

Construction workers in a climate precarious world

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Abstract

This paper examines climatic heat stress as a question of workplace health and safety in relation to at-risk and precarious labour. Firstly, we argue that precarity is usefully understood as a phenomenon that is both generalised (all work is precarious given the function of labour under capitalism) and differentiated (experienced differently across geography, labour process and employment status). We frame climate change and labour relations as internally related and argue that climate change needs to be incorporated into the notion of precarity. Secondly, we explore the experience of construction workers in New South Wales, Australia and consider the industry as a potential site of organising over both labour conditions and global warming. We conclude that climate change exacerbates precariousness, disrupting all work and intensifying and extending individual risk in various ways. Further, that these experiences present a potential site to simultaneously act on both global warming and labour conditions.

Keywords

precarity, labour, climate change, heat stress, WHS, OHS, industrial relations

Introduction

[W]hen summer comes we're all in for it. You try and prepare yourself best you can but regardless, any summer in Australia is hectic ... When the mercury gets over 30, what does it matter, (you're) starting to feel the pinch. [Respondent 38]

The climate crisis, which has been apparent from the mid to late twentieth century, is the result of human activity and threatens the longer-term capacity of the planet to sustain life (Moore, 2015). More immediately, there are a range of health and labour security issues evident. Shifts in climate are altering weather patterns and have increased the prevalence and intensity of various seasonal phenomena, including hot days and extreme temperatures. As a result of related heat stress events, accumulation and the labour process are being disrupted, and the financial security and well-being of millions of workers impacted.

Workers who labour outdoors in high heat conditions, or indoors without effective temperature controls such as air-conditioning, are particularly vulnerable to workplace health and safety (WHS) risks posed by high heat and humidity. Those engaged in strenuous, physical work confront particular risks, as this form of exertion makes metabolising heat more difficult. Increasing climate heat also poses a serious threat to labour productivity, as it reduces humans' capacity for physical activity and work in many heavily populated locations (ILO 2019). The working arrangements of an employee — their relative security or precarity and the level of labour organisation in their workplace — shape how they manage heat stress.

Climatic heat stress is a WHS issue in relation to at-risk labour, as is widely acknowledged in the construction industry. However, we are also interested in whether the experience of heat stress presents possibilities for labour organising on the issue of climate change. In order to examine this question, data was obtained through a survey of construction workers in the state of New South Wales (NSW), Australia, and an interview with a senior construction union official.

In considering the nexus between labour organisation and climatic heat stress, we argue it is useful to frame analysis through the notions of precarity and internal relations. This is because climatic heat stress events both exacerbate already existing precariousness and present opportunities to act on that status and in relation to the climate crisis. Further, in understanding climate change as internal to capitalist production and labour exploitation, we can better understand how labour experiences contingency in the present period.

In what follows, we begin by considering the notion of precarity and argue it is a phenomenon that is *both* generalised (all work is precarious given the function of labour under capitalism) and differentiated (experienced differently across geography, class and employment status). We then detail the experience of construction workers in NSW, who were surveyed about the impact of heat stress, their experience of workplace struggle over this issue, and their perspectives on climate change in relation to high heat working conditions. We contextualise this survey through an interview with a senior union official in that jurisdiction, on the organisation's experience of managing heat stress in the industry. Based on this study we suggest heat stress is likely a useful avenue for more focussed organising on both precarity and global warming. Heat stress has the potential to concretise the issue of climate change for workers, and struggle over heat stress has the potential to also be a struggle over conditions of precarity as well.

Conceptualising the terrain

Centrally, precarity is used to describe changing employment conditions and social supports, and the unravelling of a social contract made possible by the stability of accumulation in the period after the Second World War and up until the end of the long boom in the early 1970s. The era of globalisation, and the processes of neoliberalisation, have undermined the social contract of the Fordist era, transforming workplace relations. Companies and governments have pursued more flexible employment arrangements and have shifted risk onto individual workers, including in Australia (Rafferty and Yu, 2010). Large organisations have pursued outsourcing, which has in turn 'created complex chains of suppliers, distributors and contractors', leading to casualisation and a larger number of precarious workers — 'forever chasing diminishing employment opportunities' (Lamm et al., 2017: 39). The notion of precarity is also used by social movements acting on these issues, as both an analytical framework and mobilising strategy (Alberti et al., 2018: 447).

At the centre of debates about 'precarity' is the work of Guy Standing and his notion of the precariat. For Standing, the precariat is — in both a signal to Marx and Weber — a new 'class-in-the-making' (Standing, 2011: 7) and a category of workers with 'truncated status' (Standing, 2011: 8). He argues the precariat has been formed by decades of neoliberal reform, and a more general undermining of trust relationships through the shifts in state-personal relations. However, precarity is often understood more broadly, as having 'significant work-related (e.g., job insecurity, economic insecurity, inequality) and non-work related (e.g., individual, family, community) consequences' (Kalleberg, 2009: 17). In summarising Standing, Shukaitis (2013: 645) notes this is a case of both the 'contractual matter of job conditions' and the 'intensification of labour through technological means and communication', which has altered 'the very nature of the social fabric such that it is increasingly difficult to feel secure in any position'. Importantly, it appears that workers' '*sense of insecurity* ha[s] risen more substantially than empirically measurable job instability (such as we might be able to discern through categorising work in various ways)' (Alberti et al., 2018: 451).

We find aspects of Kalleberg and Standing's analysis useful for highlighting that precariousness is not simply a condition confined to the workplace (Kalleberg), and is a status and experience that

can be a potential site for conflict and struggle (Standing). However, it is crucial to understand that all work in the capitalist mode of production is precarious in a sense, and that precarity is not strictly confined to a new form of labour arrangements or class (i.e. the precariat). We take Alberti et al.'s (2018: 449) view that 'there is no one group for whom precarity is a unique hallmark; precarity is instead [better] theorised as inherent to all labour–capital relationships, to varying degrees'. Rather than focusing on whether the concept is 'solid' enough to act as an analytical category, we ask how experiences of precarity shape working life and the potential for action (Shukaitis, 2013: 655). In this regard, the experience of precariousness has historically been central to the struggles of Standing's salariat and 'old' working class, in gaining improved work and social security conditions — struggles for: the 8-hour day; for sick leave and holiday pay; the right to access retirement pensions and payments; and, for better WHS standards. We are interested in how the experience of work (including its precariousness) relates to how workers may be, or may potentially be, organised. Of course it is crucial to understand precarity as a differentiated factor in the experience of work by labour, as we will demonstrate in our discussion of construction workers and climatic heat stress below, but the nature of class power within capitalism means precarity is also an intrinsic component of work more generally.

While use of the concept in the social sciences has become 'ubiquitous' (Herod and Lambert, 2016: 4), it has also attracted critique. Some have highlighted concerns about conceptual clarity and argue that the notion is becoming diffuse and 'stretched', losing its usefulness as an analytical tool (Alberti et al., 2018: 448; Jørgensen, 2016: 960). This is, in part, argued on the basis that the term has become so broad that it encompasses too many forms and experiences of work. According to this line of argument, it does not assist us in understanding the specificity of experience or how work is changing or has changed, and the term has become an empty signifier (Jørgensen, 2016: 960). Yet there is a benefit of utilising a broader definition of precarity, and to understanding precarity as inclusive of the impact of climate change on labour. This is because 'precarity is not one thing, but rather a versatile concept' that aids analysis of how labour is organised today, and can be 'deployed differently in varying situations and contexts' (Shukaitis, 2013: 655). It is also in being aware of this versatility and diffusion, that the 'tension between precarity as a sociological and as a strategic and political concept' is made plain (Shukaitis, 2013: 655-656). The scale of the climate calamity facing the planet, and how this creates volatility and transformation in work, suggests that discussions of worker precarity should be attentive to climate change. Climate change processes including climatic heat stress impact production to cause and exacerbate insecurity, and, as such, climate change should be understood as: 1) a factor making, or likely to make, all labour more precarious; 2) a process of intensification of existing experiences of precariousness; and, 3) a process internal to the labour process.

Climate change constantly shapes the experience of work. All labour is made insecure by climate change given it: threatens human and ecological life; impacts the capacity of capitalism to maintain stable accumulation; and, often negatively impacts the capacity to labour. In other words, climate change processes — including climatic heat rises — impact the broader processes of social reproduction, work life longevity, and job security, and have consequences for all workers. As Goods (2017: 676) argues, climate change is an industrial issue 'because it shapes the types of jobs and industries that will exist, and not exist, in the future, the labour process, the wages and conditions of workers, and the strategies of organisations and management'. In relation to our study, precarity as a conceptual frame also highlights the differentiated experience of climatic heat by workers in two ways: firstly, it disrupts the labour process and increases the risk for labour exposed to heat stress; and, secondly, it highlights how workers who are already more precarious (e.g. casual or contract workers, or those who are non unionised) are less able to take mitigating action against the adverse effects of heat stress.

Räthzel and Uzzell (2013: 1-2) point out that trade unions have mainly viewed nature in two ways: as ‘a space for recreation and leisure that needed to be preserved as well as enjoyed’; and, ‘in the context of health and safety concerns for their members’. As a result, ‘nature as a source of use value, and human labour power as a part of nature’ has been neglected, and nature has been constructed as labour’s other (Räthzel and Uzzell, 2013: 2). Additionally, in regards to climate change, it is not simply a question of global warming acting on the performance of waged labour — as much of the literature on heat stress characterises the issue — as this posits climate change as something ontologically external to production. Instead, we need to understand that climate change is internal to the labour process — internal to capitalist social relations. As Jason W Moore (2015: 30-31) argues, to ‘follow through on Marx’s philosophy of internal relations is to grasp historical change as co-produced by humans and the rest of nature — but not as two interacting boxes, or even overlapping circles in the well-worn style of a Venn Diagram’. In this way, ‘the connection between people’s productive relations with nature, or labour process, and their productive relations between themselves, or social relations of production, is internal and necessary, not external and contingent’ (Sayer, 1987: 25). Understanding the experience of climatic heat stress in this way allows us to understand social relations in a way where ‘connections are maintained and contained as aspects of a self-forming whole’ (Bieler and Morton, 2018: 9). In considering climate change and labour conditions, heat stress has the potentiality to make explicit and concrete what is often abstract or understood as externally related. Further, in asking how workers might act to articulate and address their experiences of climate change, rather than exploring how workers might be *integrated* into existing political campaigns over it, the question then becomes how the embeddedness of climate change struggles *within* labour struggles — in particular the experience of heat stress by labour — might usefully be understood and used as a site of mobilisation.

Construction workers as a climate actors

Recent literature has emphasised heat stress as an immediate and pressing WHS issue (Dell et al., 2014; Xiang et al., 2015), as well as a threat to economic productivity (Zander et al., 2015; Kjellstrom et al., 2016). At above 35°C, the risk of heat stress for workers engaging in heavy manual labour is high (Parsons, 2014). Under temperatures equal to or exceeding 37 °C, workers are likely to face acute physiological effects which threaten their health and safety (Bennett and McMichael, 2010). Heat exposure increases the risk of workplace accidents related to physical fatigue, the misuse of equipment and reduced mental capacity (Rowlinson et al. 2014). It can have a negative effect on worker behaviour (Park et al., 2009), and lead to irritation and anger (Gubernot et al., 2014).

While the risk of heat stress for workers engaging in heavy manual labour is acute above 35°C (Parsons 2014), there is no legislated requirement in NSW for workers to stop work at a specific temperature or humidity level. Section 19 of the *Work Health and Safety Act 2011* outlines a broad duty on Persons Conducting a Business or Undertaking (PCBU) to eliminate health and safety risks in the workplace ‘so far as is reasonably practicable’. Where eliminating risks is not reasonably practicable, PCBUs are required to minimise health and safety risks by the same standard (‘reasonably practicable’). What is ‘reasonably practicable’ is defined in section 18 of the Act, and partially determined by the cost associated with eliminating or minimising the risk.

The specific risks posed by climatic heat stress to workers in Australia were acknowledged by both Unions NSW and the Australian Council of Trade Unions (ACTU) in their recent submissions to the 2018 review of the Model WHS laws. Unions NSW have called for a new model Code of Practice covering heat risk management, noting that ‘climate change has brought with it increasing levels and duration of heat and humidity’ subjecting workers in non-air-conditioned environments to increased risk of ‘heat exhaustion, fatigue [and] melanoma’ (Unions

NSW, 2018: 5). The ACTU (2018: 27) argues that the current guidance material on heat-related illness, which is non-binding, represents an ‘inadequate regulatory response’ to the issue, ‘which is likely to continue to worsen due to Australia’s climate, the impact of global warming and Australia’s aging workforce’. They note that ‘(d)uty-holders and workers in numerous sectors are struggling to manage [the] issue’ (ACTU, 2018: 27).

Projected temperature increases are expected to elevate the risks of heat stress and heat related issues for workers in the building and construction industry. Concurrently, the construction industry is expected to grow rapidly. The construction industry is currently the third largest employer in Australia at 9% of all employees, and is male dominated (87.6%) (ABS, 2019a). It is the fourth largest industry sector as a proportion of Gross Domestic Product, at 8% (RBA 2019). The construction industry is projected to grow by 10% in the five-year period to May 2023 (Department of Jobs and Small Business 2018: 3). In New South Wales, a total of 371,332 people are employed in the industry: 84.7% work full time, and 15.2% work part time (ABS, 2019b).

Climatic heat is a specific challenge for both health and safety and productivity in the building and construction industry. Most obviously, workers in this industry are particularly vulnerable to climatic heat stress due to the weather exposed and physically strenuous nature of most of the work (Rowlinson et al., 2014; Acharya et al., 2018). Furthermore, the informal and casualised labour arrangements, sham contracting and fragmented labour-hire structures which increasingly characterise the industry, all have negative implications for WHS (CFMMEU Construction & General Division, 2018: 2). The construction industry is the third most dangerous industry to work in, behind agriculture (including forestry), and transport (Safework Australia 2019). Leaders from the union representing construction workers in NSW — the Construction, Forestry, Maritime, Mining and Energy Union (CFMMEU) Construction & General, NSW Divisional Branch (CFMMEU C&G NSW) — have advised that high heat days involve spikes in members contacting the union for advice, and that they are contacted on extreme heat days more than any others. CFMMEU enterprise bargaining agreements (EBAs), including Principal Contractor and Sub-contractor enterprise agreements, require that workers are to stop work, and prepare for ‘safe completions of critical tasks currently underway’, when the ambient temperature reaches 35°C or above 75% humidity (CFMMEU Construction & General 2016). The temperature is measured at the closest Bureau of Meteorology station to each worksite. The construction union is active on the issue of heat stress in a variety of ways: advocating for changes to legislation and regulation; submissions to inquiries and coronial inquests; sitting on consultative bodies safe work authorities; training delegates and union members on heat stress management; and organising and advocacy on work sites on high heat days.

Discussions about how to put climate issues ‘on the agenda’ for unions and workers, and how to maximise the climate consensus, are ongoing. For example, Hampton (2015) sees that workers ‘have a special, privileged stake’ in tackling the processes which give rise to ecological degradation (p. 39), and anticipates that class struggles will increasingly play out over issues related to climate change (see also Brunnengräber, 2007). These struggles might include industrial action over climate policies which shift the costs of climate mitigation onto labour; localised, community action against climate policies; or more political battles over, for example, fiscal policy and taxation schemes which adversely affect workers (Hampton 2015: 39-40). As such, Australian unions are an important force in the debate about climate action.

Snell and Fairbrother (2011: 87-91) outline the approaches taken by key unions in Australia, and highlight that action has primarily focussed on two key axes: what position should a union take on climate change policy; and, how the issue of job security can be addressed for workers in carbon producing industries. Goods (2017: 674-676) groups the approaches of workers and their

unions in addressing climate change into *embedded institutional* approaches, such as integrating environmental clauses into Enterprise Bargaining Agreements (EBAs), and *voluntary multilateral* approaches, such as workers and unions having a more direct role in emissions reduction initiatives in the workplace. In their recent analysis of 2427 environment-related Enterprise Bargaining Agreements (EBAs) certified between January 2011 and June 2016, Markey & McIvor (2019: 96-97) found that while several of these environmental clauses extend managerial prerogative on general environmental matters, by imposing employer-led initiatives on employees, there is also ‘significant scope for extending opportunities for environmental worker agency in general consultative clauses’, and that WHS Committees may be a useful ‘foot in the door’ strategy for unions hoping to intervene on environmental issues through collective bargaining.

Without dismissing such approaches to understanding climate action and workers, and the important goals pursued by these authors, analysis can tend to pose climate as an external political issue for workers to take up and take action on. Climate is often being understood as ‘outside’ the immediate interests of workers and those that represent them. Less attention has been paid to the ways in which climate issues (in this case, rising heat), are internal to the industrial process. We suggest climate change can be recast as being in the immediate and everyday interests of heat exposed workers, and necessarily part of the ‘core business’ of trade unions. Climate justice is not only a concern which extends ‘beyond wages and working conditions’ (Stavis et al., 2018: p. 442), but it is internal to those concerns. We argue that linking climatic heat with WHS, particularly through notions of precarity, is an opportunity to make these underlying internal relations more apparent. This is not simply a case of suggesting unions integrate heat issues into bargaining to a greater level, but of leveraging the fact that struggles over climatic heat and the labour process are inherently also struggles over climate change.

Data collection

The survey data analysed in this paper was originally obtained by one of the co-authors as part of an honours research study (Newman 2018). Between July 5 and July 12, 2018, 151 members of CFMMEU C&G NSW were anonymously surveyed on the issue of climatic heat stress through online and self-administered questionnaire (see Appendix 1). The survey investigated how this group of workers: were experiencing heat stress at work; how they managed high heat days; whether they had taken action on heat stress issues in the workplace; and their views on high heat and climate change. It used Kjellstrom et al. (2016: 98)’s definition of heat stress and its associated symptoms: ‘Heat stress refers to heat received in excess of that which the body can tolerate, without physiological impairment’. The survey questions were drafted after initial scoping conversations with academics and trade unionists working in this area. There are over 17,000 members in this branch of the CFMMEU, comprising both a permanent and casual workforce. Members are predominantly male, and a large proportion of these members are from non-English speaking backgrounds. These members work in a variety of different trades in construction, including labourers, carpenters, concretors, crane operators, dogman, riggers, bricklayers, formworkers and steelfixers.

The online survey was distributed through the union’s established email communication pathway, and open to 11,657 members of the branch. 151 responses (or 1.3%) were received. During the data collection process respondents were assigned a unique identification number (from 1-151) based on the date and time which they completed the survey. The choice to survey union members only was taken for two reasons: firstly, a central aim of the research was to consider how workers are currently organised, and how they potentially could be organised, in relation to climatic heat stress; and secondly, a pragmatic consideration was the ease of survey distribution and timing of the honours project — the union was able to facilitate surveying

construction workers quickly through their established communication networks. In addition to the survey, a formal interview was conducted with Rita Mallia, President of the CFMMEU C&G NSW Branch, on 23 January 2019. This interview covered heat stress in the construction industry, how the union organises on this issue, government WHS regulation and climate change perspectives in the union. Survey data was reviewed and analysed using Microsoft Excel and an open-ended coding method. For the closed-ended questions, where options had been provided for respondents to add additional categories, these were also grouped by common themes where appropriate. For the open-ended questions, where respondents were encouraged to write longer answers, these were coded — often with multiple themes.

In interpreting the survey results we have been mindful of two factors. Firstly, it is likely that the responses gathered would be different if non-union members were also surveyed, or if the workers surveyed were from a wider geographic area, as this would likely have increased variation in responses on some questions. Secondly, there was a low response rate to the survey and, as such, the survey data may not be representative of the sample generally (i.e. all CFMMEU C&G NSW members). The low response rate was impacted by various project constraints and requirements, and we note: internet surveys have a lower response rate (over surveys administered face-to-face or by telephone); only a single email was sent (with no reminders); the survey was open for responses for a short time (one week); not all members open union communications and would not have been aware of the survey; and the survey was written and distributed in English only. While there 'is no simple answer to what is an appropriate rate, and no rate is automatically indicative of greater or lesser accuracy and utility' (Morton et al., 2012: 1), in interpreting results from this specific survey we are cautious in drawing hard conclusions. We consider that a larger response rate may not have increased the completeness of information on some questions (e.g. such as what physical symptoms related to heat stress workers had experienced, or whether employers took the risks associated with heat stress seriously) as the sample likely contained sufficient variation within the 151 responses. However, on other questions, including where there was a very small number of responses in certain demographic categories such as employment status (see table 1 below), the low response rate must be treated with caution.

Table 1: Respondents as a percentage of employment status

| Nature of employment | % of respondents |
|---|------------------|
| Full-time permanent (employed on an ongoing basis) | 82.78% |
| Casual (employed week to week) | 12.58% |
| Contract (employed for a period of weeks or months) | 3.31% |
| Part-time permanent (employed on an ongoing basis) | 1.32% |

Discussion

Working construction in a climate precarious world

Increasing climatic heat stress events make the performance of all construction work more uncertain. During an interview on the subject of heat stress, workplace precarity and labour organising, CFMMEU NSW Branch Construction & General Division President Rita Mallia (2019) suggested that all her members were at risk of heat stress. This included workers in the non-trades 'like scaffolding, labouring, traffic control, crane operating', and in glass and tiling factories, as well as outdoor, on-site workers in construction and building. Mallia noted that even

in well organised worksites, on high heat days ‘the phones just run hot... because people don’t have either the confidence to stop work themselves, delegates are uncertain whether they [or the] Health and Safety Reps have the authority to bring to the attention of the principal contractor that work should stop’. Even though CFMMEU EBAs contain 35 degree stop work clauses, implementing these policies effectively is still fraught for union delegates and members. For example, Mallia notes that contention over how to measure the temperature is still common even on highly organised worksites. This assessment accords with the survey results, which suggest that heat exposure is producing WHS-related consequences across all categories of work (permanent full time, labour hire, etc), and regardless of whether these workers had a union representative in their workplace, or whether there were policies in place for managing heat stress events when they occur.

Workplace heat stress is a significant issue for the survey respondents in terms of physical health, mental health, and safety. Most respondents said that on high heat days, workplace heat stress affects them quite a bit (41.96%), or very much (32.87%). Almost 20% of respondents said it affects them somewhat. Only 4.89% of respondents said heat stress affects them a little bit, and 0.7% of respondents — one person — said heat stress does not affect them at all. The most common physiological effects of heat stress identified by survey participants were fatigue or exhaustion (88.03%), increased body temperature (76.76%), reduced concentration (71.13%) and stress (59.86%). Some respondents (7.74%) described other effects of heat stress, including headaches, excessive perspiration, sunburn, vomiting, self-injury, loss of consciousness, anxiety and frustration. Respondents said that heat stress ‘plays a significant [role] in judgement making abilities’ (Respondent 51), made them ‘tire much faster’ (Respondent 109), and increased the probability of ‘accidents due to fatigue’ (Respondent 32). Heat stress impacts not just work time and conditions, but also broader health and recovery once away from the workplace. Many surveyed workers also noted that the adverse effects of heat stress potentially affected their friends and families. Respondents characterised heat stress as a ‘very serious’ and ‘major’ issue in terms of health and safety, with ‘both short and long term’ (Respondent 29) consequences for ‘all (workers) on site not just the person suffering’ (Respondent 148). Respondent 116 noted that ‘it can lead to a lot of problems at home, work and travelling during and after the event’.

The profusion of more insecure forms of employment does not only impact heat stress affected workers in casual or contract working arrangements, but reduces the ability of all workers to act over heat stress. To take one example, Respondent 42, a full-time permanent worker, noted that subcontract work arrangements in NSW undermined the effectiveness of their own actions on heat stress: ‘Too many subcontract workers in NSW for any success with any action, always someone who stays working’. In support of these findings, other studies have noted how precarious working arrangements undermine construction workers’ health and safety. Lao et al. (2016: 230) found that despite being covered by a temperature policy allowing work to stop at 38 degrees, skeleton staff used by one Adelaide council were ‘required to keep working to ensure the safety and security of the workplace’. As Quinlan et al. (2016: 30) argue, ‘precariousness is better understood as something that can to some degree affect all categories of workers, encapsulating the loss of control over working-life’. Furthermore, all categories of workers contend with generalised obstacles to managing the effects of heat stress. These include managerial prerogative over the labour process; an industrial relations environment hostile to unions and union action; and inefficient or deficient WHS regulations. All workers contend with the fact that their employers have fundamentally conflicting interests over WHS issues, including heat stress, and there is no natural alignment of employer/worker interests in relation to workplace safety (see Creighton and Gunningham 1985: 149).

Differentiated experiences of heat stress

While climate heat increases the risk for *all* labour exposed to heat stress, this risk is differentiated among workers. As we have argued, the working arrangements of an employee — their relative security or precarity and the level of labour organisation in their workplace — shape how they experience and are able to manage or reduce heat stress. For workers on relatively less organised worksites, the ability to mitigate the adverse effects of heat stress — for example by stopping work, taking frequent breaks, hydrating, ensuring that they have adequate PPE, rearranging or rescheduling work tasks at different times of the day, delaying work, taking strike action, being advocated for on behalf of a Health and Safety Representative — is diminished.

There is a substantial body of literature linking precarious employment arrangements to negative WHS outcomes. Quinlan, Mayhew & Bohle (2001: 345, 351) identify key risk factors which contribute to reduced WHS outcomes in precarious employment arrangements, including: greater pressure experienced by precarious workers to retain jobs or contracts; the conduciveness of piecework to forms of work intensification; workplace disorganisation leading to increasingly complex or ambiguous rules, more complicated lines of management control and the reduced ability of workers to organise and protect themselves; and an increased risk of regulatory failure, due in part because conventional WHS regimes may be designed for permanent employees in large enterprises and agencies. While there is evidence that joint workplace arrangements improve WHS outcomes, this general correlation is underpinned by a number of factors including support from trade unions, consultation between Health and Safety Representatives (HSRs) and workers, well-trained and informed representatives, commitment from management, and regulatory inspectorates to enforce legislative provisions for worker representation (Walters, 2004).

While, according to Mallia, heat stress is an acute issue for all members to some degree, she recognises a difference between workers on sites which are highly organised and those which are not:

...once you get away from the highly organised workplaces, probably across the board whether it's a factory or a warehouse or a building site where people are left to their own devices unfortunately a lot of employers just will treat people like rubbish and expect them to work in extraordinary temperatures and it will take a fatality or some very serious incident before something is done.

Many surveyed workers communicated that work processes and policies for managing heat stress were fragmented across different worksites. Of those surveyed, 21.28% said that there was no union representative on their worksite, such as a Health and Safety delegate, and 14.18% did not know. Respondent 6 commented that it 'seems every site has different rules!'. This is, potentially, a particular concern for labour hire workers. Given the lower union density amongst contractors, and a lack of permanency, the ability of these workers to exercise power in the workplace to address the negative consequences of heat stress is considerably reduced. One labour-hire worker noted that they worked 'at different sites all around the city. [S]ome sites have a union rep and good safety procedures, others (don't) have anything at all?.'

Negative workplace impacts related to heat stress and resulting from productivity pressures, which some longer-term workers argued has worsened over time, was a key theme emerging from the respondents. These findings are suggestive of a generalised problem, given it was raised consistently although the survey did not ask workers specifically about the issue of productivity. Moreover, these pressures were differentiated across worksites and for different groups of workers. For example, Respondent 7, who noted that they had taken action over heat stress in

the past, suggested that their workmates had instead kept working in high heat conditions ‘prob in fear of losing their jobs’.

Reflecting dissatisfaction with the degree of managerial prerogative over WHS issues, many respondents felt that the current measures in place to deal with heat stress events were ad hoc, individual, and overly determined by an employer’s priorities. Some surveyed workers felt that a ‘self-management’ approach to heat stress issues was ineffective, and that what the industry refers to as Persons Conducting a Business or Undertaking (PCBU’s), such as employers, were taking advantage of the fact that heat stress affects different workers at different rates and in different ways. Respondent 44 observed that ‘PCBUs tend to capitalise’ on the fact that there is ‘no definitive definition of what constitutes excessive heat exposure’ and that ‘people have different tolerances’ to exposure. As this respondent highlights, this also results in heat stress being made the responsibility of an individual worker — impacting precariousness through risk shifting — rather than it being dealt with as a WHS matter that is managed collectively and is the responsibility of employers.

Mallia is conscious of the varied ability to take action on heat stress across the membership, and notes heat stress is one of the union’s ‘key issues’ given its significant risk in terms of health and potential fatalities. She argued that the union division has moved from having a ‘somewhat ambiguous position’ to a more rigorous one, in particular since the construction of Barangaroo began in 2012. Barangaroo is a significant redevelopment of a 22 hectare site on the western edge of the central business district of Sydney, on the harbour foreshore, which was commenced in 2012 and is scheduled to be completed in 2024. On that site workers were exposed to high heat through a combination of direct sunlight and heavy personal protective equipment (PPE), and the union took active steps to develop what Mallia describes as ‘a much more stringent and clearer process’ for managing high heat.

Precarity intersects with climatic heat stress in three ways. Firstly, decreasing labour security and workplace organisation impacts collective action and undermines the ability for all workers to establish more generalised procedures around heat stress, which is compounded on sites that are less well organised. Secondly, WHS risk is linked to exposure on a particular day, and casual and contract workers are less able to mitigate immediate consequences during an extreme heat event because they occupy a relatively weaker position industrially on worksites. Thirdly, the effects of high heat are not experienced in the same way for all workers, as individuals acclimatise to heat in different ways — thus those unable to acclimatise are made more precarious through an inability to physiologically adapt.

Possibilities and challenges for organising

Many surveyed workers characterised their attempts to protect their health and safety in high heat conditions as fundamentally incompatible with their employers and managers, who were necessarily focused on maintaining a particular intensity of labour in order to meet deadlines and complete jobs. There was a strong perception among surveyed workers that their supervisors, managers, bosses and employers were not taking the issue seriously, and in some cases, were undermining or obstructing their capacity to manage instances of heat stress. Only 6.34% of respondents believed that their employers took heat stress ‘very seriously’, whereas 35.92% of respondents felt that their employers did not take heat stress seriously ‘at all’. A sense of contempt for employers, managers and bosses over heat stress issues was also evident in many responses. Workers believed that bosses ‘would have you work in any weather’ (Respondent 120), and stated directly that if ‘[y]ou think the bosses give a crap, they don’t, they just want production, money money money’ (Respondent 38). Surveyed workers often contrasted their difficult experiences with heat stress ‘on the ground’ with the comfortable experiences of their

managers, bosses and employers, who ‘sit in air conditioned offices and don’t want production to stop’ (Respondent 2). Similarly, Respondent 43 said that ‘[o]ur bosses never come out of their air conditioned offices on stinking hot days but make us work in horrible places with crazy high (temperatures)’. Respondent 67 said ‘(m)any employers disregard the issue even when they have a policy on it’.

The majority of surveyed workers indicated they believed that heat stress could be used to effect labour process change. An overwhelming number (86.14%) believed that heat stress issues should be included in bargaining, as well as in union campaigns — although we acknowledge the union does both already. The most common explanations given for increasing activity on heat stress were: that heat stress is a serious health and safety issue; that employers were not taking the issue seriously enough, and/or acting against their interests on heat issues; that there was a need for clearer and stronger policies; that the current processes in place for managing heat stress were deficient or inconsistently enforced, particularly in the context of increasingly fragmented working arrangements; and, that the pressure to maintain a particular level of production in intense and unsafe conditions was significant and increasing. These factors translated to a clear appetite among surveyed workers to effect labour process change through bargaining, union campaigns, and other forms of struggle and action.

We were also interested in whether heat stress might be an opportunity to engage members on the question of climate change, given the link between higher temperatures and the increased frequency of hot days. Reflecting on members’ views, Mallia suggests that the union has ‘had a very sophisticated conversation with our members around’ climate change and how it affects the construction division. She notes that the issue comes up internally through discussions and resolutions, and that ‘people are obviously concerned’. Union members are also cognisant of climate and energy issues in terms of building efficiency, and how these issues shape the design aspects of construction. Mallia stated that because members ‘have always been exposed to extreme weather’, they experience the effects of increasing temperatures in very direct ways — and some are likely to draw connections between climate change and the ways in which they work. As temperatures continue to increase, ‘and things still have to be built’, this will be an ongoing challenge for the union, their members, and other workers in the industry.

Views among surveyed workers about whether there was a direct relationship between climate change and heat stress at work were mixed. This relationship seemed ‘obvious’ to some workers, and many referred to their experiences of changes in the climate at work, over time and in different locations. However, while many expressed keen interest to use workplace power to deal with environmental constraints to their ability to work, some who were enthusiastic about organising around heat issues were unsure, ambivalent, or skeptical about climate change generally. Several respondents understood heat stress as a critical health and safety issue, but not one that was linked to climate change. Generally speaking, it appears that for this group of workers, framing heat stress issues in terms of climate change may have less credence than framing these issues in terms of health and safety. No hard conclusions can be drawn from such limited data, but given this is an important issue for trade unions and other social movement groupings — hoping to organise workers around climate issues and increase climate consensus — it is worthy of further research. As Hampton (2018:484) has argued of the UK experience as well, ‘research is needed on workers’ perceptions of climate change, how they frame it and what they are prepared to do about it’. That said, setting aside the question of how to frame action on the issue of heat stress, the desire of surveyed workers to take greater action was clear.

Conclusion

Based on this study, it is likely that workers' direct experience of heat stress is informed and constituted by a sense and actuality of precariousness, and that this is a result of: a worker's employment status (permanent, casual, contract, etc) and level of job security; the ability of workers to take industrial action to address workplace concerns (which has been undermined in the neoliberal era); and, perhaps more abstractly, the experience of climate change in the workplace through increasing climatic heat stress events. To this end, we consider that climatic heat stress may represent an opportunity for workers to gain an insight into this contradiction of the productive process — between exploiting labour and the conditions necessary for accumulation, as well as climate change itself. Climate change is a component of precariousness in the labour process, and is subject to both intensification and resistance. As a result, climatic heat stress may have considerable, albeit latent, organising potential. This is not a simple question of how precarious forms of work might undermine (or offer potentials for) labour action on climatic heat stress in the present period. Rather, there is a deeper contradiction at play. Climate change is anthropogenic, as many argue, but it is more specifically a consequence of the capitalist mode of production. As such, it is destabilising for both the performance of labour on particular worksites and the process of accumulation and social reproduction more generally. This disruption threatens profitability, but also offers potential for mobilisation inside the productive process.

Capital's purview over the conditions of production ensures that climate heat is an object of struggle over both immediate labour conditions and the climate crisis more generally. How those struggles take place is contingent, and not predetermined. In acknowledging the internal relationship between climate change and the labour process, we can depart from the established parameters of approaches to these struggles. For example, the question 'how can we make climate change core union business?' might become 'how are climate issues already embedded in the labour process and our working lives?'. While the idea that climate change is internal to the labour process may be a notion that is usually abstract, in the case of climatic heat stress it has the potential to be made solid. And while heat stress events are undoubtedly a physical limitation and an obstacle for many workers, we also consider that they represent an opportunity to gain an insight into an underlying contradiction of capitalism — the contradiction between exploiting labour and the conditions of production and social reproduction of life on this planet.

Appendix I. Survey questions

1. What is the nature of your employment? (multiple choice)
 - Contract (employed for a specific period of weeks or months)
 - Casual (employed week to week)
 - Part-time permanent/ongoing
 - Full-time permanent/ongoing

2. Have you ever experienced any of the following effects from heat stress at work? Please tick all that apply (check list)
 - Nausea
 - Dizziness
 - Fatigue or exhaustion
 - Increased heart rate
 - Increased body temperature
 - Reduced concentration
 - Stress
 - Other (please specify) (open-ended)

3. On hot days, how much would you say heat stress affects you? (On a scale of 1-5)
(Sliding scale)
4. Have you ever raised issues relating to heat stress with any of the following? Please tick all that apply (check list)
 - Union delegate
 - Boss / supervisor
 - WHS representative
 - CFMMEU
 - Workcover
 - Other (please specify) (open ended)
5. Do you know at what temperature you are meant to stop working completely? (multiple choice)
 - 32 °C
 - 33 °C
 - 34 °C
 - 35 °C
 - 36 °C
 - 37 °C
 - 38 °C
 - 39 °C
 - 40 °C
 - 41 °C
 - 42 °C
 - 43 °C
 - I don't know
6. How seriously would you say your employer takes the issue of heat stress, in terms of workers' health and safety? (On a scale of 1-5) (sliding scale)
7. Is there a union representative, such as a Health and Safety delegate, in your workplace? (multiple choice)
 - Yes
 - No
 - I don't know
8. What types of procedures exist in your workplace for managing heat stress events, when they occur? (check list)
 - Reporting procedure (e.g. through First Aider or site Safety Coordinator)
 - Cessation of work at particular time or humidity level
 - Increased frequency of rest breaks
 - I don't know
 - Other (please specify) (open ended)
9. Have you ever taken action at work over heat stress issues? (multiple choice)
10. Was the action successful? Why or why not? (open ended)
 - Yes [directed to question 10]
 - No [directed to question 11]

11. Do you think that heat stress issues should be a part of bargaining and/or union campaigns? Why or why not? (open ended)
12. Do you think high heat days and heat stress events are increasing due to climate change? Tell us what you think. (open ended)

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ⁱ The CFMMEU is not able to collect data on email opens (i.e. how many of those who received the email opened it, in order to be aware of the survey).