limits of knowledge and the climate change debate. *Cato Journal* 36: 589.

Bissell D (2008) Comfortable bodies: Sedentary affects. *Environment and Planning A* 40(7): 1697–1712.

Björnberg KE, Karlsson M, Gilek M, et al. (2017) Climate and environmental science denial: A review of the scientific literature published in 1990–2015. *Journal of Cleaner Production* 167: 229–241.

Bolitho A and Miller F (2017) Heat as emergency, heat as chronic stress: Policy and institutional responses to vulnerability to extreme heat. *Local environment* 22(6): 682–698.

Bowden V, Nyberg D and Wright C (2019) Planning for the past: Local temporality and the construction of denial in climate change adaptation. *Global Environmental Change* 57: 101939.

Bowden V, Nyberg D and Wright C (2021) Truth and power: Deliberation and emotions in climate adaptation processes. *Environmental Politics* 30(5): 708–726.

Brace C and Geoghegan H (2011) Human geographies of climate change: Landscape, temporality, and lay knowledges. *Progress in Human Geography* 35(3): 284–302.

Brighenti AM and Pavoni A (2018) Climbing the city. Inhabiting verticality outside of comfort bubbles. *Journal of Urbanism: International Research on Placemaking and Urban Sustainability* 11(1): 63–80.

Brulle R Norgaard K (2019) Avoiding cultural trauma: Climate change and social inertia. *Environmental Politics* 28(5): 886–908.

Bureau of Meteorology. (2017). New South Wales in February 2017: Another hot, dry month. Available at: http://www.bom.gov.au/climate/current/month/nsw/archive/201702.summary.shtml (accessed 12 July 2021).

Chappells H and Shove E (2005) Debating the future of comfort: Environmental sustainability, energy consumption and the indoor environment. *Building Research & Information* 33(1): 32–40.

Chowdhury PD, Haque CE and Driedger SM (2012) Public versus expert knowledge and perception of climate change-induced heat wave risk: A modified mental model approach. *Journal of Risk Research* 15(2): 149–168.

Cornes, I.C. and Cook, B. (2018) Localising climate change: heatwave responses in urban households. *Disaster Prevention and Management* 27(2): 159–174.

Cramer MN and Jay O (2016) Biophysical aspects of human thermoregulation during heat stress. *Autonomic Neuroscience* 196: 3–13.

Craven LK (2017) System Effects: A hybrid methodology for exploring the determinants of food in/security. *Annals of the American Association of Geographers* 107(5): 1011–1027.

Davis L, Gertler P, Jarvis S, et al. (2021) Air conditioning and global inequality. *Global Environmental Change* 69: 102299.

Day Biehler D and Simon GL (2011) The great indoors: Research frontiers on indoor environments as active political-ecological spaces. *Progress in Human Geography* 35(2): 172–192.

de Vet E (2017) Experiencing and responding to everyday weather in Darwin, Australia: The important role of tolerance. *Weather, Climate, and Society* 9(2): 141–154.

Della Bosca H, Schlosberg D and Craven L (2020) Shock and place: Reorienting resilience thinking. *Local environment* 25(3): 228–242.

Dialesandro J, Brazil N, Wheeler S, et al. (2021) Dimensions of thermal inequity: Neighborhood social demographics and urban heat in the Southwestern US. *International Journal of Environmental Research and Public Health* 18(3): 941.

Florido Ngu F, Kelman I, Chambers J, et al. (2021) Correlating heatwaves and relative humidity with suicide (fatal intentional self-harm). *Scientific reports* 11(1): 1–9.

Gibson K, Barnett J, Haslam N, et al. (2020) The mental health impacts of climate change: Findings from a Pacific Island atoll nation. *Journal of Anxiety Disorders* 73: 102237.

Goeminne G (2012) Lost in translation: Climate denial and the return of the political. *Global Environmental Politics* 12(2): 1–8.

Hansen A, Bi P, Nitschke M, et al. (2011) Residential air-conditioning and climate change: Voices of the vulnerable. *Health Promotion Journal of Australia* 22(4): 13–15.

Haynes V, Calgaro E and Dominey Howes D (2022) The future of our suburbs: Analyses of heatwave vulnerability in a planned estate. *Geographical Research* 60(1): 152–167.

Hitchings R (2011) Researching air-conditioning addiction and ways of puncturing practice: Professional office workers and the decision to go outside. *Environment and Planning A* 43(12): 2838–2856.

Hitchings R (2020) A curiosity driven approach to air-conditioning on the Arabian Peninsula: Comparing the accounts of three resident groups in Qatar. *Geoforum* 111: 116–124.

Hitchings R and Lee SJ (2008) Air conditioning and the material culture of routine human encasement: The case of young people in contemporary Singapore. *Journal of Material Culture* 13(3): 251–265.

Howes D and Classen C (2013) *Ways of Sensing: Understanding the Senses in Society*. London: Routledge.

Hsu E (2008) The senses and the social: An introduction. *Journal of Anthropology* 73(4): 433–443.

Ibrahim JE, McInnes JA, Andrianopoulos N, et al. (2012) Minimising harm from heatwaves: A survey of awareness, knowledge, and practices of health professionals and care providers in Victoria, Australia. *International journal of Public Health* 57(2): 297–304.

Jay O, Capon A, Berry P, et al. (2021) Reducing the health effects of hot weather and heat extremes: From personal cooling strategies to green cities. *The Lancet* 398(10301): 709–724.

Keller RC (2015) *Fatal Isolation: The Devastating Paris Heat Wave of 2003*. Chicago: University of Chicago Press.

Klinenberg E (2015) *Heat Wave: A Social Autopsy of Disaster in Chicago*. Chicago: University of Chicago press.

Leder D (1990) *The Absent Body*. Chicago: University of Chicago Press.

Lopes AM and Healy S (2021) Cultivating the habits of coolth. In: Bennett T, Dibley B, Hawkins G, et al. (eds) *Assembling and Governing Habits*. London: Routledge, pp.97–115.

Lopes AM, Healy S, Power E, et al. (2018) Infrastructures of care: Opening up "home" as commons in a hot city. *Human Ecology Review* 24(2): 41–59.

Lucas CH and Davison A (2019) Not 'getting on the bandwagon': When climate change is a matter of unconcern. *Environment and Planning E: Nature and Space* 2(1): 129–149.

Madsen LV and Gram-Hanssen K (2017) Understanding comfort and senses in social practice theory: Insights from a Danish field study. *Energy research & Social Science* 29: 86–94.

Naustdalslid J (2011) Climate change – The challenge of translating scientific knowledge into action. *International Journal of Sustainable Development & World Ecology* 18(3): 243–252.

Nicholls L, McCann H, Strengers Y, Bosomworth K (2017) Electricity pricing, heatwaves and household vulnerability in Australia. Centre for Urban Research, RMIT University. Available at: https://cur.org.au/cms/wpcontent/uploads/2016/12/heatwaveshomeshealth-briefing-paper_rmit-2.pdf. (accessed 12 May 2020).

Nobert S and Pelling M (2017) What can adaptation to climate-related hazards tell us about the politics of time making? Exploring durations and temporal disjunctures through the 2013 London heat wave. *Geoforum* 85: 122–130.

Norgaard KM (2006a) "People want to protect themselves a little bit": Emotions, denial, and social movement nonparticipation. *Sociological inquiry* 76(3): 372–396.

Norgaard KM (2006b) "We don't really want to know" environmental justice and socially organized denial of global warming in Norway. *Organization & Environment* 19(3): 347–370.

Norgaard KM (2011) *Living in Denial: Climate Change, Emotions, and Everyday Life*. Cambridge, MA: MIT Press.

Norgaard KM (2012) Climate denial and the construction of innocence: Reproducing transnational environmental privilege in the face of climate change. *Race, Gender & Class* 19(1–2): 80–103.

Oppermann E, Strengers Y, Maller C, et al. (2018) Beyond threshold approaches to extreme heat: Repositioning adaptation as everyday practice. *Weather, Climate, and Society* 10(4): 885–898.

Oppermann E, Walker G and Brearley M (2020) Assembling a thermal rhythmanalysis: Energetic flows, heat stress and polyrhythmic interactions in the context of climate change. *Geoforum* 108: 275–285.

Pachauri RK, Allen MR, Barros VR, et al. (2014) *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the fifth assessment report of the Intergovernmental Panel on Climate Change*. Geneva: IPCC.

Pink S (2011) From embodiment to emplacement: Re-thinking competing bodies, senses and spatialities. *Sport, Education and Society* 16(3): 343–355.

Pink S, Mackley KL, Morosanu R, et al. (2017) *Making Homes: Ethnography and Design*. London: Taylor & Francis.

Prasad A (2019) Denying anthropogenic climate change: Or, how our rejection of objective reality gave intellectual legitimacy to fake news. *Sociological Forum* 34(S1): 1217–1234.

Ravanelli NM, Hodder SG, Havenith G, et al. (2015) Heart rate and body temperature responses to extreme heat and humidity with and without electric fans. *Journal of the American Medical Association* 313(7): 724–725.

Rayner S (2012) Uncomfortable knowledge: The social construction of ignorance in science and environmental policy discourses. *Economy and Society* 41(1): 107–125.

Reckwitz A (2016a) How the senses organise the social. In: Jonas M Littig B (eds) *Praxeological Political Analysis*. London: Routledge, pp.68–78.

Reckwitz A (2016b) Practices and their affects. In: Hui A, Schatzki T and Shove E (eds) *The Nexus of Practices: Connections, Constellations, Practitioners*. London/New York: Routledge, pp.126–137.

Salamanca F, Georgescu M, Mahalov A, et al. (2014) Anthropogenic heating of the urban environment due to air conditioning. *Journal of Geophysical Research: Atmospheres* 119(10): 5949–5965.

Saniotis A, Hansen A, Kralik D, et al. (2015) Building community resilience to heatwaves in South Australia. *Transactions of the Royal Society of South Australia* 139(1): 113–120.

Schlosberg D, Craven L, Della Bosca H, et al. (2019) Resilient Sydney – Insights into community urban resilience experiences. Resilient Sydney and the Sydney Environment Institute. Available at: www.sydney.edu.au/environmentinstitute/publications/insights-community-urban-resilience-experiences/ (accessed 12 May 2021).

Schlosberg D, Della Bosca H and Craven L (2020) Disaster, place, and justice: Experiencing the disruption of shock events. In: Lukasiewicz A Baldwin C (eds) Natural Hazards and Disaster Justice. Berlin: Springer, pp.239–259.

Seamon D (2013) Lived bodies, place, and phenomenology: Implications for human rights and environmental justice. *Journal of Human Rights and The Environment* 4(2): 143–166.

Sun-Hee Park L and Naguib Pellow D (2019) Forum 4: The environmental privilege of borders in the Anthropocene. *Mobilities* 14(3): 395–400.

Shove E (2003) *Comfort, Cleanliness and Convenience: The Social Organization of Normality*. Oxford, UL: Berg.

Strengers Y and Maller C (2017) Adapting to 'extreme' weather: Mobile practice memories of keeping warm and cool as a climate change adaptation strategy. *Environment and Planning A* 49(6): 1432–1450.

Szerszynski B (2017) The Anthropocene monument: On relating geological and human time. *European Journal of Social Theory* 20(1): 111–131.

Tremeac B, Bousquet P, de Munck C, et al. (2012) Influence of air conditioning management on heat island in Paris air street temperatures. *Applied Energy* 95: 102–110.

Vannini P, Waskul D and Gottschalk S (2013) *The Senses in Self, Society, and Culture: A Sociology of the Senses*. London: Routledge.

Viguié V, Lemonsu A, Hallegatte S, et al. (2020) Early adaptation to heat waves and future reduction of air-conditioning energy use in Paris. *Environmental Research Letters* 15(7): 075006.

Waitt G and Harada T (2019) Space of energy well-being: Social housing tenants' everyday experiences of fuel poverty. *Transactions of the Institute of British Geographers* 44(4): 794–807.

Walker G, Shove E and Brown S (2014) How does air conditioning become 'needed'? A case study of routes, rationales and dynamics. *Energy Research & Social Science* 4: 1–9.

Wilson ED (2021) *After Cooling: On Freon, Global Warming, and the Terrible Cost of Comfort*. New York: Simon and Schuster.

Zografos C, Anguelovski I and Grigorova M (2016) When exposure to climate change is not enough: Exploring heatwave adaptive capacity of a multi-ethnic, low-income urban community in Australia. *Urban Climate* 17: 248–265.

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