








The urban and regional impacts of plant closures: new methods and perspectives

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ABSTRACT

Work on large-scale plant closures has provided a rich vein of scholarship and academic debate. This paper articulates a new set of methods and concepts for understanding how large-scale redundancies associated with the closure of manufacturing plants affects society and the economy at the local, regional and national scales. It posits the need for a more comprehensive exercise in data collection and experimentation with previously unused methods, including the application of discrete-choice experiments in order to understand better the choice and decision-making frameworks adopted by affected workers. The paper argues there is a need to integrate community-wide policy responses into the core of the analyses.

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INTRODUCTION

Plant closures, and the associated large-scale displacement of workers, remain an enduring feature of both developed and developing economies (Bailey & MacNeill, 2008; Bailey, de Ruyter, Michie, & Tyler, 2010; Bailey, Kobayashi, & MacNeill, 2008; Pfeiffer & Chapman, 2010; Pike, 2005). The process of economic adjustment within the global economy (Martin, Tyler, Storper, Evenhuis, & Glasmeier, 2018) and nationally can see both individual businesses close, and whole industries cease operation (Beer, 2018). Understanding the drivers for, and impacts of, plant closure has been an important theme in regional and urban research. Shutdowns generate important questions of public policy (Bailey & de Ruyter 2015; Productivity Commission, 2014a, 2017) as well as more theoretically informed analyses as researchers seek to understand how communities respond and look to unpack the implications for the functioning of contemporary labour markets (Bailey, de Ruyter, & Chapain, 2012; MacKinnon, 2017;

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Weller, 2008). Other research has examined the impacts of public policy responses, especially the effectiveness of labour market assistance post-redundancy (Armstrong, Bailey, de Ruyter, Mahdon, & Thomas, 2008; Bailey & MacNeill, 2008; Bailey, Bentley, de Ruyter, & Hall, 2014). This research has sought to understand the impact of government responses that are informed by a 'workfare' approach to social policy, or which are part of a broader neoliberal approach to policy.

Work on large-scale redundancies has provided a rich vein of scholarship and academic debate, including much cited work by Pike (2005), Fagan and Webber (1994), Healey (1982), and Watts and Kirkham (1999). Researchers have often relied on cross-sectional or short-term longitudinal surveys to shed a light on the employment outcomes for different sub-groups of affected workers (Webber & Campbell, 1997). Other work has applied a range of econometric analyses to investigate the impact of particular conditions, such as the presence of industrial subsidies and unions, on the outcomes of plant closures (Productivity Commission, 2014a, 2014b, 2017) or the health status of workers (Zeirsch, Baum, Woodland, Newman, & Jolley, 2014). This paper articulates a new set of methods and concepts for understanding how large-scale redundancies associated with the closure of manufacturing plants affects society and the economy at the local, regional and national scales. It posits the need for a more comprehensive exercise in data collection and experimentation with previously unused methods, including the application of discrete-choice experiments, in order to understand better the decisions made by affected workers. The paper also argues the need to integrate community-wide responses into the core of the analyses. Too often research has taken an atomistic approach to understanding how individual workers and their families are affected, in the process ignoring community dynamics and responses.

The closure of the Australian car-making industry is the lens through which these ideas, and the need for a new set of methods, will be explored. The paper is structured as follows. It next examines the changing nature of work, and how globalization, alongside the forecast impacts employment of artificial intelligence (AI) and associated technologies, is reshaping labour market opportunities globally. It considers some of the forecasts for future industries and employment before moving on to examine the details of the closure of car manufacturing in Australia. It examines the unique circumstances that resulted in three major car manufacturers – General Motors Holden (GMH), Ford and Toyota – ceasing operations nationally within a 16-month window. The paper then turns to examine ways to develop more robust insights into large-scale changes in labour markets, drawing on key debates in the literature to argue for more comprehensive longitudinal data collections, the application of theoretically informed qualitative data collections, community-wide analyses of responses to change and a detailed focus on the choices – forced and voluntary – made by affected workers and their families. We argue that the increased complexity of contemporary working environments calls for a more integrated analytical approach, one which can assign agency to governments, firms and individuals.

A CHANGING WORLD OF WORK

Over the past decade, the ongoing drive to improve productivity has changed many parts of national economies and their constituent industries (Gilpin, 2018). Technological innovations in networked, automated AI and associated robotics have been profound, with many arguing they will transform work and employment over the coming decades. The impacts are expected to be far reaching with workers in a range of unskilled, semi-skilled and highly skilled occupations supplanted by new technologies, resulting in disruptions equivalent to those evident with the onset of the Industrial Revolution in the 18th century (WEF, 2016).

Technological change is now said to threaten entire professions and has been heralded by some as foreshadowing a 'jobless future'. For example, the *Australian Industry Report* (Australian Government, 2014) concluded 500,000 jobs in Australia could soon be automated, while Frey and Osborne (2017) predicted half of all employment in the UK could be replaced by robotics. However, there is some debate about the extent of these impacts. Chester (2018) has provided a more conservative estimate of the risks of employment loss associated with automation, suggesting 9% of jobs in Australia are at risk, and that while 'manual and routine cognitive jobs have fallen as a proportion of jobs from 50 per cent to 37 per cent; non-routine manual and non-routine jobs have increased from 42 per cent to 53%' (p. 5). Conversely, Deloitte (2014) suggests that one-third of the Australian economy faces impending digital disruption – a 'short fuse, big bang' scenario – with white-collar jobs (accountants, lawyers, bank tellers and supermarket staff) threatened by machine intelligence. On the other hand, technological change could revolutionize manufacturing in advanced economies, including Australia (Vecchi, 2017), as mass customization becomes the norm, and short production runs of high-quality, high-design and high-value goods enables the reshoring of manufacturing employment. However, if these new jobs are – as current indications suggest – mainly part-time, limited tenure and intermittent in nature, then the world of work will change, and households will need to adjust the ways in which they make their way in the world.

Governments and firms are increasingly challenged to develop better responses to changing economic conditions and labour markets. Businesses seek to ensure the well-being of their current and former employees, while governments recognize the need to find new strategies to assist individuals and places affected by industry transition (Productivity Commission, 2017). Globally, the need to adapt to the anticipated technology-led 'fourth industrial revolution' is challenging governments to investigate new forms of policy and innovative interventions in labour markets, training and education (WEF, 2016). Private sector organizations also need to find a way through this new economic and political landscape: firms are increasingly held to account for their social, environmental and community impacts, and this focus on corporate social responsibility challenges individual firms to account for their decisions and actions. Technological innovation appears to be displacing globalization as a key driver of industrial restructuring and job displacement globally. In studies of value chains and production networks, for example, interest is shifting to lead firms' consolidation of production chains and the associated reorganization of work and technology (Bamber, Brun, Frederick, & Gereffi, 2017; Gereffi, forthcoming).

Over the past three decades, there has been a small number of investigations into the impacts of large-scale restructuring in Australia and the associated impacts on workers and their households. In large measure, these have been conventional analyses drawing upon the intellectual traditions of a small number of academic disciplines, including public health, economics and geography. Importantly, most have been undertaken in the context of one industry participant closing and being supplanted in the marketplace by an alternative local businesses. They have also taken place within a largely unchanging industry structure in which conventional employment options are potentially available for displaced workers. Of these major studies, the first was undertaken in the late 1990s by researchers examining closures within the textile clothing and footwear (TCF) industry (Webber & Weller, 2001; Weller, 2000a, 2000b). A second study undertaken in the early 2000s examined employment and other outcomes for workers made redundant by the closure of a major airline (Weller, 2008, 2009, 2012). Finally, several papers were produced on the impacts of the closure of Mitsubishi's Lonsdale engine-making and components plant in Southern Adelaide (Beer et al., 2006; Beer & Thomas, 2007; Verity & Jolley, 2008).

The investigation of the Mitsubishi Motors Ltd (MMAL) closure found employment outcomes for retrenched workers were unfavourable and compared poorly with a similar closure in the UK (Bailey et al., 2010). After three years, one-third of workers from MMAL had left the

workforce, one-third had found full-time work and one-third were either unemployed or underemployed. The majority of workers who secured employment post-redundancy reported lower incomes and that redundancy had adversely affected their health (Zeirsch et al., 2014). It found few workers were willing or able to relocate to find employment, with most seeking jobs in the manufacturing or mining sectors. Moreover, many who gained a job were made redundant again within three years, but few undertook further education or training to increase their employability. Housing tenure had an impact, with tenants more likely to find work and outright owners prone to depart the workforce (Beer, 2008). Later research found that the community as a whole paid a price for the plant closure, through reduced incomes, lower levels of employment in well-paid manufacturing industry and a greater reliance of lower paid industries (Beer, 2015). This outcome was consistent with earlier analysis that suggested there were significant deficiencies in how the Australian government responded to the closure (Beer & Thomas, 2007).

These three studies represent an important empirical and conceptual contribution to the understanding of industry change and the impacts of economic shocks on communities, workers and economic systems. In large measure, however, they examined a process of change that is more typical of the 20th century rather than of the 21st. Governments can no longer assume manufacturing workers will move to other manufacturing jobs; nor will full-time workers necessarily find continuing, permanent or full-time employment again. In large measure, the technological changes that are emerging in the second decade of the 21st century present profound challenges for both policy and theory; for governments and for the conceptualizations of scholars. It is important that we acknowledge that shifts in the world of work present a significant challenge to the economy as a whole, the affected communities and individual workers and their households. Recent work by Beer (2016) suggests automation and shifts in employment opportunities are leading displaced workers and their communities to doubt both their ability to find further employment and the economy's capacity to create meaningful work. Similarly, Turnbull and Wass (2000) argue a worker's experience of involuntary separation shapes their perception of the future labour market and job security. The experience of unemployment compounds this sense of unease and contributes to disengagement from the world of work.

Evidence in Australia of entrenched long-term and intergenerational welfare dependence has highlighted the cost of worklessness and the consequent erosion of mental health (Perales et al., 2014). While work on how the economies of places evolve over time (Boschma & Martin, 2007) has provided the intellectual foundation for recent writing on the 'branching' of workers into new forms of economic activity (MacKinnon, 2017), and the ways in which post-retrenchment pathways are shaped by both local opportunities and previous decisions. It acknowledges that workers face pressure to remain economically active to sustain themselves and their households, while also seeking outcomes that maximize their (existing or to-be-acquired) skills (MacKinnon, 2017).

THE RISE AND DECLINE OF THE AUTOMOTIVE INDUSTRY IN AUSTRALIA

Australia was home to an automotive manufacturing industry for 70 years, and its demise is indicative of globally evident challenges to car-making across the world. The on-going, transnational, challenge facing this industry was highlighted by General Motors' (GM) announcement in late 2018 that it would mothball five plants and terminate 14,000 jobs (Shih, 2018). A number of worrying trends for established car producers have been evident over the past two decades. There has been a long-established movement of car production to the Global South, where labour costs are lower, and these new plants in lower cost nations have increased competition within an already saturated market, which in turn has threatened established manufacturers (Bailey et al., 2014). The automotive sector has also remained fragile since the economic shocks of

2008 and 2009, reducing the resilience of the major corporations and making them more inclined to terminate loss-making operations. Critically, the original equipment manufacturers (OEMs) are – perhaps for the first time – threatened by digital disruption, with software firms such as Google and Microsoft potentially winning the race to develop driverless vehicles, and along the way relegate conventional car manufacturers to the role of mere suppliers in a larger ‘mobility solution’ for the next generation of consumers.

The Australian passenger vehicle industry was established in 1948 when the first car rolled off the GM assembly line. Other car manufacturers soon entered the Australian market, with local production a necessary device to overcome the substantial tariff barriers that protected virtually all segments of industrial and agricultural production. The major – predominantly US-headquartered – automotive producers established plants throughout Australia, with some simply assembling cars from imported components, while others designed and built cars in their totality. From 1973, tariff protections were reduced as the Whitlam government sought to create a more modern economy (Emmery, 1999). Under the Hawke governments of the 1980s, a state-aided rationalization programme encouraged car-makers to source similar components from local suppliers, effectively binding the lead firms to a common trajectory and industry structure. The OEMs were fierce competitors, but local plants relied on a limited pool of suppliers to provide the components they needed. This depended on second- and third-tier providers made the industry vulnerable to change, and eventually resulted in cascading closures as OEMs and supplier firms ceased production one after the other.

By the end of the 20th century, protection for the car industry in Australia had fallen significantly, but tariff rates remained close to 20%. When tariffs across the economy were set at 5% by 2005, the impacts on automotive manufacturing were cushioned by alternative government supports such as the Automotive Industry Structural Adjustment Program (AISAP) and the Automotive Competitiveness and Investment Scheme (ACIS). The ACIS alone cost the Australian government A\$7 billion over the period 2001–11. In the early 2000s, the Australian economy entered a period of unexpected prosperity as growth in China created a surge in demand for Australian commodities, especially iron ore and coal. The impact on Australia was profound, with labour shortages reported in many regions and industries, and it resulted in increased investment in fixed assets such as housing, and profound wage rises in booming sectors. One effect of this resources boom was the rising value of the Australian dollar, which reduced the local car industry’s competitiveness in both domestic and export markets.

In 2004, MMAL closed its Lonsdale engine plant in southern Adelaide (Beer & Thomas, 2007), and four years later announced the shutdown of its Tonsley Park assembly line. In 2007 and 2008, a decision by Ford to close its Geelong operations was reversed after a federal government intervention. But this, of course, turned out to be a temporary reprieve with an industry-wide shutdown evident just six years later. In early 2014, Toyota Australia announced it would cease the manufacture of vehicles in Australia. This news came on top of the announcement by GMH in December 2013 that all car production would end in 2017, while Ford Australia made public in May 2013 its intention to close its production facilities (Beer, 2018). In just 24 months, all remaining elements of the car manufacturing industry in Australia signalled their departure, putting in question tens of thousands of jobs. Widely cited estimates include the Productivity Commission’s forecast of 40,000 direct and indirect job losses nationally from 2013 to 2018 (Productivity Commission, 2014a) and the Federal Chamber of Automotive Industries’ (FCAI) (2013) forecast of 50,000 job losses, although some have made estimates as high as 100,000 job losses (National Economics, 2014). Employer interviews in Adelaide’s northern suburbs indicated significant direct and indirect impacts were expected at the local level (Ranasinghe, Hordacre, & Spoehr, 2014). Importantly, the closures announced in 2013 and 2014 did not represent a radical change in trajectory: instead, they followed a well-established pattern of exits by major producers, with Mitsubishi closing in 2008 (Beer, 2014), Nissan ceasing

production in 1992, Chrysler terminating local car building in 1981 and Leyland Australia closing in 1974. Effectively, 70 decades of mass car production in Australia ended in 2017, resulting in large-scale labour market disruption, community uncertainty, shocks to regional economies and considerable challenges for government agencies at the national, state and local levels in seeking to manage this process of change.

Recent scholarship has sought to understand why the Australian car industry came to an end over such a short period of time (Beer, 2018). A number of explanations have been put forward: Nieuwenhuis and Wells (2015) argued that Australian policy – especially, the withdrawal of subsidies – was the key factor behind the closures. The US government’s support for the ‘reshoring’ of manufacturing (Vecchi, 2017) consolidated the US-based automotive manufacturers’ low priority for Australian producers, while other nations – including Canada – provided capital subsidies designed to drive investment into their plants rather than elsewhere (Yates, Sweeney, & Mordue, 2017). Shifts in the market were also a factor. Australian producers remained wedded to the production of large sedans, while the production of more promising sectors, such as sports utility vehicles (SUVs), went to Korean or other Asian producers. The limited extent of car production in Australia was an additional factor in the decline of the sector. Australian car plants were simply too small to be viable: at its peak, the GMH plant at Elizabeth produced 160,000 vehicles per annum, well short of the 250,000 units per annum considered the industry minimum in the 21st century (Orsato & Wells, 2007). Other manufacturers in Australia had even lower production volumes: Ford produced fewer than 70,000 units per year and Mitsubishi 35,000 cars annually.

Finally, it is important to acknowledge that the Australian automotive industry has long occupied a position on the very margins of global production networks, and that Australian manufacturing contributed few technological advances to the global automotive sector (Beer, 2018). Key decisions on investment in, and the future of, the industry were made in New York or other global capitals, and the heavy reliance on US-based producers – who had become vulnerable in the aftermath of the ‘great recession’ further escalated the level of risk confronting the Australian industry.

TOWARDS A NEW UNDERSTANDING OF THE IMPACTS OF PLANT CLOSURE

Contemporary economies in the developed and developing worlds continue to experience profound change. In many nations the production of services, rather than goods or commodities, has become the most important sector of the economy. New phases of accumulation have been driven by digital disruption and are challenging existing industries in the transport, accommodation and professional services sector. Manufacturing remains important for many economies, but the innovations of Industry 4.0 (WEF, 2016), driven by ongoing inputs of design, new technology and mass customization, are revolutionizing the production process. While many industries remain robust, others appear to be at risk. Even in prosperous sectors individual enterprises are vulnerable. These changes instigate knock-on effects that permeate throughout the labour market. Governments increasingly prioritize skills acquisition for retrenched workers to equip them to work in ‘in-demand’ services sectors, and there appears to be few alternative responses in an era where the remaining large-scale manufacturing plants are unlikely to be replaced. This social and economic transformation generates new questions for research: at a broad level, policy-makers and research scholars alike share a need to understand how new technologies will reshape labour markets and access to meaningful employment. At a more detailed level, better data are needed on how displaced workers navigate a labour market post-redundancy, and this focus recognizes the agency of workers and their households as well as the structural impact of broader economic circumstances.

For workers, large-scale redundancies associated with plant closures bring the uncertainties of future employment to the fore. Many workers struggle to comprehend how they will 'fit' into a labour market that is transforming under the weight of the rising incidence of 'precarious' work (Standing, 2011), labour-displacing innovations in digital and robotic technology (CEDA, 2015) and the rise of 'platform' and 'gig' economies (Flanagan, 2017). Reflecting on their experience, workers may be reluctant to take on training, doubting that it will enhance their long-term employment prospects, or they may not warm to new employment options in the care professions – such as those in the disability sector or aged care – despite strong immediate job prospects. Increasingly displaced workers face futures of less secure work in poorer quality jobs. In addition, redundancy and associated unemployment has an impact on mental and physical health (Bohle, Quinlan, McNamara, Pitts, & Willaby, 2015), household income (Beer et al., 2006) and the well-being of children (Newman & McDougall, 2009). Nonetheless, we still know too little about how workers leaving skilled and unskilled employment in manufacturing and related sectors find jobs, re-establish careers and sustain themselves and their families. In Australia, this challenge is especially acute as previous studies are more than a decade old (Beer et al., 2006; Webber & Weller, 2001) and much has changed in the labour market and economy over the intervening period. The international literature is no more advanced than Australian scholarship in addressing these questions (Beer, 2016; MacKinnon, 2017). Over the past five years there has been substantial growth in the use of administrative data sets – sometimes created as linked data sets from across a number of government portfolios (Rafi, 2017). These new forms of analysis have shed a new light on the size and direction of the spillover effects associated with plant closure (Gathman, Helm, & Schonberg, 2014, 2017; Jofre-Monseny, Sanchez-Vidal, & Viladecans-Marsal, 2017), the efficiency of government expenditures in ameliorating the impacts of redundancy (Rafi, 2017), and the advantages and disadvantages associated with occupational mobility post-redundancy (Eriksson, Hane-Weijman, & Henning, 2018). However, as retrospective investigations they offer limited insights into the emerging world of work – or non-work – for displaced workers.

Large-scale redundancies challenge regional resilience and call into question the ability of places to shape their own future. Gathman et al. (2014, 2017) have shown how mass layoffs have profound, and persistent, impacts regionally although the impact on the national economy may be negligible. Importantly, the remaining businesses in the region often suffer the most (Gathman et al., 2017). These findings reinforce the importance of a regional focus for research and policy action although, as Bristow and Healy (2014) argue, human agency has been neglected in studies focusing on regional resilience and path development (Grillitsch & Sotarauta, 2018). Importantly, when bringing human agency into the debates on regional resilience, the focus is not solely on the formulation of better policies and their implementation, but also the ways actors come together to pool dispersed resources, capabilities and powers. Collaboration across institutional and organizational partitions is notoriously difficult; it does not happen by itself. Therefore, we need to learn more about how actors are organized in complex, regional economies and how they act collectively (Bristow & Healy, 2014).

Place-based leadership studies have focused on the deliberative actions of key actors, coalitions of them and organizations in both charting and implementing a new future for a city or region. Many researchers have focussed on the ability of place leaders to influence others (Beer & Clower, 2014; Sotarauta, 2009; Sotarauta & Beer, 2017), and it is this focus on achieving change through horizontal and vertical persuasion that differentiates leadership in regions and communities from the formal authority structures of governments, large corporations and institutions. Place-based leadership is context dependent, and while there are similarities in how it is expressed across nations and regions, there are also profound differences (Beer et al., 2018). Critically, leadership needs to be forward facing, rather than focussed on historical legacies (Safford, 2009), and able to gain access to resources (Bailey & Berkeley, 2014; Beer, 2014; Kurikka, Kolehmainen, & Sotarauta, 2017).

Policy-makers have increasingly looked to local leadership to address the challenges of economic change at the community scale. The OECD (2009) acknowledged the importance of place-based leaders in the revival of economies, largely through their capacity to shape culture and control land and other resources. Within Australia, the Productivity Commission, a central government advisory agency, has looked to place-based leadership to address the local consequences of the economic changes produced by the removal of industry subsidies, the removal of trade barriers (Productivity Commission, 2014a, 2017). The Productivity Commission was a key agent in the creation of a policy environment in which the closure of the Australian automotive industry was, arguably, inevitable (Beer, 2018). Only recently has it acknowledged that the resulting industry adjustment has had long-lasting impacts on affected communities (Productivity Commission, 2017). Consequently, it has looked to the development of leadership at the local or regional scale to repair damage to local economic structures. However, it has been unable, as yet, to specify the nature, shape and drivers of the community leadership it sees as a solution to this policy conundrum.

There is a pressing need to understand the processes, consequences and dynamics evident in the labour market and the community when an entire sector disappears. The removal of car manufacturing in Australia may presage future events for many other sectors and industries in developed and developing economies. Our knowledge of the outcomes associated with individual plant closures is unlikely to serve as a worthwhile model of events and outcomes when entire segments of the economy close. There is therefore a need to focus on all parts of an industry, including its supply chain, as the re-employment outcomes for workers formerly working in large plants owned are unlikely to be reproduced amongst small suppliers. Simultaneously, there is a higher likelihood that small, relatively nimble, enterprises will be able to reshape their business to take up new opportunities. Other businesses, of course, will close and some of their staff will not find ready re-employment.

In the contemporary global economy, it is inevitable that the impacts of industrial change will be differentiated by location, with some places increasingly by-passed while others assume a more central position in economies. Understanding this geographical differentiation and its drivers must take centre stage in the further evolution of studies of plant and industry closures (Pike, 2005). Studies need to compare and contrast outcomes across locations and with reference to national, local and global economic and labour market conditions, as well as place-based, or community, leadership. In addition, future research needs to be undertaken at a greater scale than previously with respect to the number and diversity of respondents, as a more complex and differentiated labour market calls for nuanced and differentiated insights, and these should be findings that provide a long-term perspective.

The next generation of research into plant closures needs to shed a light on precarious labour markets. Better information and a stronger evidence base is called for on labour market precariousness associated with large-scale redundancies. There is a need to understand its impact on the functioning of labour markets and the decisions taken by displaced workers, as well as the policies needed to overcome a position at the margins of the labour market. Recent studies have shown that successful policies are likely to 'extend beyond merely providing "jobs" or "job opportunities"' also to grapple with questions surrounding the quality of employment (Bailey & de Ruyter, 2015, p. 379). Standing (2011) provides a means to operationalize these issues by outlining seven forms of uncertainty in employment: labour market security (access to adequate paid work); employment security (protection against arbitrary dismissal); job security (opportunities for occupational/career progression and upward mobility); work security (protection against hazards and unsociable working hours); skill reproduction (opportunities for skill deployment and attainment); income security (liveable wages); and representation security (collective voice at work). This framework provides a start-point for advancing our understanding of precariousness after retrenchment.

However, there are deficiencies in Standing's framework that need to be addressed before application to the understanding of closures. First, Standing underplays the embodied characteristics of individuals. There is a clear association between labour insecurity and factors related to gender, age and ethnicity (McDowell, 2008), which result in quite different pathways post-closure (Bailey et al., 2012; Weller, 2008). We need to keep in mind that frameworks based on precarious work are not the same as those based on precarious workers (Campbell & Price, 2016). Since Standing's framework is gender-blind, it overlooks the different labour market positions of men and women. Second, Standing ignores household and family responsibilities, and does not accommodate insecurity at the household scale, but in reality workers' labour market participation is shaped by their household responsibilities (Hanson & Pratt, 2003), especially post-retrenchment (Weller & Webber, 1999). The impacts of contemporary job loss are complicated by the increasing likelihood that spouses will be active in the workforce, which reduces the degree of financial hardship but also restricts the family's capacity to relocate to take up opportunities. Importantly, a working spouse disqualifies workers from unemployment assistance in Australia, which implies a large proportion of workers navigate the labour market without government support.

The third gap in Standing's framework is the absence of an appreciation of the spatial dimensions of labour market processes. Standing's aggregations obliterate the differences between places and regions, and therefore also the interplay between processes at different spatial scales, such as differences in occupational labour markets (Bailey et al., 2014; Bailey & de Ruyter, 2015; Weller, 2008).

Fourth, Standing's framework is too static for the dynamic nature of labour market processes. Standing's checklist cannot capture the ways that different types of economic security interact and reinforce each other, or how people make trade-offs, for example, by forgoing 'job' security' to improve 'labour market' security (Burgess & Campbell, 1998).

Fifth, Standing underplays the relationship between economic, financial and emotional security. Retrenchment's negative impact on mental health are well documented (Verity & Jolley, 2008; Webber & Campbell, 1997), but the causal mechanisms remain opaque (Weller, 2012).

Finally, Standing's framework cannot integrate the community-wide and policy impacts and responses or how these are mediated by the wider political economy (Bailey et al., 2014).

METHODOLOGICAL CHALLENGES AND OPPORTUNITIES

Future research into plant closures must address these critical information gaps and provide a synthesis that informs policy development and implementation, while at the same time advancing knowledge. It needs to bring together insights into the functioning of economies and industries, with a detailed understanding of changes in labour markets. One pathway forward is to build upon work on how the economies of places evolve over time (Boschma & Martin, 2007). Recent writing on the 'branching' of workers into new forms of economic activity is a potentially promising pathway, as it examines the ways in which those pathways are shaped by both local opportunities, place-based leaders and the previous decisions of workers and policy-makers. It acknowledges that workers face pressure to remain economically active to sustain themselves and their households, while also seeking outcomes that maximize their existing (or to-be-acquired) skills. As MacKinnon (2017) has argued, there is a pressing need to understand better the everyday practices deployed by workers affected by redundancy as they seek to move into related industries, relocate to more buoyant labour markets, adopt informal coping strategies, initiate new enterprises or reshape household dynamics to sustain their families. Scholarship needs to illuminate the ways in which labour markets change with industrial transformation.

Previous studies of large-scale plant closures have examined the employment position of individuals but have displayed a tendency to treat them as the recipients of outcomes – of local labour market conditions, government policies, etc. – without acknowledging their agency

in shaping their own future. Little is known about the decisions taken by retrenched workers, which factors determine the opportunities taken up or declined, the relative influence in the decision-making process of household factors – spousal employment, family ties to the community and so on – relative to fiscal considerations such as wages offered. In the 21st century some workers made redundant will experience chequered and interrupted careers while others pick up ‘gigs’ via labour hire agencies or internet platforms. Others engage in voluntary work, unremunerated work for friends and family, or underpaid work in the informal economy. There will be workers who choose to leave the labour market permanently; workers who want to work but become discouraged; and workers who settle into welfare dependence. Others will move to well-paid and productive careers in related occupations. These variegated outcomes are poorly understood because previously it was accepted individual outcomes were a product of broader structural conditions. Future investigations into the impacts of industry restructuring and closure need to address this gap.

Qualitative data collection is especially valuable in understanding change in 21st-century labour markets because of its ability to apprehend a diversity of life experiences and circumstances. Contemporary society and workplaces are increasingly complex spaces (Beck, 2006), with significant differences between individuals on the basis of gender, age, ethnicity, education and prior work history. Members of this differentiated workforce are likely to experience very different combinations of outcomes, with complexity that defies capture through large-scale cross-sectional or longitudinal survey instruments. The integration of qualitative methods into the examination of plant and industry closure needs to be undertaken longitudinally through repeat face-to-face discussions over time in order to understand better the ways in which people understand the changes affecting them. There is a need to focus this attention on those likely to be most at risk – women workers, those from ethnic or other minorities, older workers, and others likely to be vulnerable once retrenched (Bailey & de Ruyter, 2015) – whose circumstances are often excluded as outliers in quantitative studies. Qualitative data collection should include the spouses and families of retrenched workers in order to understand better how career trajectories interact with household circumstances. Previous studies in Australia have rarely considered the role of spouses in structural labour market change (Gibson, 1992), although Newman and McDougall (2009) examined the impact of redundancy on the children and grandchildren of displaced auto workers.

In-depth qualitative data can be used to design and develop longitudinal discrete-choice experiments (DCE). DCEs provide a robust statistical method to examine the choices that consumers, households, firms and other agents make (Train, 2009). Whilst their application in this context is new, DCEs have been successfully applied over the last two decades in health economics to assess the relative determinants of health, workers’ employment choices, and the effects of policies designed to address human resources problems (Mandeville, Lagarde, & Hanson, 2014). DCEs have the capacity to build on the in-depth qualitative data to further interrogate workers’ decision-making processes and their weighting of options in relation to future training and employment. Such methodological innovation promises to illuminate why retrenched individuals make particular decisions about their futures. Applied longitudinally it provides a sequence of insights into the decision-making of individuals and the ways in which the choices taken soon after retrenchment shape subsequent decisions and future trajectories.

There is a now-acknowledged need to understand the community impacts and dynamics associated with plant closure alongside the analysis of individual outcomes. This realization has emerged in both the academic literature (Anderton, 2017; Horlings, Collinge, & Gibney, 2017; Quinn, 2017; Rossiter & Smith, 2017) and amongst policy-makers. For example, in Australia the Productivity Commission (2017) has explicitly accepted that central governments lack the capacity to lead a process of economic and social change at the local scale, and that actors

mobilized locally need to take charge of their own future (Bailey & Berkeley, 2014; Beer & Clower, 2014). Closures have the potential to give rise to both negative and positive social impacts including long term unemployment, lower regional incomes and the opportunity to reshape local economies. These consequences could include the flow-on effects for families whose businesses are affected by the closures as well as the capacity for improved community cohesion as people unite to rebuild their communities. Place-specific factors, including the strength of local government, local leadership, geography, resource endowments and industry structure, are likely to serve as important mediating factors. We need to know more about how, and under what circumstances, effective local responses arise, and whether broader community attitudes have a determinant role in the emergence of leaders (Safford, 2009). We also need to understand better how local leaders can effectively interact with the formal responses of governments.

The realization that the impacts of plant closure do not terminate at the workplace gate represents a change in direction for research, with a need to include community-wide surveys into future analyses as a way of ascertaining the extent of indirect ‘knock-on’ impacts of the plant closures for households. There is the opportunity to determine whether the uncertainties of the labour market give rise to feelings of helplessness at the community scale, and the degree to which individuals look to governments or businesses to identify solutions. There is also potential value in examining relationship between structural adjustment programmes and political (dis)enfranchisement (Weller, 2017), and the degree to which individuals are aware of government assistance. Such investigations build upon existing analyses by researchers into community engagement with political governance and processes (Shelton & Garkovich, 2013), and shed a light on questions of household demography, social capital, the perceived leadership of the community and broader community expectations.

CONCLUSIONS

In a world of on-going economic change and rapid technological innovation there is an acute need to understand better the processes of industry decline and the fate of workers affected by the demise of their industry. The ‘shock of the new’ (Toffler, 1971) may well see large parts of our established economic structure disappear within the space of one or two decades, and if some of the commentators are to be believed (Deloitte, 2014; Frey & Osborne, 2017) the very institution of paid employment may well be brought into question for large sections of the population in developed and developing economies alike. These are critical challenges for cities and regions locally and globally. The impacts potentially touch on many areas of public policy – large-scale tertiary and higher education, income support arrangements, taxation, trade and social development – as well as culturally important institutions such as shared social values, family structures, parenting practices and the relationships between generations. In addressing these issues there is a pressing need for both a stronger evidence base, one that is in tune with contemporary labour markets; that integrates explanations based on both structural conditions and the agency of individuals and groups; and that truly takes advantage of both quantitative and qualitative methodologies. We also need this evidence base to be applied to the development of better urban and regional policy and programmes, as the impacts find their clearest expression at this scale, and are best addressed through stronger city policies.

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