Grease monkeys : A history of Australia's motor mechanic trade, 1900-1970

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Grease Monkeys

A History of Australia's Motor Mechanic Trade, 1900–1970

Submitted by

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Abstract

Motor mechanics are iconic members of Australia's working class. The timeless imagery associated with them, of men in grease-stained overalls – colloquially called 'grease monkeys' from the 1930s – hides a complex history.

This thesis explores how class structures affected the organisation of the motor mechanic trade. The first motor mechanics emerged from across the social divisions of class, race and gender. A demand for mechanics' engineering skills created avenues of social mobility. The diversity of motor mechanics in the early years of automotive repair work also inhibited solidarity and their ability to organise. As a result, the organisational structures that governed the trade were imposed by multiple outside groups. Motorist organisations, employer associations, technical colleges and multiple trade unions all vied to advance their interests and gain control over automotive work. This affected both mechanics' class positioning and social status.

Issues of skill are crucial here. Mechanics initially relied upon an unstructured, *ad hoc* education, based around practical learning. This changed in the interwar years, as technical colleges began offering courses in automobile repair. The formalisation of motor mechanics' education that took place from this period affected more than their skills. Accreditations defined who could qualify as a mechanic. These were responsible for the initial gendering of the trade, as women were excluded from trade colleges. Changing gender norms following the Second World War acted in combination with the introduction of accreditations to set boundaries, both in terms of who could become a mechanic and the skills deemed relevant to the trade. This culminated in a broad deskilling program, enforced at the at the behest of employers which diminished mechanics' expertise and affected their financial remuneration. This thesis explores the connections between these different aspects of the motor mechanic trade to extend our understanding of Australian class structures.

Engaging with a broad range of sources, this thesis incorporates archival records, interviews, newspapers, and trade journals. It integrates aspects of labour, economic, educational and gender history to provide historical context to our current understanding of mechanics. In turn, it contributes to debates regarding the right to repair, a grassroots movement of American origins that seeks to protect independent repairers, and the future of maintenance work.

Contents

Declaration

This thesis contains no material that has been extracted in whole or in part from a thesis that I have submitted towards the award of any other degree or diploma in any other tertiary institution.

No other person's work has been used without due acknowledgement in the main text of the thesis.

All research procedures reported in the thesis received the approval of the relevant Ethics/Safety Committees (where required).

[redacted] 5/12/2021

Signature Date

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My parents, Joanne and Simon Pearson, have been there for me throughout all the twists and turns my life has taken. They have always supported me in my studies, for which I am forever grateful. There are countless other friends and family, too many to name here, who have supported me personally throughout my PhD. They know who they are, and I thank them all.

Finally, despite this small army, I still would have never been able to finish this thesis if it were not for the daily support from my partner, my best friend, my biggest supporter, and the love of my life: Karen Cooke. We have been crazy enough to both undertake PhDs at the same time, mine in history and hers in biological anthropology. We celebrated the good times together and held each other together through the difficult ones (of which there were many). Karen, thank you for everything over the last four and a half years. I never could have completed this without you. I love you with all my heart.

All these people have made this thesis better. Any remaining errors are my own.

List of Abbreviations

AEME – Australian Electrical and Mechanical Engineers

AEU – Amalgamated Engineering Union

AWAS – Australian Women's Army Service

NES – National Emergency Services

NRMA – National Roads and Motorists' Association

RAAF – Royal Australian Air Force

RACA – Royal Automobile Club of Australia

(R)ACV – (Royal) Automobile Club of Victoria

RMIT – Royal Melbourne Institute of Technology

VACC – Victorian Automotive Chamber of Commerce

VBEF – Vehicle Builders Employees' Federation

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Introduction

Mechanics are not the sort of people who reach for publicity, and they rarely get it. But I have a desire to hoist my mechanic before the bright lights and celebrate every grease-stained inch of him – Sasha Shtargot[1]

In 2010 Sasha Shtargot, a writer from the regional town of Castlemaine, Victoria, published a short article about his local mechanic Mick in the Australian current affairs magazine, *Eureka Street*.[2] Shtargot described the daily grind of his humble subject as part of an analysis of the maintenance workers who keep our society running while also being hopelessly exploited by it. 'Imagine a car-dependent country like ours without mechanics', Shtargot mused. Though mechanics' work was essential, this was not recognised in social attitudes towards them. Nor was it reflected in their conditions at work and their pay. 'Amid strict divisions of labour, we are still a society ruled deeply by status. And when it comes to dirty, repetitive or dangerous work we prefer to look away', Shtargot observed.[3]

Shtargot's depictions of Mick's workshop, with grease and grime coating everything from the benches to a pornographic calendar on the wall, gave the garage a sense of timelessness. In his telling, Mick's garage appeared as a relic of the past. Reading Shtargot's article, it is easy to imagine that Mick's place of work had always been like this, that nothing about it had ever changed. In turn, Mick himself appeared as a timeless type, a living example of the 'grease monkey' stereotype so often associated with motor mechanics. The abiding image of Mick in Shtargot's piece was as an experienced, tireless worker with a rough, worn face. Mick was a man of few words, but always willing to assist and educate drivers on how their machines work.[4]

While Shtargot provided no actual images of Mick, his article about him was of a piece with the visual depictions of the Brisbane mechanic Bill Russell, produced by the photographer Dean Saffron in 2015 (see Image 1). Saffron's photographic series captured Russell working in his historic garage, a workplace that had been in operation for the past hundred years. Russell's garage was also covered in grime and dust, with equipment, cables

[1] Sasha Shtargot, 'Ode to My Mechanic', *Eureka Street* 20, no. 15 (2010): 36.
[2] Ibid., 36–37.
[3] Ibid.
[4] Ibid.

and tools spread out everywhere. Saffron's images of Russel again imparted a sense of timelessness – his photographs could have easily been taken decades earlier than the 2010s.

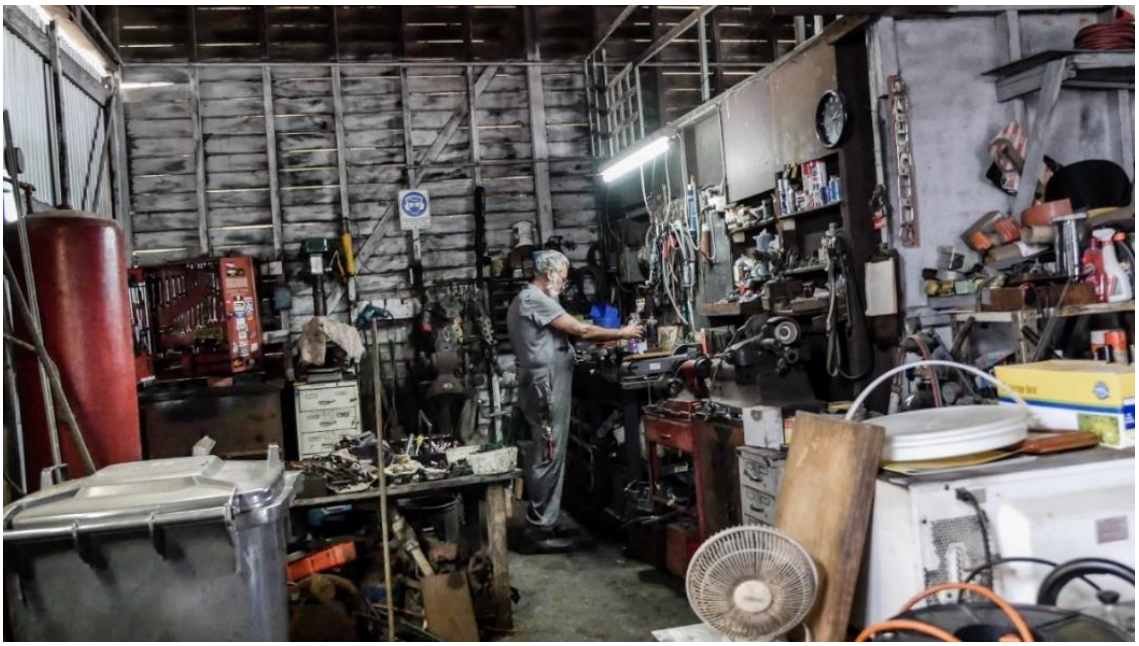

Image 1 Bill Russell at work in the one hundred year old workshop at Buckland Auto service, Nundah, Queensland, January 2015. Photographer: Dean Saffron. 2 9802-0001-0016, State Library of Queensland, Brisbane. Reproduced with permission from Dean Saffron.

This thesis engages in a project in some ways similar to Shtargot's and Saffron's: elevating the ordinary mechanic as a figure deserving of contemplation and respect. Rather than contributing to a sense of the mechanic's timelessness, however, this thesis historicises the work they performed and traces the evolution of the 'grease monkey' figure associated with mechanics since the end of the Second World War. The following chapters will make it clear that the stereotype of the male, working-class mechanic is a historical creation. By examining the motor mechanic trade in Australia from its origins, dating back to the nineteenth century through to its development into an unambiguously working-class trade by 1970, the thesis will show that the image of mechanics as 'grease monkeys' emerged over time rather than being fixed or somehow preordained.

When the motor car arrived in Australia in 1900, it created an entirely new area of work in automobile repair and maintenance. This work drew on existing knowledge held by Australia's metalworkers, but the trade had few defined boundaries. A wide variety of people who acquired motor-mechanic skills were consequently able to become involved in different kinds of modern engineering work: both men and women across class divisions. This thesis will explore these fluid and undefined origins to the motor mechanic trade. It will also chart how, why, and when the boundaries around the trade emerged. This process eventually robbed motor mechanics of autonomy over their labour, making it difficult for them to acquire

a wide range of skills and preventing them from moving to various forms of engineering work. By examining this process, the thesis will provide insights not only into the history of the mechanics' trade, but also into how Australian class structures developed across the twentieth century.

As part of its contribution to the history of class in Australia, this thesis explores the increasing exploitation of mechanics through meagre wages, limited opportunities for career advancement, and low social status between c.1900 and 1970. I argue that this outcome was not inevitable. Rather, it was the result of three key developments. The first was class struggle. The most conspicuous feature of this struggle for mechanics was a long-running campaign by motorists and employers to suppress their standing. It was also significant that mechanics' ability to resist the efforts of motorists and employers to exploit them was limited by their lack of collective identity and solidarity. Though many mechanics found individual ways to resist, their trade remained characterised by a lack of industrial organisation across the twentieth century.

The second reason that mechanics were increasingly exploited and limited in their work had to do with deskilling. As I show in the following, this deskilling was a result of technological change rendered by massive transformations in the manufacturing sector, and further facilitated by complicit educational institutions. The final reason that mechanics were corralled into low-status, low-paying work and limited to a working-class position and identity had to do with transformations in gender relations in the post-war period. Cars became definitively 'male', linked with changing masculinities in an age of suburbanism and consumerism. Mechanics, however, became associated with car culture and youth culture offsets, both of which disrupted conservative tastes and were designated as low status.

In showing these three factors at work over the period spanning the turn of the twentieth century to the early 1970s, this thesis provides a historical context for the broad denigration of maintenance work that has occurred since then. This thesis stops at 1970 because the key development it explores – the process through which mechanics became emblematic members of the working-class, associated with the particular masculine 'grease monkey' stereotype – was effectively complete by then. What has happened under late capitalism, however, is that mega-corporations have made large profits from the freedom to monopolise maintenance work while driving independent repairers to collapse, or otherwise forcing them to engage in semi-legal, or outright illegal, activities in order to continue to

provide repairs.[5] The monopoly of maintenance work by manufacturers has set the scene for the ongoing fight over whether citizens even have a right to repair their own belongings. As discussed in the epilogue, this is destined to affect what our society and economy looks like in the future.[6]

Over the next few pages, I provide a summary and literature review for the three key aspects of my argument about why and how motor mechanic work began as a medium for social and occupational mobility for its practitioners at the start of the twentieth century, only to become a deskilled trade that was industrially isolated by the start of the 1970s. I accordingly turn first to a survey of work on the history of motor vehicles, their relationship to class, and to scholarship on the history of class more broadly. Part of this section involves a discussion of the theories of John Urry, using what he says about social mobility to understand how mechanics negotiated their relationship to class. This leads into a discussion of histories of technology and skill, which focuses on the debates surrounding Harry Braverman's theory of deskilling. I will later use Braverman's work to examine the processes through which mechanics lost their status and autonomy in the garage after the Second World War.

My survey of relevant literature finishes with a summary of work on the changes in gender relations and consumption patterns taking place in the wake of the Second World War. Reference is made to Raewyn Connell's concept of hegemonic masculinity here, chiefly to gesture toward the shifts in hegemonic masculinity taking place in post-war Australia and how this affected mechanics' status, work conditions and identity. This section also surveys

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[5] Masayuki Hatta, 'The Right to Repair, the Right to Tinker, and the Right to Innovate', *Annals of Business Administrative Science* 19 (2020): 144–55; Jason Koebler, 'Tractor-Hacking Farmers Are Leading a Revolt Against Big Tech's Repair Monopolies', *Motherboard: Tech by Vice*, 15 February 2018, https://web.archive.org/web/20211018024517/https://www.vice.com/en/article/kzp7ny/tractor-hacking-right-to-repair; Rob Stumpf, 'Tesla's $16,000 Quote for a $700 Fix is Why Right to Repair Matters', *The Drive*, 12 July 2021, https://web.archive.org/web/20211204212421/https://www.thedrive.com/news/41493/teslas-16000-quote-for-a-700-fix-is-why-right-to-repair-matters. Late capitalism was initially identified by Ernest Mandel (*Late Capitalism* [1975] (London: Verso, 1980)) as relating to the post-war economic boom. Originally writing in the early 1970s, Mandel himself had designated post-1967 as a new wave of capitalist development (*Late Capitalism*, 130–32). Fredric Jameson (*Postmodernism, or, The Cultural Logic of Late Capitalism* (London: Verso, 1991), xx), has expanded on this understanding by identifying late capitalism as emerging from the post-war era, but identifies the end of the 1960s as its starting point as a new era of capitalism.

[6] Peter Ryan, 'Car Dealers Targets by ACCC in Warranty Crackdown', *ABC News*, 10 August 2017, https://web.archive.org/web/20201111182651/https://www.abc.net.au/news/2017-08-10/car-dealers-targeted-by-accc-in-warranty-crackdown/8792258; Leanne Wiseman and Kanchana Kariyawasam, 'Revisiting the Repair Defence in the *Designs Act* (2003) in Light of the Right to Repair Movement and the Circular Economy', *Australian Intellectual Property Journal* 31, no. 2 (2020): 145–46; Leo Kahane, 'The Impact of the Massachusetts 2012 Right to Repair Law on Small, Independent Auto Shops', *Applied Economic Letters* (2021): doi:10.1080/13504851.2021.1896669; Aaron Perzanowski, 'Consumer Perceptions of the Right to Repair', *Indiana Law Journal* 96, no. 2 (2021): 361–94; Productivity Commission, *Right to Repair*, Inquiry Report no. 97 (Canberra: Productivity Commission, 2021); Aaron Perzanowski, *The Right to Repair: Reclaiming the Things We Own* (Cambridge: Cambridge University Press, 2022).

work on the relationship between gender and technology, and the increasing masculinisation of the car, which also affected mechanics' identity and work.

Class Relations and Motor Cars in Australia

This thesis adopts Terry Irving and Raewyn Connell's definition of class as the relationships between peoples of similar social strata. Their monograph, *Class Structure in Australian History*, has long dominated Australian labour historiography.[7] Though rejected as inadequately agentive by the subsequent generation of cultural historians who were taught with it, Irving and Connell's classic Marxist history of Australia remains useful here.[8] Class, for Irving and Connell, is understood as a relationship, although it is not confined to a group identity. Rather, it also includes 'a complex of emotions, of sympathies and antagonisms; and a complex of symbols, forms of speech, labels, codes'.[9] Even then, as they reflected during a recent anniversary of the book, class is a process of becoming, not a set of categories into which mechanics – nor indeed any other workers – were automatically slotted.[10] This understanding is grounded in the assumption that class was made, as E.P. Thompson famously showed, and did not pre-exist in worker identity or consciousness. The inclusion of mechanics into Australian class structures was a historical process – it was only in the end that they became emblematically working class.[11]

Historians have often gestured to the car as a symbol of class, gender, and technological modernity in Australia, noting its changing meaning over the twentieth century.[12] This understanding of how the history of the automobile has interacted with an

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[7] R.W. Connell and T.H. Irving, *Class Structure in Australian History*, 2nd ed. (Melbourne: Longman Cheshire, 1992).
[8] Henry Pasternoster, 'Questioning the Legacy of *Class Structure in Australian History*: An Australian "Historical" Class Analysis?', *Labour History* 111 (2016): 119–20.
[9] Connell and Irving, *Class Structure in Australian History*, 5.
[10] Terry Irving and Raewyn Connell, 'Scholars and Radicals: Writing and Re-thinking *Class Structure in Australian History*', *Journal of Australian Studies* 40, no. 1 (2016): 11–12.
[11] E.P. Thompson, *The Making of the English Working Class*, revised ed. (Harmondsworth, Hillingdon: Penguin, 1968), 9–11.
[12] Graeme Davison, *Car Wars* (Crows Nest, NSW: Allen & Unwin, 2004); Robert Conlon and John Perkins, *Wheels and Deals: The Automotive Industry in Twentieth-Century Australia* (Aldershot, Hampshire: Ashgate, 2001); Georgine Clarsen, *Eat My Dust: Early Women Motorists* (Baltimore: The John Hopkins University Press, 2008), 120–39; Connell and Irving, *Class Structure in Australian History*, 198; John William Knott, 'The "Conquering Car": Technology, Symbolism and the Motorisation of Australia before World War II', *Australian Historical Studies* 31, no. 114 (2000): 1–26; Linley Walker, 'Car Culture, Technological Dominance and Young Men of the Working Class', in *Male Trouble: Looking at Australian Masculinities*, eds. Stephen Tomsen and Mike Donaldson (North Melbourne: Pluto Press, 2003), 40–68. See also Judy Wajcman, *Feminism Confronts Technology* (Cambridge: Polity, 1991), 134–37.

understanding of class is furthered by Pierre Bourdieu's theories of taste.[13] Systems of taste and cultures of consumption, according to Bourdieu, are formed through social connections, thus creating a relationship to class.[14] This thesis expands upon this understanding by considering whether these relationships with status and taste transferred from car to auto repairers. Histories of the car, however, have often focused on the technology itself and those who owned it. Graeme Davison's monograph, *Car Wars*, is the most prominent in Australian historiography.[15] Davison shows that the car literally re-shaped Australian urban and regional landscapes. It also influenced the inner life of Australians, structuring consumer and sexual desire, fulfilled gender stereotypes and acted as a signifier of socio-economic status.[16] Internationally, historians Michael Berger and Giucci Guillermo have also seen the car as a signifier of modernity, indicating the centrality of an expanding middle class as the car transformed both landscapes and economies.[17]

Car owners have a significant place in this thesis, however, as they asserted collective power, not unlike trade unions through motorist organisations. Their organisation at the turn of the twentieth century signalled their role as a group with a material interest in automotive repair. Their part in this thesis accordingly expands beyond a Bordieuan sense of their performance of class identity via their taste in vehicles.[18] Erik Olin Wright's class theory described the 'exploitation of assets' as an extension of Marx's understanding of the control of the means of production. This is critical to understanding the impact motorists had on the mechanic trade. Wright defines three assets in this framework: capital, organisational and credential. These are key in defining the class positioning of individuals and groups.[19]

Control within the automotive industry is easy to track, as capitalists control the means of production in the manufacturing industry, along the lines observed by Marx.[20] In maintenance, however, Marx's categories are trickier to apply. Kevin L. Borg notes that motor mechanics fall into a middle ground, between owner and worker.[21] Motorist

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[13] Pierre Bourdieu, *Distinction: A Social Critique of the Judgement of Taste* (Cambridge, MA: Harvard University Press, 1984), 116–17, 128–29, 278–79.
[14] Ibid., 466–75. For further on the split between culture and economics in defining class, see Mike Savage, 'End Class Wars', *Nature* 357 (2016): 476–78.
[15] Davison, *Car Wars*.
[16] Ibid. For an economic history counterpart to Davison's cultural history, see Conlon and Perkins, *Wheels and Deals*.
[17] Michael L. Berger, *The Automobile in American History and Culture* (Westport, CT: Greenwood Press, 2001), xx–xxviii, 143–203; Giucci Guillermo, *Cultural Life of the Automobile: Roads to Modernity* [2004] (Austin: University of Texas Press, 2012).
[18] Bourdieu, *Distinction*.
[19] Erik Olin Wright, *Classes* (London: Verso, 1985), 283.
[20] Karl Marx, *Capital*, vol. 1 [1867] (London: Penguin, 1976), 270–73, 492–508, 553–65.
[21] Kevin L. Borg, *Auto-Mechanics: Technology and Expertise in Twentieth-Century America* (Baltimore: John Hopkins University Press, 2007), 2–4.

organisations and employer groups, otherwise known as motor trader associations, increasingly controlled the organisational assets associated with automotive repair, using their networks to affect the status of mechanics. This included the direct employment of mechanics through technical divisions and roadside assistance schemes, which introduced a hierarchy of skill to the trade. This placed car owners among other 'bosses' who were united in the goal of controlling the motor industry to advance shared interests and sought to squeeze the incomes of mechanics.

Australian labour historians, including Ken Buckley and Ted Wheelwright, have rightly disputed nineteenth-century politicians' claims that Australia was a 'working man's paradise'.[22] Antipodean institutions, such as the Australian Labor Party and Arbitration Courts, may have made Australia a social laboratory, but its working class have not been placed on a materially better footing than their comrades overseas, as Buckley and Wheelwright showed.[23] Australian bosses exploited assets for profit the same as anywhere else. Perhaps even more than their American counterparts, Australian workers were enthusiastic unionists, though the distributed structure of the mechanics' trade meant that they retained more aspects of the 'autonomous craftsman' than workers described by American labour scholars David Montgomery and Harry Braverman.[24] A diffuse set of bosses like motorist organisations, motor trader associations, and even educational institutions, converged in Australia to suppress mechanics' autonomy. By focusing on this range of players, this thesis offers a fresh approach to questions of worker control over work processes, priorities and even tool ownership in twentieth-century labour history.

This process aligns well with John Urry's theory of mobilities, which has been used to describe not only some of the social and cultural practices that cars enabled but also a framework in which to understand class.[25] Mechanics were not working class because of their occupation. Rather, class formation was a mobile set of activities that were always *in motion* – mechanics became working class, they performed their working-class identity, and some

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[22] *Sydney Morning Herald*, 26 February 1884, 7.
[23] Ken Buckley and Ted Wheelwright, *No Paradise for Workers: Capitalism and the Common People of Australia 1788–1914* (Melbourne: Oxford University Press, 1988). See also Ken Buckley and Ted Wheelwright, *False Paradise: Australian Capitalism Revisited, 1915–1955* (Melbourne: Oxford University Press, 1998)
[24] David Montgomery, *Workers' Control in America: Studies in the History of Work, Technology and Labor Studies* (Cambridge: Cambridge University Press, 1980), 14–15; Harry Braverman, *Labor and Monopoly Capital* (New York: Monthly Review Press, 1974), 109–10.
[25] Mimi Sheller and John Urry, 'The New Mobilities Paradigm', *Environment and Planning A* 38, no. 2 (2006): 207–14; John Urry, *Mobilities* (Cambridge: Polity, 2007), 44–62; Dennis Kingsley and John Urry, *After the Car* (Cambridge: Polity, 2009), 27–44, 47–61. The effects of social mobility on class structures have been explored by labour historians. For examples, see Irving Krauss, *Stratification, Class, and Conflict* (New York: The Free Press, 1976), 25–26, 31–68, and Anthony Giddens, *The Class Structure of the Advanced Societies*, 2nd ed. (London: Hutchinson & Co., 1981), 98.

worked to leave the working class while a few never were. In contrast to the ways that such theoretical frameworks have led some historians to stress worker agency, however, this thesis also shows the ways that this agency was constrained by an assemblage of sometimes-coercive structures that American labour historian Seth Rockman called 'economic power relations'.[26]

Mechanics were able to engage in mobility through class structures by leveraging their social status. Max Weber saw status as a dimension of power within society: separate from class, yet inherently interlinked with it.[27] Bourdieu expanded upon Weber in arguing that an analysis of the materialistic nature of class is incomplete without comprehending the symbolic importance of status.[28] More recent class theorists such as Erik Olin Wright and Mike Savage have seen the performance and pursuit of social status as a way of understanding agency within class structures.[29] This thesis draws on Wright and Savage and expands upon their understandings of social status by demonstrating how individual mechanics navigated markers of social status in ways that affected their class positioning.

For mechanics, opportunities to use status to engage in social mobility came through areas of engineering where their skills and experience were recognised. Recognition of their status as skilled engineering workers allowed mechanics to progress into higher-paid occupations. The relationship between mechanics and engineers, through interactions within Australia's unique institutions, help expose the interconnection of class and status in new ways. Middle-class engineers, seeking increased status through professionalisation, actively sought to remove these avenues of entry available to mechanics. The further complicity of educational institutions with employer interests, moreover, challenges notions of their independence, long assumed by the Australian labour movement.

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[26] Seth Rockman, 'The Contours of Class in the Early Republic City', *Labor: Studies in Working-Class History* 1, no. 4 (2004): 95–99, 106–7; Seth Rockman, 'Class and the History of Working People in the Early Republic', *Journal of the Early Republic* 25, no. 4 (2005): 530–33.

[27] Max Weber, *Economy and Society*, vol. 1, eds. Guenther Roth and Claus Wittich (Berkeley, CA: University of California Press, 2013), 305–7; Richard Breen, 'Foundations of a neo-Weberian Class Analysis', in *Approaches to Class Analysis*, ed. Erik Olin Wright (Cambridge: Cambridge University Press, 2005), 33.

[28] Elliot B. Weininger, 'Foundations of Pierre Bourdieu's Class Analysis', in *Approaches to Class Analysis*, 84–85.

[29] Erik Olin Wright, *Understanding Class* (London: Verso, 2015), 1–3, 17–18; Savage, 'End Class Wars', 475–79. See also Carles Muntaner and Virginia Gunn, 'In Defence of Class Wars in Popular Health: The New Landscape of Social Class with Bourdieu, neo-Marxists, and the Kohn/Schooler/Wright Integrative Models', *International Journal of Health Services* 49, no. 1 (2019): 104–6.

Technologies, Repair Work, and Deskilling

Not even the best unions could protect all workers from technological change. Historians of technology have long demonstrated that tools affect our society beyond their mere existence. The affordances that each piece of technology offers changes our social relationships. Technology does not exist in a vacuum. On the contrary, many forms of technology play a crucial role in defining workers and their location within class structures.[30] Wright's theories suggest that, because of this relationship with technology, the placement of mechanics within class structures is complicated. Major corporations, such as Ford and General Motors-Holden, controlled the means of the production of technology. The knowledge of its operation, however, extended beyond their control. Wright argues that skilled workers have been (and continue to be) capable of adapting their knowledge to challenge class structures.[31] For mechanics, this opportunity occurred through the increased status they achieved by engaging with emerging technology. This was especially prevalent in Australia, where the arrival of the automobile occurred without the direct lines of education from manufacturer to repairer evident in the United States.

American historian of technology Kevin L. Borg's *Auto-Mechanics* offers a history of auto repair that bears some chronological similarity to this thesis. There are key differences between Borg's project and the one here, however, not just relating to the fact that he focuses on the United States, but also because *Auto-Mechanics* positions mechanical skill as a timeless artefact, only affected by technological change.[32] By contrast, this thesis argues that skill is a historical concept, drawing heavily in doing so on the approach of the Australian labour historian, Ben Maddison. Building upon the theories of Antonio Gramsci, Maddison describes a transformation following the Industrial Revolution in the understanding and deployment of skill in the late nineteenth century. The search for increased efficiency provided an incentive for capitalists to take control over the education of craft workers. The

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[30] Jacques Ellul, *The Technological Society* [1954] (New York: Vintage, 1964), 49–55; Cynthia Cockburn, *Brothers: Male Dominance and Technological Change* (London: Pluto Press, 1983), 140–50, 191–209; Cynthia Cockburn, *Machinery of Dominance: Women, Men and Technical Know-How* (London: Pluto Press, 1985), 20–31; Langdon Winner, 'Do Artifacts Have Politics?', *Daedalus* 190, no. 1 (1980): 121–35; Donald Mackenzie and Judy Wajcman, 'Introduction', in *The Social Shaping of Technology: How the Refrigerator Got Its Hum*, ed. Donald MacKenzie and Judy Wajcman (Milton Keynes: Open University Press, 1985), 2–24; Borg, *Auto-Mechanics*; Jesse Adams Stein, *Hot Metal: Material Culture and Tangible Labour* (Manchester: Manchester University Press, 2016); Mar Hicks, *Programmed Inequality: How Britain Discarded Women Technologists and Lost its Edge in Computing* (Cambridge, MA: MIT Press, 2017), 233–37; Lee Vinsel and Andrew L. Russell, *The Innovation Delusion: How Our Obsession with the New has Disrupted the Work That Matters Most* (New York: Currency, 2020), 39–42, 104–6. Labour historians have also discussed this at length, see C. Wright Mills, *White Collar: The American Middle Classes*, 50th anniversary ed. (Oxford: Oxford University Press, 2002), 66–70; Montgomery, *Workers' Control in America*; Braverman, *Labor and Monopoly Capital*.
[31] Wright, *Classes*, 283.
[32] Borg, *Auto-Mechanics*, N15, 180–81.

old understanding of 'artisanal skill', Maddison suggests, was characteristically mysterious, unknowable to outsiders but instinctual to – and thus controlled by – craftsmen. Industrialisation undermined this 'mystery', removing the control of knowledge from workers, and replacing them with structured institutions.[33]

Mechanics emerged in the dying days of this artisanal structure. Since there were few barriers to entry into the work of automotive repair, mechanics came from a variety of existing crafts. Others were simply creative, adventurous individuals who stuck their heads underneath a car and figured out how it worked. No formal training developed until the 1920s when motorist groups organised training classes through technical colleges in a bid to take control of the processes of knowledge. This thesis explores the transformations that these educational institutions wrought on the hierarchies of skill inherited from artisanal structures. This enabled employers, in collusion with other interest groups, to restrict opportunities for social mobility.

Labour historians have long been aware of the connections between technology and class. Harry Braverman's influential examination of scientific management in *Labor and Monopoly Capital* explored how the techniques bosses used to control factory workers in the late nineteenth century were adapted to deskill white-collar workers towards the end of the twentieth.[34] Taylorism used strict management techniques in coordination with technology to deskill workers. David Montgomery subsequently expanded on this by exploring the importance of social distinctions in the workplace.[35] Both conclude that the subsequent specialisation of workers was a ploy by management to gain power within the workforce, rather than a necessity demanded by the ever-growing complexity of technology.

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[33] Ben Maddison, 'Skill and the Commodification of Labour in New South Wales, 1840–1915', PhD thesis, University of Wollongong (1995): 1–12; Ben Maddison, 'From "Moral Economy" to "Political Economy" in New South Wales, 1870–1900', *Labour History* 75 (1998): 82–84; Ben Maddison, '"The Skilled Unskilled Labourer": The Decline of Artisanal Discourses of Skill', *Labour History* 93 (2007): 73–74. This unknowable aspect of artisanal skill was vital to the control workers possessed over their craft. Seth Rockman ('The Contours of Class in the Early Republic City', 100) describes the master's possession over artisanal skill as 'a form of property', granting crafts workers status within society. See also Kathleen Franz, *Tinkering Consumers Reinvent the Early Automobile* (Philadelphia: University of Philadelphia Press, 2005); Stefan Krebs, '"Dial Gauge verses Senses 1–0": German Car Mechanics and the Introduction of New Diagnostic Equipment, 1950–1980', *Technology and Culture* 55, no. 2 (2014): 366–77.

[34] Braverman, *Labor and Monopoly Capital*, 85–139, 293–358.

[35] Montgomery, *Workers' Control in America*, 32–47; David Montgomery, *The Fall of the House of Labor: The Workplace, The State, and American Labor Activism, 1865–1925* (Cambridge: Cambridge University Press, 1987), 1–4.

Image 2 RMIT University Photographer, Motor Mechanics Students with Cars, 1918. Image No. 2711. PH3.10.02. RMIT University Archives, Melbourne. Digitised image available under a Creative Commons 3.0 licence.

This thesis builds upon our understanding of the deskilling process by exploring the systems that enable them. Douglas Harper identified the rationalisation of mechanic work and the dismantling of artisanal structures as a key source of mechanics' deskilling in the United States.[36] This rationalisation in Australia occurred specifically through technical colleges. Historians of education have explored the evolution of working-class education, from nineteenth-century mechanics' institutes into twentieth-century technical colleges.[37] These historians argue that institutions played an ever-growing role in the education of working- and middle-class students, resulting in a broad upskilling of society. Since they limit the scope of their research to institutions, however, the effect of technology on education falls outside their research. So too does the outside organisations who seek control over technology. For motor

[36] Douglas Harper, *Working Knowledge: Skill and Community in a Small Shop* (Chicago: University of Chicago Press, 1987), 22–24.
[37] Stephen Murray-Smith and Anthony John Dare, *The Tech: A Centenary History of the Royal Melbourne Institute of Technology* (South Yarra, Vic.: Hyland House Publishing, 1987); Carolyn Rasmussen, *Poor Man's University: 75 Years of Technical Education in Footscray* (Footscray, Vic.: Footprint, 1989); Norm Neill, *Technically & Further: Sydney Technical College 1891–1991* (Sydney: Hale & Iremonger, 1991); Philip Candy, '"The Light of Heaven Itself": The Contribution of The Institutes to Australia's Cultural History', in *Pioneering Culture: Mechanics' Institutes and Schools of Arts in Australia*, eds. Philip Candy and John Laurent (Adelaide: Auslib Press, 1994), 1–28.

mechanics, structured education was a lever used by motorist groups and business owners to gain control over the trade by using education as a method of deskilling.

By understanding how institutions enforce class formation, this thesis also explores the ways in which education itself became a means of deskilling workers. Sociologist Randall Collins has termed this 'credentialism', drawing on the theories of Max Weber, to show how accreditations are a deskilling tool used to specialise workers in areas most beneficial to capital.[38] Richard Teese has built upon this understanding through exploring how curriculum selection by educational institutions play a role in class formation.[39] The creation of formal structures to the education of mechanics resulted in social closure, a Weberian notion expanded upon by Frank Parkin which demonstrates how power is used to separate groups from outsiders.[40] Social closure occurred to keep people out of the trade, such as women in the 1920s, but it was also used to keep workers within it by limiting the acknowledgement of skill, thus restricting mobility.

The outcomes of these processes have been analysed recently by Jennifer Rayner and Gideon Haigh in their investigations into the closure of manufacturing and automotive industries in Australia since the 2008 financial crisis. Both conclude that many of these workers have been forced into niche specialisations with little transferability of their skills, leaving them vulnerable to major economic change.[41] This thesis will seek to understand how this process of working-class specialisation has occurred, with special attention to the deskilling process amongst mechanics.

Gender and the Performance of Being a Mechanic

Even within the masculine world of trade work, mechanics stand out for the fact that they are overwhelmingly men. As of 2021, men make up 98 per cent of the automotive industry in

[38] Randall Collins, *The Credential Society: An Historical Sociology of Education and Stratification* (New York: Academic Press, 1979).
[39] Richard Teese, *Academic Success and Social Power: Examinations and Inequality*, 2nd ed. (Melbourne: Australian Scholarly Publishing, 2013).
[40] Weber, *Economy and Society*, 341–43; Frank Parkin, 'Strategies of Social Closure in Class Formation', in *The Social Analysis of Class Structure*, ed. Frank Parkin (London: Tavistock Publications, 1974), 1–15; Frank Parkin, *Marxism and Class Theory: A Bourgeois Critique* (New York: Columbia University Press, 1979), 44–71; Frank Parkin, *Max Weber* (Chichester, Sussex: Ellis Horwood Limited, 1982), 100–2.
[41] Jennifer Rayner, *Blue Collar Frayed: Working Men in Tomorrow's Economy* (Carlton, Vic.: Schwartz Publishing, 2018), 6–14; Gideon Haigh, *End of the Road?* (Melbourne: Penguin, 2013).

Australia.[42] This figure has remained constant since recorded figures began tracking the gendered composition of the trade in 1979.[43]

Gender historians have long shown that cars acted as literal and metaphorical vehicles of masculine performativity.[44] Judith Butler argues that gender identity is formed through social pressures and exists as a kind of performance.[45] Raewyn Connell has expanded upon this, noting that whilst gender identities are entwined with social structures and practices, their formation and contestation is a historical process.[46] The changes in the gendered depictions of the motor mechanic trade provide a demonstration of this process. Early in the twentieth century, automotive work was tied to modernity which envisaged the inclusion of women's work extending beyond the home. This created an environment wherein women were able to find work as mechanics.[47] By the 1970s, when historian Georgine Clarsen completed her motor mechanic apprenticeship, the now male-dominated trade produced 'environments that have been designed to repel women, for the benefit of men'.[48]

When it comes to gender, labour historians have tended to focus on the exclusion and suppression of women. Eileen Boris and Desley Deacon each draw attention to how institutions related to the operation of capitalism, such as employer organisations and unions, have benefited men. In seeking working conditions and pay rates for a male breadwinner, these institutions reduced women's work to a category understood as not-work, both institutionally and internally.[49] The exclusion of women mechanics is part of the story in this

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[42] Shane Wright, 'Auto Sector Urged to Employ Women', *Age*, 7 July 2021, 12. According to the Motor Traders Association of Australia (*Directions in Australia's Automotive Industry: An Industry Report 2021* (Kingston, ACT: Motor Traders Association of Australia, 2021), 59–60), women make up 4.8 per cent of apprentices in the automotive industry in 2019 (1,302, compared to 26,957 men).

[43] Ann Calvert, *Girls and Apprenticeships* (Melbourne: TAFE Services, 1979); Meg Smith, *Trade Credentials: Do They Help Pay Equity?* (Sydney: New South Wales Department of Industrial Relations, 2000); Department of Education and Training, 'Motor Mechanics', Skilled Occupations List Summary Sheet 3212 (Canberra: Department of Education and Training, 2015); Georgine Clarsen, 'Of Girls and Spanners: Feminist Politics, Women's Bodies and the Male Trades' in *Everyday Revolutions: Remaking Gender, Sexuality and Culture in 1970s Australia*, eds. Michelle Arrow and Angela Woollacott (Canberra: ANU Press, 2019), 27–32.

[44] Walker, 'Car Culture', 40–68; Jeremy Morris, 'Automobile Masculinities and Neoliberal Production Regimes Among Russian Blue-Collar Men', in *Masculinity, Labour, and Neoliberalism: Working-Class Men in International Perspective*, eds. Charlie Walker and Steven Roberts (Cham, Zug: Palgrave Macmillan, 2018), 171–93.

[45] Judith Butler, *Gender Trouble: Feminism and the Subversion of Identity* (New York: Routledge, 1990), 16–34. See also Joan Wallach Scott, *Gender and the Politics of History*, 2nd ed. (New York: Columbia University Press, 1999), 43–46.

[46] R.W. Connell, *Masculinities*, 2nd ed. (Crows Nest, NSW: Allen & Unwin, 2005), 65, 81–83, 115–16, 130–42.

[47] 'Interesting Items – Women Motorists', *Register (Adelaide)*, 13 September 1902, 8; Loretta Smith, *A Spanner in the Works: The Extraordinary Story of Alice Anderson and Australia's First All-Girl Garage* (Sydney: Hachett, 2019).

[48] Clarsen, 'Of Girls and Spanners', 35.

[49] Desley Deacon, *Managing Gender*: *The State, the New Middle Class and Women Workers 1830–1930* (Oxford: Oxford University Press, 1989); Eileen Boris, *Making the Woman Worker: Precarious Labor and the Fight for Global Standards, 1919–2019* (New York: Oxford University Press, 2019).

thesis, although it was not the case that women were always excluded from domains that became dominated by men. What is critical, however, is the role that institutions play in enforcing discrimination against women. This is particularly vital at work, where institutions (including, but not limited to, employers and unions) are often patriarchal and reflect this dominance in their attitudes and decisions towards regulating and excluding women.[50] Despite this, women found ways to enter the mechanic trade by exploiting the informal, artisanal structures of education. As fathers passed knowledge down to their sons, some fathers passed this knowledge onto their daughters. Open-minded foremen gave women an opportunity. Husbands trained their wives.[51] The exclusion of women resulted from the decisions of institutions, however, which combined with cultural forces as cars became intertwined with the performance of masculinity in the 1950s.

Image 3 Alice Anderson in the Kew Garage workshop working at lathe. 1922. 1988.0061.01556. University of Melbourne Archives, Melbourne.

Connell has expanded upon the relationship between men, technology and work in her writings on *Masculinities*. [52] Connell advanced the notion that masculine gender identities are affected by a wide range of social and cultural determinants, such as race and class. Connell

[50] Clare Burton, *The Promise & The Price: The Struggle for Equal Opportunity in Women's Employment* (North Sydney: Allen & Unwin, 1991); Moira Gatens, 'Institutions, Embodiment and Sexual Difference', in *Gender and Institutions: Welfare, Work and Citizenship*, eds. Moira Gatens and Alison Mackinnon (Cambridge: Cambridge University Press, 1996), 1–10; Katrinell M. Davis, *Hard Work is Not Enough: Gender and Racial Inequality in an Urban Workspace* (Chapel Hill, NC: University of North Carolina Press, 2016).
[51] Georgine Clarsen, 'Women, Cars and Modernity: The Alice Anderson Motor Service', in *Raiding Clio's Closet: Postgraduate Presentations in History 1997*, eds. Martin Crotty and Doug Scobie (Parkville, Vic.: University of Melbourne, 1997), 62; 'Miss 20th Century – Girl Who Won't Keep Still', *Sun*, 30 June 1918, 15.
[52] Connell, *Masculinities*.

describes hegemonic masculinity as a 'pattern of practices' that create a hierarchy amongst groups of men, which associate certain traits and activities with an 'ideal' form of masculinity.[53] This concept is crucial to this thesis as technology often plays a major role in hegemonic masculinity.[54] This is supported by Cynthia Cockburn, whose work has explored the connection between men and technology throughout history. She concludes that this relationship operates in both directions – particular technologies become defined as distinctly masculine, while men negotiate their identities through their connections to them.[55]

The adoption of cars into hegemonic masculinity was a historical process, deeply connected with the suburbanisation and consumerism that intensified during the 1950s. Richard White has highlighted that cars in Australia were increasingly tied with the development of Australian national identity, a deliberate process aimed at promoting patriotism in the post-war period.[56] Drawing on inspiration from American culture, as Lizabeth Cohen notes, Australian society took on the core tenants of capitalist consumerism. American companies such as General Motors-Holden took a central place in defining this new nationalism.[57] Social life in this era was decentralised and celebrated the private sphere of the family home and, increasingly, the car.[58] Ruth Cowan argues that technology both emphasised and expanded the structures of gender in the post-war era. Technology stressed gender roles at home – work within the house was defined as feminine, while work outside, in this case in the garage, was masculine.[59]

The reinforcement of gender norms that took place over this period is related to the masculinisation of automobile maintenance. The gendering of work has been explored in relation to workplaces dominated by women in part because the *meaning* of the work was gendered as feminine. Dorothy Sue Cobble and Joan Sangster have covered campaigns by

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[53] Ibid., 67–86; R.W. Connell and James W. Messerschmidt, 'Hegemonic Masculinity: Rethinking the Concept', *Gender & Society* 19, no. 6 (2005): 829–59.
[54] Connell, *Masculinities*, 55–56, 164–65.
[55] Cockburn, *Brothers*; Cockburn, *Machinery of Dominance*; Cynthia Cockburn and Susan Ormrod, *Gender and Technology in the Making* (London: Sage Publications, 1993). See also Wajcman, *Feminism Confronts Technology*.
[56] Richard White, *Inventing Australia* (Sydney: Allen & Unwin, 1981), 158–71.
[57] Lizabeth Cohen, *A Consumers' Republic: The Politics of Mass Consumption in Postwar America* (New York: Vintage Books, 2003); Jack Fahey, 'The Cultivation of an Australian Identity: New Insights into Public Relations at General Motors-Holden in the Interwar Era', *Australian Historical Studies* 50, no. 4 (2019): 483–502. See also Gary Cross, 'Time, Money, and Labor History's Encounter with Consumer Culture', *International Labor and Working-Class History* 43 (1993): 2–17; Henry Reese, 'Shopgirls as Consumers: Selling Popular Music in 1920s Australia', *Labour History* 121 (2021): 173–74.
[58] Nicholas Brown, *Governing Prosperity: Social Change and Social Analysis in Australia in the 1950s* (Cambridge: Cambridge University Press, 1995), 126–65. Much of this Australian identity was an imitation of similar cultural developments occurring in the United States, see Davison, *Car Wars*, 78–110.
[59] Ruth Cowan, *More Work for Mother: The Ironies of Household Technology from the Open Hearth to the Microwave* (New York: Basic Books, 1985).

women to raise their status by dismantling gendered constructs of work through the service and retail industries in North America.[60] In addition to these, Mar Hick's work on the British computer programming industry demonstrates that a degendering process can result in the masculinising of work.[61] The exclusion of women seeking mechanical repair work, however, occurred during a period of skills shortage, not that which produced the present 'precariat', to use Guy Standing's term.[62] Rather, the gender regimes that were encouraged in the 1950s had material effects. Connell has shown that white-collar men, disconnected from manual labour in the 1950s, leveraged their professionalism to redefine hegemonic masculinity.[63] As the skill and status associated with the trades declined, working-class men emphasised the 'masculine' aspects of their work, to the detriment of women. This is a trend that both Stephen Meyer and Andrea Waling have observed in the post-war period.[64]

This thesis argues that motor mechanic work in the early twentieth century disrupted established class structures and gender norms, but that these were hardened by the mid-twentieth century by a combination of factors, driven by middle-class institutional interests. These institutions erected new educational and professional boundaries, which affirm that skill and status were critical in the determination of class structure. The degradation of mechanic work was an active strategy used to suppress social mobility and re-impose gender boundaries. The result for mechanics was stigmatisation and an accentuation of gender and class stereotypes.

[60] Dorothy Sue Cobble, '"A Spontaneous Loss of Enthusiasm": Workplace Feminism and the Transformation of Women's Service Jobs in the 1970s', *International Labor and Working-Class History* 56 (1999): 23–44; Joan Sangster, *Transforming Labour: Women and Work in Post-war Canada* (Toronto: University of Toronto Press, 2010).
[61] Hicks, *Programmed Inequality*.
[62] Guy Standing, *The Precariat: The New Dangerous Class* (London: Bloomsbury Academic, 2011), 1–25.
[63] Connell, *Masculinities*, 164–81.
[64] Stephen Meyer, 'Work, Play and Power: Masculine Culture on the Automotive Shop Floor, 1930–1960', *Men and Masculinities* 2, no. 2 (1999): 117–21; Andrea Waling, *White Masculinity in Contemporary Australia: The Good Ol' Aussie Bloke* (London: Routledge, 2020), 158–78. See also Chelsea Barnett, 'Masculinity and Cultural Contestation in the Australian 1950s', *Australian Historical Studies* 49, no. 2 (2018): 184–202; Henry Paternoster, Deborah Warr and Keith Jacobs, 'The Enigma of the Bogan and its Significance to Class in Australia: A Socio-Historical Analysis', *Journal of Sociology* 54, no. 3 (2018): 429–45.

Image 4 Dick Sargent, a 25 year old Sydney motor mechanic. 1962. A1200, L41327. National Archives of Australia, Canberra.

Sources

At the end of his history of motor mechanics in the United States, Borg notes that 'when it comes to historical sources, auto repair is everywhere and nowhere'.[65] This thesis has produced similar challenges, which have forced me to work with a highly diffuse archive. Oral histories and newspapers have been a key resource for hearing the voice of workers directly, but these sources are rare. I have counterbalanced these with a broad collection of archival sources. The George Brooks Library and Learning Centre, housed at the National Motor Museum, has provided critical sources for understanding the inner workings of the motor mechanic trade before the Second World War. Military records from the National Archive of Australia and the National War Memorial offer insight into how mechanics were used by all areas of the military through the Second World War. Finally, the Noel Butlin Archive's records of the Amalgamated Engineering Union and the Vehicle Builders Employees' Federation have formed the basis of this thesis' understanding of how these two unions attempted to organise mechanics. These sources, along with records from the Court of

[65] Borg, *Auto-Mechanics*, 235.

Conciliation and Arbitration, present the union's perspective on disputes related to the mechanic trade.

Additionally, the minutes and examination records of the South Australian Motor Mechanic Examination Board provide a detailed understanding of the relationship between the major institutions of the automotive industry. The examination board was controlled by motorist organisations and motor traders, who in turn directed the curriculum of South Australian technical colleges. Although these records are specific to South Australia, they provide a good overview of how relationships between motorist groups, motor trader associations and technical colleges progressed in each state. These records demonstrate the growing power the former two groups gained over the trade, but also provides information as to the methods through which unionised and non-unionised mechanics attempted to resist them.

These archival records are used in combination with more regular sources from the major institutions involved in the mechanic trade. This thesis draws heavily upon three of their periodicals. The first is *Australian Motorist*, one of the earliest Australian automobile publications dating back to 1908. Although not a motor trader journal as such, the publication of *Australian Motorist* was assisted by the Automobile Club of Victoria, the most influential motorist club in Australia at the time, through regular contributions of articles and correspondences. *Australian Motorist* spoke to mechanics and motorists alike and covered all issues in the automotive industry. This was superseded by *R.A.C.V.*, the Royal Automobile Club of Victoria's in-house publication, and changed to focus more on the experiences of its members.

The second periodical used extensively in this thesis is *Open Road*, the magazine of the National Roads and Motorists' Association (NRMA). This periodical provides a thorough commentary of how motorist associations influenced the mechanic trade as the NRMA sought to become a national motorist association through the 1920s and 1930s.[66] Its usefulness as a historical source reduced over time, however, as it transformed from a niche industry trade journal to a mainstream magazine. The third and most important periodical is the *Australian Automobile Trade Journal*. This was the trade journal for Victoria's motor trader association, the Victorian Automobile Chamber of Commerce.[67] Although all three publications have

[66] The NRMA initially published its magazine under the title *Good Roads*. This publication is similar to its Victorian counterpart, *R.A.C.V.*, later renamed *Radiator*, however *Good Roads* has provided a more consistent commentary of the relationship between motor mechanics and motorist organisations.
[67] Renamed the Victorian Automotive Chamber of Commerce in 2021.

incomplete collections, the National Library of Australia's compilation of these journals is the most complete I have discovered, holding every issue from 1947 to 1970. This has proved the richest primary source for the 1950s and 1960s. The trade journals give a thorough account of the actions of garage owners during this period and includes information about their attempts to influence and control mechanics, their disputes with unions, and their relationships with motorist organisations and technical colleges.

Thesis Structure

Chapter one shows transformations in class relations early in the twentieth century as the motor car arrived in Australia. Craftsmen were the first to see the potential of automotive repair work through their previous occupations. By adapting their skills, these workers jostled with old-style carriage repairers and new-style bicycle manufacturers for automotive repair work. Repair was not only performed by the artisanal class. Chauffers repaired cars and so did automobile drivers more broadly, including the elite men (usually) who owned the small number of vehicles on Australian roads. Recognising the modern transformations that the motor car would bring to newly federated Australia, young women sometimes shed older forms of femininity and took up tools in motor engineering workshops. This messy, fluid, social and economic situation set the contours of the divisions that were to come. Those who owned cars and performed amateur repairs developed a different set of interests to those who repaired cars for a living. The divisions between automobile owners and mechanics, educational institutions and workers, and between masculinity and modern womanhood, were only just emerging at the outbreak of the First World War. Over the subsequent decades, however, they became crucial to the system of class and gender that dominated Australian suburban life.

Chapter two argues that educational institutions allied with social and economic elites to standardise, and later deskill, automotive repair by controlling education and training. To achieve this, car owners and employers wrested control from the expert motor mechanics whose businesses relied on training apprentices. This chapter shows the ways certain mechanics grew to prominence out of the earlier chaotic system. Mechanic-owned businesses offered a range of services beyond repairs, while apprentices supplied labour and developed the combination of technical knowledge and hands-on skill required to become mechanics. At the same time, institutions representing automobile owners built vast enterprises that increasingly relied on the rapid deployment of mechanics when their members' cars broke

down. These big businesses quickly dominated the automotive repair industry and were able to dictate employment conditions. Employer bodies known as motor trader associations grew in alliance with motorist organisations through the 1920s to create new credentials for mechanics. Technical colleges, which were gaining strength by a combination of political and industrial support, provided the institutional support for these courses, offering training to car mechanics. Training became a marketing tool, offering credentialed garages a competitive advantage. In time, the technical colleges not only dominated training but also reinforced a deepening masculinisation of the trade by actively excluding women mechanics from enrolling. This hierarchy of training sought to regulate skill levels, but it did not prevent mechanics from using their knowledge to progress into careers in engineering. Opportunities for mechanics to enter engineering were particularly enabled by technological advances in mechanical and aeronautical engineering, combined with a skills shortage.

Chapters three and four outline changes rendered to the automotive repair trade during the Second World War. Chapter three considers mechanics who undertook war service. This helped some mechanics compensate for earlier troubles in arbitration. Australia's unique conciliation and arbitration institutions, which broadly speaking protected working conditions, were less effective for Australian motor mechanics than other trades. Mechanics' haphazard history stifled unionisation efforts, meaning their interests were represented by engineering unions which were dominated by more influential trades. The rapid expansion of the Royal Australian Air Force (RAAF) allowed motor mechanics to extend their mechanical skills from automobiles to aircraft. The RAAF was not the only branch of the military seeking skilled mechanics, however, and trained auto repairers were spoiled for opportunities. This only expanded after the war when the Commonwealth Reconstruction Training Scheme (Australia's equivalent to the US GI Bill) offered tertiary and technical education to returned service personnel.[68] The result was that individual mechanics who received significant upskilling were presented with an opportunity to move into professional engineering. By the late 1940s, rises in wages were driven by a shortage of mechanics. This allowed automotive repairers to engage in mobility-effort bargaining, a strategy whereby mechanics played employers off against each other and began to take their labour away from the workshop, engaging in illegal backyard work to enhance their income.

Chapter four considers the effect of the war on automotive repair domestically. Cars were important at home during the war, although for transporting goods and medical supplies

[68] Stuart Macintyre, *Australia's Boldest Experiment*: *War and Reconstruction in the 1940s* (Sydney: NewSouth, 2015), 326–27.

around the country rather than serving the needs of private individuals. Motorist organisations volunteered this service, which gave them the opportunity to lobby state governments over regulations that concerned them. They lost members during the war, however, as petrol rationing discouraged people from driving. The reduced cohort of mechanics, after many joined the military, found themselves servicing older cars that broke down more often. Motorist groups warned that this allowed 'unscrupulous' mechanics to earn higher wages, but the real threat to the status quo was from women. The surge in demand for mechanics gave women renewed opportunities to perform this work, though technical colleges and unions quickly scrambled to ensure that this was temporary. Unions included women initially, but they also actively encouraged male preferential recruitment as the war came to an end. This, and the technical colleges' refusal to enrol them, successfully pushed women out of the automotive repair industry.

Chapter five argues that the post-war settlement, based on the high levels of consumption and manufacturing made possible by full employment, had a transformative effect on hegemonic masculinity. For suburban consumers, the car represented a collective, as well as individual kind of mobility, embodying the promise of post-war prosperity. Such mobilities, however, also transformed gender. The deepening gender divisions of the 1950s were intimately connected with the car. New forms of masculinity linked technological capability with personal competence. Automotive repair work began to take place in suburban backyards as well as in garages. Against an expanding white-collar workforce, paid mechanical repair work became entrenched in gender norms that ultimately devalued the skill and status of those who did this work for a living.

Chapter six shows that the expansion of automobile manufacturing reshaped mechanics' occupational and social status. As new cars became more reliable, an increasing amount of a mechanic's work turned to car maintenance, rather than repair. Car maintenance required fewer skills – at least, so bosses decided – than in earlier times where mechanics diagnosed and fixed complex problems. In this way, employer groups used technological change to successfully deskill mechanical repair work. Employers sought out apprentices and the large number of immigrants rapidly arriving from war-ravaged Europe to reduce the skills shortage and place downward pressure on wages. This change in the workforce presented employers with a unique opportunity to deskill the trade by forcing new structures onto unexpecting new workers. This included the isolation of mechanics in the workshop, limiting them to arbitrary departments or specialised tasks. More importantly, this process involved the separation of decision making and authority over work from mechanics, shaped by

scientific management. In this context, mechanics' hands-on technological skill was devalued, while managerial oversight became more esteemed. The new association of technology with working-class, hands-on masculinity helped reduce the status of those who worked with the cars, elevating in their place those who now took control of shift planning and workplace resources like tools and equipment.

For mechanics, deskilling paradoxically occurred just as the global economy was determinedly upskilling. For auto repair workers, expansions in tertiary education acted as a barrier to social mobility and even worked as an instrument of deskilling. Chapter seven shows educational institutions standardising training levels for mechanics in ways that accelerated their deskilling. There were unions to protect them, but these were distracted by more cohesive segments of the workforce, like those working for motorist organisations or in highly unionised public transport sectors. These profoundly institutionalised unions often overlooked the heterogenous body of small-time garage workers. This opened a space in which middle-class engineers used their union to claim higher 'professional' status by cutting off the bottom of their profession, further devaluing the trade. This chapter expands on the technological deskilling seen in the previous chapter to consider the roles of educational institutions and certain unions in reinforcing a lower social status for mechanical repair workers than the field seemed to promise in the first decades of the twentieth century.

This thesis concludes by showing the transformation of automotive repair work from one that was relatively inclusive of class and gender participation to a field that became an emblem of working-class masculinity. The process of deskilling, enforced by the middle class, isolated mechanics from avenues of social and industrial mobility, creating the 'timeless' notions of motor mechanic work as we understand it today. Mechanics' resistance to these developments was inhibited by their marginal role in Australia's trade union movement but was nevertheless expressed in more individualised forms of agency, like the 'backyarding' discussed in chapters three and six. The epilogue to the thesis concludes by considering the right to repair movement as a form of resistance to the control of maintenance work by businesses.

Chapter 1 – The First Motor Mechanics

Mark Foy was driving through the small northern New South Wales town of Grafton in 1905 when his car broke down. The noted Sydney department store owner and sportsman was travelling in his French Panhard motor car with his wife and chauffeur.[1] Finding that his chauffeur was unable to solve the problem, Foy turned to Grafton locals for help. After asking around town, he contacted tradesman Maund 'Monty' Page. Page fixed the problems with the car so quickly that Foy immediately offered him a job in Sydney, running a 'fitting shop' he was seeking to establish there. Foy's attempt to lure Page to Sydney angered the town's newspaper, the *Grafton Argus*. Page was involved in maintaining a variety of machinery around Grafton – including the newspaper's printing machinery.[2]

Fortunately for the *Grafton Argus*, Page declined Foy's offer. He decided instead to become a motor mechanic and open his own garage. One of his motivations was that his brother Earle, then a doctor in Grafton, relied on him to keep his car on the road.[3] Earle Page would go on to lead the Country Party for twenty years, becoming Australia's eleventh Prime Minister in 1938. When he reflected on his time as a rural doctor in his autobiography, he waxed lyrical about his brother Monty's genius as a newly fledged motor mechanic in the early 1900s. Monty's 'relationship to mechanical contrivances paralleled my facility in medical and surgical affairs', Earle Page began:

> When he diagnosed a disease of automation he displayed a sixth sense and when he operated he did so with precision. He was naturally sensitive to the peculiarities of mechanical intestines and when the most modern knowledge and experience failed to solve his problem he … invoked the old. What he could do with a piece of fencing wire in an automotive emergency filled me with wonder and admiration.[4]

Page's description of his brother's mechanical skills reflects an artisanal understanding of skill as an art, embedded within the worker themselves. This sheds light on the origins of automotive repair in Australia. Automotive repair, an entirely new field of work, was

[1] 'Mr Mark Foy En Tour', *Northern Star*, 14 June 1905, 5.
[2] 'A Skilled Mechanic', *Grafton Argus*, 22 June 1905, 4; G.P. Walsh, 'Foy, Mark (1865–1950)', *Australian Dictionary of Biography*, vol. 8 (Melbourne: Melbourne University Publishing, 1981), http://adb.anu.edu.au/biography/foy-mark-6367.
[3] Stephen Wilks, *"Now is the Psychological Moment": Earle Page and the Imagining of Australia* (Acton, ACT: ANU Press, 2020), 26, 44; 'Presentation to Mr. M. Page', *Grafton Argus*, 11 September 1918, 4.
[4] Earle Page, *Truant Surgeon: The Inside Story of Forty Years of Australian Political Life* (Sydney: Angus and Robertson, 1963), 34.

embedded with nineteenth-century understandings of skill which, even before the turn of the century were being usurped by an industrial understanding, envisioning structured education as the key to skills. This change resulted in the formation of technical education but also explains why mechanics emerged from outside of this system.

Motor cars were a new, expensive piece of technology that afforded a certain status to its owner. The mechanics who kept them running, however, acquired a kind of prestige of their own. Their skills were widely considered more impressive than those of their counterparts in metalworking trades. This resulted in the kinds of offers Page received from Foy: opportunities to enter business as mechanics and expand their education in engineering. Such interactions between labour, class and technology, would form the basis for the establishment of the motor mechanic trade in Australia, and the organisational factors around it.

Defining who was a motor mechanic in this period is no easy task. While some mechanics emerged from the metalworking industry, others were small business owners, middle-class engineers and wealthy motorists. There were thus fewer boundaries to participation in the early mechanic trade than one might expect, whether in terms of class, background, regionality, gender or even to some extent race as Aboriginal communities trained their own mechanics. A mechanic in the first decade of the twentieth century could be a blacksmith's son, a doctor's brother, or an engineer's daughter. While this degree of diversity was a welcome feature of the early trade, these complicated origins hampered attempts to organise industrially.

Crucially, motorists began organising themselves through social clubs very early in the twentieth century. These organisations initially sought to make mechanical repair into an elite amateur hobby, encouraging motorists to learn enough about car engines to do the work themselves. They were ultimately unsuccessful in achieving this aim but *did* succeed in influencing the way that technical education for motor mechanics developed even in this early period.

This chapter describes the working and educational conditions of the nineteenth century, from which mechanics emerged at the beginning of the twentieth. These affected the formation of the trade following the arrival of the first automobiles in Australia. This shows how the prestige associated with these vehicles had an effect on mechanics. I then survey the trades, occupations and businesses from which motor mechanics emerged: namely blacksmithing, engineering and bicycle stores. This chapter goes on to explore mechanics'

social organisation and then their class and gender characteristics. Finally, I turn to motorists, showing that their tactics and sense of belonging to the social elite gave them substantial control over the automotive industry – all the more so because of the lack of collective identity among mechanics.

Mechanics in the Nineteenth Century

The skills and knowledge required to become a motor mechanic existed in Australia before the arrival of the automobile. The term 'mechanic', which is now synonymous with automotive repair, meant something different at the turn of the twentieth century. A mechanic then was a skilled industrial labourer who operated and maintained numerous pieces of machinery. In urban areas, mechanics' work often revolved around the maintenance of factory machinery; in rural areas, mechanics were responsible for increasingly mechanised farming equipment. Mechanics were commonplace in Australia during the nineteenth century: the 1841 New South Wales census counted 10,715 mechanics and artificers.[5]

Mechanics differentiated themselves from other labourers by their skills and knowledge. These were handed down from mechanics to apprentices in a closed system that emphasised an inherent distinction between mechanics and other workers. In his thesis on skill in Australia in the nineteenth century, the labour historian Ben Maddison describes this as an artisanal type of skill.[6] A relic of the pre-industrial era, philosophies of artisanal skill depicted workers as the embodiment of almost-mystical abilities that inhered in the person. Their work was seen as more art than science, inaccessible to those outside the craft.[7] The organisation of Australian artisans into trades in the early 1800s provided a structure in which mechanics were able to control the boundaries of their work and protect the dissemination of their skills.[8] This structure gave mechanics status over 'unskilled' labourers and suggested a way for mechanics to push for higher wages from employers.[9]

Formal technical education challenged this structure. Unlike artisanal systems of knowledge, technical education systems made skills quantifiable rather than mystical, a science rather than an art. This movement towards what Maddison describes as an 'industrial'

[5] 'New South Wales Census of the Year 1841', *Australian*, 4 September 1841, 3.
[6] Maddison, 'Skill and the Commodification of Labour', 28. See also Harper, *Working Knowledge*, 19–21.
[7] Maddison, 'Skill and the Commodification of Labour', 31–35.
[8] Ibid., 117–19.
[9] P.D. Brereton, 'Origins of the Victorian Apprenticeship Commission: A History of Apprenticeship Regulation in Victoria, 1896–1927', MA thesis, University of Melbourne (1970): 47.

definition of skill coincided with the expansion of the education system.[10] Mechanics' Institutes, like those in Britain, were established all around Australia, beginning in 1820. Historian Philip Candy described them as 'the forerunners of today's community centres, adult education classes, technical colleges and local libraries, all rolled into one'.[11] Institute membership was open to all members of the community, with the intention of training workers in technical skills and mechanical arts. The Institutes, however, rarely worked this way in practice. Rather than appealing to actual mechanics, those attending Institute courses were predominantly from the middle class. In an honours thesis on skilled trades in Victoria at the turn of the twentieth century, Eddie Butler-Bowdon notes that the courses offered by the Institutes were 'more suited to turning the qualified tradesman into foreman material than training the apprentice'. This was because the 'vast majority offered little or no trade-related courses'.[12] While the number of actual mechanics involved in Mechanics' Institutes varied from place to place, they rarely attended in any significant numbers. In Sydney, less than one in ten members of the Mechanics' Institute were mechanics in the broad sense.[13]

These differing understandings of skill – artisanal and industrial – existed simultaneously in the nineteenth century, competing against each other. They were embedded within class structures, in which mechanics negotiated their identity early in the twentieth century. Mechanics' Institutes set themselves up to teach technical skills but restricted access, not through formal barriers but by cultural exclusion. In doing so, they entrenched interests that were rarely shared by workers. Middle-class concern for worker education was frequently patronising. Historian Jill Eastwood argues that it was 'generally felt that the people with privileges…had a responsibility to the less fortunate members of the community'.[14] Members of this privileged class, such as lawyers and doctors, controlled the Institutes but were not interested in hands-on trade education.[15]

The institutionalisation of education, although mainly for the benefit of the middle class, spurred workers themselves to increasingly challenge artisanal structures. Artisanal thinking dominated the labour movement up until the late nineteenth century. Feminists objected to this artisanal system, as definitions of skill were entirely limited to men's work.[16]

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[10] Maddison, 'Skill and the Commodification of Labour', 74–77.
[11] Candy, '"The Light of Heaven Itself"', 2–3.
[12] Ibid.; Eddie Butler-Bowdon, 'Class Confrontation, Class Collaboration: The Construction of Skill and the Reestablishment of Apprenticeship in the Painting and Electrical Trades in Victoria', Honours thesis, University of Melbourne (1986): 13.
[13] Connell and Irving, *Class Structure in Australian History*, 107.
[14] Jill Eastwood, 'The Melbourne Mechanics' Institute: Its First Thirty Years', in *Pioneering Culture*, 66.
[15] Ibid., 66–67.
[16] Maddison, 'Skill and the Commodification of Labour', 57–67.

Emerging trade unions were also concerned that the artisanal model would undermine their place in modern industrial capitalism. Tensions existed between these criticisms and the emerging middle-class system of technical education. In Melbourne, mechanics pushed for the establishment of a Workingmen's Society in the 1850s. This was an acknowledgement that the education offered by Mechanics' Institutes was not relevant to their occupation, but through advocating for structured education, workers conceded that artisanal structures of skill were flawed.[17]

Increasing acceptance of technical education, combined with disillusionment with Mechanics' Institutes, drove workers and unions to seek a new way of educating and training workers. Between 1870 and 1910, the labour movement and engineers pushed for the establishment of a new system of technical education, but for different reasons. The labour movement, driven by the Trades and Labour Councils, wanted to establish technical classes, which they believed would protect the status and wages of skilled trades, while also offering a rounded education that enhanced workers' political self-reliance.[18] Capitalists also promoted technical education as an investment in skilled labour. They, however, wanted it separate from 'the arts' to prevent workers from gaining a political education, and thus restrict attempts by unions to use technical colleges as a recruiting ground.[19] The growing demand for accessible education at the turn of the twentieth century coincided with the interests of governments to expand the manufacturing industry. In Victoria, reforms to the technical education system, imposing an industrial definition of skill, were the result of a royal commission.[20] This had little effect on the just-emerging trade of motor mechanics at first, but it set the terms of the politics of reforms to education, which occurred over the next twenty years. Eventually – as will be seen in Chapter 2 – the structure of mechanical repair training, informed by these debates, had a significant bearing on mechanics' class status and identity.

This conflict in education and training took place in both the urban and large regional centres of Australia. Workers in rural Australia already had experience with mechanical farming equipment, which introduced them to mechanical maintenance and repair. Driven by the land reforms of the nineteenth century and an ever-expanding railway network, a growing agricultural industry had ensured that wheat had become one of Australia's major exports by

[17] Eastwood, 'The Melbourne Mechanics' Institute', 67.
[18] Connell and Irving, *Class Structure in Australian History*, 144.
[19] Ibid., 144–45.
[20] Stephen Murray-Smith, 'A History of Technical Education in Australia: With Special Reference to the Period Before 1914', PhD thesis, University of Melbourne (1966): 688–702, 723–38; Rasmussen, *Poor Man's University*, 6–9.

the late nineteenth century.[21] Expanding agricultural enterprise relied on mechanical harvesting equipment that was produced, sold and maintained by individual engineers and blacksmiths.[22] These workers provided a basis for a burgeoning technological manufacturing industry that focused on the maintenance and repair of new imported technologies at the end of the nineteenth century.[23] Australia's manufacturing industry was small but it contributed to the establishment of the automotive industry in its embryonic stages.[24]

Automobiles appeared in the middle of the transition to structured technical education. Initially, it seemed that automobile work would fit right in with existing social understandings of what a mechanic was. In 1901, the *Sydney Morning Herald* called for the establishment of a 'Motor-Vehicle Mechanics' Institute'.[25] But automobiles were not like factory machinery, which was the core of mechanics' work during the nineteenth century. The machines of the factory or the farm were specialised and only attracted interest from workers within those fields. Automobiles were a technological product beyond the confines of labour – they were machines of both work and play. More importantly, their mobility made them accessible beyond the usual limits of the factory and workshop floor. This provided greater opportunities for workers to explore their mechanisms and potentially become mechanics.

[21] Ian W. McLean, *Why Australia Prospered: The Shifting Sources of Economic Growth* (Princeton, NJ: Princeton University Press, 2013), 101–4.
[22] Ibid., 103.
[23] 'The Superiority of Protection', *Age*, 9 April 1887, as republished in C.M.H. Clark (ed.), *Select Documents in Australian History 1851–1900* (Sydney: Angus and Robertson, 1955), 265.
[24] Conlon and Perkins, *Wheels and Deals*, 11.
[25] 'A Mechanics' Institute', *Sydney Morning Herald*, 2 September 1901, 4.

Image 5 David Shearer's car. 2017. National Motor Museum, Birdwood, SA. Author's photograph.

The car was part of a wider transformation in transport technologies, an ongoing revolution that L.G. Hovenden dates back to the 1880s.[26] The first motorised cars appeared on Australian roads in the 1890s, the results of individual Australian enterprise. Australian engineers Herbert Thomson, David Shearer and Harley Tarrant invented the best-known local vehicles**.** These cars were more like 'horseless buggies' than anything resembling modern cars. David Shearer's 1898 invention was a horse buggy with a large steam engine attached to the back that powered it.[27] These vehicles were technological novelties produced on a very small scale as demonstrations, presenting the wonderous achievements of the modern age. These smaller ventures were quickly overtaken by the already established international car market, as cars transitioned from an engineering novelty into a growing transport industry. Historians Robert Conlon and John Perkins cite a French Di Dion motor car, imported into Sydney in 1900, as the first modern car to reach Australian shores. Others quickly followed: by 1907, around 3,559 automobiles were imported from Europe and the United States.[28]

Imported cars arrived off ships in a deconstructed form, meaning assembler businesses, usually converted coachmakers' firms, were required to build the car on its

[26] L.G. Hovenden, 'The Motor Car in New South Wales, 1900–1937', MA thesis, University of Sydney (1981): 28.
[27] John Goode, *Smoke, Smell and Clatter* (Melbourne: Lansdowne, 1969), 7–11; Conlon and Perkins, *Wheels and Deals*, 9. Conlon and Perkins do note that Thompson also created a car with an internal combustion engine, but he was better known for his work on steam engine powered automobiles.
[28] Conlon and Perkins, *Wheels and Deals*, 10; *Coachbuilder & Wheelwright*, 13 November 1908, 228, as cited in Peter Poynton, 'Always Crashing in the Same Car', *Arena* 52 (1979): 63–64N1.

arrival.[29] The cost of shipping and this extra labour was added on to the price of cars in Australia, making them prohibitively expensive to anyone except the most affluent. As such, cars of the early 1900s were a status symbol and a technological toy that portrayed not only wealth but progressiveness – a willingness to embrace, and a desire to understand, the technology of the future.[30] Even after the introduction of Ford's Model T revolutionised the car market in 1908 by providing a relatively cheap, yet reliable option for motorists, the purchase price was £250 not including further operational and storage costs.[31] This made cars more affordable for professionals and farmers, but still inaccessible for the working class. Blacksmith and fitters, for example, earned £2/14/0 a week in 1907. The idea of owning a motor car remained a pipedream for these workers even after the arrival of the Model T.[32]

Despite the early automobiles' relatively simple design, it did not take long for people to recognise that they would change society beyond recognition. The ability of cars to travel independently at speed opened new avenues of geographic mobility. More revolutionary, however, was these vehicles' potential to produce social change. Unfortunately for their owners, these earliest cars were fragile by modern standards; breakdowns and problems were common. Compounded by Australia's harsh conditions, including notoriously bad roads, most still unpaved dirt and full of potholes created by horses and livestock, cars required almost constant maintenance.[33] Motorists of the time claimed that they often found themselves 'twenty miles from anywhere and the car won't go'.[34] Car owners had two choices: they could take the time to learn about their new vehicle, and the ways to maintain it, or they could employ others to do so. Even those who took the time to learn about their new vehicle lacked

[29] Conlon and Perkins, *Wheels and Deals*, 22–24.
[30] Connell and Irving, *Class Structure in Australian History*, 198; Susan Priestley, *The Crown of the Road: The Story of the RACV* (South Melbourne: Macmillan, 1983), 14; Kieran Tranter, '"The History of the Haste-Wagons": The *Motor Car Act 1909* (VIC), Emergent Technology and the Call for Law', *Melbourne University Law Review* 29, no 3 (2005): 847; John William Knott, 'Speed, Modernity and the Motor Car: The Making of the 1909 *Motor Traffic Act* in New South Wales', *Australian Historical Studies* 26, no. 103 (1994): 229.
[31] Priestley, *The Crown of the Road*, 17.
[32] Hovenden, 'The Motor Car in New South Wales', 8–10; Knott, 'The "Conquering Car"', 5–8; John Lack and Charles Fahey, 'The Industrialist, the Trade Unionist and the Judge: The Harvester Case of 1907 Revisited', *Victorian Historical Journal* 79, no. 1 (2008): 12.
[33] Hovenden, 'The Motor Car in New South Wales', 4–5; Rosemary Broomham, *On the Road: The NRMA's First Seventy-Five Years* (St Leonards, NSW: Allen & Unwin, 1996), 9; Russell Grimwade, 'Early Motoring in Victoria', *Victorian Historical Journal* 23, no. 1 (1950): 16–17. This was particularly the case in rural areas. Harold O'Malley, a mechanic who started working in Geraldton, Western Australia in the 1920s noted that early car tyres were not made for Australian conditions – 'You were always getting springs made and that sort of thing because the roads were rough and it used to knock the devil out of cars … originally tyres were canvas tyres and you only hit a stone on the road and of course it would fracture' (Carol Cahill, 'Oral History Interview with Harold Luke O'Malley – Mechanical Engineering', Geraldton, WA: Geraldton Regional Library, 1993).
[34] 'Motor Notes – Roadside Repairs', *Sydney Morning Herald*, 7 October 1911, 5.

the skills to be able to fix any major problems properly. In this way, cars generated a demand for people to maintain and repair them, thus creating a new area of employment.

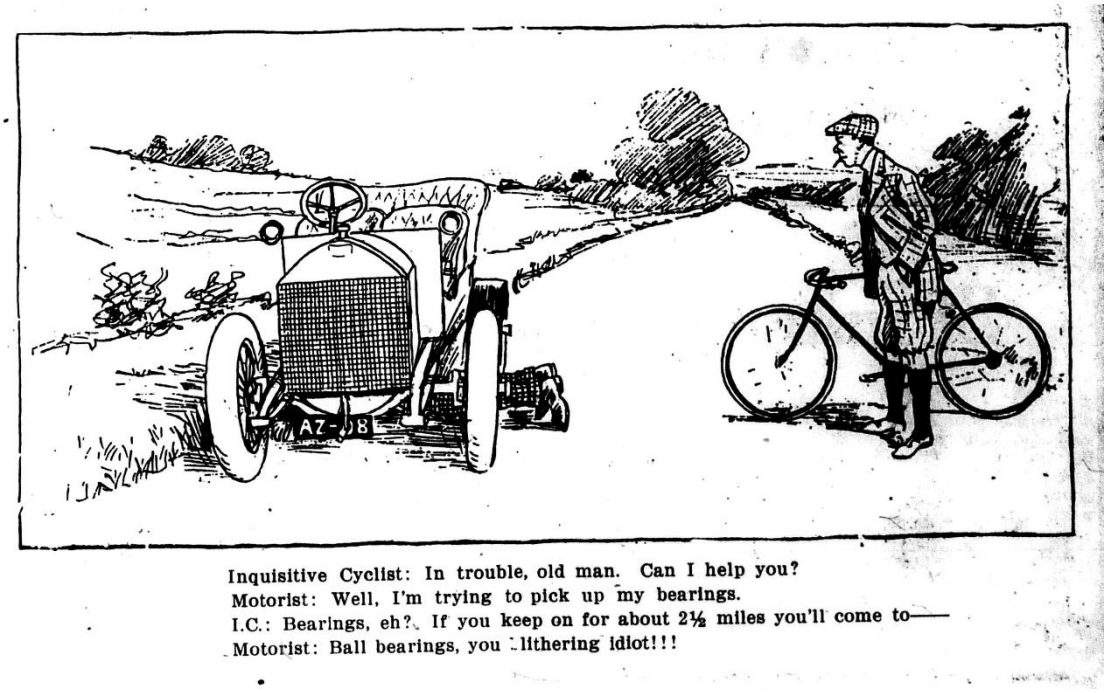

Image 6 'Inquisitive Cyclist' cartoon, *Australian Motorist*, 15 September 1908, 27.

The Emergence of Motor Mechanics

Existing histories have understated how fluid the definition of a mechanic was during the early days of motoring. An example is labour historian Tom Sheridan's description of motor mechanics as 'the direct descendants of engine fitters'.[35] This is only partly true. While some fitters did become motor mechanics, Sheridan's claim is too simplistic. It is impossible to directly trace the line of motor mechanics back to one single trade or industry. This is because it is also impossible to define exactly who was and was not a motor mechanic in the early twentieth century. The transition of various workers into motor mechanics, especially in rural areas, was haphazard. As the demand for automobile repair grew, people with the skills to become motor mechanics transitioned into this new area of work. This was in line with many engineering trades in the nineteenth century. Maddison has described the division of labour in engineering as 'simple' yet unpredictable. The demand for 'all round' skilled engineers was at a premium, rather than specialised workers.[36] People who possessed the skills to become mechanics often did so out of necessity. In particular, those with problem-solving skills, an

[35] Tom Sheridan, *Mindful Militants: The Amalgamated Engineering Union in Australia, 1920–1972* (New York: Cambridge University Press, 1975), 4.
[36] Maddison, 'Skill and the Commodification of Labour', 277.

understanding of machinery and combustion engines, and any form of metalworking skills, were able to take advantage of this new demand. Some became motor mechanics before they even realised it.

Given the fluidity surrounding the new work of automotive repair, it is not possible to say exactly how many motor mechanics existed in early twentieth-century Australia. The 1911 Australian Census counted 3,630 automotive and bicycle mechanics, the majority based in New South Wales and Victoria.[37] But these figures do not correctly identify people like Monty Page at the time that Foy encountered him in Grafton: individuals who dabbled in automotive repair but who did not necessarily consider this their primary form of work. The blurred lines separating this work from other forms of engineering and metalworking made it difficult for a discrete motor mechanic trade to emerge.

Image 7 E.W. Smith Engineering works motor garage and Harry Robinson's blacksmith workshop in Edinburgh Street, Coffs Harbour. 1920. mus07-1506. Coffs Collections, Coffs Harbour, NSW. Reproduced with permission.

While Sheridan assumed that fitters were the key forerunners to motor mechanics, motoring journalist Bill Tuckey believes that blacksmiths were one of the major 'foundation

[37] Australian Bureau of Statistics, 'Occupations', *Census of the Commonwealth of Australia 1911*, vol. 3, part 12, 1911.

stones' of the automotive industry in Australia.[38] Tuckey is right that many blacksmiths began developing skills necessary to construct and maintain motor cars in the early twentieth century. This is because their existing knowledge of metalworking made it easy and natural to transition into automotive repair work. In addition, blacksmiths' skills in forging and welding were highly sought after, as this allowed them to craft automobile parts. Blacksmiths also generally had access to an established workshop that contained many of the tools and equipment necessary to operate a garage. Already having ownership of, or access to, an established space big enough to hold cars gave blacksmiths an advantage over other metalworkers. Shane Birney wrote that often the only change needed to transform a blacksmith into a motor mechanic was for them to switch the sign on the door of their workshop.[39]

This transition into motor mechanic work was successful for blacksmiths, despite lacking a specific education in automotive repair. In an article recalling the early days of motoring, the *Courier Mail* wrote that 'for some years … the versatile blacksmith was the motorist's best friend when he needed running repairs'.[40] While urban mechanics were more likely to become full-time auto repairers, in rural areas it was more common for tradesmen to add automotive repair skills to the range of services they offered, as there was not enough demand for motor repair to justify specialising in this work.[41] In this way, motor mechanical work did not develop into a trade directly from the blacksmiths' workshop. Mechanical work was included as part of these smiths' skills and abilities, but it was not their main business nor their defining feature.

The blacksmithing trade was not the only area of work producing mechanics. Bicycle stores were also an important site for the development of the trade. Transportation became big business in Sydney and Melbourne on the back of the bicycle boom of the 1890s. The bicycle revolutionised private transport, allowing individuals to access a relatively cheap and independent form of transport. Yet, importantly, Australia lacked a bicycle manufacturing industry until the turn of the twentieth century, meaning retailers relied on imported models.[42] Specialised stores became common as bicycles became popular.

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[38] Bill Tuckey, *On Solid Ground: 90 Years of VACC* (Melbourne: Victorian Automobile Chamber of Commerce, 2008), 10.
[39] Shane Birney, *A Nation on Wheels* (Sydney: Dreamweaver, 1984), 179–81. See also Harper, *Working Knowledge*, 24–27.
[40] Harold H. Paynting and Malcolm Grant, eds., *Wheels in Victoria 1824–1984* (Port Melbourne: Victorian Automobile Chamber of Commerce, 1984), 95.
[41] 'Mechanics in Bush', *Courier-Mail*, 13 September 1951, 5; '50 Years in the Motor Trade', *Australian Automobile Trade Journal*, August 1961, 69.
[42] Conlon and Perkins, *Wheels and Deals*, 12–13.

Internationally, bicycle manufacturers were some of the first businesses to transition into automobile manufacturing. Major automotive car producers, such as the Opel brothers of Germany and the Dodge brothers of the United States, began their businesses making bicycles.[43] Bicycle stores used their established connections with international manufacturers to become the first places to import cars to Australia. The incentive to gamble on this new piece of expensive technology was interlinked with a cultural understanding of modernity. Robert Conlon and John Perkins describe the bicycle dealer as 'a kind of "modern man" of his era'. [44] Selling motor cars helped create this image. Bicycle stores already had a connection with maintenance, in providing servicing for bicycles purchased at their store. Customers looked to the stores to provide the same service for their new cars. Shane Birney has noted that this created a demand amongst bicycle shops to employ 'young, enthusiastic engineers' to oversee the maintenance and repair of cars.[45]

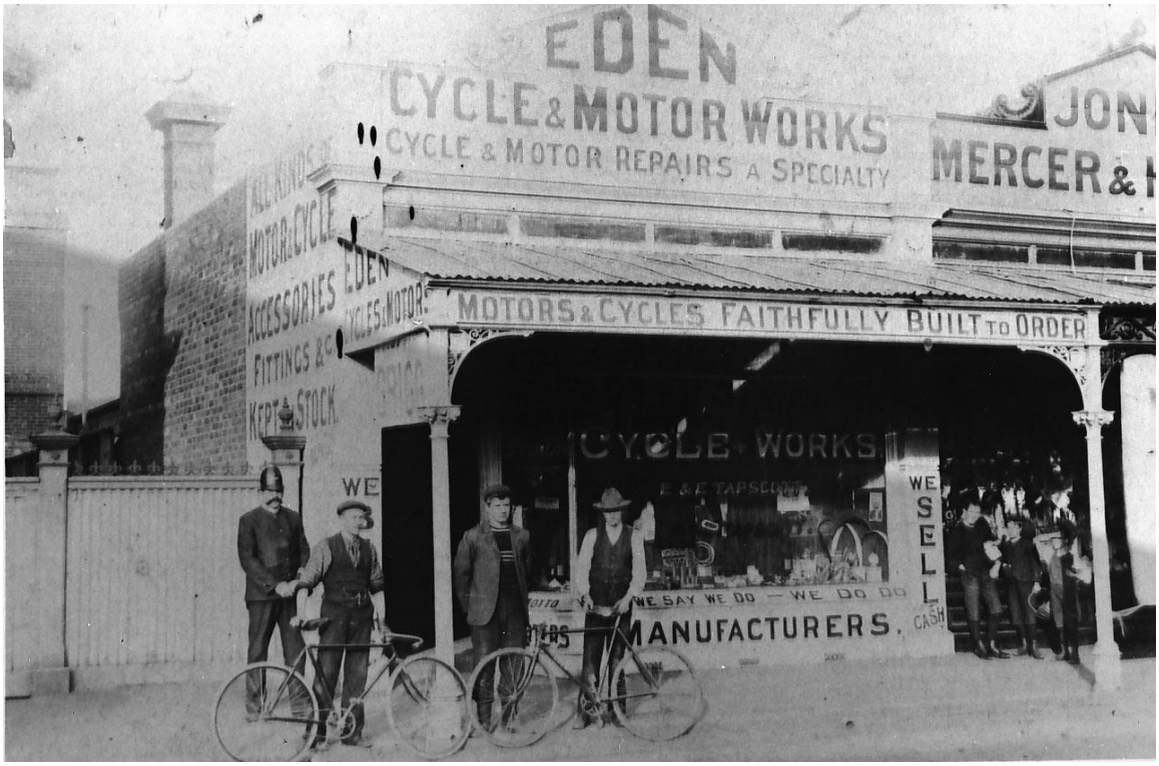

Image 8 Eden Cycle and Motor Works, Fitzroy, 1903. FL30. Yarra Libraries, Fitzroy, Vic. Reproduced with permission of Fitzroy Local History Photograph Collection.

In recruiting young engineers to take control of the maintenance side of their business, the owners of bicycle shops began poaching early mechanic work from coachmakers, who might otherwise have seemed more naturally suited to move into automotive repair.

[43] Ibid., 12–13.
[44] Ibid., 20. Tuckey (*On Solid Ground*, 13) also outlines how the first major Australian De Dion importers were bicycle stores.
[45] Birney, *A Nation on Wheels*, 169.

Coachmakers were slow to adapt to the changing industry. They took little interest in the arrival of the bicycle in the 1890s, which made them reactive to the arrival of the automobile rather than proactive.[46] Coachmakers eventually adapted their businesses to benefit from the arrival of cars. They already had the space and the assembly skills to build automobiles, especially imported models such as the Ford Model T. Since they limited their work to the external body of the car, however, coachmakers did not learn anything about its inner workings and stayed away from mechanical work. This allowed bicycle stores to become the main industry for automotive repair. According to the *Australasian Coachbuilder and Wheelwright* in 1903, 'every aspect of the problems connected with the advent of the motor car has been thrashed out bar one, and that is the motive power and its workings'.[47] By 1908, this key trade journal for coachmakers was warning the industry that 'much profitable work in the shape of repairs at present go past the coachbuilder, because of his want of familiarity with the mechanical side of the motor'.[48]

Charles Kellow's bicycle store in Melbourne provides a typical story of the era. As the bicycle craze of the 1890s came to an end, Kellow used his existing links to French bicycle manufacturers to import De Dion automobiles in 1901. By 1903, Kellow had converted his bicycle store into a 'garage'. The term 'garage' was borrowed from the French and arrived at the same time as the automobile, to define a place for storing and repairing cars.[49] Initially established as a place where motorists could store their vehicles for a fee, knowing that their car would be repaired and maintained there, garages quickly became the major site where all motorists' needs were met. Kellow's garage did not just sell cars but offered a one-stop-shop for all things related to the automobile. Many garages also offered lessons in driving as well as automotive repairs. Kellow prominently advertised that his garage employed 'Expert Motor Mechanics': workers whom he claimed specialised in the repairing of motor cars. Unlike the blacksmiths, the bicycle stores created work for repairers whose focus was entirely on the mechanical aspects of the bicycle and car. These places helped the development of motor mechanics into a trade in and of itself, rather than a set of skills related to other areas of work.[50]

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[46] Conlon and Perkins, *Wheels and Deals*, 20.
[47] *Australasian Coachbuilder and Wheelwright*, November 1903, quoted in Ibid.
[48] *Australasian Coachbuilder and Wheelwright*, April 1909, quoted in Conlon and Perkins, *Wheels and Deals*, 20.
[49] 'Jottings', *Newcastle Morning Herald and Miners' Advocate*, 14 December 1901, 9.
[50] 'Advertising – Motor Cars', *Age*, 7 November, 1903, 15; 'Death of C.B. Kellow', *Argus*, 3 July, 1943, 4; H.S. Broadhead, 'Kellow, Henry Brown (Charles) (1871–1943)', *Australian Dictionary of Biography*, vol. 9 (Melbourne: Melbourne University Publishing, 1983), http://adb.anu.edu.au/biography/kellow-henry-brown-

The situation was different in rural areas, where motor mechanic work emerged as a subsection of farming mechanics. In some country towns, mechanical repair work was taken up by Aboriginal workers. Museum curator Michelangelo Bolognese has written that, in the nineteenth century, Aboriginal mechanics established an entire system of repair built on knowledge that drew upon the natural environment. First Nations people used this knowledge to create ingenious and improvised fixes to keep mechanical equipment running in the challenging conditions of the Australian outback. These 'bush mechanics' initially developed their skills maintaining machinery used for agricultural work. 'When cars arrived', Bolognese writes, 'these mechanics quickly adapted their skills to the new technology'.[51]

Aboriginal workers benefited from a combination of community ownership and a culture of curiosity in developing mechanical repair skills. Bundjalung communities near Ballina, New South Wales, were able to purchase and maintain their own cars from as early as 1915.[52] By 1926, the Indigenous community at the Koonibba Lutheran mission, comprised of people from the Wirangu, Kokatha and Mirning nations, combined their resources to purchase multiple cars for their community. Indigenous car ownership shocked the white workers and missionaries of the area, who were unable to afford one themselves.[53] The rural economic circumstances and sociocultural practices within Aboriginal communities made it easier for First Nations motorists to deal with mechanical issues. These communities developed the knowledge and skills to keep cars operating in the most gruelling conditions. This knowledge remained a mystery to white Australians throughout the twentieth century as they refused, or were unable, to recognise these skills.[54] Newspapers of the 1930s published stories outlining their surprise at cars broken in the bush returning repaired, or Indigenous Australians showing an understanding of the working of cars at the level of fully qualified mechanics.[55] This culture of learnt and improvised skills was not acknowledged until the 1980s when American anthropologist Eric Michaels reported on his colleague, Francis Jupurrurla Kelly, who had repaired their car with the use of unique Indigenous bush mechanic techniques.[56]

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charles-6914. See also Ian Berg, *Jas A Munro & Co: The Largest Garage in Melbourne* (Umina Beach, NSW: Everbest Printing, 2020), 43.

[51] Michelangelo Bolognese, 'Nyurulypa: The Good Tricks', in *Bush Mechanics: From Yuendumu to the World*, eds. Mandy Paul and Michelangelo Bolognese (Mile End, SA: Wakefield Press, 2017), 51.

[52] Georgine Clarsen, 'Bush Mechanics: Then and Now', in *Bush Mechanics*, 9.

[53] Ibid., 11; 'Aboriginal missions in South Australia: Koonibba', *State Library of South Australia*, https://guides.slsa.sa.gov.au/Aboriginal_Missions/Koonibba.

[54] Clarsen, 'Bush Mechanics', 11.

[55] 'Aboriginal Mechanic Astonishes Darwin Employer', *Age*, 25 June 1937, 12; 'Aboriginal Intelligence', *Northern Star*, 6 February 1931, 6.

[56] David Batty and Francis Jupurrurla Kelly, 'The Making of Bush Mechanics', in *Bush Mechanics*, 39.

Back in urban settings, the demand for skilled workers and the fluidity of the trade opened up positions for women to become involved in automotive repair work. While the trades in the best positions to transition into motor mechanic work were typically dominated by men, there was an early cultural perception that women would be suited to automotive work. In the first days of the automobile, the car was positioned as a modern creation, and observers predicted that the labour force involved in motoring work would be similarly modern and progressive. The Adelaide *Register* commented in 1902 that:

> the motor has brought in its train an opening for the intelligent women with a taste for mechanical engineering, and there are many more of this type than people imagined – women who feel perfectly at home in an engineer's workshop, and whose passion for machines is only equalled by that of their masculine prototype.[57]

The *Register* went on to claim that one of the ways Australia could quickly adapt its workforce to the shortage of motor mechanics was through the promotion and education of women into the industry.[58]

Affluent Australian women were quick to embrace the car. By 1912, 'driving had become such a popular pastime with ladies in Sydney that there were few who could not be trusted with the wheel of a large and speedy car', historian John William Knott explains.[59] Female motoring columns provided evidence of a culture of women motorists who were gaining independence and knowledge: both of how to drive and the inner workings of the car. 'The Women's Point of View' column began appearing regularly in the *Australian Motorist* from the end of 1908. The author was a female motorist who wrote under the pseudonym Minerva, taken from the name of a Belgium automobile manufacturer popular with Australian women at the time. She commented in 1908 that:

> Victorian women seem to have made up their minds to learn to drive their own cars, and it really is a good move … Even if not strong nerved enough to drive, it would be a decided advantage for a woman to understand how to do so and to have a general understanding of the management and working of her car.[60]

While the press encouraged women to become involved in mechanical work, actual opportunities were scarce. As already noted, motor mechanics fell into areas of work

[57] 'Interesting Items – Women Motorists', *Register (Adelaide),* 13 September 1902, 8.
[58] Ibid.
[59] *Motor in Australia*, 1 October 1912, 98, as cited in Knott, 'The "Conquering Car"', 12.
[60] Minerva, 'The Woman's Point of View', *Australian Motorist*, 15 December 1908, 195.

traditionally dominated by men: engineering, metalworking, and mechanical repair. With few barriers of entry into the trade, however, women began working as mechanics. The lack of accurate figures makes it difficult to provide an exact number of how many women became involved in motoring work during the early twentieth century. The 1921 Australian census lists 271 female mechanics out of a total of 11,251.[61] Newspapers of the day gave conflicting reports on the topic. According to Sydney's *Evening News* in 1928, few women worked as motor mechanics or chauffeurs.[62] The Sydney *Sun* said something different in 1927, suggesting that women were a common sight in the city's garages, both as attendants and motor mechanics.[63] The latter claim was likely an exaggeration, but it at least draws attention to female participation in the trade. Even though women likely comprised only a small percentage of motor mechanics in the first three decades of the century, the lack of formal barriers to female participation meant that some of those who began working on cars were able to take advantage of the embryonic stages of the trade.

One woman who became a mechanic during the trade's early years was G.M. Cameron. She was interviewed by the *Sydney Morning Herald* in 1918 and explained why she became a mechanic:

> Honestly, I'm not one scrap domesticated. I can't make a bed. I'd ruin a dinner and burn a kettle of water. I can't sew, nor bake, nor sweep – but give me a garage full of mixed cars, my overalls, a kit of tools, and the world is mine.[64]

The appearance and employment of women like Cameron did not shock reporters of this era. Instead, their appearance seemed to fulfil earlier predictions that the modern nature of the car would produce a workforce that involved women. Cameron, dubbed 'Miss 20th Century', was celebrated as an example of how the automobile contributed to the progressive expansion of the workforce.[65]

With mechanical repair work emerging in multiple trades, as well as across class, racial and gender lines, attempts to organise the trade became complicated due to the

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[61] Australian Bureau of Statistics, 'Occupations', *Census of the Commonwealth of Australia 1921*, vol. 2, part 17, 1921. In comparison, Nancy Gabin observed that 15,000 women worked within the automotive industry in the United States at the end of the First World War, making up 7 per cent in total. Many of these women workers, however, were mainly employed in 'women's work', such as upholstery, as the manufacturing industry held a strict sexual division of labour. See Nancy F. Gabin, *Feminism in the Labor Movement: Women and the United Auto Workers, 1935–1975* (Ithaca, NY: Cornell University, 1990), 9–12.
[62] 'Women's Garage', *Evening News (Sydney)*, 2 February 1928, 22.
[63] 'Ingenious Women', *Sun (Sydney)*, 14 February 1927. See also 'The New Independence of Women', *Open Road*, 24 September 1927, 19.
[64] 'Miss 20th Century – Girl Who Won't Keep Still', *Sun (Sydney)*, 30 June 1918, 15.
[65] Ibid. See also Smith, *A Spanner in the Works*, 182–86.

haphazard way that people began working on repairing automobiles. The fluidity of the trade stifled industrial representation. As automotive repair work began to emerge as a viable and vibrant field of work by the 1910s, workers sought to unionise the trade. The Motor and Cycle Mechanics Union was founded in Adelaide in 1908. In Melbourne, the Chauffeurs and Motor Mechanics Independent Union was formed in 1912. So was the similarly named yet separate Engineers and Mechanics Independent Union. [66] All of these were small in numbers and short lived. The Motor and Cycle Mechanics Union only lasted six months, while both Melbourne unions seem to have disbanded during the First World War. By the end of 1913, the Engineers and Mechanics Independent Union had 105 members, while the Chauffeurs and Motor Mechanics Independent Union had only 39 members.[67] Stable union representation of the motor mechanic trade did not occur until the formation of the Amalgamated Engineering Union in 1920.

While the lack of a clear definition of motor mechanics' work made industrial organisation difficult, those involved in automotive repair were able to exploit this relatively undefined position to advance their social status. Though engineering in Britain had established itself as a middle-class profession by the turn of the twentieth century, the situation in Australia was quite different.[68] Owing to their lack of numbers, engineering in Australia was comprised of both middle-class professionals and working-class tradespeople. As a result, engineers did not possess the levels of elite social status akin to their European counterparts.[69] In his history of engineering in Australia, former President of the Institution of Professional Engineers Brian E. Lloyd counted only 1,050 engineers in Australia in 1900, with only 39 per cent of them receiving 'a formal engineering education'.[70]

By the early 1900s, middle-class professionals formed engineering societies, comparable to their British equivalents. These societies attempted to control Australian engineering by enforcing qualification requirements but lacked the numbers, status, or power

[66] 'Motor and Cycle Mechanics Union', *Advertiser*, 6 February 1908, 10; 'Independent Chauffeurs' Union', *Age*, 18 September 1912, 11; 'Chauffeurs and Motor Mechanics' Independent Union', *Age*, 29 November 1912, 13; State Government of Victoria, 'Twenty-Eighth Annual Report on Trade Unions' (Melbourne: Albert J Mullett, 1914), 3.
[67] State Government of Victoria, 'Twenty-Eighth Annual Report on Trade Unions', 5.
[68] R.A. Buchanan 'Gentlemen Engineers: The Making of a Profession', *Victorian Studies* 26, no. 4 (1983): 407–10.
[69] Hannah Forsyth and Michael P.R. Pearson, 'Engineers and Social Engineering: Professional/Trade Unions and Social Mobility', *Labour History* 120 (2021): 173–74; Brian E. Lloyd, *Engineers in Australia: A Profession in Transition* (South Melbourne: Macmillan, 1991), 38–39.
[70] Ibid., 53. Only 20 students graduated from an Australian tertiary institution with an engineering qualification in 1900 (Michael Edelstein, *The Flow of New, Tertiary Qualified Engineers in Australia*, Source Papers in Economic History 18 (Canberra: Australian National University, 1988), 22, 26). Lloyd (*Engineers in Australia*, 54) goes on to describe that engineers who received a university education in Australia in the late nineteenth century faced scepticism as to the use of a formal, rather than a technical hands-on, education in engineering.

to do so.[71] This opened the door for mechanics. While not recognised as engineers in the professional sense of the term, Australian mechanics could find work in engineering firms by leveraging their practical experience.[72] The lack of control over their field frustrated engineers who sought British levels of elitism. George Julius, president of the Engineering Association of New South Wales between 1910 and 1913, bemoaned the lack of formal qualifications and fluid identity of Australian engineering, complaining that 'every fitter, mechanic or plumber is an "Engineer". Every dreamer who schemes out a rotary engine, a flying machine or a perpetual motion freak is also an "Engineer"'.[73]

With mechanics emerging from multiple backgrounds and moving between various metalworking trades, they had too few shared characteristics to build much solidarity. While the fluidity of the trade was advantageous to some, a lack of cohesive identity and industrial organisation weakened them collectively. This had consequences for how the trade developed over the next few decades. If some mechanics enjoyed their isolation in their workshop or garage, unbothered by the outside world, this was short-lived. Other groups were quickly closing in on them.

Motorist Organisations and their Influence on Motor Mechanics

Though motor mechanics remained unorganised throughout the first twenty years of the trade, motorists were quick to define who they were and organise themselves. From the earliest days, motorists developed a union-like culture that promoted solidarity. These organisations included the Automobile Club of Victoria (ACV) and its New South Wales equivalent, the Automobile Club of Australia. Both formed in 1903 and ran car meets and races that allowed for motorists to socialise, network, share knowledge and organise.[74] By 1905, motoring clubs were founded in every mainland Australian state. These clubs were, by definition, elite organisations. With only the most affluent people able to afford cars, the ACV was an organisation to essentially organise the elite of Melbourne around the issues affecting automobiles. Motorists' clubs also served to connect motoring business owners with potential

[71] Lloyd, *Engineers in Australia*, 2–3, 57.
[72] Ibid., 89; Suzanne Welborn, 'Interview with Mark Payne and Alf Lay in 1976', Perth: State Library of Western Australia, 1976.
[73] Lloyd, *Engineers in Australia*, 69; George Julius, quoted in Lloyd, *Engineers in Australia*, 70. Further discussions of the struggles with defining engineering in Australia in the early twentieth century can be found in 'What is an "Engineer"?', *Commonwealth Engineer*, 1 November 1920, 131.
[74] Priestley, *The Crown of the Road*, 6–9.

new customers. Jas A. Munro, one of Victoria's most prominent garage owners, joined the ACV in 1907 for precisely this reason.[75]

Image 9 Map of the Automobile Clubs and Associations of Australia, 1903–Present.

The members of motorist organisations used their connections with the rich and powerful to gain control over the automotive industry. Through the prominence of their organisations, they began asserting themselves as automotive experts. These organisations claimed to represent motorists' political views. They used this power to affect early government policy and laws. The ACV had a significant influence on the Victorian state government's *Motor Car Act* (1909). The Act was proposed following pressure from the community to regulate automobiles, identifying negative impacts on Australian roads.

According to historian Russell Grimwade, the Australian public were openly hostile to cars in the early 1900s, perceiving them as 'nothing more than the play things of rich

[75] Berg, *Jas A Munro & Co*, 26.

eccentrics'.[76] The catalyst for regulation was the death of Samuel F. Payne in 1905: the first recorded Australian fatality caused by a motorcar.[77] In response to pressure to regulate cars, the ACV organised a campaign to counter public outrage. They tapped into existing relationships between their board and the political elite, using the status of their members to get close to parliamentarians to lobby them on behalf of motorists. In some cases, they gave parliamentarians rides in motor cars to attract their attention.[78] Following pressure from the ACV, the Victorian parliament's original bill proposing the regulation of motor cars was weakened. Instead of its initial legal restrictions on automobiles, such as speed limits, the Act was limited to licensing and 'policing that was motorist-friendly'. Licensing and registration was a major win for the ACV, as it meant that motorists not only avoided the threatened restrictions but also that the Club found it easier to identify and recruit new members.[79]

The ACV was a typical elite club of the early twentieth century, with exclusive rooms that contained a bar, library, billiards room and ladies' lounge.[80] Despite this, public opposition to motor cars was rarely debated using the language of class. One rare occurrence came through a letter from an anonymous author to the *Daily Telegraph* in 1907, arguing that legislation needed to be passed 'to show the above class of motor gentry that they do not own Australia'.[81] This speaks to the success of motorist organisations in downplaying their class status and instead positioning motorists as modernists. The ACV, which gained royal approval for its services in World War I and subsequently added the prefix to its name, capitalised on the growth of the automobile by transitioning from an elite club into a mass organisation during the 1920s. This set the template for all other successful motor car clubs.[82]

[76] Grimwade, 'Early Motoring in Victoria', 14.
[77] 'Motor Car Collision – A Cyclist Killed', *Argus*, 5 January 1905, as cited in Tranter, '"The History of the Haste-Wagons"', 846; Tranter, '"The History of the Haste-Wagons"', 846–48.
[78] Tranter, '"The History of the Haste-Wagons"', 863–66; Grimwade, 'Early Motoring in Victoria', 13–14.
[79] Tranter, '"The History of the Haste-Wagons"', 843–44, 875.
[80] Priestley, *The Crown of the Road*, 20, 25.
[81] *Daily Telegraph*, 30 July 1907, 5, quoted in Hovenden, 'The Motor Car in New South Wales', 37.
[82] Most of Australia's motor clubs were given royal approval following their services in transporting soldiers around cities during the First World War.

Image 10 The Novice cartoon, *Australian Motorist,* August 1910, 904.

Beyond organising motorists socially and politically, the ACV also served an educational function. Its representatives led a campaign to educate motorists, under the belief that all motorists should understand the basics of their vehicles and be able to repair them.[83] Motorists pushed to reclaim the knowledge, and even the labour, of automotive repair, fearing that if organised workers controlled knowledge of the workings of motor cars and the skill required to repair them, they would be vulnerable to rent-seeking or inadequate service.[84] Car owners became increasingly suspicious of motor mechanics, especially when they realised that many of them were learning through experimentation. One author for the *Australian Motorist* disparagingly suggested that these new motor mechanics were the descendants of 'unsuccessful plumbers, shoemakers, gunsmiths and watchmakers' – failures in their own trades who were now seeking to exploit motorists.[85]

Motorists who relied on mechanics to fix their cars resented the feeling of being at these workers' mercy. Leaving their expensive machines in the hands of those who otherwise would never be able to afford to touch one disrupted their class sensibilities. In response to

[83] E.L. Holmes, 'Lessons of the Road – "Motor Economy"', *Australian Motorist*, 15 December 1908, 161–63.
[84] Fred Henning, Letter to the Editor, *Australian Motorist*,15 October 1908, 73; 'Motor Engineers and Experts', *Australian Motorist*, February 1910, 377.
[85] 'My Motor', *Australian Motorist*, 15 January 1909, 241.

this fear, motoring journals advised that car owners should take charge of their own repairs and learn how to use, maintain and repair their car. To educate members, motoring journals published columns that offered motorists advice and guides on how to maintain their car and promoted stories of 'aristocratic chauffeurs' – 'sprigs of the aristocracy' who took up work as drivers.[86] The aim for motorist organisations was to reclaim power over repair work by adopting an artisanal understanding of skill, to separate work from working-class mechanics. These types of stories sought to promote ruling class involvement in automotive work as a way of altering mechanics' position within class structures.

Motorists promoted this change rather than increasing the status of all those involved in the motor mechanic trade. Journals demonised those involved in waged automotive work to scare motorists. One letter to the *Australian Motorist* was horrified at one day pulling up alongside a car that was driven by two 'rough-looking youth[s] … both without hats or coats, with sleeves rolled up, displaying oil and dirt-stained arms and vest, and the old pants or "blueys" in contact with the seats…'.[87] Next to this letter were instructions on how motorists with the ability to house their car at home could build their own repair pit. This was framed as a dramatic first step to allow a motorist to become their own mechanic.[88]

Educating motorists was only one tactic that motorist organisations employed to counter the individual advantages that mechanics possessed. They also sought to suppress emerging automotive industries by advocating that motorists should take charge of their own work. Motorist organisations and publications only half succeeded in this aim. Motoring organisations were able to encourage car owners to become their own drivers, doing away with chauffeurs. Initially, like motorists in other countries, Australian motorists relied upon a hired chauffeur who was responsible for driving the car. Melbourne magazine *Punch* advised its readers that 'a permanent chauffeur at a fixed wage is a *sine qua non* [absolute necessity]'.[89] This came from an understanding of a motor car as a technological extension of the horse-and-carriage, with the chauffeur positioned as a modern coachman. This idea that motorists needed chauffeurs was an imported one. In the United States, most car owners were not involved in operating their cars. They neither drove their vehicles nor helped maintain them. An entire industry of chauffeurs emerged as a consequence: a type of servant 'who would perform the duties of driver and of mechanic'.[90] By contrast, in Australia the demand

[86] 'Aristocratic Chauffeurs', *Australian Motorist*, 15 September 1908, 19.
[87] 'The Hatless Motor Driver', *Australian Motorist*, 15 February 1909, 301.
[88] 'The Construction of a Repair Pit', *Australian Motorist*, 15 February 1909, 301.
[89] 'Motor Notes', *Punch (Melbourne)*, 19 September 1907, 36.
[90] Borg, *Auto-Mechanics*, 16.

for skilled mechanics outweighed those for chauffeurs. Motorists learned that chauffeurs were unnecessary, while mechanics were essential.

There were three key reasons why Australian car owners did away with chauffeurs earlier than their counterparts in either the United States or Great Britain. Firstly, chauffeurs were expensive. Secondly, their skills were not viewed as important enough to be worth the cost. E.L. Holmes, the head of the ACV, warned members that 'the "mechanic-drivers" of Melbourne can be numbered on one hand', and any chauffeur that claimed they had mechanical knowledge of the car should not be trusted.[91] Lastly, since few chauffeurs had skills beyond driving, motorists could make them redundant. Most Australian motorists quickly realised that driving a car was not only easy but also enjoyable. In 1911, a reporter for the *Sydney Morning Herald* thus informed readers that:

> …a man with average intelligence will be able to drive exceedingly well in a few weeks, and if he is at all enthusiastic about his car, which most men are, he will understand the details and driving as well as a professional chauffeur within a few months ... The man who has not yet sat behind the steering wheel with the control levers at his hand ... has much of the joy of life yet before him.[92]

The ACV took this further by denigrating mechanics' work. As President of the ACV in 1908, E.L. Holmes advised motorists that 'the "mechanic" is a very visionary attachment to the word driver, and in practically every case it means a driver who has picked up knowledge of the mechanism, either by instruction or quick wit'.[93] Belittling mechanics' skills glossed over the fact that any worker who became involved in automotive repair after previous involvement in the metalworking or engineering trades had an inherent advantage over motorists. These workers had existing knowledge that they could adapt to vehicle repair. By contrast, most motorists had to learn everything about motor repair from scratch. It is not surprising that most were either accordingly unable or unwilling to become mechanics.

'Most men who buy a car do not trouble to study the various portions of the mechanism until they are strande[d] and without hope of outside assistance,' the *Sydney Morning Herald* commented in 1911.[94] The *Australian Motorist* noted that even motorists who engaged in amateur repair work could hit problems. Joking that one motorist who

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[91] 'The Chauffeur Question', *Australian Motorist*, 15 September 1908 20; Henning, Letter to the Editor, *Australian Motorist*, 15 October 1908, 73; E.L. Holmes, Letter to the Editor, *Australian Motorist*, 16 November 1908, 127.
[92] 'Motor Notes', *Sydney Morning Herald*, 5 August 1911, 8, as cited in Broomham, *On the Road*, 13, n41.
[93] Holmes, Letter to the Editor, 127.
[94] 'Motor Notes – Roadside Repairs', *Sydney Morning Herald*, 7 October 1911, 5.

engaged in all his own driving and repair work was asked by a friend how disassembling the engine went, the motorist replied that 'when I put that machine together again yesterday, I had nearly two dozen pieces left over'.[95] It was precisely because motorists had little prior mechanical knowledge and ability that they formed the readership for automotive magazines and journals. For the next thirty years, 'expert engineers' answered questions from motorists about their mechanical issues in popular columns.

Unable to change motorists into mechanics *en masse*, motoring groups began to look at how they could influence or control the associated motoring trades. At first, the ACV attempted to bring mechanics into the fold by offering them associate memberships to the club. This would allow the Club's representatives to control a register of drivers and mechanics and use their expertise to enhance its status. The scheme failed, however, because mechanics preferred their own small organisations and social clubs to being associated with the ACV.[96] Unable to convince mechanics to become members, the motorists' clubs would find other ways to bring them into their fold during the 1920s: chiefly, by employing their services and becoming involved in both the education and regulation of automotive work.

Conclusion

By the end of the First World War, the foundations were laid for what would develop into Australia's motor industry and trades. Motor mechanics appeared and flourished through the informal structures of the sector. Those with existing, artisanal skills were able to transition from their previous areas of work into repairing cars. This incorporated a wide range of workers, both men and women, across class divides. Initially, these conditions benefited mechanics greatly. They maintained almost total authority and control over their work and acquired prestige as doctors of machinery, performing seeming miracles to bring dead cars back to life.[97]

With no formal structures to unite them, there was a lack of cohesive class consciousness amongst these first mechanics. The trade struggled to develop any form of cohesive identity, nor were they able to organise to protect their emerging trade. Attempts to unionise were small, isolated, and generally failed. This lack of formal organisation presented difficulties. Mechanics struggled to develop an industrial identity – some claimed to be skilled

[95] 'Too Many Parts', *Australian Motorist*, 15 September 1908, 19.
[96] Priestley, *The Crown of the Road*, 35–36.
[97] Page, *Truant Surgeon*, 34.

engineers, while others saw repairing cars as adjacent to their careers. While this fluidity and lack of organisation provided short-term advantages for mechanics, it would later be the cause of long-term problems in organising and defending their status.

In contrast, motorist groups organised almost immediately with the arrival of the automobile. This was because motorists leveraged their existing connections between elites. Motorists quickly perceived mechanics as a threat to their interests. Driven by a fear of mechanics overcharging and underdelivering, motorist groups used their networks to gain control over the unorganised motor mechanic trade. This positioned motorist organisations, representing car owners rather than mechanics, as the holders of expertise over the motor vehicle. Their superior organisation and cohesive identity gave motorists the power to begin negotiating with trade schools and technical colleges over regulation and certification for the motor mechanic trade. This would determine the direction of the trade and the way the skills and knowledge regarding mechanical repair were organised, which is the subject of the next chapter.

Chapter 2 – Education and Organisation

Over the first two decades of the twentieth century, those involved in the motor mechanic trade adopted approaches and structures common in related fields when seeking to train new workers. As a result, informal, indentured apprenticeships became the main way for young workers to enter the trade. This system meant mechanics themselves controlled the education of new workers. Since the apprenticeship system was closely connected to a range of trades, it also enabled those involved to gain a wide variety of skills. Apprentices participated in work beyond automotive repair, developing competencies in areas such as fitting and metalworking. But the apprenticeship system was not perfect. Consumers of mechanical repair services could not be sure of the quality of a mechanics' services. This meant that by the end of the First World War, motorist organisations began campaigning for the standardisation of motor mechanic apprenticeships. The structured apprenticeships that resulted established a more formal system in which young people could enter their training confident that they would emerge with recognised skills.

Formalised education entrenched power structures governing the trade. Technical colleges, not mechanics, now recognised what was becoming an established body of knowledge and imposed standards on mechanical repair. Motorist organisations were able to use technical education to increase their influence. For them, control over the trade was vital. Mobile mechanic programs were central to the success of motorist organisations in the 1920s. Other stakeholders contributed to this expansion of technical education for motor mechanics. Both the Amalgamated Engineering Union, which represented mechanics in the Industrial and Arbitration system (the broad contours of which will be shortly outlined below), and the Institute of Automotive Mechanics promoted educational standards within the trade through technical courses.

While the technical education system sought to weed out inconsistencies in mechanics' education, it introduced some of its own. As informal arrangements were increasingly replaced by formal apprenticeships, the trade came to depend on technical college admission policies. Some, such as Swinburne Technical College, denied entry to women. This was not universal. Others, like the Perth Technical College, provided opportunities for women with little to no engineering or metalworking background, allowing

them to become motor mechanics. Helen Hobley from Roper River in the remote north of the continent was an example.[1] The new system nevertheless hardened gender divisions.

The imposition of educational standards on the trade did not only lead to a deeper entrenchment of gender norms. Technical education also created hierarchies between occupations. In time, these established class barriers between the mechanics' trade and other professions, especially engineering. This did not happen overnight. At first, technical education helped some mechanics to transition between trades and professions, using the recognition and status each now conferred to access higher status jobs. This seemingly contradictory role played by formal education – both offering and inhibiting opportunity – complicates understandings of the significance of educational institutions in class formation in Australia in the 1920s and 1930s.

This chapter outlines the apprenticeship system, the major form of education for mechanics in the earliest years of the trade. It then explores the growth of motorist organisations, followed by the establishment of motor traders' associations as authorities with a stake in the work of automotive repair. The chapter then explores how these two groups coordinated with technical colleges to create courses and qualifications for motor mechanics. The chapter concludes by exploring how the connection between the apprenticeship system and technical colleges imposed new barriers to women, albeit not without resistance.

Apprenticeships

As demonstrated in the previous chapter, the motor mechanic trade developed in an *ad hoc* fashion, evolving out of related industries from the metalworking and engineering trade, some of the last areas of work to relinquish the artisanal structure of skill.[2] This makeshift state of affairs meant that it was not until the early interwar era that a structured form of training for those wanting to become mechanics emerged. Before that, young people wanting to become involved had simply approached garages or other relevant workshops and asked to be taken on as an apprentice.[3] The expansion of this informal apprenticeship system caught some off-guard. At an Apprenticeship Conference in Victoria in 1907, some of those present called for

[1] E.M. Litchfield, *Roper River Jack* (San Francisco: Blurb Inc., 2012), 217–20; 'Engineering Student – Bush Girl's Ambition to Fly Own Plane', *Northern Herald*, 24 July 1937, 40.
[2] John Shields, 'A Matter of Skill: The Revival of Apprenticeship in Early Twentieth-Century NSW', *Journal of Industrial Relations* 37, no. 2 (1995): 251–53; Maddison, 'Skill and the Commodification of Labour', 311–13.
[3] John Danks, 'The Apprentice and the Technical College', in *Souvenir 25th Anniversary AEU Australia, 1920–1945* (Sydney: Amalgamated Engineering Union, 1946), 56.

a state-authorised body to enforce regulation and the systematised involvement of technical colleges, arguing the existing situation could not guarantee workers' quality.[4] Many were indeed coming to view technical colleges as the future of industrial training in Australia.[5] Yet the Australian apprenticeship system survived this turn towards formalised education across most trades; motor mechanics included.

John Shields has noted that this is a unique quirk of the Australian industrial system as the apprenticeship system was phased out of most other industrialised nations.[6] Shields speculates that the continuing popularity of apprenticeships was due to a number of interlinking factors. The most important were the demands of craft unions and their negotiations with Australia's newly formed arbitration system.[7] The *Commonwealth Conciliation and Arbitration Act* (1904) mandated compulsory arbitration by law in reaction to the debilitating strikes of the previous decade. Arbitration Courts were established, at both federal and state levels, to bring 'law and order' to industrial relations by creating a structured system where workers and bosses negotiated pay and conditions.[8] Judgements by the courts created standardised wages across trades and professions, known as awards. Broadly, historians have interpreted the arbitration system as one that defended workers against exploitation by employers.[9] Charles Fox and Marilyn Lake have described the system as enacting 'compromise and concession' between the powerful union movement and capitalists.[10] Worker representation in the arbitration system relied upon the union movement, which led to problems for mechanics which will be discussed in the following chapter. It is

[4] Report by the Apprenticeship Conference, Victoria, 1907, as quoted in Butler-Bowdon, 'Class Confrontation, Class Collaboration', 1; Rasmussen, *Poor Man's University*, 10–11; Brereton, 'Origins of the Victorian Apprenticeship Commission', 90–91.
[5] Murray-Smith and Dare, *The Tech*, 134; Brereton, 'Origins of the Victorian Apprenticeship Commission', 91, 112.
[6] Shields, 'A Matter of Skill', 236–37. Shields notes that Britain is the other notable exception where the apprenticeship system survived into the twentieth century.
[7] Ibid., 260–62.
[8] H.B. Higgins, 'A New Province for Law and Order No. 1', *Harvard Law Review* 29, no. 5 (1915): 23, as quoted in *Australians at Work: Commentaries and Sources*, eds. Charles Fox and Marilyn Lake (Ringwood, Vic.: McPhee Gribble, 1990), 215.
[9] Marjorie Tew, *Work and Welfare in Australia*: *Studies in Social Economics* (Carlton, Vic.: Melbourne University Press, 1951), 124; Australian Centre for Industrial Relations Research and Training, *Australia at Work* (Sydney: Prentice Hall, 1999), 13; Keith Hancock and Sue Richardson, 'Economic and Social Effects', in *The New Province for Law and Order: 100 Years of Australian Industrial Conciliation and Arbitration*, eds. Joe Isaac and Stuart Macintyre (Cambridge: Cambridge University Press, 2004), 202–4; Peter Scherer, 'The Nature of the Australian Industrial Relations System: A Form of State Syndicalism?', in *Australian Labour Relations: Readings*, 4th ed., eds. G.W. Ford, June Hearn and Russell Lansbury (Crows Nest, NSW: Macmillan, 1987), 85–89. For criticism of compulsory arbitration and the award system, see Connell and Irving, *Class Structure in Australian History*, 136–39, 154, 158.
[10] Fox and Lake (eds.), *Australians at Work*, 190.

sufficient to note for now that the courts were important as they allowed workers to defend their institutions, including the apprenticeship system.

Apprenticeships allowed for the passing on of knowledge learned in *ad hoc* ways and could include innovations developed in individual workshops. This was particularly the case in rural areas, where a motor mechanic apprentice could learn multiple trades depending on the demands of the day. During Harold O'Malley's apprenticeship at a bicycle manufacturer in Geraldton, a regional town in Western Australia, his training included fitting and turning, panel beating, bicycle construction, electrical wiring and rubber vulcanisation, amongst other skills. O'Malley noted that through his apprenticeship 'all those trades melted in together and [gave] a good general knowledge of most everything … whilst you are learning one trade, you are learning altogether'.[11] O'Malley credited his apprenticeship with helping him to establish competency in a wide range of skills that provided him with a start as a skilled journeyman mechanic who could engage in repair work on anything mechanical including, but not limited to, cars.[12] An example of his confidence in his ability to adapt his knowledge to other areas of mechanical repair was demonstrated when a friend broke his tractor's axle. According to O'Malley, he told his friend 'We'll have a go at welding it.' When his friend asked, 'You can do that?' O'Malley replied: 'We can have a try, can't we?'[13]

A broad apprenticeship education did not just benefit mechanics' skill development, but their career prospects as well. In 1923, the Amalgamated Engineering Union argued to the Arbitration Court that it was essential for apprentices to be educated in a wide range of skills, even if they were being trained for a specialist position. The Union noted that any mechanic skilled only in operating one piece of machinery 'would find his field of employment decidedly limited'.[14] The Union made this claim to protest factories seeking to train specialist mechanics in limited forms of machinery. This defence also covered motor mechanics, as their apprenticeships were included in the union-negotiated 1921 Engineering Award.[15]

An example of how mechanic apprenticeships operated in the 1920s can be found in the records of Alice Anderson's Kew Garage. Anderson was the most prominent woman in Australia's automotive industry during the 1920s. She opened her garage in 1919 and was the proprietor and forewoman until her death in 1926.[16] The Kew Garage became iconic, not only

[11] Cahill, 'Oral History Interview with Harold Luke O'Malley'.
[12] Ibid.
[13] Ibid. See also Harper, *Working Knowledge*, 75–91.
[14] Brereton, 'Origins of the Victorian Apprenticeship Commission', 212.
[15] Ibid., 242.
[16] Anderson was shot dead in her garage in suspicious circumstances. While newspapers at the time speculated suicide, both Georgine Clarsen (*Eat My Dust*, 107) and Loretta Smith (*A Spanner in the Works*, 279–302)

due to its charismatic owner but also because the garage only employed female mechanics.[17] While unique in this way, Anderson was not the only famous female mechanic. G.M. Cameron, mentioned in the previous chapter, appeared in advertisements as a model of modernity.[18] Betty Taylor rose to the public's attention through her role as President of the Australian Women's Army Auxiliary Corp. Her skills as a motor mechanic inspired other women during the First World War.[19] Nor was Anderson the only female garage proprietor of her era. Brigid Wynne, a well-known English racing car driver, helped establish a garage with Marjorie Ogilvie in Sydney in 1928.[20] Unlike Anderson, Wynne and Ogilvie employed men to work as mechanics within their garage, but the two supervised those men's repair work'.[21]

Female-operated garages prove useful case studies for historians. This is largely because they attracted media attention. While the operations of male-owned garages were considered too mundane to record, newspaper reports of garages such as Anderson's offer insights into how a range of garages operated at the time, whether or not they had female owners or staff.[22] The operations within Anderson's garage highlight the two-track demand of motor mechanic knowledge and training within the community. At one level, there was a growing industry for maintaining motor cars. Yet, even by the 1920s, the trade had not established itself as its own field of work.

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believe her death was accidental. Smith speculates that it was the result of Anderson cleaning her revolver, not knowing it had been loaded by an apprentice.

[17] Alice Anderson, and her garage, have been covered extensively. See Mimi Colligan, 'Alice Anderson: Garage Proprietor', in *Double Time: Women in Victoria – 150 Years*, eds. Marilyn Lake and Farley Kelly (Ringwood, Vic.: Penguin, 1985), 305–11; Clarsen, 'Women, Cars and Modernity', 61–75; Georgine Clarsen, '"A Woman Who Does": A Melbourne Motor Garage Proprietor', in *Sapphic Modernities: Sexuality, Women and National Culture*, eds. Laura Doan and Jane Garrity (New York: Palgrave Macmillan, 2006), 55–71; Clarsen, *Eat My Dust*, 104–19; Geoff Laurenson, 'Nothing Ventured, Nothing Gained: Alice Anderson – mechanic, chauffeur and entrepreneur', *University of Melbourne Collections* 14 (2014): 16–21; Smith, *A Spanner in the Works*.

[18] 'Advertisement – Heenzo', *Daily Telegraph*, 17 October 1918, 3.

[19] I.M. Brodie, 'Australian Women's Army Auxiliary Corps', *Lone Hand*, 2 September 1918, 415; 'Soldier's Wife Leads the Way', *Herald*, 5 March 1918, 4.

[20] '"News" Motorists' Guide', *Evening News*, 6 March 1925, 10; 'Women's Garage – English Girls Venture', *Evening News*, 2 February 1928, 22.

[21] 'Women's Garage – English Girls Venture', 22. Unlike Anderson, there is very little long-term coverage of Wynne and Ogilvie's venture, but it seems to have been short lived. In 1935, Wynne was arrested in Pietermaritzburg, South Africa for jewellery theft ('Woman's Proud War Record', *Telegraph (Brisbane)*, 24 January 1935, 8).

[22] Further discussions of women in the automotive trades, both within Australia and internationally, see Clarsen, *Eat My Dust*.

Image 11 Alice Anderson in chauffeur uniform holding her cap and gloves. 1920. 2011.0033.00001. University of Melbourne Archives, Melbourne.

Anderson began hiring apprentices for her garage in 1920.[23] She ran a four-year apprenticeship, which included lessons in driving, with the intention of turning out 'driver-mechanics'.[24] This apprenticeship course had one eye on Anderson's business. Anderson's garage offered services beyond the storage and maintenance of automobiles. This included a chauffeuring service which ran regularly between the major suburbs of eastern Melbourne, as well as multi-day tours through regional Victoria.[25] The chauffeuring services offered by garages in the 1920s were guided tours that could be booked by the public, rather than the servant-chauffeurs employed directly by motorists of the 1900s. These services allowed garages to attract non-motorist customers and were popular at the time. Wynne and Ogilvie were in the process of establishing a similar service in Sydney, offering regular transport between Bondi and the Blue Mountains when approached by the press in 1928.[26] Apprentices allowed Anderson to expand her services with cheap labour – apprentices were paid 15/– a week, much less than fully qualified mechanics who earned £4/10/–.[27]

[23] 'Classified Advertising – Miss Anderson's Motor Service', *Argus*, 3 July 1920, 13.
[24] I.M. Brodie, 'Woman and the Car', *Australian Woman's Mirror*, 20 October 1925, 9.
[25] The Kew Garage Tours Price List, 1925, 'Newspaper Cuttings', Frances Durham Collection, 1988.0061.0750, University of Melbourne Archives, Melbourne.
[26] 'Women's Garage – English Girls Venture', 22.
[27] Brodie, 'Woman and the Car', 9.

Anderson's services also included educational courses for the public. Her driving lessons emphasised the interconnected skills of operating a motor car and maintaining its condition. Anderson herself had learned to drive along the Black Spur, a beautiful but notoriously dangerous mountain road northeast of Melbourne. This helped establish her credentials to the public as an excellent driver. Anderson emphasised that it was not enough to simply learn to drive. A motorist needed a basic understanding of the inner working of the car to be able to operate it properly. She warned that drivers who did not understand 'what is happening inside the engine' or 'how to know if it is making a sound that it should not make' risked disaster.[28] The need for this knowledge led to a crossover between the career mechanic, whose work in automotive repair made up their livelihood, and the car owner or driver, who did not engage in automotive work but required some of this knowledge to be able to drive safely. It was this side of the business that created the most demand for Anderson. The full, public driving and mechanical educational course cost £10/10/–, which helped fund the expansion of her touring chauffeur services.[29]

The experiences of Anderson's Kew Garage highlight the strengths and weaknesses of the apprenticeship system. As the system entrusted education to those within the trades, the mechanics became their own experts. Since the trade took charge of its own training, this allowed, to a certain extent, protection of the knowledge it held. If outsiders wanted access to knowledge and training to maintain their private car, they could gain it for a fee. This in turn produced revenue and status for mechanics. Anderson's status during the 1920s grew as she became seen as an expert mechanic: she was often interviewed by the press and had her own column in the *Women's World* magazine.[30]

For all the benefits that apprenticeships brought to business, the system had problems. The apprenticeship system was operated by businesses themselves, which meant apprentices relied heavily on their employers for their quality of education. Unless the apprentice knew their employer before entering the trade, there was no way of knowing in advance whether or not they would receive training of any quality. Anderson held very high standards for her

[28] Alice E.F. Anderson, 'Her Wheel', *Woman's World of Australia*, 1 May 1926, 341, 'Alice Elizabeth Foley Anderson, Died 17 September 1926', Frances Durham Collection, 1988.0061.1439, University of Melbourne Archives, Melbourne. Georgine Clarsen ('Women, Cars and Modernity', 68) has noted that Anderson's driving school was known as having some of the highest standards amongst garages of the era and were 'even stricter than those of the police'. This is both a reflection of Anderson's own standards, but it is also almost certainly a response to discrimination against female motorists by both the press and the police in the 1920s.
[29] Smith, *A Spanner in the Works*, 140. Clarsen ('Women, Cars and Modernity', 64) has noted that these lessons entered Melbourne's cultural memory and, over time, have taken on mythical qualities – 'Sometimes "Alice Anderson" taught people to drive twenty years after she had died'.
[30] Brodie, 'Woman and the Car', 9; Anderson, 'Her Wheel', 341, 354; Clarsen, *Eat My Dust*, 112.

apprentices. She once claimed that an ideal mechanic should have a college education in engineering and mathematics before undertaking their apprenticeship, requiring eight years of training.[31] Historian Loretta Smith has noted that Anderson's standards were higher than those of the motor mechanic courses offered at the Working Men's College.[32] Despite these standards, Anderson had no formal qualifications herself. She learned her trade through her father, an engineer who lectured at the University of Melbourne, and her sister Claire, who was the first woman to undertake a Bachelor of Engineering at the University of Melbourne in 1923.[33]

Another issue with the apprenticeship system was that there was no guarantee that apprentices would be put to work on automobiles. The flexibility of the trade prompted the *Australian Automobile Trade Journal* to explain:

> the dimension and capacity of the repair shop and also its organisation, largely, if not solely, depend on the volume of business passing through it, and therefore determine at what particular occupation … the apprentice shall find himself engaged.[34]

If there were no demands on garages or shops to engage in repair work, apprentices could be enlisted into all kinds of other work that may or may not benefit their education. This links to the second major criticism levelled at the apprenticeship systems by the Amalgamated Engineering Union: their uncontrolled and unregulated nature meant that an unscrupulous employer could easily exploit an apprentice, stringing them along with promises of training or employment while exploiting their cheap labour. While it is unclear how often this took place, organisations such as the Victorian Automobile Chamber of Commerce were aware it was still occurring towards the end of the 1920s.[35]

High profile mechanics like Anderson grew their status through publicity rather than any actual certification of the quality of their work. This led to an information asymmetry, where it was close to impossible for outsiders to determine the quality of the mechanic they were dealing with. The *Sunday Times* complained in 1924 that the only way to tell the difference between the 'dud mechanic' and the 'legitimate motor engineer' was 'by experience, in other words, by being "stung"'.[36] The lack of quality control in education and

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[31] Alice Anderson, quoted in Clarsen, 'Women, Cars and Modernity', 72.
[32] Smith, *A Spanner in the Works*, 207.
[33] Clarsen, 'Women, Cars and Modernity', 69; Smith, *A Spanner in the Works*, 193–94, 207.
[34] 'The Apprentice', *Australian Automobile Trade Journal*, 27 May 1929, 80.
[35] Ibid., 79; 'Engineers' Award', *Australian Automobile Trade Journal*, 27 May 1928, 87.
[36] 'Dud Mechanics', *Sunday Times (Sydney)*, 10 February 1924, 10.

work within the trade meant taking the car to a mechanic was a gamble for motorists. The trade, however, lacked any organisational structure to initiate changes in education. Instead, formal certification systems were foisted onto it from the outside.

The Evolution of the Motorist Organisations

The 1920s were formative years for motorists' organisations. As discussed in the previous chapter, motorists' organisations, such as the Royal Automobile Club of Victoria (RACV) had formerly been relatively elite clubs. The automotive industry expanded rapidly in the 1920s. In 1920, there were 22,000 cars registered in New South Wales. By 1927, that number had increased to 200,000.[37] By the end of the decade, Australia possessed one of the highest rates of automobile ownership in the world.[38] Established motorist groups, with their existing authority and position within the industry, were in the prime position to transition from being exclusive clubs into mass organisations that operated as agents between motorists and the automotive industry. This was the case in all Australian states, except one. In New South Wales, an upstart organisation – the National Roads and Motorists' Association (NRMA) – quickly used this changing landscape to overhaul the existing structures.

The NRMA was founded in Sydney in 1921. The Association was initially named the National Roads Association and was founded as a political lobby group to pressure the New South Wales government over the poor quality of the state's roads. By 1923, the National Roads Association was on the brink of collapse, with little funding and under a thousand members.[39] Seeing an opportunity for expansion, it added 'and Motorists' to its name and began to establish itself as a public motorists' organisation. Its aims and intentions were clear. As its journal, *Open Road*, put it: 'The NRMA is simply a union of motorists created for common service and defence. But it is not a union in a political sense any more than it is a mere club'.[40]

The NRMA encroached on the territory of an existing motorist club, the Royal Automobile Club of Australia (RACA), drawing the two into competition for members. Unlike its Victorian counterpart, however, the RACA was mainly a 'social organisation' for

[37] Broomham, *On the Road*, 42.
[38] Stuart Macintyre, *A Concise History of Australia*, 4th ed. (Port Melbourne: Cambridge University Press, 2016), 176.
[39] Broomham, *On the Road*, 23.
[40] 'Money in Your Pocket', *Open Road*, 24 September 1927, 72; Alexandra Wilkinson, *The NRMA Story, Volume 1 1920–21 to 1963–64* (1964), 39. NRMA Business Archives, Sydney.

elite motorists.[41] Since the RACA continued to restrict membership to elites, by the end of the 1920s the NRMA was the major car owner's organisation in New South Wales.[42] The main reason for its growth was that the organisation employed mechanics. Mobile motor mechanic programmes were inspired by overseas motorist organisations.[43] Both the NRMA and RACV established similar programmes in 1924, which were immediately successful. The RACV program attended over one thousand jobs in its first year of operation.[44]

The NRMA servicemen, wearing leftover soldier uniforms from the First World War, were initially recruited as guides for motorists who were members of the Association.[45] They were small in number, only seven in 1924 and ten in 1925, and were located in key areas of Sydney.[46] Their initial duties were limited to offering directions and helping drivers find a place to park their vehicle, but their services quickly expanded. The servicemen were trained to offer 'mechanical first aid' – that is, minor repair work in emergencies.[47] Such services proved popular, and by 1927 mobile services were offered all over New South Wales.[48] The NRMA realised that this service, and their Technical Department, were important to their expansion. The Association rapidly grew from 1,571 members in June 1924 to 33,147 in June 1927.[49]

[41] J.C. Watson, as quoted in Hovenden, 'The Motor Car in New South Wales', 167; Wilkinson, *The NRMA Story*, 33–34.
[42] Hovenden, 'The Motor Car in New South Wales', 167–68.
[43] Priestley, *The Crown of the Road*, 52.
[44] 'Club's Road Patrol Service', *R.A.C.V.*, 16 May 1927, 4.
[45] Broomham, *On the Road*, 28; Personal correspondence with James Simmons, July 2018.
[46] Broomham, *On the Road*, 29.
[47] Ibid.
[48] 'Bouquets', *Open Road*, 24 December 1927, 44.
[49] 'Annual Report of the NRMA for the year ending 30th June 1927', *Open Road*, 25 July 1927, 20.

Image 12 NRMA Serviceman assists motorist, *Open Road*, 25 August 1928, 32. Reproduced with permission from NRMA.

Part of the reason for the success of organisations such as the NRMA was that they had people on the ground to assist members. More important, however, is that these assistants were skilled workers with mechanical knowledge. The RACA had attempted to establish its own motorists' assistance program in 1924, but their operations mainly focused on employing car minders – people who looked after a parked car for a fee. L.G. Hovenden has explained that this service proved disastrous for the RACA.[50] Car minders possessed no skills, meaning anyone could serve as one, attracting a range of individuals who were not necessarily suitable for the role. The Club's car minders turned on 'any motorist who spurned their services.' Anyone who underpaid a RACA car minder 'could expect to find his car damaged on his return', and they even engaged in 'minor confrontations' with the NRMA servicemen.[51] By 1928, the RACA had not only disbanded the program but petitioned the state government to outlaw the practice of car-minders entirely.[52] The success of motorist organisations through the 1920s relied upon the services they offered to members. In providing technical advice and emergency maintenance, motorist organisations transformed from the elite clubs they had been for the previous two decades. This change, however, brought motorists directly into competition with motor traders.

[50] Hovenden, 'The Motor Car in New South Wales', 165.
[51] Ibid., 165, 168.
[52] Ibid., 165.

Voices of the Industry: The Motor Traders' Associations.

In 1927, the NRMA opened its own garages. Garden Garage in Bondi was the first. Sixteen Sydney-based garages were operating by the end of the year.[53] These official garages were introduced to complement the technical trade courses. For a garage to become authorised by the NRMA, it had to employ mechanics with NRMA approved qualifications.[54] Motorist organisations' attempts to regulate and designate official garages can be seen as a direct response to the threats emerging within the industry. Like their motorist counterparts, motor trader associations were organised within state boundaries. The Motor Trades Association of New South Wales, formed in 1910, was the only organisation of its type until after the First World War. The next motor trader association did not form until 1918 – this being the Victorian Automobile Chamber of Commerce. More emerged over the 1920s and 1930s.[55] The establishment of motor trade associations was in many ways predictable. Many employer associations emerged in Australia after the establishment of the federal arbitration system. The formation of groups such as the Chamber of Manufacturers of New South Wales and the Central Council of Employers of Australia was a capitalist response to the power of unions.[56] The formation of the Victorian Chamber of Commerce should also be seen in this light. Since its mission statement claimed that it was 'at once a servant and policeman of its membership', it makes sense to see it as a similar effort to assert capitalist interests as a counterbalance to labour power.[57]

[53] 'Advertisement – Garden Garage' *Open Road*, 25 June 1927, 52; Broomham, *On the Road*, Image xxiii and caption, insert between pages 14–15; 'Official Suburban Service Stations of the NRMA', *Open Road*, 25 November 1927, 61.
[54] Hovenden, 'The Motor Car in New South Wales', 168, 170.
[55] Ibid., 90; Tuckey, *On Solid Ground*, 6.
[56] David Plowman, 'The Role of Employer Associations', in *Australian Labour Relations*, 231–36.
[57] Tuckey, *On Solid Ground*, 6.

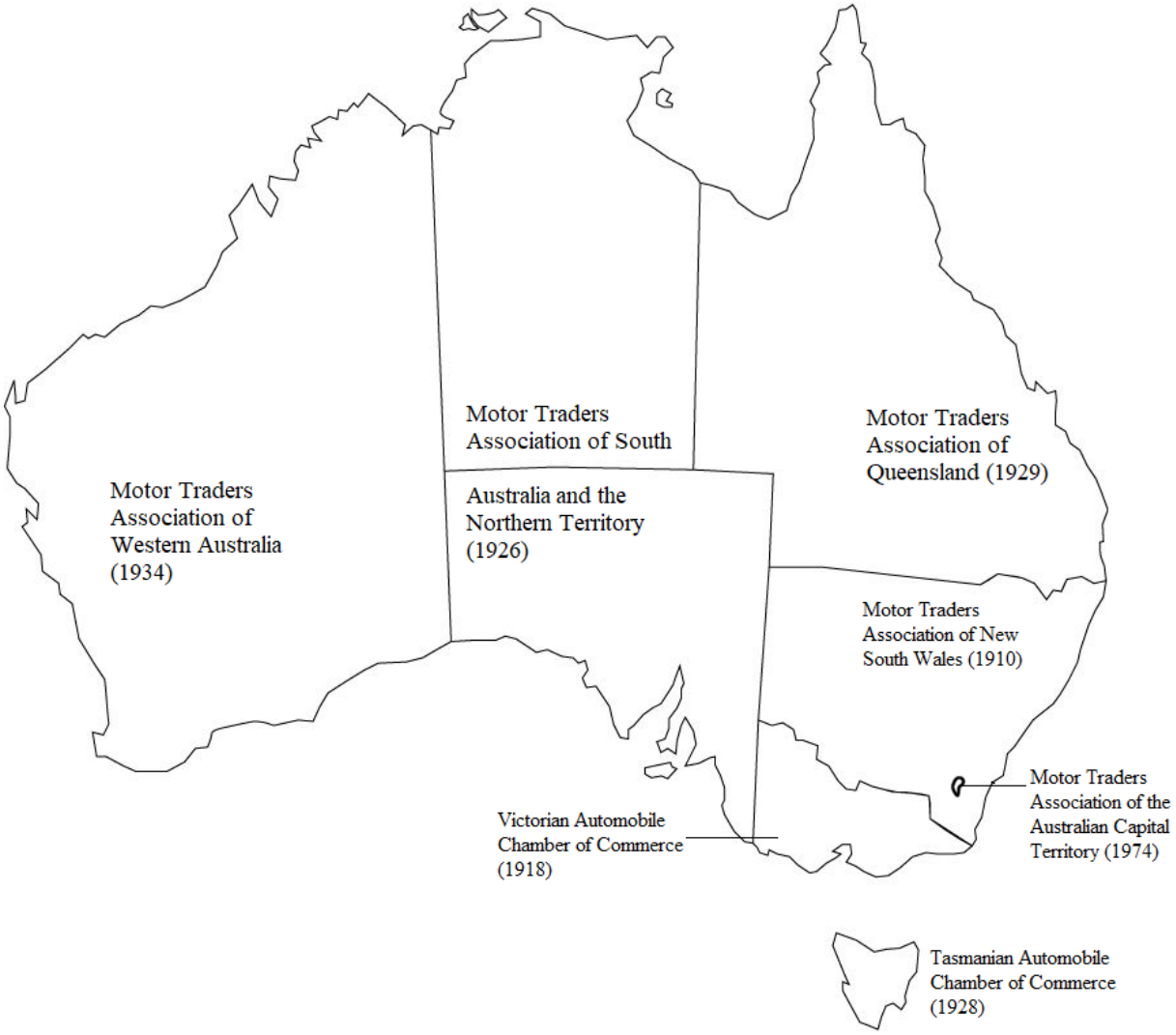

Image 13 Map of the Motor Traders Associations of Australia, 1910–Present.

Motor trader associations also served an additional role as a counterbalance to the power of motorists' organisations within the industry. The relationships between these two types of organisations differed between the states. The Motor Traders Association of NSW had cordial relations with the Royal Automobile Club of Australia following its founding in 1910, and the RACV remained close with the Victorian Automobile Chamber of Commerce during the 1920s. The NRMA was much more confrontational. Motor traders saw the NRMA's attempt to organise the certification of garages as an attack on their industry. The Motor Traders Association of NSW condemned the intervention and its representatives warned members that joining the NRMA was 'against the interest of a large majority of members of this section'.[58] The motor traders considered the NRMA 'pirates' who had come

[58] *Motor Traders Association Journal*, 25 March 1929, as quoted in Hovenden, 'The Motor Car in New South Wales', 169.

to raid the motor industry and pillage its membership base.[59] The expansionist tendencies of the NRMA were not limited to motor traders – the NRMA even made an enemy of their Victorian counterpart, the RACV, for a brief period in 1927 by attempting to recruit members across the Murray River.[60]

The rift between the NRMA and the Motor Traders Association of NSW was described in the NRMA's journal, *Open Road*. Motorist club journals were key advertising outlets for garages, but *Open Road* was also a place for the NRMA to separate the garages they endorsed from outsiders. They did this by openly attacking the latter and suggesting the superiority of the former. A 1927 article in the NRMA's *Open Road* parodied dictionary entries, and defined garages as '[a] place for repair (sometimes) of cars. It has been rumoured of late that there are garages where one can actually get done what one wants'.[61] This, of course, was a reference to the NRMA's own garages. In 1928, it stepped up its attacks on garages, warning its members about dishonesty in the sector and to look for NRMA endorsed garages – although it was careful to give praise to the Motor Traders Association of NSW.[62] By the end of the decade, the NRMA attempted to resolve the dispute by running articles praising motor traders and emphasising their own qualities for all garages in New South Wales.[63]

Mechanics were caught in the middle of these battles. The introduction of motorist club-endorsed garages allowed motorist organisations to impose technical education on the trade without enshrining qualifications in law. Mechanics did not need to complete these certifications to work in their trade, but as they became a requirement to work in some of the largest garages in Sydney (and increasingly towards the end of the decade, the rest of New South Wales), mechanics were limited in where they could gain employment if they did not gain certification through a technical college.

The Establishment of Technical Education for Mechanics

Motorist organisations, having established themselves as the recognised experts in the Australian motor industry, were responsible for the growth of technical education and standardised certifications for motor mechanics in the 1920s. An alliance with technical

[59] 'How The N.R.M.A. Benefits the Garage Proprietor', *Open Road*, 13 November 1930, 8.
[60] Priestley, *The Crown of the Road*, 54–55.
[61] 'The Motorists Dictionary', *Open Road*, 25 November 1927, 15.
[62] ''Ware the Dishonest Trader', *Open Road*, 25 February 1928, 28.
[63] 'How The N.R.M.A. Benefits the Garage Proprietor', 8.

colleges helped them entrench their authority over the trade. The motorists' organisations' claims to expertise gained validity by establishing educational courses. This built upon their public programs related to mechanical repair – from mobile mechanical crews to registering garages. Motorist organisations were given positions on the technical colleges' examination boards, which only furthered the power they exerted over the trade.[64]

Technical colleges played a key role in the standardisation of education. The New South Wales Director of Education introduced reforms in 1914 that instructed technical colleges to standardise skill and move away from the artisanal models that had governed technical education through the nineteenth century.[65] The move towards technical education appealed to workers. For mechanics, this was because *ad hoc* learning had failed to protect them from the dangers of automobile work. Many lessons were learnt the hard way. Newspapers from the 1910s frequently published stories of mechanics being injured or killed at work.[66] Early mechanics often had little understanding of the dangers of petrol and other chemicals they worked with. The mechanics John Donnelly and George Prowse were set alight when attempting to fix petrol tanks.[67] The *Australian Motorist* warned its readers in 1911 of the insidious dangers of carbon monoxide poisoning, which had killed a number of mechanics working in unventilated garages.[68] Many of these injuries and deaths came from a lack of knowledge about the dangers the car posed and a lack of adequate training. While not the main driver of change, the risky conditions facing mechanics were the key reason workers accepted more structured forms of technical training in the 1920s.

Technical colleges had dabbled with education for the automotive industry before the 1920s. In New South Wales, the Sydney Technical College established a Motor Driving course as early as 1907, designed for chauffeurs but which included lessons on basic automotive repair.[69] In 1914, the College's Fitting and Machining course included a higher trade Motor Construction course, later renamed Internal Combustion Engine course. This interweaving of driving, engineering, manufacturing and mechanical repair shows firstly how intertwined these skills were, and secondly that expectations of motor mechanics' skills were still not universally standardised even in the 1920s. After the First World War, Sydney

[64] Priestley, *The Crown of the Road,* 44.
[65] Lucy Taksa, '"All a Matter of Timing": Managerial Innovation and Workplace Culture in the New South Wales Railways and Tramways Prior to 1921', *Australian Historical Studies* 29, no. 110 (1998): 23–24.
[66] 'Mechanic's Jaw Broken', *Ballarat Courier*, 27 March 1914, 7; 'Motor Mechanic's Death', *Age,* 5 February 1915, 8; 'Motor Mechanic's Death', *Age,* 5 February 1915, 8.
[67] 'Mechanic Badly Burnt', *Ballarat Courier*, 4 May 1914, 2; 'Motor Mechanic Injured', *National Advocate,* 14 July 1916, 4.
[68] Pinion, 'A Hidden Danger in the Garage', *Australian Motorist,* August 1911, 1031.
[69] Neill, *Technically & Further,* 68.

Technical College established its first dedicated motor mechanic courses. This was introduced as part of the Repatriation Vocational Training Scheme.[70] Designed to operate in tandem with the apprenticeship system, this course provided the basis for the development of college courses.

A mechanics' course backed by the NRMA and facilitated by the Sydney Technical College opened its doors in 1925, organised by the head of the Mechanical Engineering Department, H.J. Swain, a 'large man, with a loud voice and a liking for colourful language'.[71] The NRMA's backing was not as powerful as they had hoped. This initial course was not well received and only 48 students undertook the final exam. It did, however, allow the NRMA to poach the best apprentices from garages. Clifford Napthali obtained the highest marks on the examinations and was subsequently offered a position in the NRMA's technical department.[72] The Motor Traders Association of NSW showed little interest in supporting courses run by the 'pirates' of the NRMA. They were also critical that the NRMA backed courses did not include particular skills that the motor traders deemed vital; metalworking in particular.[73]

The development of technical education for mechanics in Victoria followed a similar path. In 1919, the RACV approached the Working Men's College in Melbourne and began establishing the first Victorian motor engineering course for repatriated soldiers.[74] These courses developed a poor reputation amongst students and teachers alike. Instructor Alfred Hart described them as 'hopelessly bad'. He believed Repatriation Courses did not adequately prepare students for anything other than highly specialised technical work.[75] Regardless, these courses sparked the beginning of an association between the RACV and the College, particularly with Arthur James.[76] James was a vital part of the expansion of technical education for motor mechanics. Bill Tuckey described him as 'the dour kindly father of automotive technical training in Victoria'.[77] The motor engineering course for soldiers was expanded into a full motor mechanics course in 1923. The plan was that this course would complement the apprenticeships for mechanics that were already in place. Much like the NRMA's course, this Victorian counterpart struggled to attract students. After one year, there

[70] Ibid., 33.
[71] Ibid., 41; Hovenden, 'The Motor Car in New South Wales', 169–70; Wilkinson, *The NRMA Story*, 59.
[72] Wilkinson, *The NRMA Story*, 63.
[73] Neill, *Technically & Further*, 41; Broomham, *On the Road*, 35–36.
[74] Priestley, *The Crown of the Road*, 43.
[75] Alfred Hart, quoted in Brereton, 'Origins of the Victorian Apprenticeship Commission', 184.
[76] Murray-Smith and Dare, *The Tech*, 262.
[77] Tuckey, *On Solid Ground*, 49.

were only 26 students enrolled.[78] Even so, the RACV expanded its relationship with technical colleges by establishing similar courses at Swinburne Technical College in 1923 and Richmond Technical College in 1926.[79]

In 1924, George Pockett of the Victorian Automobile Chamber of Commerce pushed for the industry to begin self-regulating through an A-Grade Certificate of motor mechanics.[80] Certification introduced a formal way of determining skill, which in turn created a hierarchy of workers based on qualifications.[81] The RACV and their associated technical colleges quickly climbed on board, having struggled to implement educational reforms themselves. The connection between the RACV and the Chamber of Commerce expanded the A-Grade certificate. The Chamber of Commerce targeted garage owners and foremen rather than apprentices, advising that the A-Grade Certificate allowed the bosses to establish their status above that of the other mechanics.[82] Alice Anderson was one of the earliest members of the Chamber of Commerce and would have sat for the A-Grade examinations but for her untimely death in 1926.[83] The A-Grade certificate intended to improve the educational standard of the trade from the top down, and included incentives for garage owners to undertake further training.

[78] Priestley, *The Crown of the Road,* 43–44; Murray-Smith and Dare, *The Tech*, 159.
[79] Priestley, *The Crown of the Road,* 44.
[80] Tuckey, *On Solid Ground*, 19.
[81] For a precursor to this process with the introduction of grading to the boilermakers trade in the 1880s, see Maddison, 'Skill and the Commodification of Labour', 263–69.
[82] 'A-Grade Engineers Certificate Information', *Australian Automobile Trade Journal*, 27 May 1928, 28.
[83] Clarsen, 'Women, Cars and Modernity', 68; Clarsen, *Eat My Dust*, 112, 116.

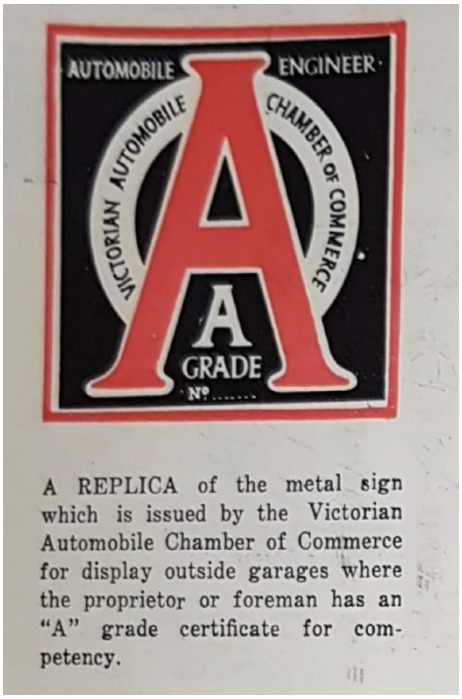

Image 14 A-Grade Certificate sign, *Australian Automobile Trade Journal*, 27 May 1928, 28. Reproduced with permission from VACC.

The A-Grade Certificate succeeded because it played individual garage owners against each other. This included targeted, sometimes ingenious strategies. The Victorian Automobile Chamber of Commerce distributed metal signs to businesses where owners or foremen had completed A-Grade certificates. These signs advertised that a 'motor engineer' worked on the premises, attracting potential customers on the street, while simultaneously pressuring other garages to join the Victorian Automobile Chamber of Commerce.[84] This certification was supported by the RACV, which told its members to look for the A-Grade Certificate sign.[85]

The Victorian state government incorporated the mechanic trade into the *Apprenticeship Act* (1929) as a result of pressure from the Victorian Automobile Chamber of Commerce. This required all trainees to complete formal technical training as part of their apprenticeship.[86] The success of the A-Grade certificate enabled the Chamber of Commerce to expand its reach and influence across the motor industry and establish a relationship with the RACV that increased the educational standards required for motor mechanic apprentices. By the end of the 1930s, the A-Grade expanded beyond being a foreman's certification into a general mechanic qualification. Many Victorian garages mandated that all mechanics who had completed an apprenticeship must complete the A-Grade certificate.[87]

[84] 'A-Grade Engineers Certificate Information', 28.
[85] 'Advertisement – Victorian Automobile Chamber of Commerce', *R.A.C.V.*, 15 January 1927, 24.
[86] Tuckey, *On Solid Ground*, 23; 'The Apprentice', *Australian Automobile Trade Journal*, 27 May 1929, 80.
[87] 'Nineteenth Annual Report', *Australian Automobile Trade Journal*, 1 September 1937, 15–16.

The Institute of Automotive Mechanics, a national organisation formed in 1933, further embedded the control of motorist organisations and motor trader associations over the mechanic trade and its training practices. The founders of this Institute were clear from the outset that its role was not to advocate for the rights and status of mechanics. Rather, it was strictly an educational organisation to promote technical knowledge amongst mechanics. The Institute thus reflected the subservient position of mechanics within their industry.[88] It accepted that technical training and certifications were essential in standardising knowledge and agreed with the intention of training specialised automobile repairers.[89] With its focus based on educational issues within the trade rather than industrial ones, the Institute negotiated a role in educating motor mechanics alongside both motorists' and motor trader organisations rather than competing with them.[90]

Unthreatened by the Institute, the NRMA ceded the operation of its examinations and certifications to them in 1936.[91] There were two major reasons for this decision. First, the NRMA had grown in membership and influence and no longer needed to control the trade through education and examination. By 1935, the NRMA had over 44,000 members and its service patrols were attending over 32,000 jobs a year.[92] Its Technical Department had established itself as the preeminent source of expertise on automotive engineering and maintenance and had the pick of engineers from the technical colleges.[93] The NRMA had even expanded into its most lucrative venture: automobile insurance. Its officials were thus happy for the Institute to take over running certifications, allowing them to focus their efforts elsewhere.

The second reason that the NRMA withdrew from training was that it had failed to have the motor mechanic trade regulated by law in New South Wales. NRMA leaders had approached the New South Wales government in 1933 supporting a bill to regulate the trade. With their feud now settled, they joined their efforts with the Motor Traders Association of NSW to lobby for legislated regulation. None of these attempts eventuated – efforts to

[88] Hovenden, 'The Motor Car in New South Wales', 250; 'Institute of Automotive Mechanics', *Daily Examiner*, 2 June 1937, 3.
[89] For further discussion on the role specialisation played in transforming definitions of skill, see Maddison, 'Skill and the Commodification of Labour', 60–77; Ben Maddison, 'Labour Commodification and Classification: An Illustrative Case Study of the New South Wales Boilermaking Trades, 1860–1920', *International Review of Social History* 53, no. 2 (2008): 235–60.
[90] A.J. Dawson, 'Educating Motor Mechanics', *Sun (Sydney)*, 15 August 1937, 55.
[91] Hovenden, 'The Motor Car in New South Wales', 250
[92] 'Year's Activities Are Reviewed by N.R.M.A.', *Open Road*, 29 August 1935, 1; 'More Records Made by N.R.M.A. Departments', *Open Road*, 29 August 1935, 3.
[93] 'More Records Made by N.R.M.A. Departments' 3; 'A New Engineer for The N.R.M.A.', *Open Road*, 28 March 1935, 1.

regulate motor mechanics simply fell beneath the priorities of the State Government.[94] In the end, it was easier for the NRMA to support the Institute to self-regulate the trade than force regulation on it through legislation.

The organisation of the Institute was the beginning of a formal split between educated mechanics and those working outside established businesses. Even in the 1930s, there were plenty of well-regarded mechanics who had never attained proper qualifications or had any formalised education beyond their apprenticeship.[95] This was particularly the case in rural areas, where the trade conspicuously failed to keep up with the growth of the car industry, resulting in severe shortages.[96] The demand for mechanics' services was so high that the Institute could not directly pressure those without qualifications to undertake coursework. They instead pressured the mechanics by appealing to their status. Without qualifications, the Institute argued, mechanics could not separate themselves from unskilled garage workers.[97] Attempts to force a distinction between qualified, employed mechanics and amateurs would have greater ramifications after the Second World War as cars became more accessible.

Technical Education: Criticisms and Results

Despite the benefits of the introduction of a formal technical education system, it was not without its faults. As a mechanic trained under an apprenticeship prior to the creation of technical college courses, Harold O'Malley suspected that formal technical education blunted inventiveness and creativity. The introduction of mandatory coursework confined mechanics to their specialised area of work, erecting barriers to other trades. O'Malley's own apprenticeship exposed him to skills beyond those immediately relevant to automotive repair, equipping him to work on a wide range of machinery. He was able to create the parts necessary to conduct repairs rather than just fit them. As he later recalled of the 1920s: 'if you couldn't buy a thing, you made it'.[98] This versatility had diminished among mechanics by the 1960s. Observing the effects of technical education on his sons and their peers who entered

[94] Hovenden, 'The Motor Car in New South Wales', 249–50. The Royal Automotive Club of Western Australia made its public plea that certifications should be mandatory by law by claiming that this was the case in Queensland, although publications at the time indicate that this was not the case ('Motorists Should Be Guarded Against Ignorant Mechanics', *Daily News (WA)*, 9 July 1935, 2; 'Motoring and Motors', *Queenslander*, 6 June 1935, 10).
[95] 'Motor Mechanic's Certificates', *Central Queensland Herald*, 2 May 1935, 67.
[96] 'Refugees – Professions' Attitudes – Jobs in Sydney', *Sydney Morning Herald*, 29 July 1938, 13.
[97] 'Motor Mechanic's Certificates', 67.
[98] Cahill, 'Oral History Interview with Harold Luke O'Malley'.

the trade during that decade, O'Malley felt that their training equipped them to be 'fitters' rather than mechanics, excluding much of the diverse skills he had acquired decades earlier.[99]

The formal educational requirements introduced in the 1920s also imposed a gender barrier. Before the introduction of technical education, women had been able to participate in automotive repair work through what historian Georgine Clarsen calls 'informal access' to male-dominated trade education. Alice Anderson's introduction to engineering through her father provides an obvious example.[100] Once established, these women could go on to open doors for others through apprenticeship schemes. These doors began to shut with the introduction of technical qualifications. The first mechanics' courses were constructed out of the First World War amidst an environment that celebrated the bravery of men returning from war and seeking to re-establish 'traditional' relations between men and women.

Historian Joy Damousi notes that, unlike the United States and the United Kingdom, women in Australia resisted a return to conservative gender relations up until the Great Depression and demanded to be included within newly established educational structures.[101] This included access to the new courses for mechanics.[102] Rather than enabling women to become fully qualified mechanics, technical colleges prevented them from doing so by introducing sex-segregated training. An example is the Swinburne Technical College, which established female-specific motor mechanic courses in 1929. These courses made use of equipment that Swinburne was already using in its other, general motor mechanics courses, but with one key difference. The College's courses for women only offered a rudimentary introduction to basic car maintenance rather than teaching a full range of mechanical skills.[103] The College corralled female mechanics into an amateur stream, under the false impression that women did not want to undertake the motor mechanic trade as a career, but rather were seeking basic skills to maintain their own vehicles. The mechanics' courses in the Working Men's College, on the other hand, were 'deemed strictly for men'.[104]

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[99] Ibid. Blacksmith-turned-mechanic Hugh Lickiter made similar comments to Douglas Harper in 1987: 'We don't do anything right down to the scratch and we don't have real mechanics anymore, we have parts men. They take off one part and put another on' (Harper, *Working Knowledge*, 23).

[100] Clarsen, 'Women, Cars and Modernity', 62; Clarsen, *Eat My Dust*, 108, 113. Loretta Smith (*A Spanner in the Works*, 138–39) has disputed how much of an influence Anderson's father's engineering background had on her education, but he seems to have had, at least, a direct influence on his daughter's aspirations (Smith, *A Spanner in the Works*, 193–94).

[101] Joy Damousi, 'Marching to Different Drums: Women's Mobilisations 1914–1939', in *Gender Relations in Australia: Domination and Negotiation*, eds. Kay Saunders and Raymond Evans (Sydney: Harcourt Brace, 1992), 362–65. See also Smith, *A Spanner in the Works*, 184–88, 216–18.

[102] 'Training Women Motor Mechanics', *Herald (Melbourne)*, 10 May 1928, 34.

[103] 'The Women's World', *Herald (Melbourne)*, 24 May 1929, 12.

[104] Smith, *A Spanner in the Works*, 138. A similar outcome occurred in the United States through different processes. Borg notes that women were disadvantaged in organisation of mechanics courses after the First World

Engineering unions helped to facilitate this reduction of opportunities for women mechanics. The Amalgamated Engineering Union was invited onto the assessment boards for motor mechanics courses in all states, allowing them to influence decisions about who qualified for technical education.[105] Since Union officials were soon publicly stating that they did not want female motor mechanics taking jobs they believed belonged to men, this involvement almost certainly helped to create new barriers for women wanting to enter the trade. Union officials also incorrectly claimed that no women were working in the engineering trades in Australia.[106]

The introduction of credentials in the mechanic trade served two purposes. The first was a legitimate way of confirming the quality of workers for both employers and customers. The second drew boundaries around the broad definition of mechanic work, both defining what skills were and were not necessary, and who could and could not qualify. Randall Collins has described this secondary motivation as 'credentialism', which he defines as the use of certifications to introduce barriers of entry into fields of work – in this case, barriers to women.[107]

This method of using education as a way of enforcing structural discrimination against women was not unique to motor mechanics. Clare Burton has noted that organisations controlled by men often create barriers of entry to women.[108] All key figures involved in the structuring of technical education in the trade, from motor trader associations, motorist groups, technical colleges, and unions, were men. Still, this was a reverse of what women had experienced in other trades. According to Eddie Butler-Bowdon, apprenticeships also served to prevent women from becoming electricians in Australia during the early twentieth century, as most men in the electrical trades refused outright to train women. It was technical colleges that opened electrical engineering education to women.[109] This inconsistency between the two trades suggests that the question of whether education enabled or suppressed women workers

War, but not excluded entirely. It was with the introduction of 'auto shop' classes in high schools that the garage became a place exclusively for 'boys' (Borg, *Auto-Mechanics*, 74–98).

[105] Neill, *Technically & Further*, 70.

[106] 'No Women Wanted – In Engineering Trade', *Daily News (Perth)*, 30 October 1929, 7.

[107] Randall Collins, *The Credential Society: An Historical Sociology of Education and Stratification* (New York: Academic Press, 1979). See also Wright, *Classes*, 127; Parkin, 'Strategies of Social Closure in Class Formation', 6–9; S.M. Miller, *Breaking the Credentials Barrier* (New York: Ford Foundation, 1967); Gerbrand Tholen, 'Degree Power: Educational Credentialism Within Three Skilled Occupations', *British Journal of Sociology and Education* 41, no. 3 (2020): 284–86.

[108] Burton, *The Promise & The Price*, 3.

[109] Butler-Bowdon, 'Class Confrontation, Class Collaboration', 52. It is also notable that the closure of opportunities to women in the mechanics trade was occurring just as women began organising resistance to the masculine domination of work. See Marilyn Lake, *Getting Equal: A History of Australian Feminism* (St Leonards, NSW: Allen & Unwin, 1999), 167–90 and Gabin, *Feminisim in the Labor Movement*, 8–46.

may have been more about the organisations with whom they worked, rather than an institutional commitment to merit.

Social Mobility and the Limits of Social Closure Through Credentialism

By the end of the 1930s, the technical colleges and apprenticeship system were connected. Apprenticeships included six hours of study at a technical college per week, with hours split inside and outside of the working day. Technical colleges focused on the practical skills of the trade: 'the apprentice acquires knowledge of certain shop practices to supplement what he learns in industry'.[110] This combination of recognised technical education and apprenticeship established mechanics' status alongside other trades.

Despite new impediments to women's entry into the trade, a young woman from the Northern Territory, Helen Hobley directly benefited from educational systems that developed during this time. Unlike Alice Anderson and others who had entered the trade decades earlier, Hobley had no connection to the trade. In fact, before 1936, Helen Hobley had never seen a tramcar, a motorcycle, or even large crowds of people.[111] Hobley grew up on a soldier settlement farm in Roper River, Arnhem Land – roughly 450km southeast of Darwin. The writer Ernestine Hill visited Hobley's home as part of her journey through the Northern Territory while researching her popular work, *The Great Australian Loneliness* (1940). Hill described Hobley as 'an intelligent and contented girl with many interests', but described the family farm as 'perhaps the most pathetic little homestead in all Australia'.[112] Hobley first came to public prominence in 1933 with a letter to the *Australian Women's Weekly* in which she wrote a spirited defence of the Northern Territory.[113] She moved to Perth in 1936 and became a minor celebrity, followed by the press who were astounded by the girl who seemed like 'a visitor from Mars'.[114]

[110] Danks, 'The Apprentice and the Technical College', 56.
[111] 'From Another World: Two Pioneers in Perth', *West Australian*, 14 January 1936, 16.
[112] Ernestine Hill, 'The Rim of Arnham Land', *Adelaide Chronicle*, 19 October 1933, 2. See also Ernestine Hill, *The Great Australian Loneliness* [1940] (North Ryde, NSW: Angus & Robertson, 1991), 220–21.
[113] E.M. Litchfield, 'Girl Writes From Remote Roper River', *Australian Women's Weekly*, 16 December 1933, 3.
[114] 'Paradise to This Girl is the Roper River', *Australian Women's Weekly*, 7 March 1936, 10; 'From Another World' 16.

Image 15 Helen Hobley, 'Miss Hobley Wants to be a Travelling Mechanic', *Daily News (Perth)*, 6 August 1937, 3.

One thing caught Hobley's attention after she moved to Perth. 'I'm very interested in internal combustion engines', she told the *Daily News.* She was particularly fascinated by aeroplanes.[115] Hobley only possessed a rudimentary education through a correspondence school and was told that she needed a basic engineering qualification before she could work on aeroplanes. The most feasible way to achieve this was by becoming a qualified motor mechanic. In this, Hobley benefited from her minor celebrity status. She was sponsored and approved by the Royal Automotive Club of Western Australia to enrol at Perth Technical College in a one-year motor mechanic course and passed her exams in 1937. Within eighteen months, she went from having never seen a motor car to becoming a fully qualified motor mechanic.[116] By the end of 1937, Hobley was accepted into an aero-engineering course and attained a scholarship, sponsored by the Royal Aero Club of Western Australia, and a year later she qualified as an aeronautical engineer.[117]

Hobley's story provides evidence that standardised education did not entirely limit pathways of social mobility that existed for mechanics, whether male or female, during the first half of the twentieth century. While linked in with working-class trades, the social status of the trade was still uncertain. For those with ambitions, the skills and knowledge earned

[115] 'Miss Hobley Wants to Be Travelling Mechanic', *Daily News* (*Perth)*, 6 August 1937, 3.
[116] Ibid.; Litchfield, *Roper River Jack*, 217; 'Engineering Student', 40.
[117] 'Girl From Roper River Wants to Try Her Wings – Romantic Story of Ellen Hobley', *Northern Standard*, 28 February 1939, 5.

through study and work in the motor repair trade could form the backbone of a further career in engineering.[118] These career paths were only opened further during the Second World War, which enhanced the demand for those with technical skills on both the front lines and the home front.

Conclusion

Formal technical education brought the motor mechanic trade in line with other trades in adopting an industrial concept of skill. Ben Maddison has described this changing definition of skill throughout the early twentieth century, resulting in technical education occurring through formalised institutions. These compensated for flaws in traditional, artisanal modes of apprenticeships, which seemed archaic by the end of the First World War.[119] Most scholars have seen this as a positive development. Apprenticeships produced variable outcomes and left apprentices vulnerable to discrimination and exploitation. By contrast, technical colleges provided standardised courses, guaranteeing a certain degree of skill.[120] They formalised the mechanic trade, protecting mechanics and their customers.

These changes took place under the watchful influence of motorist and employer organisations. Having split after the First World War, these two groups used education to entrench their control over the trade. By the end of the 1920s, motorist organisations expanded their power from being the recognised authorities of knowledge for the automotive trades to becoming regulators of a recognised body of knowledge. When employer groups, known as motor traders' associations, presented a possible threat to their control, motorist organisations instead worked in alliance with bosses to structure and control education. This undercut the artisanal nature of training which until the 1920s had granted mechanics power over their occupation.

The alliance between motorists and employers was not straightforward or always assured. Initially opponents, they represented consumers and employers respectively. Additionally, state-based organisations contributed to the tension. Some, like the NRMA, attempted to claim national jurisdiction over their respective groups. What united this diverse

[118] Employment Council of New South Wales, *A Career as a Motor Mechanic* (Sydney: State Government of New South Wales, 1941), 6–7.
[119] Maddison, 'Skill and the Commodification of Labour', 368–69.
[120] Butler-Bowden, 'Class Confrontation, Class Collaboration', 51–52; Taksa, '"All a Matter of Timing"' (1998): 23–24; See also Jacques Rancière, 'The Myth of the Artisan: Critical Reflections on a Category of Social History', *International Labor and Working-Class History* 24 (1983): 13–14.

coalition, however, was a shared class interest. Disputes between elite motorists and small business owners were set aside in the interests of a shared goal of gaining control over workers with a view to decreasing repair costs.

These qualifications demonstrate that formal technical college education was not inherently liberating for mechanics. Rather than empowering workers, these new educational structures increased the control both motorist organisations and motor traders asserted over the trade. Such educational structures served as a blueprint that employers and motorists used throughout the twentieth century to control mechanical repair. Yet this did not entirely restrict mechanics' opportunities. Qualifications were not yet mandatory, meaning that some mechanics could find ways to succeed without them or, in the case of Helen Hobley, exploit connections to acquire them. The following chapter exposes the weaknesses of this structure, which became important when Australian leaders sought to mobilise its skilled workforce for the Second World War.

Chapter 3 – The Second World War and its Effects on Industrial Conditions and Social Mobility

The Second World War disrupted the rudimentary organisation of the mechanic trade. Despite the protections offered by Australia's arbitration system, poor coordination of the trade and the lack of unionisation left mechanics open to exploitation. This changed with the war. The Australian military was unprepared for the outbreak of war and required rapid mechanisation. In 1939, all branches of the Australian military began an urgent campaign to enlist skilled engineering workers. Mechanics were especially called upon, since their knowledge of combustion engines could be transferred to military equipment, such as aeroplanes and warships. Garage owners accordingly struggled to find skilled workers and to service Australia's growing fleet of cars during the war.[1] The resulting scarcity had a profound effect on the ways mechanics organised themselves.

This chapter discusses the experiences of mechanics in the First World War and demonstrates why it presented fewer opportunities for upskilling than the Second World War. It then discusses the foundations of future crisis: reductions in the wages and bargaining power of mechanics in the 1930s, which led many mechanics to enlist in the military once war broke out. The chapter proceeds to explore the mobilisation and recruitment of mechanics. They were upskilled through their military service, firstly via technical training and secondly through practical experience. I then conclude by demonstrating that many mechanics used their military experience to change careers upon returning from the war, with many becoming engineers. In addition, the relatively small numbers of mechanics who re-entered the trade were better able to negotiate favourable wages and conditions with their employers. These mechanics were able to engage in what Chris Smith has called 'mobility-effort bargaining' on an individual basis: threatening to move on to a new job if their employer did not meet their demands.[2]

The First World War: Mechanics, Engineers and Technology

Though Australian mechanics served in large numbers in the First World War, the military did not have as great a need for their skills as it would during the Second World War.

[1] 'Release of Mechanics', *Open Road*, 18 October 1945, 1; 'Shortage of Mechanics', *Australian Automobile Trade Journal*, February 1950, 22.
[2] Chris Smith, 'The Double Indeterminacy of Labour Power: Labour Effect and Labour Mobility', *Work, Employment and Society* 20, no. 2 (2006): 391–99.

Australians only deployed a small number of military vehicles in the First World War. By January 1918, Australia had between 700 and 1,000 motorised vehicles under its command; this was a tiny number in comparison to the 40,000 horses sent to the front lines.[3] Another reason that Australian mechanics were not recruited for their skills during the First World War was that the British Ordnance Corps completed all major mechanical repairs. The most complicated maintenance work performed by members of the Australian military was installing a makeshift heating system in the rear of ambulances. Comprising of a pipe that connected the exhaust to a ventilation grate, this system heated the compartment in which patients were held with carbon monoxide.[4] Although military historian Rod Dux has been unable to confirm if this dangerous alteration killed anyone, the very fact it was put in place highlights how little the military made of mechanics' knowledge. Given that motor mechanics were well aware of the dangers of carbon monoxide poisoning by 1914, they must not have been consulted by those responsible for the heating system's design.[5]

While there are no figures indicating exactly how many Australian mechanics joined the military during the First World War, 1,418 soldiers listed their occupation as 'Mechanic', 2,257 as 'Motor Mechanic' and 181 as 'Motor Engineer' upon enlistment in the Australian Imperial Force. This suggests a total of at least 3,856 soldiers with a background in mechanical repair work.[6] A high proportion of workers in the trade appear to have enlisted since newspaper records show that motorists and garages alike suffered due to the shortage of mechanics at home. According to Brisbane's *Daily Mail*, there were not enough motor mechanics before the war, but military enlistments exacerbated the shortage of skilled labour.[7]

Though some mechanics enlisted explicitly to use their mechanical skills, they were often misused by the military bureaucracy, who were unable to understand their technical skills.[8] In an oral history interview from the 1970s, Mark Payne recalled he enlisted in

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[3] Rod Dux, *The Benzine Lancers: Mechanicalizing the Australian Military Forces, 1901 to 1919* (Nerang, Qld.: self-published, 2012), 147; Jean Bou and Peter Dennis, *The Australian Imperial Force*, The Centenary History of Australia and the Great War 5 (South Melbourne: Oxford University Press, 2016), 13, 156.
[4] Dux, *The Benzine Lancers*, 165–66, 266–72.
[5] Ibid; Pinion, 'A Hidden Danger in the Garage', *Australian Motorist*, August 1911, 1031.
[6] These enlistment figures have been calculated from *The AIF Project*, https://www.aif.adfa.edu.au/index.html. These numbers exclude other types of mechanics, such as dental and electrical mechanics. As such, there may have been some crossover between aeronautical mechanics and motor mechanics that are missed in these results. My sincere thanks to Peter Dennis for providing access to these figures. World War I records, included in the 1933 census (Australian Bureau of Statistics, 'War Service', *Census of the Commonwealth of Australia 1933*, vol. 2, part 17, 1933), state that 1,161 motor mechanics and motor engineers, 740 mechanics, 421 "engineer, mechanical not professional", 47 bicycle mechanics and 13 aircraft mechanics, for a total of 2,382 soldiers with relation to the motor mechanic trade served during World War I.
[7] 'Wanted: Motor Mechanics', *Daily Mail (Brisbane)*, 5 December 1916, 4; Berg, *Jas A Munro & Co*, 92–94.
[8] Max Carmichael, *With Skill and Fighting: Craftsmen of the Australian Army 1942–2014* (Brisbane: Brisbane CopyRight Publishing Company, 2014), 3.

February 1916 with a preference to serve in the transport division. He mistakenly believed that the Australian military had adapted to the newest technology and needed mechanics to fix vehicles. Payne was shocked when he arrived at basic training to find stables and horses, with no automobiles in sight. With no need for his technical skills, the transport division spent six weeks unsuccessfully attempting to train him to ride a horse. When it became clear that he was far less skilled at riding horses than fixing engines, Payne was transferred to infantry and deployed on the Western Front in an unskilled position.[9]

Payne's experience highlights the differences between engineers and mechanics during the First World War. While the line between mechanics and engineers was generally blurred in civilian life, there was a clear division when it came to their military deployment. Engineers played a key role in Australia's infantry forces and served with various other nations. Australian engineers conducted a wide range of work, from constructing bridges and infrastructure to basic maintenance work.[10] The war affected the development of engineering as a profession over the following decades. Historian Carolyn Rasmussen has noted that 'by the 1930s there were few men in senior engineering posts throughout Australia who had not seen war service'.[11]

The First World War had a greater effect on the development of the mechanic trade through the post-war reintegration of men into the workforce than through mechanical service during the war itself. As mentioned in Chapter 2, new mechanics were trained through the Repatriation Vocational Training Scheme, providing an entry point into the trade. This scheme also served as the beginnings of formalised education for mechanics. Although their skills were not used, some mechanics were able to use their military connections to find positions in engineering workshops in England and Australia immediately after the war. Mark Payne was an example. While waiting to be transported back to Australia, he was employed by an engineering firm in England and worked on aeroplanes.[12] This was not unusual given that the distinction between engineering and mechanics was still relatively blurred at the time. Though the Second World War would create far more opportunities for mechanics to move into engineering and thus enjoy a degree of social mobility, some instances of this occurred immediately after the First World War.

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[9] Welborn, 'Interview with Mark Payne and Alf Lay in 1976'.
[10] Carmichael, *With Skill and Fighting*, 3; Carolyn Rasmussen, '"Constructive Work": The Engineering Profession in Australia and World War I', in *The First World War, the Universities and the Professions in Australia*, eds. Kate Darian-Smith and James Waghorne (Carlton, Vic.: Melbourne University Press, 2019), 152–53.
[11] Rasmussen, '"Constructive Work"', 160.
[12] Welborn, 'Interview with Mark Payne and Alf Lay in 1976'.

The Foundations of Future Crisis: Mechanics and Arbitration during the Interwar Period

Before discussing how the Second World War disrupted and altered the automotive repair trade, it is important to understand the organisation of the Australian labour force before the war, and the position of mechanics within this system. Australia's labour force was defined by a constant population and skill shortage during the interwar years. This was exacerbated by the Great Depression, which resulted in a steep decline in migration to Australia.[13] In contrast to the labour force stagnation, however, automobile sales accelerated throughout the 1920s and 1930s, barring a small decline during the Great Depression (see Figure 1). Theoretically, this placed mechanics in a position of strength. Some 11,251 mechanics appeared in the Australian census in 1921, but this figure included both motor mechanics and bicycle repairers.[14] By 1933, there were enough mechanics to be included as their own category in the census: 15,326 in all.[15] This meant there was one mechanic for every 35 cars on Australian roads. Theoretically, this shortage of workers gave mechanics a strong position over employers in negotiating wages, but as explored in the previous two chapters, this was undermined by employers and motorists' organisations. These two groups, allied by common interests, used their control over technical education to reduce mechanics' leverage.

[13] Tim Hatton and Glenn Withers, 'The Labour Market', in *The Cambridge Economic History of Australia*, eds. Simon Ville and Glenn Withers (Port Melbourne: Cambridge University Press, 2015), 351–52.
[14] Australian Bureau of Statistics, 'Occupations', *Census of the Commonwealth of Australia 1921*, vol 2, part 17, 1921.
[15] Australian Bureau of Statistics, 'Occupation', *Census of the Commonwealth of Australia 1933*, vol. 2, part 23, 1933.

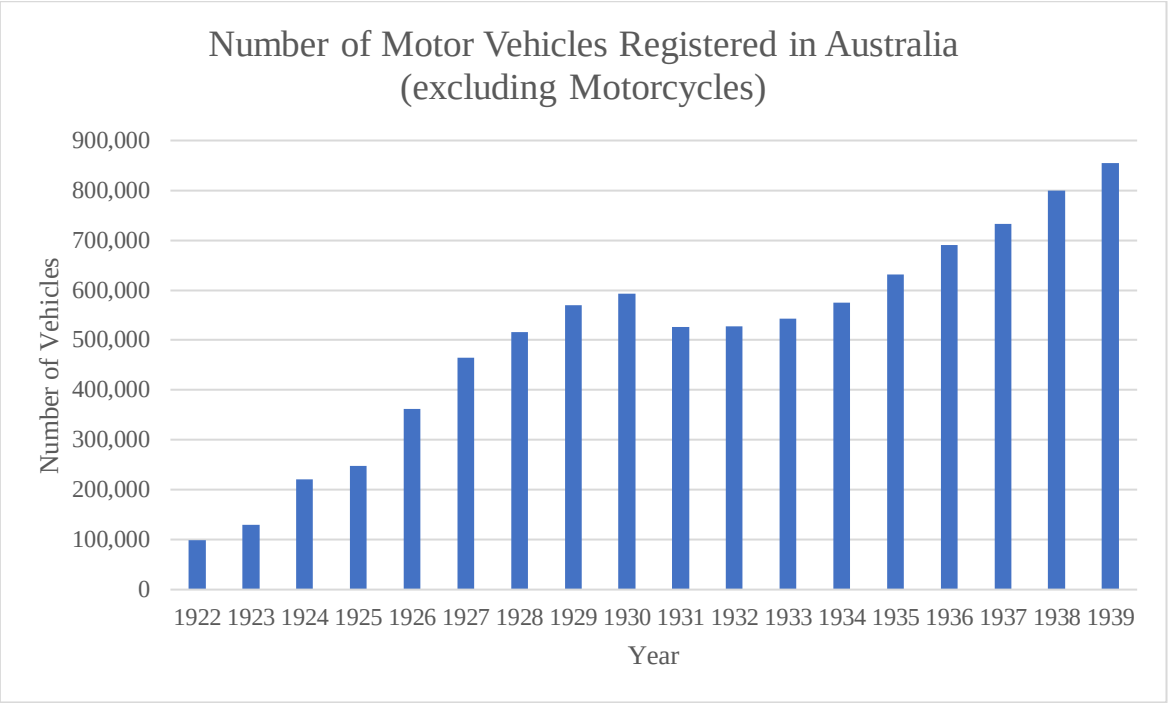

Figure 1 Number of Motor Vehicles Registered in Australia, excluding motorcycles, 1922–1939. Sources: Australia Bureau of Statistics, *Year Book Australia 1923*, 341; *Year Book Australia 1924*, 335; *Year Book Australia 1925*, 327; *Year Book Australia 1926*, 304; *Year Book Australia 1927*, 321; *Year Book Australia 1928*, 311; *Year Book Australia 1929*, 317; *Year Book Australia 1930*, 219; *Year Book Australia 1931*, 216; *Year Book Australia 1932*, 254; *Year Book Australia 1933*, 198; *Year Book Australia 1934*, 201; *Year Book Australia 1935*, 203; *Year Book Australia 1936*, 204; *Year Book Australia 1937*, 173; *Year Book Australia 1938*, 176; *Year Book Australia 1939*, 140; *Year Book Australia 1940*, 140.

The absence of organisation within the trade meant that mechanics were at a disadvantage in trying to negotiate for better wages and conditions in the Arbitration Courts. Justice Henry Bournes Higgins, the father of the Arbitration Courts, noted in 1915 that 'the system of arbitration adopted by the Act is based on unionism. Indeed, without unions, it is hard to conceive how arbitration could be worked'.[16] This posed a major problem for the mechanic trade. Mechanics were attached to the Amalgamated Engineering Union. The Union represented mechanics in the Arbitration Courts, and mechanics' wages were linked to the union-negotiated Metal Trades Award.[17] Awards played a fundamental role in the Australian arbitration system. They set a base minimum wage for each trade through negotiations between employers and unions. Mechanics' wages, as a result, were connected with the pay rates negotiated by the Union for workers in other engineering trades, specifically fitters and

[16] Higgins, 'A New Province for Law and Order', in *Australians at Work*, 215. Higgins served as the judge for the influential Harvester Case of 1907 which set the groundwork for Australia's arbitration system and basic wage.

[17] The Amalgamated Engineering Union was the major union for mechanics after 1920, but mechanics did appear in other unions. For example, the Federated Ironworkers' Association began accepting motor mechanics as members in 1923 ('Forty Years Ago', *Australian Automobile Trade Journal*, August 1963, 37). See also J. Hutson, 'The Amalgamated Engineering Union and Arbitration in the 1920s', *Labour History* 14 (1968): 50–53.

turners. This system relied upon unions to police the enforcement of awards.[18] Since mechanics were relatively non-unionised compared to other engineering trades, they were vulnerable to exploitation. Although the Union took multiple garages to court over the underpayment of award wages, oral histories confirm that many cases of underpayment went unreported.[19]

The lack of unionisation was not the only issue that hampered the organisation of mechanics. The introduction of technical education in the 1920s also split the trade in the manner discussed in the last chapter: between mechanics with formal qualifications and those without. This contributed to a divisive judgement in the Arbitration Courts in 1935. Justice Beeby raised the award rate for fitters but not for motor mechanics in a ruling relating to the negotiations for the Metal Trades Award.[20] Beeby's decision was based upon the educational divisions within the mechanic trade. In his view, 'some of these motor mechanics undoubtedly are high grade men, and should receive better treatment' and 'should get the higher marginal rate'. Beeby was convinced that there was a wide differential in mechanics' skill levels, however, and so tied the trade as a whole to a lower rate of pay.[21]

Beeby's ruling emphasised the disorganised nature of the mechanic trade during the 1930s. It also undermined the authority of the fragile Award. The decision essentially argued that the Award should be broken by employers in cases of exceptional mechanics.[22] Beeby's ruling also highlighted the large gap in skill levels that continued to exist within the trade, notwithstanding that the introduction of formalised education was supposed to standardise skill levels. This wide variation in skill affected the status of the trade. The decision set the groundwork for the exodus of mechanics into the military or other forms of work during and immediately after the Second World War. Had they been better organised, mechanics could have challenged Beeby's decision. In relying on the Amalgamated Engineering Union for representation without active participation, however, mechanics were passive observers of the changes to their pay and status. The decision to tie mechanics at a lower wage than fitters was not overturned until 1947, twelve years after it had been implemented and two years after the end of the war. Even then, improvements in mechanics' conditions did not come through

[18] Miles Goodwin and Glenda Maconachie, 'Minimum Labour Standards Enforcement in Australia: Caught in the Crossfire?', *The Economic and Labour Relations Review* 22, no. 2 (2011): 63.
[19] *Souvenir 25th Anniversary AEU Australia*, 216, 218; Barbara Deverson, 'Interview with Doug and Lorna Morton', Cumberland Park, SA: State Library of South Australia, 1991.
[20] *Commonwealth Arbitration Reports*, no. 76, 34 CAR 449 (1935): 464–65.
[21] *Commonwealth Arbitration Reports*, no. 137, 35 CAR 477 (1935): 477–78; *Souvenir 25th Anniversary AEU Australia*, 186–87. Further discussions of Beeby's 1935 decision can be found in Keith Hancock, *Australian Wage Policy: Infancy and Adolescence* (Adelaide: University of Adelaide Press, 2013), 596–98.
[22] *Commonwealth Arbitration Reports*, no. 750, 59 CAR 1654 (1947): 1654–55.

active campaigning by the Union. Mechanics' pay rates only increased when employers became desperate to resolve the labour shortage crisis that emerged after the war.[23]

The Mobilisation and Recruitment of Motor Mechanics for the Second World War

The outbreak of the Second World War changed mechanics' industrial position. Branches of the military competed to recruit mechanics in the war's earliest years. Ken Buckley and Ted Wheelwright criticised the slowness of Australia's mobilisation, and its inability to organise technical workers in the military before 1942.[24] The sluggish mobilisation meant that the Australian military forces were underprepared for the task of maintaining Australia's military equipment during the earliest years of the Second World War. Military historian Max Carmichael has observed that this lack of organisation and urgency at government level seeped into the organisation of the military, causing problems on the ground.

Technically skilled soldiers, including motor mechanics, were needed by both the Australian Army Ordnance Corps and the Royal Australian Engineers.[25] At the beginning of the war in 1939, the Ordnance Corps were responsible for the repair and maintenance of all military equipment, as well as supplying and stocktaking military resources. The Ordnance Corps specifically targeted skilled trades for recruits, who had to complete an examination to demonstrate their technical competency before they were permitted to join.[26] The Royal Australian Engineers, on the other hand, were responsible for constructing, maintaining, and destroying public works and military fortifications.[27] Both Corps were heavily depleted at the outbreak of the war. The Ordnance Corps had less than 250 permanent members along with 450 part-time soldiers serving in a militia unit when the war broke out in 1939.[28] By 1942, the federal government formed the Corps of the Australian Electrical and Mechanical Engineers (AEME) to take over the responsibilities of maintenance and repair, leaving the Ordnance

[23] Ibid., 1655; *Commonwealth Arbitration Reports*, no. 133, 44 CAR 564 (1941): 572. For further discussions on the representation of the Amalgamated Engineering Union of its members, and how the union's large membership and broad range of roles led to a distancing between members and union officials, see Tom Sheridan, 'Democracy Among the Aristocrats: Participation of Members in the Affairs of the AEU (Australian Section) 1900–1972', *Journal of Industrial Relations* 21, no. 2 (1979): 161–83.
[24] Buckley and Wheelwright, *False Paradise*, 145–48.
[25] Carmichael, *With Skill and Fighting*; Service and Casualty Form, 'Murray Lawrence', B883, NX3560, National Archives of Australia, Canberra.
[26] 'Field Repairs by Ordnance Mechanical Engineers', *Building and Engineering*, 24 November 1942, 64; Peter Johnson, 'A.A.O.C. (P) Workshop Branch, MD 1937 (and earlier)–1945)', *RAEME Craftsman* 5 (1980): 53.
[27] Graham McKenzie-Smith, '"We Make 'Em and We Break 'Em": Understanding the Royal Australian Engineers in the Second World War', *Sabretache* 58, no. 2 (2017): 47–52.
[28] Carmichael, *With Skill and Fighting*, 10–11.

Corps to focus on supply. The AEME was formed out of the Ordnance Corps and began life in October 1942 with close to 15,000 soldiers.[29] The Royal Australian Engineers had a similar, rapid expansion, holding over 28,000 soldiers at its peak.[30]

Image 16 Maintenance and repair in the Ordnance Corp of the Australian Army – English Matilda tank being repaired. 1943–1944. H98.105/3443. State Library of Victoria, Melbourne.

To facilitate this rapid expansion, the army organised a recruitment campaign to target skilled workers from Australia's technical trades, including motor mechanics. Despite this, the army's bureaucracy was slow to assign technically skilled recruits to the areas where they were most needed, if they did so at all. Some eager recruits with technical backgrounds were keen to see combat and did not want a technical position to keep them away from the frontlines. As such, they deliberately enlisted as infantry, hiding their training from their

[29] Ibid., 18.
[30] McKenzie-Smith, '"We Make 'Em and We Break 'Em"', 52.

applications. This loss of skilled workers to regular infantry roles caused an even greater shortage for the technical areas of the military.[31]

While engineers and tradespeople were premium recruits for Australia's ground forces, they were also essential for the rapid expansion of the Royal Australian Air Force (RAAF). This expansion took place after the Allied forces asked Australia to assist with the defence of Europe. The RAAF had an established supply of skilled workers from the civil aviation services and aeronautical clubs, but turned to those with experience in the engineering trades – motor mechanics included – to meet the sudden demand for engine maintenance skills.[32] The RAAF were better than their army counterparts at identifying recruits with the appropriate skills because they focused on technical training.[33] According to military historian Douglas Gillison, the RAAF appealed to recruits indirectly by positioning itself as the high-status section of the military, using the lure of aeroplanes and the romantic prospect of becoming pilots to attract recruits.[34] Technical workers who applied to become heroic fighter pilots were accepted into the RAAF but then reassigned to make the best use of their technical skills on the ground.[35] Trained motor mechanics were amongst the most sought-after tradespeople for the RAAF. Just as the automotive industry was adapting to building planes, motor mechanics were also able to adapt to fixing them.[36] By March 1940, the RAAF recruited 7,894 ground staff from over 56,777 applications, having its pick of the best mechanics, engineers, and technicians.[37]

Motor mechanics benefited from competition between different branches of the military. Their technical skills and mechanical knowledge were in high demand among both the army and air force. So was their ability to adapt to new technology. In 1940, Brisbane's *Telegraph* advertised that the RAAF needed two hundred enlistments with the technical skills to assist in maintaining and repairing aircraft, specifying that they were searching for fitters and mechanics.[38] Mechanics were thus recruited as much for their potential as they were for their existing skills. The practical education they had gained by working on cars meant they

[31] Carmichael, *With Skill and Fighting*, 12.
[32] Douglas Gillison, *Royal Australian Air Force, 1939–1942*, Australia in the War of 1939–1945 3, vol. 1, 1st ed. (Canberra: Australian War Memorial, 1962), 71–72.
[33] Ibid., 58–63.
[34] Ibid., 68–69.
[35] Jack Brabham, in Tony Davis, *Wide Open Road: The Story of Cars in Australia* (Sydney: HarperCollins, 2011), 97; Maxine Laurie, 'Interview with Bob Aitkin, with Rosalyn Aitkin present', Bencubbin, WA: State Library of Western Australia, 2005.
[36] 'Air Force Needs 200 Men at Once', *Telegraph* (Brisbane), 10 December 1940, 8; McLean, *Why Australia Prospered*, 179; Laurie, 'Interview with Bob Aitkin'.
[37] Gillison, *Royal Australian Air Force*, 69.
[38] 'Air Force Needs 200 Men at Once', 8.

did not have to learn how to perform more complicated technical work from scratch and could be trained on the job.[39] Both areas of the military used the prospect of this upskilling to attract mechanics, assuring them that war service would enhance their employment opportunities after the war.[40]

Image 17 Maintenance and Repair in the Ordnance Corp of the Australian Army – Truck Maintenance in Darwin. 1943–1944. H98.105/3447. State Library of Victoria, Melbourne.

The competition between different areas of the military attracted mechanics to enlist because of the high rates of pay they offered. While some workers may have been attracted by the promise of acquiring new skills, oral histories show that better rates of pay were the key appeal. Major Peter Johnston, who enlisted in the Ordnance Corps in 1937, noted that:

> …recruits joining as tradesmen were enlisted as Corporals and paid a much higher wage than Corporals or Bombardiers of other Corps/Regiments. The higher rate of pay continued throughout all OR scales until the rank of [Warrant Officer Class

[39] Davis, *Wide Open Road*, 97.
[40] 'Recruits at Once for A.I.F', *Sun (Sydney)*, 2 January 1941, 16; 'Women Offer for R.A.A.F.', *Advertiser*, 29 May 1940, 20; 'RAAF Wants Mechanics', *Daily News (Perth)*, 16 March 1942, 5.

> One] was reached when it levelled out. During 1941, a [Warrant Officer Class Two] Artificer received in cash, after tax deduction, the princely sum of £11.0.4d per fortnight.[41]

In comparison, under the 1937 Federal Metal Wages Award, motor mechanics in Melbourne were paid £4/19 a week (or £9/18 a fortnight) before tax.[42] Pay varied for mechanics from area to area, and employer to employer. Doug Morton, an Adelaide motor mechanic, worked in a garage with no union representation, and his employers negotiated wages directly with the workers. The result was Morton and his fellow mechanics made £3/12 a week in 1937 – well below the award rate.[43] While there are few records to confirm the extent of underpayment of mechanics in Australia, other cases suggest that wage theft may not have been unusual. In 1938, the Industrial Court twice found a Queensland garage guilty of underpaying mechanics.[44] These low wages made it easy for the military to recruit mechanics directly from their garages. Once military recruiters told Morton that he would make an extra 15/– a week in his first week in the military, he enlisted on the spot.[45]

Upskilling Mechanics at War: Technical Training

The federal government adapted the education sector to meet the military's needs in response to the slow recruitment of skilled workers. This transformed universities and technical colleges into training grounds for the technical education of servicepeople.[46] The Commonwealth Technical Training Scheme was an important educational development for motor mechanics. Established at the end of 1939 to increase Australia's skilled labour force more broadly, the Scheme's first priority was to train engineering tradespeople for the RAAF.[47] By the end of the war, the Scheme had trained almost 100,000 tradespeople for all areas of the armed forces, 25,000 of which were directly trained by the RAAF.[48]

To educate soldiers through the Commonwealth Technical Training Scheme, the federal government adapted existing state educational infrastructure rather than building new,

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[41] Johnson, 'A.A.O.C. (P) Workshop Branch', 53.
[42] 'Wages', *Australian Automobile Trade Journal*, 1 August 1937, 58.
[43] Deverson, 'Interview with Doug and Lorna Morton'.
[44] *Souvenir 25th Anniversary AEU Australia*, 216, 218.
[45] Deverson, 'Interview with Doug and Lorna Morton'.
[46] Hannah Forsyth, *A History of the Modern Australian University* (Sydney: NewSouth, 2014), 22–26; Murray-Smith and Dare, *The Tech*, 253–77.
[47] Darryl Dymock and Stephen Billett, 'Skilling Australians: Lessons from World War II National Workforce Development Programs', *Australian Journal of Adult Learning* 50, no 3 (2010): 471.
[48] Ibid., 471–74; Murray-Smith and Dare, *The Tech*, 253–58; Commonwealth of Australia, Parliamentary Debates, House of Representatives, no. 32, 7 August 1946, 3877.

specialised, military educational facilities. The government transformed the Melbourne Technical College's Motor Mechanics School into a training school for aeronautical engineers.[49] Educators found the existing infrastructure in many mechanic's courses had fallen below standards they believed necessary to adequately train students, with little support to improve them. Frank Ellis, principal of Melbourne Technical College, noted in his 1940 report that:

> I must make, as I have done every year for the past ten years, a protest against the necessity imposed upon us of carrying on our motor mechanics classes in the present unhygienic, dismal, dark, ill-ventilated, unsuitable and depressing building.[50]

Ellis was even more blunt in 1941, stating that 'the only justification for training men of the army motor transport section in the Motor School was that it gave them in advance an idea of the horrors of war'.[51] The poor conditions mechanics were trained in were not confined to the Melbourne Technical College. During a 1941 inspection, NRMA representatives reported that they were appalled by the 'extremely old-fashioned' and 'inadequate' equipment in use at the Sydney Technical College.[52]

The Commonwealth Technical Training Scheme's programmes were deliberately short. Rather than using the qualifications from technical colleges, which took years to attain, the Scheme rushed servicepeople through training in a matter of weeks. This intensive training was intended to result in 'semi-skilled' soldiers. The idea was that their training would be supplemented by practical experience under 'adequate skilled supervision and instruction' in the field.[53] Further, the Scheme did not have the capacity to train specialised workers, such as aeronautical engineers.[54] These realities placed a greater strain on the technical divisions of the military. Branches of the military with the greatest demand for skilled workers, such as the RAAF, took for themselves the best recruits under the initial impression that they would immediately be able to assist with complicated maintenance and repair work.[55] In practice, the RAAF needed to set aside its best skilled workers to train its newest recruits from the Scheme, taking them away from actual repairing work. In doing so,

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[49] Murray-Smith and Dare, *The Tech*, 261.
[50] Frank Ellis, as quoted in Murray-Smith and Dare, *The Tech*, 261.
[51] Ibid.
[52] 'Help Wanted to Train Mechanics', *Open Road*, 18 September 1941, 4; 'Training Our New Mechanics', *Open Road*, 15 May 1941, 1.
[53] 'Qualifications and Classifications of Tradesmen', 1945?, AWM082994, Australian War Memorial, Canberra.
[54] Ibid.
[55] Gillison, *Royal Australian Air Force*, 71.

the RAAF actually reduced its maintenance output when it took on recruits from the Scheme.[56] This forced the RAAF to contract repairs out to private civil engineering firms and the automotive industry to complete repairs on schedule.

Image 18 'Practical instruction for A.I.F Driver Mechanics and Mechanics M.T. at a Motor Vehicle Trade Training Centre near Melbourne', 1942. H98.105/4667. State Library of Victoria, Melbourne.

Military training for motor mechanics was designed to upskill their practical knowledge beyond working with cars. Their existing knowledge provided the foundation for an education in engineering. In addition to upskilling existing mechanics, the military also sought to train new ones from scratch. The military needed drivers who had the mechanical skills to maintain and repair their vehicles if necessary, and so drivers were recruited for the Armoured Corps. These drivers underwent a seven to thirteen week intensive training course, which included between forty and sixty-six days of maintenance training.[57] Along with formal training courses, the military distributed pamphlets explaining procedures for the regular maintenance of light vehicles. These pamphlets detailed instructions of the inner workings of cars and outlined how to identify problems in all sections of the vehicle, from the ignition to steering. These pamphlets were written for drivers, not mechanics. Since drivers were

[56] Ibid., 98.
[57] Armoured Corps Training Centre, 'Syllabus of Recruit Training: Armoured Corps Training Regt.: Draft Priority 3 (D.P.3) Stage', Syllabus of Recruit Training, 1943?, AWM041809.11, Australian War Memorial, Canberra.

expected to hold only the most basic understanding of car maintenance, these pamphlets were written to allow an unskilled driver to patch minor issues in an emergency to get to safety. All major issues with a vehicle were referred upwards to either the Ordnance Corps or later the AEME.[58]

Motorist organisations were initially concerned by the possibility of underqualified driver-mechanics emerging from military training and filling the civilian mechanic trade with poorly trained workers. Eventually, they conceded their support for the scheme, citing their admiration for the basic mechanic training of the United States Air Force.[59] Their approval was based on assurances that they would retain some authority over the training and certification process of motor mechanics during and after the war. Even though they relinquished control of certification to the Institute of Automotive Mechanics in 1936, motorist groups and motor trader associations held close links to the technical colleges which were being used by the Commonwealth Technical Training Scheme.[60] As a result, driver-mechanics trained by the AEME or the RAAF did not receive formal motor mechanic qualifications.

Upskilling Mechanics at War: Practical Experience

The engineering experience gained by the AEME's service people during the war proved invaluable to the military. These skills were in demand across all branches, in workshops and on the frontlines. As a consequence, mechanics were trained in areas of engineering for which they would have been deemed unqualified in peacetime, but any benefits with the military came with the experiences of war. Mechanics were often positioned close enough to the front lines to see combat, working at all hours to maintain equipment and vehicles. Three soldier-mechanics, W.M. Allison, O.J. Dunning and K. Smith, received medals in recognition of their bravery during the 1941 Siege of Tobruk. The trio worked around the clock with highly sensitive oxy-acetylene torches, while under heavy shell fire, to repair five tanks and restore them to service.[61] Combat was not the only threat. Carmichael notes that maintenance workers with the Ordnance Corps were forced to endure 'the most appalling of climactic conditions',

[58] "Ford Vehicles – Description and Maintenance", Mechanization Pamphlet no. 1, 2nd ed., 1940, M40, George Brooks Library and Learning Centre, Birdwood, SA.
[59] Gillison, *Royal Australian Air Force*, 68; 'Mass Production of Mechanics', *Open Road*, 17 April 1941, 3.
[60] 'Training Our New Mechanics', *Open Road*, 15 May 1941, 1; 'Training Young Motor Mechanics', *Open Road*, 19 June 1941, 3; Murray-Smith and Dare, *The Tech*, 262.
[61] Carmichael, *With Skill and Fighting*, 13.

while the AEME engineers in New Guinea and Southeast Asia 'suffered up to 35 per cent casualties from disease'.[62]

Competition for skilled mechanics continued in the military beyond recruitment. As mechanics were upskilled, their services came into demand across many other branches. Gillison notes that as the skilled workforce depleted, the RAAF turned to recruiting aircrew from other branches of the military. While 'the army gave some aid by agreeing to release men anxious to join the air force', however, they 'resisted all attempts on the part of the RAAF to recruit ground staff from its ranks'. The staff most desired by the air force 'were the very men the army was least willing to part with'.[63]

The AEME were particularly possessive of their skilled staff. Concerned that their best mechanics and engineers would be recruited by the RAAF or the Navy, the AEME worked in cooperation with other branches of the military to conduct repairs so long as they retained control over the deployment of their skilled soldiers. This complicated relationship proved beneficial in the later years of the war when the AEME worked closely with the Royal Australian Navy to establish amphibious workshops.[64] The first of these workshops was the *Kalang*, an altered Sydney ferry that was deployed in New Guinea in 1944. The workshop was staffed with tradesmen from the AEME, including motor mechanics, who adapted their skills to conduct emergency ship repairs. Although initially deployed to service Australian warships, the workshop was so successful that its services were used by other Allied forces in the Pacific.[65] E.H. Colley, who worked on the *Kalang*, described that at times 'the *Kalang* looked every bit the mother ship with up to a dozen vessels, in varying stages of repair, strung out from the port and starboard sides'.[66] Mechanics on the *Kalang* undertook a wide variety of maintenance tasks, from 'engine overhauls to the manufacture of replacement propellers on the spot'.[67]

[62] Ibid., 25.
[63] Gillison, *Royal Australian Air Force*, 489.
[64] Carmichael, *With Skill and Fighting*, 24; *The A.E.M.E. in the Field*, republished in *RAEME Craftsman* 14 (1986): 27.
[65] E.H. Colley, 'A Repair Ship for RAEME', *RAEME Craftsman* 7 (1981): 55–57.
[66] Ibid., 56.
[67] Ibid.

Image 19 'A starboard bow view of the vessel AB97 *Kalang*. Master General of the Ordnance Branch, Land Headquarters' Sydney, New South Wales. 1944. AWM067154. Australian War Memorial, Canberra.

With the success of the *Kalang*, the Navy looked to deploy more naval, floating workshops. They entered negotiations with the AEME to allow its soldiers to undertake complicated naval engineering work. Much like recruit training, these courses were not designed to turn soldiers into fully qualified naval engineers overnight. AEME personnel were individually selected for engineering work with the Royal Australian Navy, specifically prising those with a background of adaptable skills. Rather than undergoing comprehensive training, the AEME soldiers underwent a fourteen-day intensive training program that focused on the key features of engine and boiler maintenance. This program worked under the assumption that the existing skills the AEME 'craftsmen' possessed would allow them to learn the specifics of naval engineering on the job.[68]

The military's acknowledgement of experience as a form of practical training brought them into conflict with the professional engineering sector back in Australia. Concerned that

[68] Letter to Director of Training & Staff from Captain K.F. Price, 9 January 1945, 'Training in Watercraft – AEME Personnel (Training of Army Personnel in Sea-Going Duties)', MP742/1, 323/10/989, National Archives of Australia, Melbourne; Syllabus for Engineers, 'Training in Watercraft – AEME Personnel (Training of Army Personnel in Sea-Going Duties)', MP742/1, 323/10/989, National Archives of Australia, Melbourne.

the war may bring an influx of new engineers from lower socioeconomic backgrounds, H.G. Carter (the earlier-mentioned president of the Institution of Engineers Australia) emphasised that engineering was not just about the skills involved. Rather, engineering included 'the art of organising and directing men'. In an article for the Institution's journal, the *Commonwealth Engineer,* Carter criticised military-style engineering training that focused on 'purely technical subjects to the exclusion of [professional skills, such as] industrial management, accounting, economics and psychology'.[69] The Institution regarded the practical engineering training offered by the military as a threat to the status and pay of engineers, fuelling fears that mechanics would become interchangeable with engineers.[70] These debates split the engineering profession as its more elite members sought to shore up their social status. These elite engineers attempted to restrict entry into the profession to tertiary qualified graduates, but this was impractical in Australia due to the labour force demand for engineers. The simple lack of university-trained engineers opened the field to technically trained skilled workers, especially those with wartime experience, to fill the engineer shortage once they returned home.[71]

Returning Home: Industrial Mobility and the Post-War Labour Shortage in the Mechanic's Trade

Mechanics returned to civilian life with new, recognised skills gained from their service in the armed forces. Motor mechanics who had enlisted in the military found engineering experience opened doors into higher paid engineering positions. Mechanics' wages were still locked below fitters, and many skilled mechanics did not return to their old garages when they could find better-paying work with higher status elsewhere. This caused a labour crisis in the trade, which threatened its ability to keep up with the demand for work as motorists rushed to get their cars back onto the roads.

The overwhelming majority of service members within the engineering ranks of the military resumed civilian work at the end of the war. While expecting a large decrease through demilitarisation, by 1947 the AEME was alarmed that so many skilled tradespeople had left the military that they could not sufficiently maintain military equipment to

[69] H.G. Carter, quoted in 'Training the Engineer', *Commonwealth Engineer,* 1 June 1944, 263.
[70] 'What Price Engineers?', *Commonwealth Engineer*, 1 November 1944, 86.
[71] C.W. Candy, 'Correspondence: Technical Education', *Commonwealth Engineer*, 2 April 1945, 257; 'Slump in Engineering Students', *Commonwealth Engineer,* 2 April 1945, 262.

operational standards.[72] The key reason for this collapse in staff numbers was the post-war economic boom and the demand for skilled labour in the private sector. Though pay within the military had been attractive to skilled workers at the start of the war, it was now lower than what private businesses were offering. Rather than adjusting their own wages, the AEME began bringing in civilian contractors to fill the gaps left by departing soldiers and assist with the required maintenance work. These contractors were paid at the new award rates, meaning they were paid more than the few skilled soldiers who had remained within the military. With little incentive to stay, almost all tradespeople who had served with the AEME left to seek work outside the military.[73]

The success of the Commonwealth Technical Training Scheme prompted the federal government to establish a post-war counterpart, the Commonwealth Reconstruction Training Scheme, in March 1944. Similar to the GI Bills in the United States, the Reconstruction Training Scheme was established to allow veterans whose careers and training had been interrupted by the war to commence tertiary studies.[74] The Scheme allowed the federal Labor government to continue the economic conditions of full employment that had been established during the war.[75] The Scheme included training for motor mechanics and helped returning service people, like Bob Aitkin, to enter the trade. Aitkin had dropped out of a mechanic apprenticeship in the early 1930s and enlisted in the RAAF during the war. While serving, he completed a fitter and driving course through the Sydney Technical College. Aitkin became a fully qualified mechanic upon completing his training in the Scheme and subsequently found work in a local garage.[76]

The Commonwealth Reconstruction Training Scheme was limited in scope, intended to train soldiers who were returning home without an occupation, or soldiers whose training was interrupted by their service. The Department of Post-War Reconstruction was clear that 'men and women who are already trained for a job will not be encouraged to train for another job … Training is not a reward for service'.[77] One young soldier, for example, enlisted in the

[72] Maintenance of the Corps of A.E.M.E., 28 July 1947 and 3 September 1947, 'Maintenance of the Corps of AEME', MP742-1, 240-3-1038, National Archives of Australia, Melbourne. The report to Army Headquarters estimated that AEME's 'numerical strength' was at 70 per cent of what was required to perform at operational standards.
[73] Ibid.
[74] Also known as the Servicemen's Readjustment Act, the GI Bill provided free college tuition to returning American soldiers and provided direct inspiration for the Australian Commonwealth Reconstruction Training Scheme (Macintyre, *Australia's Boldest Experiment*, 326–27).
[75] Dymock and Billett, 'Skilling Australians', 475–76; Buckley and Wheelwright, *False Paradise*, 150.
[76] Laurie, 'Interview with Bob Aitkin'.
[77] Australian Army Education Service, *Commonwealth Reconstruction Training Scheme*, Information Booklet 1 (Melbourne: Australian Army Education Service, 1945), 1.

AEME with no workshop experience. The Ministry of Post-War Reconstruction advised that subject to entrance examinations and industry requirements, his service fitted him for training in an engineering trade to provide an avenue into post-war work. This soldier was accepted into the Scheme precisely because he had enlisted without any formal training.[78]

Under Category Six of the Commonwealth Reconstruction Training Scheme, anyone who had demonstrated 'conspicuous mental ability' during their service could qualify for further training in a new field.[79] To satisfy this clause, an applicant needed to persuade their state's Regional Reconstruction Training Committee (bodies controlled by the Ministry of Post-War Reconstruction) of 'their suitability for a professional calling calculated substantially to improve their economic status'.[80] An example listed in a booklet was that of a clerk who had excelled in the RAAF and was approved by the Reconstruction Training Scheme to undertake a university course as a civil engineer.[81] This exception was vital for mechanics returning from the war, as it created a new pathway into tertiary engineering studies.

While universities were still elite institutions, the Commonwealth Reconstruction Training Scheme made them more accessible. Recognition of skills gained through the war was pushed heavily under the guise of respecting the service of soldiers.[82] Simultaneously, the Scheme offered financial support for successful applicants. This removed one of the key barriers to tertiary education. While the government stipend was modest, £3/15 a week for single men and £5/15 for married men, it was competitive with apprenticeship pay rates (see Figure 4).[83] Additionally, any short-term financial loss was offset by the promise of stability and the possibility of increased pay, status, and opportunities in the future.

Tertiary engineering education boomed under the Commonwealth Reconstruction Training Scheme. During the war years, Australian universities produced between one hundred and 150 engineering graduates a year. By 1947, this doubled to three hundred

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[78] Ministry of Post-War Reconstruction, *Questions and Answers*, no. 2 (Melbourne: Ministry of Post-War Reconstruction, 1946), 11.
[79] Australian Army Education Service, *Commonwealth Reconstruction Training Scheme*, 9
[80] Department of Post-War Reconstruction, *Guide to Reconstruction Training Scheme* (Canberra: L.F. Johnson, 1945), 3.
[81] Ministry of Post-War Reconstruction, *Strictly Personal: Stories of Re-Establishment from the Personal Angle* (Melbourne: Ministry of Post-War Reconstruction, 1946), 6–7.
[82] 'Servicemen "Penalised" – Engineering Trade Regulations', *Advertiser*, 2 April 1946, 7; 'Servicemen in Trades', *Sydney Morning Herald*, 22 March 1946, 3; J Field, 'What the Community Owes the Serviceman', *Sydney Morning Herald*, 25 July 1946, 2.
[83] Department of Post-War Reconstruction, *Opening University Doors: The Story of the Universities Commission*, (Adelaide: The Advertiser Printing Office, 1949), 8; Forsyth, *A History of the Modern Australian University*, 48–49.

graduates, which increased to over five hundred graduates in 1952.[84] These burgeoning numbers raised concerns about oversupply. During the war, the need for engineers had been so high that students were not permitted to drop out of an engineering degree.[85] The situation had changed so markedly by the end of the war that the Institution of Engineers Australia warned that the profession was overwhelmed with candidates at a time of stagnating pay.[86] Even the Vice-Chancellor of the University of Western Australia tried to dissuade students from undertaking an engineering degree, warning that 'the profession seems likely to become overcrowded'.[87] The fears of oversupply scarcely troubled most mechanics seeking to become engineers, because the mechanic's trade faced even greater difficulties. Low wages were the most pressing problem. While nurses had been paid less than mechanics throughout the 1930s, they were earning more than them by 1947.[88] This poor remuneration led many mechanics with military engineering experience to leave the trade.

The shortage of motor mechanics caused by the exodus of those with military experience upon return from the war created a crisis for motorists. In February 1946, the Vice President of the Royal Automobile Club of Queensland estimated that Australia needed ten thousand more motor mechanics.[89] By the motor industry's estimates, this figure was conservative. Prior to the Second World War, the motor industry had estimated that the nation needed one mechanic for twenty-five private cars and one per fifteen commercial vehicles to 'ensure roadworthiness'.[90] In 1946, there were 522,615 registered cars and 333,129 registered commercial vehicles on Australian roads.[91] By the calculations of the motor industry, Australia required 43,114 mechanics to maintain its transport industry and keep roads safe. According to the 1947 census, Australia had 23,449 mechanics – just shy of twenty thousand less than what was required.[92] The labour shortage became even more pressing by the end of

[84] D.P. Mellor, *The Role of Science and Industry*, Australia in the War of 1939–1945 4, vol. 5, 1st ed. (Canberra: Australian War Memorial, 1958), 199, 676; Carolyn Rasmussen, *Increasing Momentum: Engineering at the University of Melbourne, 1861–2004* (Carlton, Vic.: University of Melbourne Publishing, 2004), 143.
[85] Forsyth, *A History of the Modern Australian University*, 48; Don Richards, quoted in Hector Gallagher, *We Got a Fair Go: A History of the Reconstruction Training Scheme 1945–1952* (Melbourne: self-published, 2003), 110.
[86] 'What Price Engineers?', *Commonwealth Engineer*, 1 November 1944, 86; 'National Victory Means Personal Defeat!', *Commonwealth Engineer*, 1 August 1945, 1; Hannah Forsyth, 'Expanding Higher Education: Institutional Responses in Australia from the Post-War Era to the 1970s', *Paedagogica Historica* 51, no. 3 (2015): 367–68, 371–74.
[87] G.A. Currie, quoted in 'Rehabilitation – Professional Training – How Applicants are Advised', *The West Australian*, 16 January 1946, 7.
[88] Based on published NSW awards, data produced by Hannah Forsyth, *Virtue Capitalists: The Rise and Fall of the Professional Class in the Anglosphere c.1870–2008* (Cambridge: Cambridge University Press, forthcoming).
[89] 'Claims Car Trade Bars Ex-Soldiers', *Courier-Mail*, 1 February 1946, 3.
[90] 'Shortage of Mechanics', *Australian Automobile Trade Journal*, 1 February 1950, 22.
[91] Australian Bureau of Statistics, 'Transport and Communication', *Year Book Australia*, no. 37 (1947): 176.
[92] Australian Bureau of Statistics, 'Occupation', *Census of the Commonwealth of Australia 1947*, vol. 2, part 18, 1947.

the decade as the car started becoming affordable, foreshadowing the boom in car purchases in the decade to follow (see Figures 2 and 3).[93]

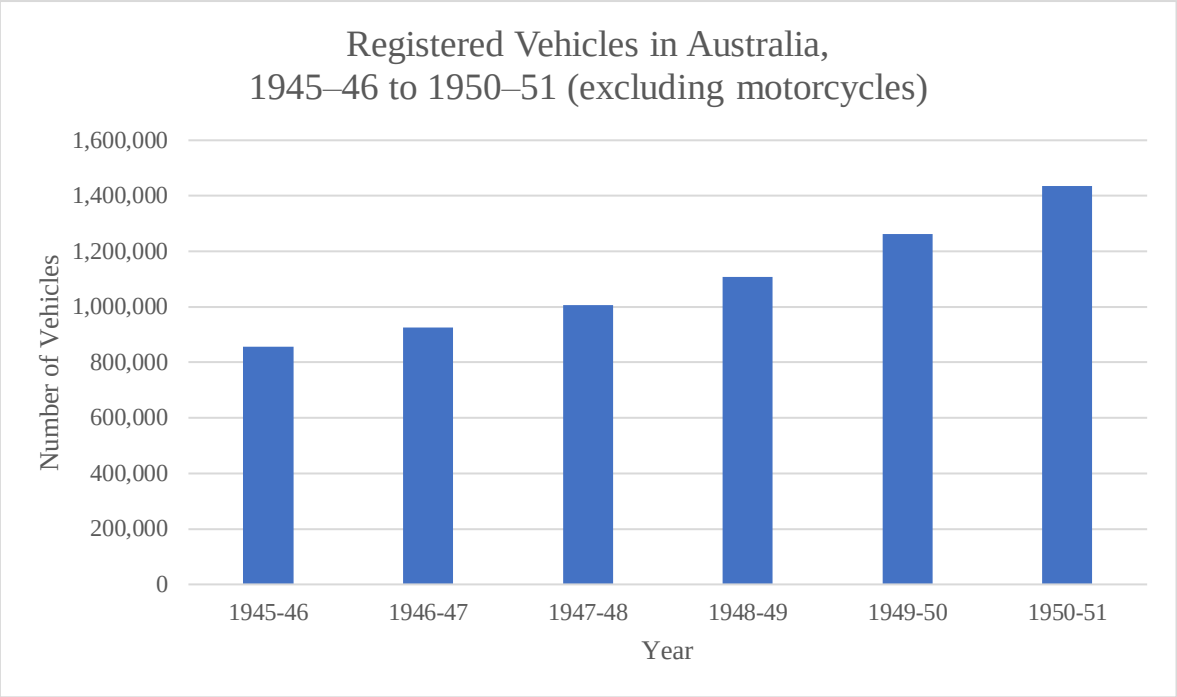

Figure 2 Number of Registered Vehicles in Australia (excluding motorcycles), 1945–46 to 1950–51. Sources: Australian Bureau of Statistics, *Year Book Australia 1953*, 177; *Year Book Australia 1954*, 139.

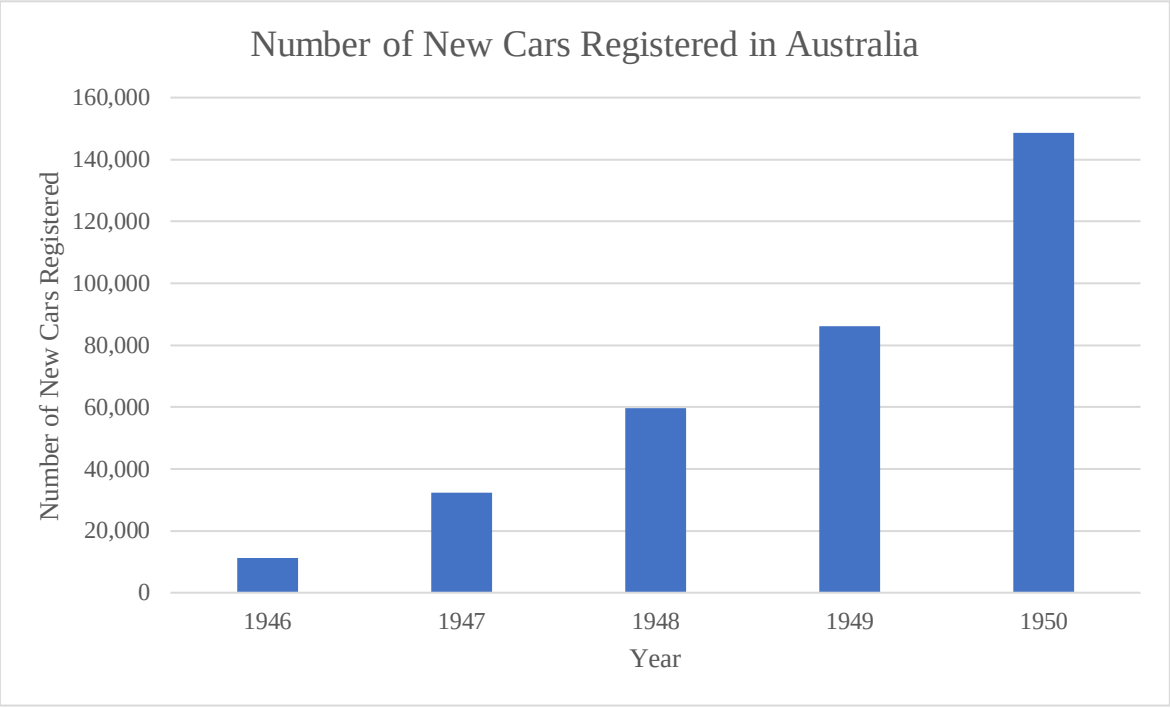

Figure 3 Number of New Cars Registered in Australia, 1946–1950. Source: *Australian Automobile Trade Journal*, 1 March 1951, 36.

[93] Davison, *Car Wars*, 6–10.

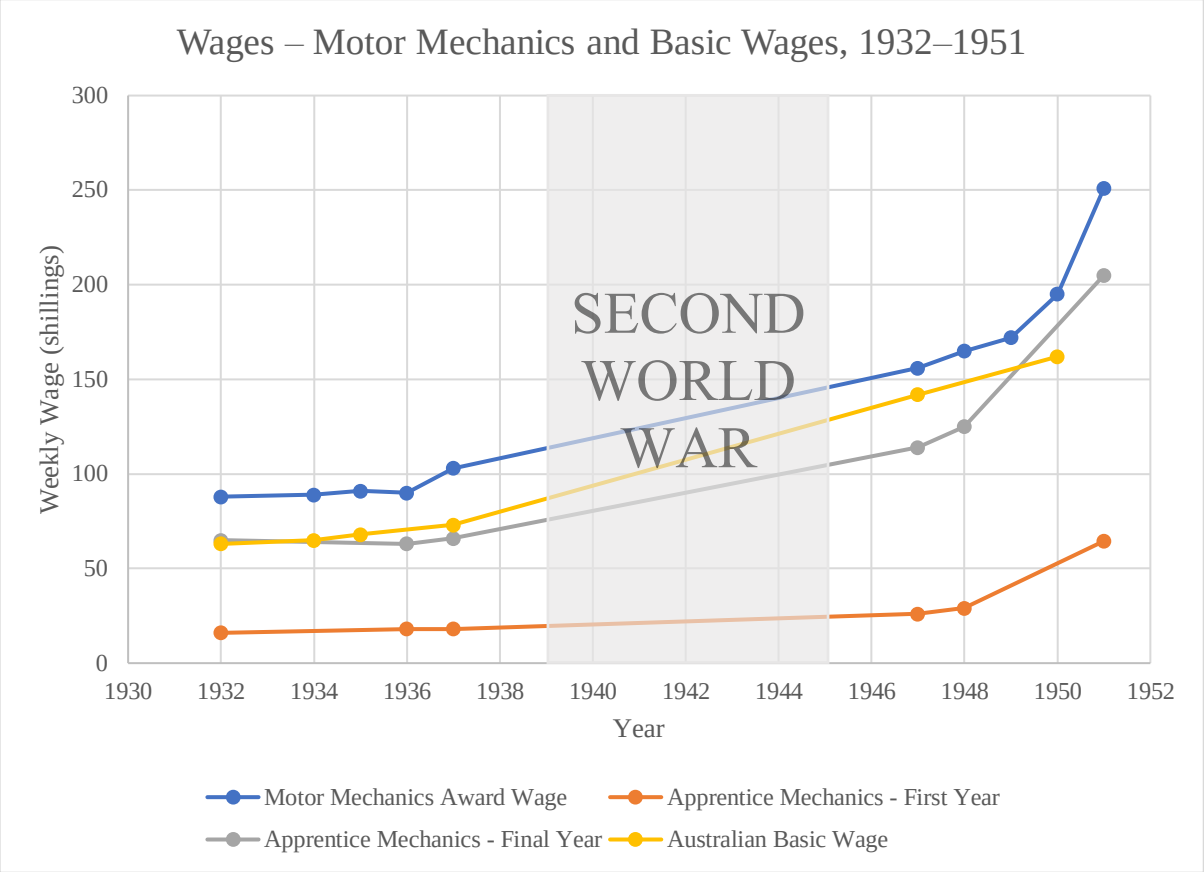

Figure 4 Australian Mechanic wages and Basic Wage 1932–1951. Sources: *Australian Automobile Trade Journal*, December 1932, 48; August 1936, 52; August 1937, 58; December 1947, 95; November 1948, 92; July 1949, 82; November 1950, 76; December 1951, 86; Fair Work Commission, 'The Australian Minimum Wage from 1906', *Waltzing Matilda and the Sunshine Harvester Factory*, 12 July 2019, https://www.fwc.gov.au/waltzing-matilda-and-the-sunshine-harvester-factory/historical-material/the-australian-minimum-wage.[94]

The labour crisis forced the motor industry to increase mechanics' wages. The award wage for mechanics was restored to the level of fitters in 1947. A corrective increase in the award wage finally followed in 1950, but by this time it was too late. The *Australian Automobile Trade Journal* confirmed that the shortage of mechanics had become a 'serious problem' for the automotive industry.[95] This shortage extended to apprentices. While motorist organisations were concerned that undertrained mechanics might flood the trade during the war, they welcomed any skilled servicemen who wanted to become mechanics upon their return to civilian life. The wages for those in their first year of an apprenticeship had barely

[94] Figures 4 and 14 draw upon wage data relating to Motor Mechanics working in Melbourne from the Engineering Award wage. The Award wage slightly differed from region to region, as rural mechanics often received a higher rate of pay than their urban counterparts. A Motor Mechanics wage relates to an adult mechanic who has completed an apprenticeship. They may or may not hold qualifications. Apprenticeships were either three or four years depending on the period, region and employer. If both are listed, these graphs have used the higher rate of pay. These graphs do not consider payments outside of the award system, nor do they consider wage theft. As a result, the actual pay mechanics received may have been higher or lower than these graphs indicate.

[95] 'Shortage of Mechanics', *Australian Automobile Trade Journal*, 1 February 1950, 22.

increased since 1932. The wages for final year apprentices were increased in 1947–1948 in an attempt to lure skilled young workers, but again this seemed too little too late (see Figure 4). In 1948, first-year glassblowing apprentices were being offered £4/11 a week, a fortune compared to the miserly £1/9 offered to first-year apprentice mechanics.[96]

While changes in the wages of mechanics occurred through union-negotiated increases to the award through the arbitration system, the leverage to push for higher wages were the result of the pressures put upon the trade by industrial mobility. These poor conditions were a result of the pre-war failure of mechanics to organise strong industrial representation. The issue of low pay had not been rectified because the conditions that created them still existed. Mechanics were still poorly represented in the arbitration system, relying on the Amalgamated Engineering Union to represent a predominantly non-unionised trade. This made mechanics vulnerable to exploitation. After the war, wages only increased once the shortage of skilled mechanics began to hurt businesses.

Mobility-Effort Bargaining and Motor Mechanics

Despite the poor wages they attracted immediately after the war, motor mechanics realised that labour shortages within their industry gave them bargaining power by the late 1940s. In 1933, there was one mechanic for every thirty-five cars on the road. By 1947, this had blown out to one mechanic for every forty-three cars.[97] When combined with poor wages, which did little to attract workers to the trade, this created the preconditions for market failure. With no alternative labour source for employers to use, mechanics possessed leverage to negotiate with their employers through mobility-effort bargaining.

Mobility-effort bargaining, as Chris Smith explains, is an industrial negotiating tactic where workers use the potential to leave their job as leverage to negotiate better wages. This tactic is unique in that it allows unorganised workers, at an individual level, to improve their conditions. Mobility-effort bargaining relies on a number of factors. First, there needs to be a demand for workers' skills beyond their current occupation. It also needs workers to have an established network to enable them to change employment; that is, if a worker is going to leave a job, they must have the financial security to do so, and the knowledge that work is available for them elsewhere.[98] There was minimal ability for mechanics to engage in

[96] Tatchell, 'Industrial Roundabout', 1 February 1949, 83.
[97] Australian Bureau of Statistics, 'Occupation', 1947; Australian Bureau of Statistics, 'Transport and Communication', *Year Book Australia*, no. 39 (1953): 177.
[98] Smith, 'The Double Indeterminacy of Labour Power', 391–99.

'mobility-effort bargaining' before the Second World War due to the organisation of employers. Garages were united through motor trader associations, which enforced solidarity amongst employers and prevented the poaching of mechanics. With no ability to effectively bargain through the formal arbitration system, or through mobility-effort bargaining, mechanics were easy to underpay and exploit. The war provided the ability for mechanics to form networks through the military, which gave them the potential to change jobs and industries.[99]

The post-war conditions of full employment and the demand for skilled engineering workers across the country allowed mechanics to successfully engage in mobility-effort bargaining. Mechanics could move with relative ease between different fields of engineering. Lawrence 'Darby' Murray, a mechanic who served with the Royal Australian Engineers, returned to Australia and worked in three jobs in different areas of engineering in three years. He initially returned to working as a mechanic with the Strathfield Timber Company, driving and repairing trucks in their fleet. Murray did not remain with Strathfield for long. With his mechanical skills, Murray was quickly recruited by the de Havilland Aircraft Company as an aeronautical mechanic, repairing aeroplanes. Again, Murray's employment was short. He only stayed there for six months before again moving to Glen Innis in northern New South Wales to work in the tin mining industry. When combined with his experiences of military engineering, Murray's mechanical training proved useful to the mining industry. Establishing himself as a mining engineer, he had become the manager of the Gibsonvale tin mine in central New South Wales by the early 1950s.[100]

Similar mobility-effort bargaining strategies were available for mechanics who remained working in garages. The Commonwealth Reconstruction Training Scheme helped new mechanics to enter the trade, but not in enough numbers to meet the demand. Simultaneously, the mechanics entering the trade as apprentices were replacing skilled mechanics. Any remaining experienced mechanics were highly sought after as a result.[101] By the turn of the decade, businesses were in fierce competition to retain skilled mechanics. Some garages in Victoria began poaching mechanics from competitors by offering them wages above the award rate.[102] The competition for skilled mechanics threatened to break the solidarity of employers within the industry. Attempting to combat this, the Victorian

[99] For the relationship between the military and social mobility, see Krauss, *Stratification, Class, and Conflict*, 47–48.
[100] Michael P.R. Pearson, 'Interview with Stephen Murray', 22 May 2020, unpublished author's notes.
[101] 'The Worker Becomes the Boss', *Australian Automobile Trade Journal,* 1 February 1948, 38–40; 'Shortage of Mechanics in Motor Trade', *Age,* 18 January 1951, 5.
[102] 'Have You Lost or Gained a Mechanic?', *Australian Automobile Trade Journal,* 1 March 1950, 21.

Automobile Chamber of Commerce demanded that its members stop competitive bidding for mechanics and instead pay only the award wage.[103] In this way, the relevant award worked to constrain mechanics' leverage in employment negotiations and restrict the growth of pay packets rather than acting as a floor to protect workers' wages.

Faced with these difficulties, another option for mechanics was to leave the official workplace and instead conduct repairs privately at home. 'Backyarding', as it was termed, represented a fall-back option for mechanics, either allowing them to work for themselves full-time or to supplement their wages after hours.[104] Since backyarding was illegal, there are no records as to exactly how many mechanics engaged in it, but records from the various state motor trader associations suggest that the practice increased as soldiers returned from war.[105] Harold O'Malley was one mechanic who took up backyarding after the war. He left Geraldton to serve as an armourer for the military in 1939 when the army took control of the garage where he had worked. With no garage and no mechanics, drivers in the area had no external means to service their cars. When O'Malley arrived back in Geraldton in 1945, he found thirteen cars left waiting for him in his front yard.[106] O'Malley did not begin working out of his backyard as an act of subversion against the trade but simply clearing the backlog of work within his town. The work proved highly profitable, nonetheless. Over the next decade, O'Malley made enough money working out of his shed to start his own garage and return to legal industry work.[107] The rise in award wages for mechanics and apprentices in 1951 (see Figure 4) was a response to mechanics' newfound bargaining power. Mobility-effort bargaining, including backyarding, allowed mechanics to improve their power by negotiating directly with their employers. Mobility-effort bargaining remained an individualised solution, however, and it did not readdress the structural issues that had caused wage stagnation within the automotive repair trade in the first place.

Conclusion

The Second World War temporarily improved the industrial bargaining position of mechanics. The overwhelming demand for skilled workers opened prospects that had not previously existed, even during the First World War. Mechanics had failed to organise the

[103] Ibid.
[104] 'Skittle the Backyarder on a Wet Wicket', *Australian Automobile Trade Journal*, 1 June 1948, 11.
[105] 'The Executive Committee Wants Your Ideas on – "What Should be done about Backyarders?"', *Queensland Motor Industry*, 1 March 1948, 23.
[106] Cahill, 'Oral History Interview with Harold Luke O'Malley'.
[107] Ibid.

trade in its earliest days, which left them unable to negotiate for reasonable wages and protections. Mechanics allowed the Amalgamated Engineering Union to negotiate wages on their behalf but did not join in sufficient numbers for the Union to vigorously represent them. This meant that mechanics were unable to defend their wages when they came under attack. Their position was further weakened by motorist and motor trader associations, which organised the educational qualifications defining mechanics. The result was that, after 1935, their wages and status were set below those of fitters, a low point for the trade.

The war changed this situation, offering a career trajectory for mechanics seeking to upskill. The demand for skilled technical workers and disorganisation amongst the military administrations created a system that used high wages to encourage skilled workers to enlist. Once enlisted, the military offered both technical training and practical experience well above that available to mechanics under regular peacetime conditions. Most importantly, this training and experience was recognised after the war. Mechanics who served in the military and worked in various areas of engineering were able to leverage their service to enter the civil engineering profession, which was better paid and was associated with middle-class status. This, in turn, provided new entry points into the mechanics' trade for returning service members who had entered the war as unskilled labourers. The war essentially allowed for upward mobility along the long ladder of engineering.

Mechanics who returned to the trade found it in crisis, paradoxically affected by both a skills shortage and stagnant wages. In response, mechanics who did not leave the trade negotiated improved wages and conditions by engaging in mobility-effort bargaining, moving to different garages or conducting their work in their own backyard. While these efforts benefited individuals such as O’Malley, they did nothing to improve the conditions which had weakened the position of the trade in the 1930s. The mechanics who remained in the trade were still unorganised, and unable to use their leverage over employers to enact longer-lasting change to the industry to preserve temporary improvements.

Chapter 4 – The Gendered Experiences of Mechanics during the Second World War

While the military recruited many mechanics, the automotive industry continued to operate at home. Wartime petrol rationing and movement restrictions made motoring more expensive and difficult. The memberships of motorist groups suffered a major downturn. Yet not everyone stopped driving. Some private motorists persisted regardless of the inconveniences, and essential industries in the form of medical and goods transportation continued. There remained a constant demand for maintenance workers throughout the war. The automotive industry looked for new sources of labour, and the increased demand for skilled workers in the military and the private sector opened opportunities for women to gain employment as mechanics and engineers. This briefly reversed interwar efforts to exclude women from the trade through the gender segregation of technical college education.

This chapter demonstrates the impact of the war on Australia's automotive industry and the motor mechanic trade. It goes on to explore how the high demand for skilled workers produced opportunities in the private sector for mechanics on the home front. The chapter then describes the experiences of women mechanics before turning to the fast-tracking of training for male mechanics who replaced those who enlisted in the military. I discuss the differences in opportunities for men and women, focusing particularly on the extra barriers encountered by women who wanted to move into professional engineering. The discussion concludes by considering the long-term implications of the gendering of mechanical repair work, setting up the focus on the decades after 1950 in the final three chapters of the thesis.

The Australian Automotive Industry during the Second World War

A number of automotive and military historians have highlighted the disruptions to the Australian automotive industry caused by the war. They show that war conditions compromised car sales because manufacturers transitioned into war-related work while the rest of the public was restricted economically.[1] As much as possible, the automotive industry sought to continue operations under these challenging conditions. Manufacturers and dealers kept up operations despite limited profitability in the face of import restrictions and the downturn in sales. The Australian government had taken steps during 1939 to secure its

[1] Davison, *Car Wars*, 2–3; Broomham, *On the Road*, 75; Conlon and Perkins, *Wheels and Deals*, 115; Michael McKernan, *Australians at Home: World War II* (Scoresby, Vic.: Five Mile Press, 2014), 88–89.

supplies of military equipment and manufacturing availability through the *Supply and Development Act* (1939) and the establishment of a Department of Supply.[2] This move to control the economy provided security for manufacturers in the automotive industry. General Motors and Ford began producing ammunition, weapons, armoured vehicles, and aeroplanes instead of cars for the civilian market.[3] This redirection of automotive manufacturing into the production of military equipment was vital for the war effort. As scientist David P. Mellor later recalled, 'without its automotive industry Australia would not have been able to build aircraft on a scale attained at the height of the war'.[4]

It was not only the automotive firms that were reshaped by the war. Motorist organisations were caught between their role in protecting motorists at home, while simultaneously accepting difficult wartime conditions and providing support to the war effort. During the First World War, motorist groups had organised transport around the country for Australian soldiers and donated vehicles for both military and medical use. The groups did the same during the Second World War but also offered the technical training discussed later in this chapter.[5] These organisations' ability to offer these services suffered from a large drop in members. The membership of the NRMA, for example, fell from a peak of 66,936 in 1940 to 53,668 in 1943.[6]

The difficulties faced by motorist organisations meant that most petitioned state governments for support. There was little uniformity in what these organisations sought, however: each state took a different stance depending on the economic position of the local automotive industry. The RACV petitioned the Victorian government to subcontract garages to conduct emergency maintenance work. This measure was adopted in 1941 to assist Victorian garages which were overstaffed.[7] But the situation was the opposite in New South Wales. In 1942, the NRMA called for the government to return military mechanics to civilian life so they could fill the labour shortages in garages.[8] Petrol rationing was the one issue that unified motorist organisations across all states. Despite vehement opposition by the

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[2] Mellor, *The Role of Science and Industry*, 31–33.
[3] Buckley and Wheelwright, *False Paradise*, 159; Graham McDonagh, 'Historical Overview of the Collision Repair Industry in Australia and Transfers of Power through Rationalization', PhD thesis, University of South Australia (2011): 51–52.
[4] Mellor, *The Role of Science and Industry*, 394.
[5] 'N.R.M.A. Weight in National Effort', *Open Road*, 11 July 1940, 1; 'Members' War Effort – Transport of Evacuees', *Open Road*, 22 August 1940, 2; 'Five Trailer Garages Presented to Army Chiefs', *Radiator*, 16 January 1941, 1.
[6] 'N.R.M.A.'s Service in a Difficult Year', *Open Road*, 16 October 1941, 1; 'N.R.M.A. Annual Report: Service to Motorists in Difficult Time', *Open Road*, 21 October 1943, 1.
[7] 'Garages and War Work', *Radiator*, 15 November 1940, 4; 'Enlist the Garages', *Radiator*, 15 June 1941, 4; 'Country Garages Now Doing War Work', *Radiator*, 15 September 1941, 2.
[8] H.I. Johnson, 'Wheels of the Industry Must Keep Moving', *Open Road*, 18 June 1942, 1.

automotive industry, the federal government introduced rationing in October 1940.[9] Even stricter rationing was introduced in 1941 and 1942, which also restricted the movements of motorists beyond the limits of their city.[10] For some, it was all too much. As Graeme Davison explains, 'many car owners simply garaged their vehicles, hoisting them on blocks and taking off the wheels until the war was over'.[11]

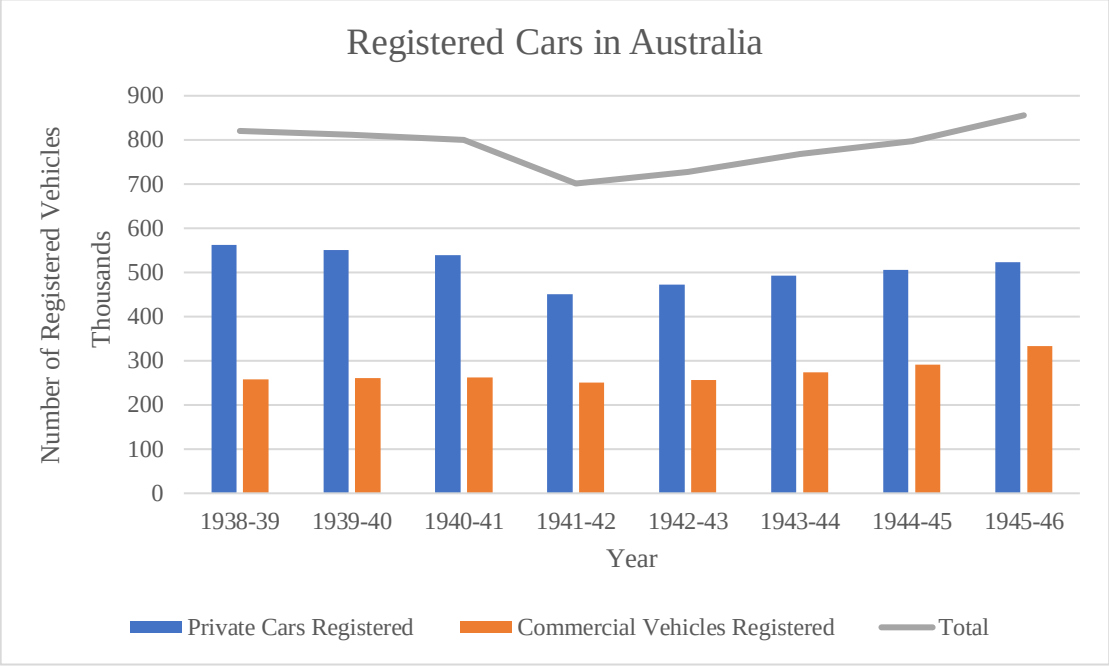

Figure 5 Total Motor Vehicles Registered in Australia, excluding motorcycles, 1938–1946. Sources: *Year Book Australia 1942–1943*, 129; *Year Book Australia 1944–1945*, 158; *Year Book Australia 1946–1947*, 176.

[9] Geoffrey Blainey, *The Tyranny of Distance* (Melbourne: Sun Books, 1966), 311–13; Australian Bureau of Statistics, 'Transport and Communication' *Year Book Australia*, no. 36 (1945): 160; 'NRMA Service: An Appeal', *Open Road*, 20 February 1941, 1.
[10] Tuckey, *On Solid Ground*, 38–39; Australian Bureau of Statistics, 'Transport and Communication' (1945): 161. Further discussions on the details and political fallout of petrol rationing can be found in Lorna Froude, 'Petrol Rationing in Australia during the Second World War', *Journal of the Australian War Memorial* 36 (2002): https://web.archive.org/web/20200328183059/https://www.awm.gov.au/articles/journal/j36/petrol.
[11] Davison, *Car Wars*, 2.

Years	Total number of cars registered in Australia	Percentage of 1938–39 total
1938–39	820,296	--
1939–40	811,527	-1.07%
1940–41	800,624	-2.40%
1941–42	701,366	-14.50%
1942–43	727,675	-11.29%
1943–44	767,660	-6.42%
1944–45	796,743	-2.87%
1945–46	855,744	+4.32%

Figure 6 Percentage of total motor vehicles registered in Australia 1938–1946, excluding motorcycles, in comparison to total vehicles registered in 1938–1939. Sources: See Figure 5.

The decline in motoring caused by the restrictive wartime conditions can be seen in the number of cars registered in Australia. Privately-owned cars, rather than businesses, were responsible for the decline. While public transport usage increased significantly during the war, commercial vehicle usage slowly increased (see Figures 5 and 6).[12] Changes in the total number of vehicles registered did not reflect how many new vehicles were being purchased. New vehicle purchases declined dramatically during the war due to import restrictions, which caused a long-term downturn in the market (see Figure 7). Drivers of both private and commercial vehicles thus relied extensively on their older cars and trucks. Over 20,000 older cars were re-registered every year from 1942–43 until the end of the war as motorists returned to the road (see Figure 8). These older cars were more likely to require maintenance to keep them running, creating extra demand for automotive repair.

[12] Davison, *Car Wars*, 2–3; Wray Vamplew and Ian McLean, 'Transport and Communications', in *Australians – Historical Statistics*, ed. Wray Vamplew (Broadway, NSW: Fairfax, Syme & Weldon Associates, 1987), 168. Australian roads remained dangerous even with the reduced number of cars. According to Graeme Davison (*Car Wars*, 143) '65,000 more Australians had been killed or injured on the roads between 1939 and 1946 than had been killed or injured in the war'.

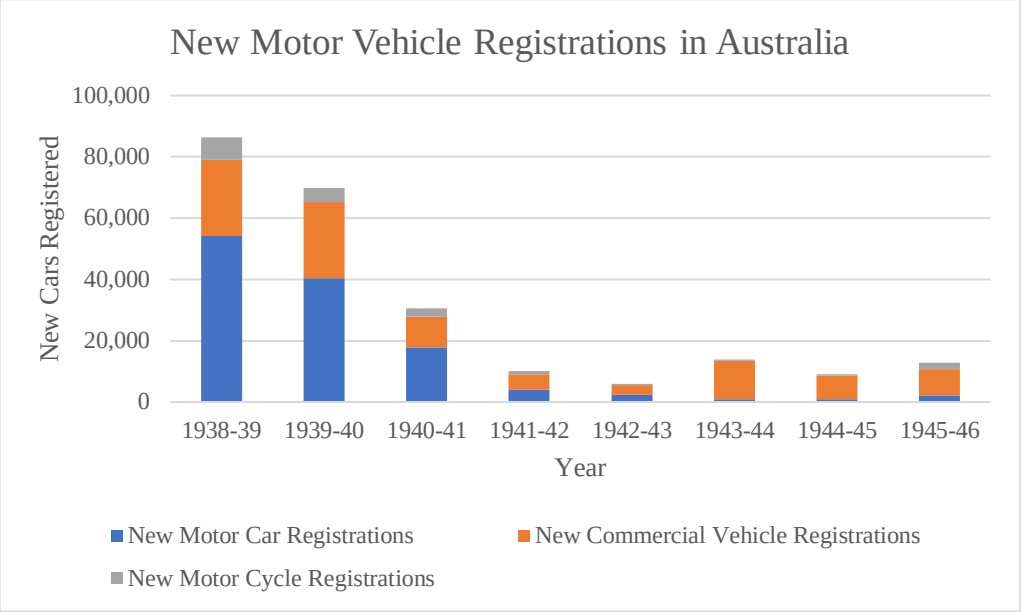

Figure 7 New Motor Vehicle Registrations in Australia, excluding Defence Service vehicles, 1938–39 to 1945–46. Sources: *Year Book Australia 1942–1943*, 131; *Year Book Australia 1944–1945*, 159; *Year Book Australia 1946–1947*, 177.

Years	Total growth of cars registered in Australia	Total number of new cars registered	Re-registration of old cars
1942–43	26,309	5,444	20,865
1943–44	39,985	13,460	26,525
1944–45	29,083	8,553	20,530
1945–46	59,001	10,809	48,192

Figure 8 Comparison of Vehicles Registered in Australia by New Vehicles and Re-registering of Old Vehicles after the resumption of market growth in 1942–43. Sources: See Figures 5 and 7.

The Motor Mechanic Trade during the Second World War

While the downturn in car sales affected the automotive industry, mechanics were still needed to keep an ageing fleet of vehicles running. Prior to the restrictions on petrol and movement, declines in car usage had already begun to affect garages. C.A. Gregory, President of the Service Station Association of New South Wales, observed in May 1940 that petrol sales had dropped between 25–30 per cent in comparison to pre-war consumption.[13] In response, garages began to restrict their trading hours to save on the cost of wages. This put mechanics

[13] 'Garage Trading Hours – Reduction Favoured by Operators', *Sydney Morning Herald*, 22 May 1940, 14.

in a tight position – while Gregory was adamant that garages still needed skilled mechanics to operate, he acknowledged that the restriction of hours 'will have the effect of making motor mechanics and fitters available for the Air Force'.[14]

Gregory was correct that the downturn of work in garages played a role in many a mechanic's decision to enlist in the military. But this downturn of work was only temporary. The departure of so many to the war created a shortage of skilled civilian workers, counterbalancing the restrictions in working hours. Wartime conditions also created a demand for more specialist car modifications. In a bid to avoid rationing, some motorists began to modify their engines to accept diluted fuel or even had their engines converted from being fuelled by petrol to gas.[15] Motorist organisations encouraged this conversion after the introduction of strict rationing, but skilled mechanics were needed to make the change.[16]

War restrictions created further work for mechanics. Cars that were driven by civilians throughout the war needed to be checked by mechanics to make sure they met government requirements. Motorists had to have masks fitted to their car lights after lighting restrictions were introduced, for example, and these needed to be fitted and removed by a mechanic.[17] Since not enough mechanics were available, motorist organisations distributed instructional guides to help car owners conduct basic maintenance and modifications themselves, seeing this as a temporary measure to reduce pressure on short-staffed garages.[18] The NRMA warned motorists that mechanics were 'determined to take every advantage of wartime condition by overcharging, but also pleaded with its members to 'grin and bear' the increased costs of motoring as an effect of the war.[19]

By 1942, motorist organisations argued that motor mechanics should be protected as an essential service as too many had enlisted in the military. Organisations such as the RACV claimed that mass enlistment of mechanics without replacements threatened Australia's transport network.[20] The RACV claimed that import restrictions on motor vehicles were

[14] Ibid; 'No Pressure on Mechanics', *Daily News (Sydney)*, 22 May 1940, 5.
[15] 'Cutting down your fuel costs', *Open Road*, 31 October 1940, 3; Australian Bureau of Statistics, 'Transport and Communication' (1945): 162; 'Producer Gas and Mechanics', *Open Road*, 19 June 1941, 4.
[16] 'A Spotlight on Motoring Affairs of the Day', *Open Road*, 19 June 1941, 4; 'Help Wanted to Train Mechanics', *Open Road*, 12 September 1941, 4.
[17] Bill Tuckey, *Australians and Their Cars: 100 Years of Motoring* (Sydney: Focus Publishing, 2003), 35; 'Brighter Car Lighting – Labour Problem', *Sydney Morning Herald*, 27 June 1942, 8; Broomham, *On the Road*, 84–85.
[18] 'Car Reconditioning: Home-Work by Amateur Mechanics', *Open Road*, 15 May 1941, 8; 'Wheels of Industry Must Keep Moving', *Open Road*, 18 June 1942, 1.
[19] 'Repair Service Problem', *Open Road*, 21 October 1943, 4.
[20] 'A Spotlight on Motoring Affairs of the Day', *Open Road*, 21 May 1942, 3; 'Wheels of Industry Must Keep Moving', 1.

similarly leading towards 'trouble and chaos'.[21] The RACV's representatives argued that Australia's ageing trucks were regularly breaking down and that other transport networks were likely to become overwhelmed if there continued to be restrictions on importing new vehicles at the same time as a shortage of civilian mechanics.[22]

Instead of heeding motorist organisations' calls to release mechanics from military service, the Australian government granted certain garages 'protected' status. Workers in protected garages were exempt from military service. In return, these garages had to attend to government and military vehicles before privately owned cars. By mid-1942, there were 800 protected garages in New South Wales, and 530 in Victoria. In comparison, 900 other garages without protected status were still operating in Victoria in November 1942.[23] Unprotected garages were forced to operate with shorter opening hours, but this was not enough to relieve the demand for mechanics. While the NRMA received less than half the number of calls for assistance in 1942–43 compared to the previous two years (see Figure 9), it was still unable to meet demand due to how few mechanics were available.[24]

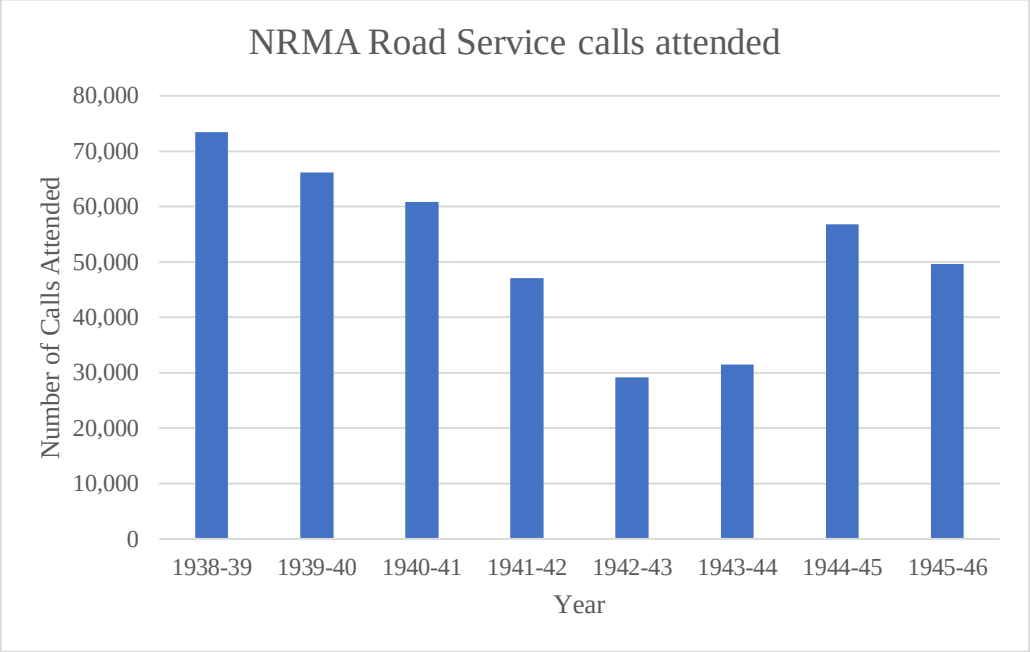

Figure 9 Number of calls attended by NRMA Road Service, 1939–40 to 1945–46. Source: Wilkinson, *The NRMA Story*, 168, 176, 182, 193, 202, 209, 215, 223.

[21] 'Our Motor Industry – Reduced to a Mere Skeleton', *Radiator*, 16 March 1942, 4; 'Skilled Men in Army – Making Use of Their Services', *Radiator*, 15 June 1942, 6.
[22] 'Our Motor Industry',' 4; 'Skilled Men in Army', 6.
[23] '800 Garages "Protected"', *Sun (Sydney)*, 18 July 1942, 2; 'Repair to Private Cars – Prohibited in "Protected" Garages', *Radiator*, 16 November 1942, 3.
[24] 'N.R.M.A. Service in Critical Times', *Open Road*, 16 April 1942, 1.

Image 20 Drivers from Army Headquarters, D. Austin and D. Pelling of A.W.A.S. 1942–1944. H98.105/536. State Library of Victoria, Melbourne.

The mobilisation of women at home was critical to the war effort. During the First World War, women had become involved in the automotive industry at home by organising civilian schemes to conduct medical and transport work. Groups such as the Women's Emergency Corp, the Loyal Service Bureau, and the Women's Army Auxiliary Corp trained women to serve as drivers and motor mechanics on the home front.[25] Women engaged in similar yet more extensive work during the Second World War. In the case of both hostilities, class divisions determined what work women conducted. Elite and middle-class women were more inclined to engage in volunteering work, while working-class women were employed as labourers through factories and workshops.[26]

Historian Rachel Harris has noted that women's volunteer organisations emphasised femininity through maternal values and acceptable forms of female labour such as knitting, sewing and baking. There were obvious differences in the experiences of women who engaged in this work and those who joined 'masculine industries' – yet even in the latter case,

[25] 'Women in Men's Places', *Age*, 13 March 1915, 4; 'Women's Response', *Daily Telegraph,* 25 August 1917, 10; 'Soldier's Wife Leads the Way', *Herald,* 5 March 1918, 4. For a broader discussion of Australian women at work during the First World War, see Damousi, 'Marching to Different Drums', 350–61 and Katie Wood, Pioneer Girls and Flappers: Australia's Early Female Ammunition Workers', *Labour History* 117 (2019): 23–46.
[26] Kay Saunders and Geoffrey Bolton, 'Girdled for War: Women's Mobilisations in World War Two', in *Gender Relations in Australia,* 378–79.

women were encouraged to engage in feminine activities. At the Hendon Ammunition Factory, for example, female employees were encouraged to participate in beauty pageants as fund raisers for the war.[27]

Women mechanics were trained by both the military and emergency services. The women's auxiliary services were founded in 1941 to relieve men from essential, non-combat positions. The key organisations here were the Australian Women's Army Service (AWAS) and the Women's Auxiliary Australian Air Force.[28] The AWAS attempted to recruit a range of women across class divides by promoting itself as a way to 'escape dull factory work or delay a life confined by domesticity'. They were careful to emphasise the femininity of their recruits despite the 'dirty work' they conducted.[29] Women mechanics in the AWAS were trained to work on a wide variety of vehicles, from cars to trucks and tanks. Women drivers for the AWAS were also trained to conduct basic maintenance on cars.[30]

Outside of military service, women mechanics were also trained by the National Emergency Services (NES). Founded in 1939 as a volunteer organisation to supervise civilian defence measures, the NES Ambulance and Transport service at its peak operated a fleet of over eight thousand vehicles, maintained by a staff of three thousand volunteers.[31] It recruited women to serve as ambulance drivers, but also needed mechanics to maintain the large fleet of vehicles. The NRMA used their established connections with the Sydney Technical College to provide a motor mechanics course for the NES. The course began in late 1939 and consisted of twelve two-hour lectures and an examination.[32] The NRMA was taken aback by just how many Sydney women signed up to be trained as mechanics. In January 1940, 418

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[27] Rachel Harris, '"Armed with Glamour and Collection Tins": Femininity and Voluntary Work in Wartime South Australia, 1939–45', *Labour History* 117 (2019): 116–19, 130–31. See also Kate Darian-Smith, *On the Homefront: Melbourne in Wartime 1939–1945* (Melbourne: Oxford University Press, 1990), 55.
[28] Kate Darian-Smith, 'World War 2 and Post-War Reconstruction, 1939–49', in *The Cambridge History of Australia* in *The Cambridge History of Australia*, eds. Alison Bashford and Stuart Macintyre (Port Melbourne: Cambridge University Press, 2013), 100.
[29] Christine Appleyard, 'Civilising Forces: Class, Gender and the Australian Women's Army Service 1941–1947', MA thesis, University of London (2019): 111; Grace Johansen, 'The AWAS: A Social History of the Australian Women's Army Service During the Second World War', Honours thesis, Central Queensland University (1996): 48–54.
[30] Ann Howard, *You'll Be Sorry!* (Sydney: Tarka Publishing, 1990), 124, 130–32; Lorna Staub Staude, *Memoirs of an AWAS Driver* (Naracoorte, SA: Naracoorte Herald, 1989), 32–33; Eileen Tucker, *We Answered the Call* (Perth: Vanguard Press, 1991), 46.
[31] State Records of New South Wales, 'National Emergency Services', in *Concise Guide to the State Archives*, 3rd ed., L–O, https://webarchive.nla.gov.au/awa/20040915144809/http://pandora.nla.gov.au/pan/23783/20020225-0000/www.records.nsw.gov.au/cguide/lo/nes.htm; 'NES in Figures', *NES Action*, April–May 1944, 25.
[32] 'Women Also Serve: Girls Prove Transport Skill', *Australian Women's Weekly*, 10 February 1940, 30.

women passed the initial examinations, as did an additional 88 by September.[33] Women who sought entry varied in skill level and experience. A number did not have a driver's licence and lied to gain entry.[34] The NRMA were quick to hail the successes of these women. With a pass rate of 93 per cent for the January examinations, *Open Road* declared that 'the male die-hard who sticks to his guns and insists that women will never make good practical motorists has something to explain'. The NRMA's chief engineer went further. He insisted that the NES examinations were more difficult than the regular NRMA test for their 'male mechanics'.[35]

For all this celebration of female mechanics, gendered prejudice quickly undermined the acceptance of female workers in the motoring world. Both the NRMA and the Sydney Technical College sought to restrict women to emergency services roles rather than recognising their new training and allowing them to become motor mechanics outright.[36] As in the 1920s, rules relating to the recognition of training qualifications were key to the way these organisations' limited women's opportunities. In October 1940, just a month after the completion of the women's training course, the NRMA and the Sydney Technical College announced changes to the motor mechanic course. The key change was a new examination process restricted to students with five years of practical experience, with an additional cost £2/2/6 (roughly $183 in today's terms). The examination was introduced deliberately to exclude the newly graduated women from using their qualifications beyond emergency wartime service.[37]

The use of formal qualifications to exclude women from the trade was similar to the exclusion that occurred in the 1920s, but wartime conditions produced a demand for skilled labour that women were able to exploit regardless of whether their qualifications were acknowledged. Many women who trained prior to the new qualification standards in October 1940 were already conducting mechanical repair work. The NRMA's effort to restrict women mechanics clashed with how the NES portrayed its workers. In its magazine, *Action*, the NES described its women workers as mechanics long after the NRMA insisted on calling them ambulance drivers.[38] This was because the women working on ambulances for the NES were

[33] 'NRMA Women's Transport Auxiliary Founded', *Open Road*, 25 January 1940, 11; 'Women's Transport Corps', *Open Road*, 2 May 1940, 2; 'Results of the N.E.S. Exam', *Open Road*, 25 January 1940, 11; 'The NRMA's Year: Gratifying Position', *Open Road*, 5 September 1940, 1.
[34] 'Women Ambulance Drivers Learn Mechanics', *Sydney Morning Herald*, 2 August 1939, 14; Georgine Clarsen, in Davis, *Wide Open Road* 96.
[35] 'Results of the N.E.S. Exam' 11. See also Broomham, *On the Road*, 72.
[36] 'Exam for Motor Mechanics', *Open Road*, 31 October 1940, 2.
[37] Ibid.
[38] 'Women's Ambulance Drivers', *NES Action*, January 1943, 7; 'The NRMA's Year: Gratifying Position', *Open Road*, 5 September 1940, 1.

obviously more than just drivers. Their mechanical skills were so in demand that both private garages and individual motorists had been approaching women to conduct repairs on their vehicles.[39] This led to the NES issuing a statement in 1942 warning its women against engaging in private repair work without authorisation from headquarters.

Image 21 Three women fixing a car in Melbourne during World War II. 1942. MM124990. Museums Victoria Collections, Melbourne.

The NRMA's deliberate attempt to limit the recognition of female mechanics was part of a larger reaction to the entry of women into the Australian workforce. Charles Fox and Marilyn Lake note that patriarchal employers perceived this as a 'mass invasion' of male spaces.[40] Employers had to accept women workers in the emergency conditions of the war, which in turn provoked the unions to organise them. The Amalgamated Engineering Union only began accepting female members in 1942, following their British counterparts. The Union celebrated this as 'a new chapter' in its history.[41] In her thesis on Australian women working in wartime metalworking industries, Beverley Symons has disputed this rosy image depicted by the Union. She argues that 'the [Union] resisted women's entry into its ranks as long as possible until it had no alternative but to accept them' – and even then, the Union placed 'strict controls on the conditions of their entry and exit, in order to protect male

[39] 'Voice of the NES', *NES Action*, March 1943, 24.
[40] Fox and Lake (eds.), *Australians at Work*, 147. See also Cockburn, *Brothers*, 36.
[41] Amalgamated Engineering Union, *Women in the Engineering Industry* (Sydney: The Worker Trustees, 1943), i–ii.

members' skills, jobs and pay rates'.[42] This depiction of the Union's resistance to women workers is consistent with the way the Amalgamated Engineering Union had treated female mechanics for decades. In a 1929 hearing in the Western Australian Arbitration Court, Union officials made it clear that they did not acknowledge any women working as mechanics, nor did they want women engaged in any of the engineering trades.[43]

The key reason the Amalgamated Engineering Union included women workers during the war was to guarantee the status and pay of its male members. Union members remained concerned that women employed during the war would be kept on at reduced rates once it ended.[44] As late as 1941, the Union opposed the introduction of women workers into engineering sectors, arguing that this should be 'a last resort'.[45] Once it became clear that it would be unable to prevent women from working in the engineering sector, the Union pivoted its position to prevent this undercutting of wages. Union officials hired equal pay campaigner Muriel Heagney to work with the government-established Women's Employment Board. The engineering sector campaigned strongly for women to receive equal pay but had to settle for female workers to receive 90 per cent of male wages covered under the Metal Trades Award.[46] The Union's official line was that women themselves would decide whether or not to retain their jobs after the war, but that it would prioritise men returning from war for any post-war employment.[47]

Restricting opportunities for women in the metalworking trades helped entrench gender norms that positioned women as homemakers rather than breadwinners. 'We do not want our servicewomen to become hard-faced and tough', claimed E.C. McGrath, the federal secretary of the Printing Employees' Union. 'After the war we want them to remain women and set up homes just as they would have done had there been no war'.[48] McGrath feared that the permanent employment of women in 'male' positions would disrupt the familiar gender

[42] Beverley Symons, 'Challenging and Maintaining the Traditional Gender Order: Labour Movement Responses to Women Workers in the Metal Industry, and to Equal Pay, During World War II', PhD thesis, University of Wollongong (1997): 257.
[43] 'No Women Wanted in Engineering Trade' *Daily News (Perth)*, 30 October 1929, 7.
[44] Amalgamated Engineering Union, *Women in the Engineering Industry*, 7.
[45] H. Fountain, quoted in Symons, 'Challenging and Maintaining the Traditional Gender Order', 261.
[46] Constance Larmour, 'Women's Wages and the WEB', *Labour History* 29 (1975): 53–54; Amalgamated Engineering Union, *Women in the Engineering Industry*, ii, 1, 7. For more information on the disparity between men and women's pay during the Second World War, and the actions of the Women's Employment Board, see Jocelynne A. Scutt, 'Inequality Before the Law: Gender, Arbitration and Wages', in *Gender Relations in Australia*, 271–75.
[47] Amalgamated Engineering Union, *Women in the Engineering Industry*, 5, 7; Symons, 'Challenging and Maintaining the Traditional Gender Order', 261, 263, 265–66; Johansen, 'The AWAS', 60–62.
[48] McGrath was here quoting Lady Zara Hore-Ruthven, wife of then Governor General the First Earl of Gowrie: *Australian Quarterly* XV, 2 June 1943, 45, reprinted in *Australians at Work*, 177.

roles of traditional households, causing social unrest and threatening male employment.[49] Similar objections were raised against women working as motor mechanics. In 1942, officials from the Amalgamated Engineering Union told the Women's Employment Board that women were 'unsuitable' as mechanics due to 'the dirty nature of the work' in spite of its engagement with female workers.[50] The Union's representatives defended this position under the guise of 'chivalry', but the Women's Employment Board rejected their representations, allowing garages to employ women as mechanics.[51]

While the NRMA and Amalgamated Engineering Union were unable to stop women from working in automotive repair during the war, female mechanics were constantly reminded that their employment was temporary. This portrayal was fostered and enforced both in the workforce and in fictional depictions of the period. Magazines such as the *Australian Women's Weekly* played an important role in emphasising the change in Australia's labour force as a temporary response to the wartime emergency.[52] Short stories published in the *Weekly*, such as Ken Mackenzie's romantic 'Camouflage for Two', portrayed women working as mechanics and crane drivers as part of the absurdities created by wartime conditions – 'a bloke sees some funny things in wartime'.[53] A 'girl mechanic' was also depicted as abnormal enough to be remarked upon in this story. Such cues helped create an expectation that women would be removed from 'male work' after the war, and a combination of patriarchal union interventions and employer prejudices ensured this removal.

[49] E.C. McGrath, reprinted in *Australians at Work*, 177; Fox and Lake (eds.), *Australians at Work*, 147.
[50] 'Can Employ Women Motor Mechanics', *Newcastle Sun*, 24 December 1942, 3.
[51] 'Is It Chivalrous for Women to Work the Dirt?', *Herald*, 23 December 1942, 7; 'Can Employ Women Motor Mechanics', 3.
[52] Penelope Johnson, 'Gender, Class and Work: The Council of Action for Equal Pay and the Equal Pay Campaign in Australia During World War II', *Labour History* 50 (1986): 138.
[53] Ken Mackenzie, 'Camouflage for Two', *Australian Women's Weekly*, 18 December 1943, 2. See also Johansen, 'The AWAS', 44–59.

Image 22 National Emergency Service bus maintenance. 1940. H99.201/5067. State Library of Victoria, Melbourne.

The Uses, and Limitations, of Fast-Tracking Male Apprentices

By refusing to recognise female mechanics, the NRMA was left with the greater issue of a declining number of workers. In 1941, they turned to promoting new male apprentices to replace the male mechanics who had left the garages to serve in the military.[54] Promoting young male apprentices allowed the trade to limit the number of female mechanics. These fast-tracked apprenticeships offered young men opportunities for rapid advancement in a growing field but left the trade with a cohort of poorly trained mechanics by the end of the war. There was no guarantee that skilled apprentices were long-term replacements for garages. The military continued to recruit skilled workers throughout the war, including these young apprentice mechanics.[55]

An example of how the new fast-tracked apprenticeships affected those garages can be found in the training of future champion Formula 1 driver, Jack Brabham. He credited his

[54] 'Training Our New Mechanics', *Open Road*, 15 May 1941, 1.
[55] 'Eliminating Bottlenecks – A School for Motor Mechanics', *Building and Engineering*, 24 November 1942, 61; 'Manpower Problems in the Motor Trade', *Open Road*, 15 February 1945, 1.

entry into the motor industry to the labour shortages during the war. He was thirteen years of age when the war broke out and initially started an apprenticeship as a fitter and turner. When his apprenticeship taught him little, Brabham began exploring his options.[56] Hearing that a Hurstville garage frequented by his father was short-staffed, he applied to be taken on as an apprentice. As the only apprentice in an overworked garage, Brabham was forced to learn fast. Although supervised, he was given far more independence and responsibility than that offered to pre-war apprentices.[57] Brabham was even forced to make replacement parts. 'Improvisation, I learnt, was the cornerstone of a good mechanic', he later recalled.[58] Brabham was particularly equipped to improvise as he had already learnt 'the rudiments of carpentry, metal work, blacksmithing, mechanical drawing and a little basic chemistry' during three years at a trade school.[59] These all-around engineering skills were still taught to mechanics in rural garages. They were rare in urban service stations, however, making Brabham a prized apprentice.[60]

Brabham's experiences underline the training available to teenage boys during the war. Instead of reducing the labour shortage in garages, however, apprenticeship programmes created a new source of engineering recruits for the military. While undertaking his apprenticeship, Brabham also took the opportunity to attend automotive engineering classes and, by 1944, was a recognised mechanic with engineering qualifications. Upon turning eighteen, he enlisted in the RAAF to serve in the final years of the war. He had initially wanted to become a pilot but was grounded and employed in aircraft maintenance work as soon as his mechanical skills were discovered.[61]

While Brabham's fast-tracked apprenticeship was a success story, the wider experiences of young apprentices differed deeply. The opportunities provided by a fast-tracked apprenticeship offered career and skill progression, but it also came with dangers. Many apprentices were exploited by employers and not adequately trained. By the end of the war, the Amalgamated Engineering Union began taking garages to court for inadequate training. The exploitation of apprentices had progressed so far that one Perth company was employing apprentice motor mechanics despite not having any equipment for apprentices to learn with.[62] Towards the end of the war, the even greater than usual variation in skill affected

[56] Jack Brabham, *Jack Brabham's Motor Racing Book* (London: Frederick Muller Limited, 1960), 7–8.
[57] Ibid., 9–10.
[58] Ibid., 8–9.
[59] Ibid.
[60] Cahill, 'Oral History Interview with Harold Luke O'Malley'.
[61] Brabham, *Jack Brabham's Motor Racing Book*, 10; Brabham, in Davis, *Wide Open Road*, 97.
[62] 'Apprentice Mechanic Not Properly Trained', *Daily News (Perth)*, 11 September 1945, 7.

the quality of service that motorists received. The NRMA began calling for the release of skilled mechanics from the military in 1944 because mistakes by younger mechanics were immobilising cars.[63] As peacetime conditions returned, both technical colleges and unions began pressing their concerns that wartime apprenticeships were preventing the trade from being able to guarantee the skill of new mechanics. These concerns were the catalyst for an effort to introduce formalised licensing schemes and strict examinations for apprentices.[64]

The Gendered Differences of Opportunities in Engineering

The increased demand for automotive work throughout the war created competition among employers in the automotive industry to obtain skilled mechanics. The upskilling of mechanics and opportunities in aeronautical engineering, discussed in the previous chapter, were not just limited to mechanics engaged in military operations. The mass recruitment of mechanics and engineers into the military also created shortages in civil aviation. This, in turn, created opportunities for skilled workers back at home, even if only for the duration of the war. This was the case for Helen Hobley, the female mechanic hailing from Roper River (mentioned in Chapter 2) who became a minor celebrity in Perth. Hobley moved to Melbourne in 1940 and married Francis Litchfield, an infantryman in the 2nd Australian Imperial Force.[65] After her husband was deployed to Darwin, Helen Hobley (I will continue to refer to her by maiden name to avoid confusion) considered joining the Women's Auxiliary Australian Air Force. This did not happen, however, as colleagues persuaded her to stick to working outside of the military due to the opportunities to work in engineering appearing at the time.

Hobley took up a position at an aircraft engineering works factory in Melbourne, initially working as a factory hand in the repair and reconstruction section.[66] Clearly, however, she had greater ambitions. She undertook further studies in 1941 at the Melbourne Technical College 'in tool making and precision work'.[67] Her knowledge and experience attracted attention from aeronautical engineers in the factory, allowing her to transfer from construction to research. 'Any other time, I would have jumped at the chance – it would have

[63] 'Manpower for Repairs', *Open Road*, 17 August 1944, 1.
[64] Danks, 'The Apprentice and the Technical College', 56; 'Mechanics Support Licensing Plan', *Daily News (Perth)*, 12 March 1945, 5; 'Test for Mechanics', *The West Australian*, 26 September 1946, 13; 'A-Grade Board of Examiners', *Australian Automobile Trade Journal*, 1 September 1948, 67.
[65] 'Wedding Bells – Litchfield-Hobley', *Northern Standard*, 20 September 1940, 13.
[66] Litchfield, *Roper River Jack*, 229.
[67] 'Technical Training for Women – Increased Courses Available', *Age*, 12 February 1941, 5.

been a definite step up the ladder of my dreams' she later wrote, 'but I had to say "Sorry, I can't take it. I am expecting a baby." No maternity leave in those days. So I did not become an aircraft designer – I became a mum instead'.[68]

Although she was unable to pursue the opportunity, the fact that Hobley was effectively invited to become an aeronautical engineer and aircraft designer illustrates the prospects available to mechanics during the Second World War. Economic historian Ian McLean describes the aeronautical manufacturing industry as 'one of the most complicated examples of precision engineering' Australia had seen.[69] Offering a position to help design military fighter planes to a female mechanic who, a few years earlier, had never seen a car, demonstrates just how blurred the boundary between mechanics and engineers had become throughout the war.

Hobley's story, however, was exceptional. She observed that 'there still seems to be a certain prejudice against women in engineering shops,' despite more women being trained as engineers.[70] Her attempts to find employment after the war demonstrates how women's skills were excluded when peacetime resumed. Hobley moved to Sydney shortly after having her baby and returned to work in a garage after the war. In this post-war period, however, her mechanical skills were disregarded, and she was limited to working as a clerk.[71] She would later note that, rather than working on real aeroplanes, she had to settle to making model ones instead.[72]

The gendered disparity between opportunities in engineering becomes even clearer when one compares Hobley's experiences to that of Jack Roy, a mechanic from Albury in southern New South Wales. He moved to Melbourne in 1939 after completing an 'examination in aircraft ground engineering'.[73] With the war also causing a shortage of aeronautical engineers, Roy was recruited by Ansett Airlines to work on the maintenance and repair of their fleet. His experience working as an aeronautical engineer throughout the war was recognised by Ansett, where he worked for the next thirty years. There Roy worked his way up to Engineering Manager for the airline and was awarded an Order of the British Empire for his services to aviation in June 1961.[74] Roy's permanent departure from the trade

[68] Litchfield, *Roper River Jack*, 230.
[69] McLean, *Why Australia Prospered*, 180.
[70] Litchfield, *Roper River Jack*, 230.
[71] Ibid.
[72] Ibid.
[73] 'About People', *Border Morning Mail*, 6 November 1939, 2.
[74] Personal correspondence with Fairlie Reed, 14 July 2019; "Mr Jack Roy", *Australian Honours Search Facility*, https://honours.pmc.gov.au/honours/awards/1088509. Thank you to Howard Le Couteur for putting me in contact with Fairlie Reed. Roy's story is not unique. An unnamed Chief Overhaul Engineer for Qantas gave

is an example of how wartime labour shortages meant male mechanics were able to expand their opportunities throughout the war. Gender, however, remained a major factor in deciding who received these opportunities, and how far they were able to progress their careers.

After the War: The Gendered Differences in Opportunities for Motor Mechanics

Governments, businesses, and unions each approached war-time employment as an emergency condition that would give way to normal, pre-war labour conditions after the war. This did not occur. The post-war demand for skilled workers created uneven conditions, which provided the basis for social mobility. As discussed in the previous chapter, mechanics who gained experience as engineers while serving in the military had an advantage when they returned home to find work. Formal acknowledgement of veterans' wartime engineering experience allowed mechanics to leave the automotive trade permanently. This was also the case for civilian mechanics, as Jack Roy's experiences demonstrate.

The Federal government's post-war emphasis on maintaining the wartime conditions of full employment placed further pressure on Australia's garages. Having lost a large number of mechanics to various other engineering fields, the trade lacked a pool of unemployed workers on which to draw.[75] Additionally, the trade offered little incentive to attract new apprentices, as explored in the previous chapter. Garages had a long history of exploiting young workers through alternate titles, such as improvers and assistants, so they could be paid at lower rates and were not required to undergo the training and mentorship of an apprentice mechanic.[76] Motor trader organisations helped unions clamp down on garages employing 'improvers', concerned that obvious exploitation would dissuade desperately needed apprentices.[77]

The shortage created by mechanics not returning to the trade prompted journalists to look for someone to blame for the crisis. Brisbane's *Courier-Mail* insisted that military training for mechanics was not being recognised, causing a shortage due to bureaucratic red

evidence during the 1954–1955 Arbitration Court hearings on the establishment of an Aircraft Award. This engineer noted that, during the Second World War, he completed an apprenticeship as a motor mechanic and then transitioned into the aviation industry. Although his initial position at Qantas was working as a fitter, he used his position to study abroad and gain qualifications as an aeronautical engineer (*Commonwealth Arbitration Reports*, no. 583, 83 CAR 574 (1955): 588–89).

[75] Buckley and Wheelwright, *False Paradise*, 150, 153–55.

[76] Roy Tatchell, 'Industrial Roundabout', *Australian Automobile Trade Journal*, 1 June 1948, 98.

[77] Ibid.; Roy Tatchell, 'Industrial Roundabout', *Australian Automobile Trade Journal*, 1 February 1948, 84.

tape.[78] Smaller, regional newspapers blamed women for remaining in wartime positions, keeping men out of work.[79] Rather than bureaucratic mistakes or women workers, low wages and poor conditions relative to other engineering occupations were the main reason for the trade's stagnation in the post-war years. While mechanics' wages had improved substantially since 1932, award wages did not keep pace with the demands for work more broadly in Australia. As noted earlier, other trades which had been paid less than mechanics in the 1930s, such as nurses and glassblowers, were now earning higher wages.[80]

While poor wages exacerbated the labour shortage, there were still workers joining the trade after the war. The post-war economic policy of full employment created opportunities for servicemen to move with ease from their military service into work in a garage. But there were not enough of these men to offset the disappearance of mechanics into engineering.[81] Though reemploying skilled women mechanics would have helped to solve this labour problem, the fear that this would destabilise post-war gender relations prevented this from taking place. Governments and unions saw the removal of women from the full-time workforce and into the home as a key element in structuring peace-time gender roles.[82]

Kate Darian-Smith has argued that many women happily gave up their employment after the war. Her examination of munitions workers shows that their desires for employment were based on the notion that their work had been essential for the war effort. Once the war was over, these women had no desire to stay in 'unrewarding, lower paid jobs'.[83] The case was different for some women mechanics. Numerous women interviewed by Georgine Clarsen indicate that their experience as wartime drivers and mechanics was transformative. Many tried to continue working with automobiles after the war, and 'they expressed great sadness at not being able to do so'.[84]

Women were forced out of the mechanics' trade almost entirely at the end of the war, despite ongoing labour shortages. Playing off fears that women would be used as cheaper labour that would keep returning soldiers out of work, both unions and the press pressured

[78] 'Jobs – But Not for Servicemen', *Courier-Mail*, 25 January 1946, 1; 'Claims Car Trade Bars Ex-Soldiers', *Courier-Mail*, 26 January 1946, 3.
[79] 'Women in Men's Jobs', *Carins Post*, 25 January 1946, 5; 'Women Stick to War Jobs', *Morwell Advertiser*, 18 April 1946, 10.
[80] Roy Tatchell, 'Industrial Roundabout', *Australian Automobile Trade Journal*, 1 February 1949, 83.
[81] Ibid.; McLean, *Why Australia Prospered*, 192.
[82] Fox and Lake (eds.), *Australians at Work*, 147; Katie Holmes and Sarah Pinto, 'Gender and Sexuality', in *The Cambridge History of Australia*, 320.
[83] Darian-Smith, 'World War 2 and Post-War Reconstruction', 108–9.
[84] Clarsen, *Eat My Dust*, 163–65.

garages to employ men over women.[85] In some cases, the mass shortage of mechanics made this impossible and a few garages continued to use female labour after the war had ended. But by 1947, of the 23,449 mechanics counted in the Australian Census, only seven were women.[86]

Conclusion

The Second World War provided an opportunity for women to enter the automotive repair trade in large numbers. This was the result of a demand that continued despite a significant reduction of cars on the road in wartime, partly caused by the fact that the vehicles driven on the home front were older and required more maintenance. Military recruitment also produced worker shortages in engineering, which provided new opportunities for mechanics. This combination of factors forced the automotive industry to look to women to bolster the mechanic labour force

Motorist organisations, employers and unions all stipulated that women's participation in automotive repair was limited to wartime. They were able to enforce this by controlling technical education. Qualifications were altered to ensure women could not attain full motor mechanic certifications. Simultaneously, male apprentices had their qualifications fast-tracked, regardless of their skill, and had improved chances of accessing higher-level occupations. Jack Roy, for example, became a celebrated aeronautical engineer, while Helen Litchfield née Hobley became a mother and was confined to deskwork. The loss of women to the trade was ideological rather than a result of labour market conditions. When the trade descended into a labour shortage crisis towards the end of the 1940s, women mechanics were still locked out of the trade.

[85] Symons 'Challenging and Maintaining the Traditional Gender Order', 310–12.
[86] Australian Bureau of Statistics, 'Occupation', *Census of the Commonwealth of Australia 1947*, vol 2, part 18, 1947.

Chapter 5 – Mass Automobility and the Performance of Mechanics' Gendered Identities

By the 1950s, relief from wartime rationing and the arrival of cheap European automobiles made the purchase of cars more affordable and accessible. The number of privately owned cars in Australia increased from 767,556 in 1949–50 to 1,924,197 at the end of the decade.[1] The mechanical repair trade looked primed to benefit from this shift to mass automobility. Instead, as the decade progressed, mechanics' wages stagnated, their opportunities decreased, and their social status declined. The final three chapters will explore the multiple reasons why this occurred. The focus in this chapter is on the social changes of the post-war era, examining how they undermined the authority and status of mechanics.

The economic landscape in which mechanics worked was remade at the end of the Second World War by international leaders such as Harry Dexter White, John Maynard Keynes and, in Australia, HC 'Nugget' Coombs. These figures designed the post-war global economy based around full employment as the central pillar of stability.[2] The expansion of the manufacturing sector in Australia after the war produced universally high wages, mostly earned by male breadwinners. This had the desired effect of increasing consumption. The motor car was also central to this picture as car makers began to dominate the manufacturing sector worldwide.

With the expansion of production and consumption in the decades after the war, the car was woven into the fabric of suburban life. Automobility was indeed entwined with post-war consumption, helped by new businesses which encouraged a life on wheels – from the Motor Inn to the drive-in. In the suburbs, automobiles became an instrument of several kinds of mobility, in sociologist John Urry's understanding change through bodily, cultural, and social movement. The car took people places, giving motorists and their families an enhanced corporeal mobility, which became culturally associated with leisure and freedom.[3]

The car also became a symbol of modernity and progress. Affordable cars spoke to a post-war technocratic ideal of collective social advancement, a shared upward trajectory of mobility achieved via a growing standard of living. Significantly, too, the car became part of the hegemonic masculinity of the post-war period. As sociologist and historian Raewyn

[1] Australian Bureau of Statistics, 'Transport and Communication' (1953): 177; Australian Bureau of Statistics, 'Transport and Communication', *Year Book Australia*, no. 48 (1962): 545.
[2] Macintyre, *Australia's Boldest Experiment*, 237–70.
[3] Dennis and Urry, *After the Car*, 39–42; Davison, *Car Wars*, 111–42.

Connell has argued, 'hegemonic masculinity' refers to the distinctive pattern of practices that at once help to maintain men's power over women and to entrench a hierarchy among different groups of men in a given society and historical era.[4]

The key features of hegemonic masculinity in post-war Australia were headship of a family, providing a wife and children with economic and material security, and steady competence at work.[5] Owning a motor car, and working on it in the garage, became a symbol of middle-class masculinity. So did controlling a car among married men. Sitting behind the wheel, deciding when and where to drive, was a key means through how a husband demonstrated who 'wore the pants' in a marriage.[6] Most pertinently for this discussion, the ability to conduct at least basic maintenance on a car became a further aspect of hegemonic masculinity. The key reason for this was that demonstrating a degree of mastery over automobile technology and performing a degree of manual labour while doing so allowed desk-bound middle-class men to offset anxieties that they were being feminised by their job.[7] Working on a car engine in the garage also allowed men living in the suburbs to forge a distinctively masculine space at home.

While the ability to dabble in automotive maintenance and repair work became an aspect of hegemonic masculinity in the post-war era, the same cannot be said for working as a mechanic as a career. The same range of mobilities that mass car ownership enabled for suburban Australians was not enjoyed by mechanics. Rather, the identity of the motor mechanics was hardened and the degree of social and occupational mobility once available to mechanics was limited due to transformations in the gender order of post-war Australia. This 'hardening' of the motor mechanic identity involved a process of hypermasculinisation: an expectation not only that all mechanics would be men, but that they would demonstrate or conform to an aggressive and misogynist set of masculine characteristics and behaviour. The most conspicuous examples of this hypermasculinsation taking place in the 1950s was among young, working-class men who took up jobs as mechanics and became involved in an emerging 'hoon' culture that revolved around driving and racing certain types of cars. In

[4] Connell, *Masculinities*, 77–81.
[5] Ibid., 28–29; Mark Peel, 'A New Kind of Manhood: Remembering the 1950s', *Australian Historical Studies* 27, no. 109 (1997): 150–52; Mark Peel, *Good Times, Hard Times: The Past and the Future in Elizabeth* (Carlton, Vic.: Melbourne University Press, 1995), 110; John Murphy, 'Work in a Time of Plenty: Narratives of Men's Work in Post-War Australia', *Labour History* 88 (2005): 215–23; Barnett, 'Masculinity and Cultural Contestation in the Australian 1950s', 184–86; White, *Inventing Australia*, 165; Johnny Bell, 'Putting Dad in the Picture: Fatherhood in the Popular Women's Magazines of 1950s Australia', *Women's History Review* 22, no. 6 (2013): 905–7, 917–23.
[6] Davison, *Car Wars*, 35–40; Bell, 'Putting Dad in the Picture', 921–23.
[7] Connell, *Masculinities*, 55–56, 169–74.

addition to warding off women from motor mechanic work, this development negatively affected the respectability and status of the trade.

This chapter describes the emergence of new mobilities in the post-war period, as the economic prosperity of the mid-twentieth century created the conditions for mass automobility. It then considers how changes in Australian society and culture affected the hegemonic masculinity of the period. My focus is only on certain aspects of this wide-ranging subject: namely, the influence of suburbanisation and the intensification of consumption. Finally, the chapter describes the relationship between hegemonic masculinity and the car. I conclude by arguing that cultural and technological changes reshaped the class status of mechanics and their relationship to broader cultural norms.

Suburban (Auto)Mobilities

Post-war prosperity produced the conditions that allowed mass automobility to develop in Australia. A High Court ruling in the case of *Wagner v. Gall* overturned wartime petrol rationing in June 1949 by declaring the relevant Act invalid.[8] Car sales spiked immediately (see Figures 10 and 11). The resulting rush on petrol threatened to disrupt commercial transport and defence capabilities, prompting the then federal Labor government to reintroduce rationing in November.[9] Rationing was a major point of contention in the 1949 election. The conservative Liberal-Country Party coalition pledged to abolish rationing, while the Labor government argued for ongoing restrictions on petrol sales. The Liberal-Country coalition, led by Robert Menzies, won the 1949 federal election in part due to its commitment to end wartime economic restrictions and pave the way for the growth of the automotive industry.[10]

[8] Froude, 'Petrol Rationing in Australia'.
[9] Ibid. The Australian Labor Party had been in power since it formed a minority government in 1941 under the leadership of John Curtain. Labor won the 1943 election, gaining outright control of the House of Representatives. Following Curtain's death in 1945, Ben Chifley became Australia's 16th Prime Minister, and led the party through the post-war period.
[10] Froude, 'Petrol Rationing in Australia'.

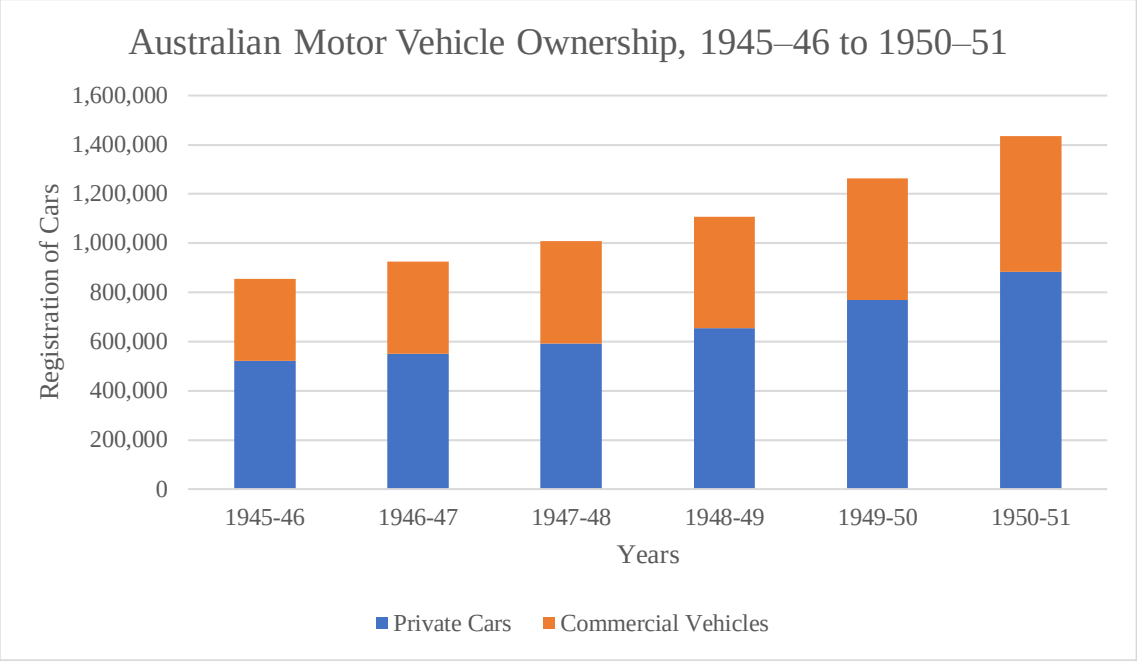

Figure 10 Australian Motor Vehicle Ownership, 1945–46 to 1950–51. Sources: *Year Book Australia 1953*, 177; *Year Book Australia 1955*, 169.

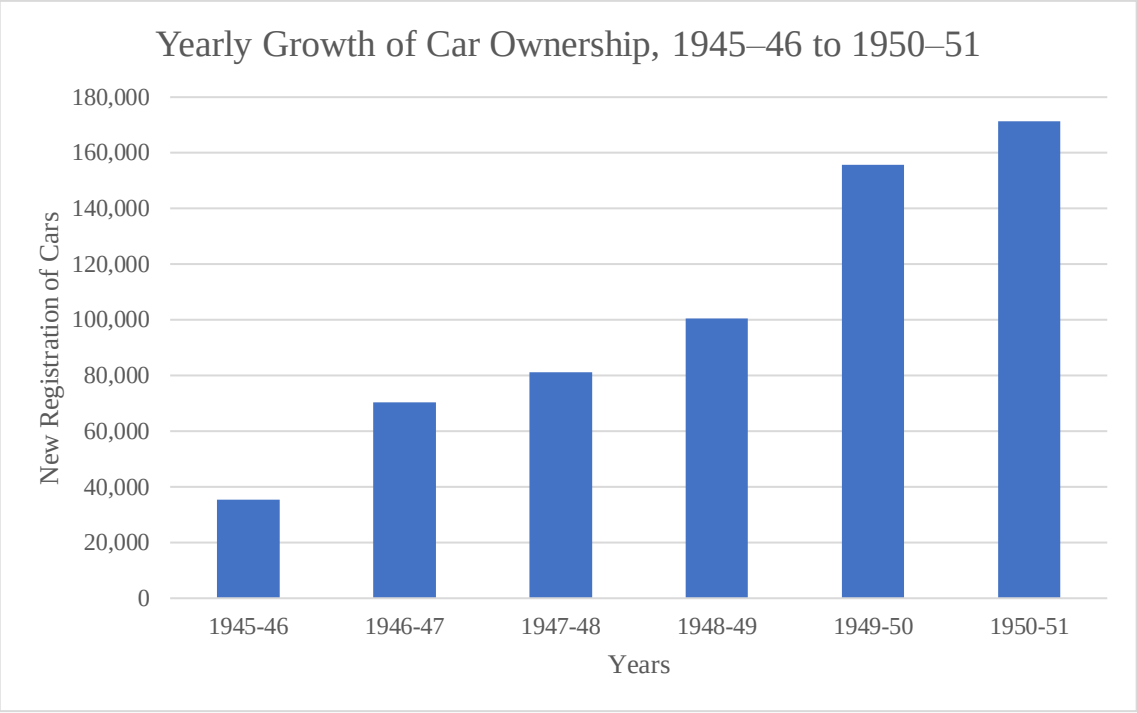

Figure 11 Yearly Growth of Car Ownership, 1945–46 to 1950–51. Sources: See Figure 10.

The end of rationing changed Australia's relationship with the car, heralding an era of mass automobility. Urry's theory of automobility suggests that the arrival of the car in developed societies set in motion their transformation, reconstructing social norms and physical spaces.[11] Automobility arrived in Australia in the 1920s when motoring organisations pressured governments to restructure urban streets around automobiles as the dominant users of the road. The price of cars, however, meant that designing city streets around automobiles only benefited a privileged few.[12] The conversion of city streets in Sydney and Melbourne was a process that took decades to complete, but in newly developed cities and towns, such automobility was being incorporated into city design. For example, Canberra, Australia's capital city, which was still under construction in the 1920s, was designed as a garden city – an urban planning philosophy that organised the city into multiple hubs rather than centralising. This design relied upon car ownership, rather than public transport, to connect these town centres.[13]

The process of mass automobility transitioned the car from a mode of transport owned by elites into something more ubiquitous. While mass automobility was envisaged early in the century, it was not achieved until the 1950s. By the end of the decade, one in three households owned a car – by the 1960s this became one in two.[14] One of the many changes that took place as a result of this development related to travel across the Australian continent. Independent journeys into the desert country at the centre of the continent were previously restricted to elites who could afford to fund such a risky undertaking.[15] During the 1950s, however, a wide range of drivers began to take part in this kind of adventure. The introduction of the Redex Around-Australia Trials in 1953 played a role in this shift. The brainchild of advertisers for Redex, a fuel additive company hoping to convince the public that their products improved a car's reliability, these Trials were rallies in which amateur drivers were

[11] Urry, *Mobilities*, 119; John Urry, 'The "System" of Automobility', *Theory, Culture & Society* 21, no. 4–5 (2004): 27, 31–32; Dennis and Urry, *After the Car*, 27–28, 33–44.
[12] '[Collection of Newspaper Cuttings Related to Traffic Questions]', 1925, SF 388.3 R81C, State Library of Victoria, Melbourne.
[13] Nicholas Brown, *A History of Canberra* (Port Melbourne: Cambridge University Press, 2014), 69–70, 89, 109.
[14] Macintyre, *A Concise History of Australia*, 225.
[15] Georgine Clarsen, '"Australia – Drive Like You Stole It": Automobility as a Medium of Communication in Settler Colonial Australia', *Mobilities* 12, no. 4 (2017): 522–24; Georgine Clarsen, 'Automobiles and Australian Modernisation: The Redex Around-Australia Trials of the 1950s', *Australian Historical Studies* 41, no. 3 (2010): 352–53. This is not to say that travel into rural areas did not occur beyond this period. Such exploration occurred in the nineteenth and early twentieth century, facilitated by railways. See Fiona Paisley, 'No Back Streets in the Bush: 1920s and 1930s Pro-Aboriginal White Women's Activism and the Trans-Australia Railway', *Australian Feminist Studies* 12, no. 25 (1997): 119–33, and André Brett, '"The Whistle Blows, and We are Whisked into a Tunnel": Railways and the Environment in Illawarra, 1850s–1915', *Journal of Australian, Canadian & Aotearoa New Zealand Studies* 1, no. 1 (2021): 114–19, 132–44.

invited to a multi-stage endurance race.[16] The Redex Trials took racers along the Eastern coast before cutting through central Australia. Many of those drivers who competed became celebrities. They captured the public's imagination, with newspapers and radio broadcasts covering every leg of their journey. The underlying message of the Redex Trials was that car ownership was no longer restricted to the wealthy, and that anyone who could afford a vehicle could become an adventurer.[17]

The first Redex Trial took place in the same year that the Holden became the highest-selling brand of car in the country. When the first Holden 48–215, or FX rolled off the production line in 1948, the only domestically-manufactured car in Australia, it was widely hailed as a milestone in the nation's economic maturity. More than just the industrial impact, Holden became a national icon and signified the growing importance of the automobile in Australian culture.[18] Yet for all its cultural significance, Holden had little direct impact on the arrival of mass automobility initially. The FX was released with a cost between £675 and £760, and it took Holden four and a half years to produce 100,000 cars. This slow production capacity stifled consumption.[19] By 1950, the waitlist for a new Holden had stretched to two and a half years. A year later, car dealerships were so overwhelmed by the demand for Holdens that they stopped taking orders altogether.[20] Limited by manufacturing ability, Holden sold less than 7,000 cars in 1949, growing to over 18,000 sales in 1950. It was only with the release of the Holden FJ in 1953 that sales of Holden outstripped those of other brands Australia-wide. Holden sold over 33,000 cars that year, a third more than its rival Ford.[21]

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[16] Clarsen, 'Automobiles and Australian Modernisation', 354–56.
[17] Clarsen, 'Automobiles and Australian Modernisation', 354–55, 363–67; Georgine Clarsen, 'The Flip Side: Women on the Redex Around Australia Reliability trials of the 1950s', *Humanities Research* 17, no. 2 (2011): 26–36.
[18] Stella Lees and June Senyard, *The 1950s: …How Australia Became a Modern Society, and Everyone Got a House and Car* (Melbourne: Hyland House, 1987), 1, 17–19; White, *Inventing Australia*, 163–65; Haigh, *End of the Road?*, 70–76; Clarsen, 'Automobiles and Australian Modernisation', 357–58; Fahey, 'The Cultivation of an Australian Identity', 500–2. For information on Australian government negotiations with General Motors in establishing an Australian car manufacturing industry, see Conlon and Perkins, *Wheels and Deals*, 50–74 and Macintyre, *Australia's Boldest Experiment*, 224–26.
[19] '100,000th Holden', *Sydney Morning Herald*, 20 May 1953, 12. The cost of the FX varied between markets. Humphrey McQueen (*Social Sketches of Australia, 1888–2001*, revised ed. (St Lucia, Qld.: University of Queensland Press, 2004), 191) gives the release price of the FX as £675 while Graeme Davison (*Car Wars*, 10) cites the higher price of £760.
[20] 'Backyard Mechanics' Car Boom', *Daily Telegraph*, 4 June 1950, 12; McQueen, *Social Sketches of Australia*, 191–92.
[21] 'Holden Leads 1953 Registrations', *Australian Automobile Trade Journal*, 1 March 1954, 69.

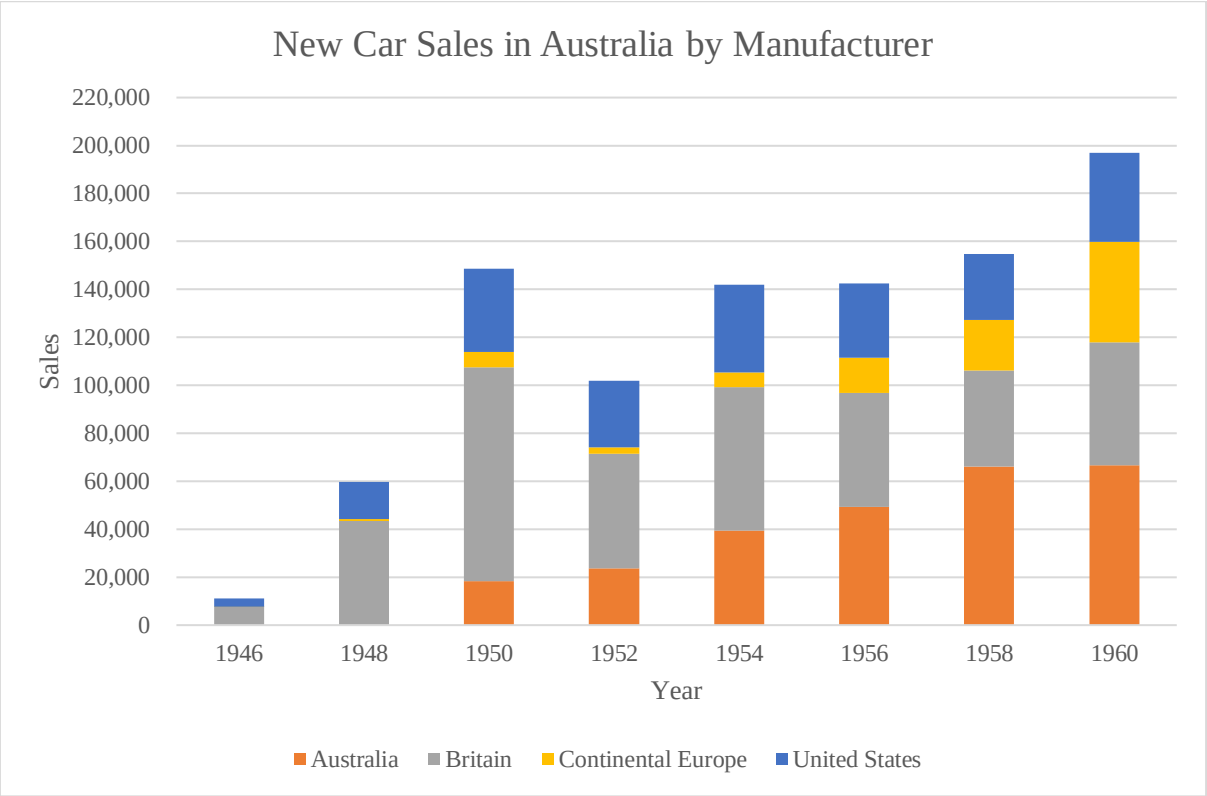

Figure 12 New Car Sales in Australia, by Region of Manufacturer 1946–1960. Sources: *Australian Automobile Trade Journal*, 1 March 1951, 36; 1 March 1953, 72; 1 May 1955, 72; 1 March 1957, 79; 1 April 1959, 85; 1 April 1961, 40.

When the first Holden appeared in 1948, the then Prime Minister Ben Chifley designated it 'the working man's car'.[22] This rhetoric was in line with the Australian Labor Party's claim to represent working-class interests. It also resonated with the 'great levelling' supposedly taking place in the post-war period.[23] Rising wages, combined with taxes on the wealthy to pay for post-war reconstruction, did increase the middle class over the course of the post-war decades. In time, working-class people would also experience greater prosperity and job security than had been the case in the interwar decades. There remained significant differences between how the middle and working class experienced the mobilities of this era. This included differences in the cars they drove. Chifley may have described the Holden as a working man's car, but in reality Holdens quickly became a symbol of the growing middle class.[24]

[22] Davison, *Car Wars*, 8.
[23] Thomas Piketty, *Capital in the Twenty-First Century* (London: Belknap Press, 2017), 13–21, 356–68; Connell and Irving, *Class Structure in Australian History*, 198. For criticism of the Great Levelling thesis, see Poornima Paidipaty and Pedro Ramos Pinto, 'Revisiting the "Great Levelling": The Limits of Piketty's *Capital and Ideology* for Understanding the Rise of Late 20th Century Inequality', *British Journal of Sociology* 72, no. 1 (2021): 52–66.
[24] 'Car and Truck Prices – February 1954', *Australian Automobile Trade Journal*, 1 March 1954, 65; 'Motor Industry Award Rates', *Australian Automobile Trade Journal*, 1 March 1954, 77.

Working-class automobility was made possible in Australia through the variety of new cars that came onto the Australian market, rather than the production of Holdens. Australian mass automobility was facilitated mainly through cheaper British imports which expanded the car market beyond the burgeoning middle class. Australians had long preferred American cars, but the importers were stifled by the post-war US Dollar shortage.[25] British manufacturers, such as Austin, Morris, and Standard were not subject to the same restrictions. They also produced cars that were smaller and less powerful than their American and Australian counterparts, making them more affordable. These manufacturers were responsible for the massive growth in car ownership in the immediate post-war period, selling just under 89,000 cars in Australia in 1950 alone (see Figure 12). In 1953, British manufacturers offered cheaper alternatives to Holden, such as the Morris Minor Saloon at £807, or a locally assembled Austin A80 Seven at £747.[26] As Graeme Davison observes, despite the hype and cultural impact that Holden had, suburban families in the 1950s were more likely to own a Morris Minor.[27] The popularity of British cars declined towards the end of the decade, replaced by the arrival of European cars, most notably Volkswagen.

The expansion of the car market also made it easier for middle-class motorists to sell their cars to a prospective working-class owner and then upgrade to a newer model. Davison notes that 30 per cent of Australian cars on the roads in 1955 were built before the Second World War, highlighting the importance of the second-hand market (see Figure 13).[28] The growth of this market brought cars within a price range affordable for most families, but while increases in car availability made cars more affordable to purchase, the costs of owning a car continued to increase. Buying a car was a major investment, but keeping them running resulted in increasing, ongoing costs to the family budget. Second-hand cars offered a cheaper alternative at the outset, but usually required significant ongoing maintenance. The costs of petrol, insurance and maintenance increased throughout the 1950s as demand rose, a consequence of mass automobility.

[25] Conlon and Perkins, *Wheels and Deals*, 116. Prior to World War II, American manufacturers controlled the overwhelming share of the Australian market, despite tariffs on car imports from outside the British Commonwealth. American companies circumvented these tariffs by sending cars manufactured in Detroit across the river (and the border) to Windsor, Canada to be assembled, thus becoming goods produced within the Commonwealth (Conlon and Perkins, *Wheels and Deals*, 83–97).
[26] 'Car and Truck Prices – February 1954', *Australian Automobile Trade Journal*, 1 March 1954, 65.
[27] Davison, *Car Wars*, 11–12.
[28] Ibid., 13.

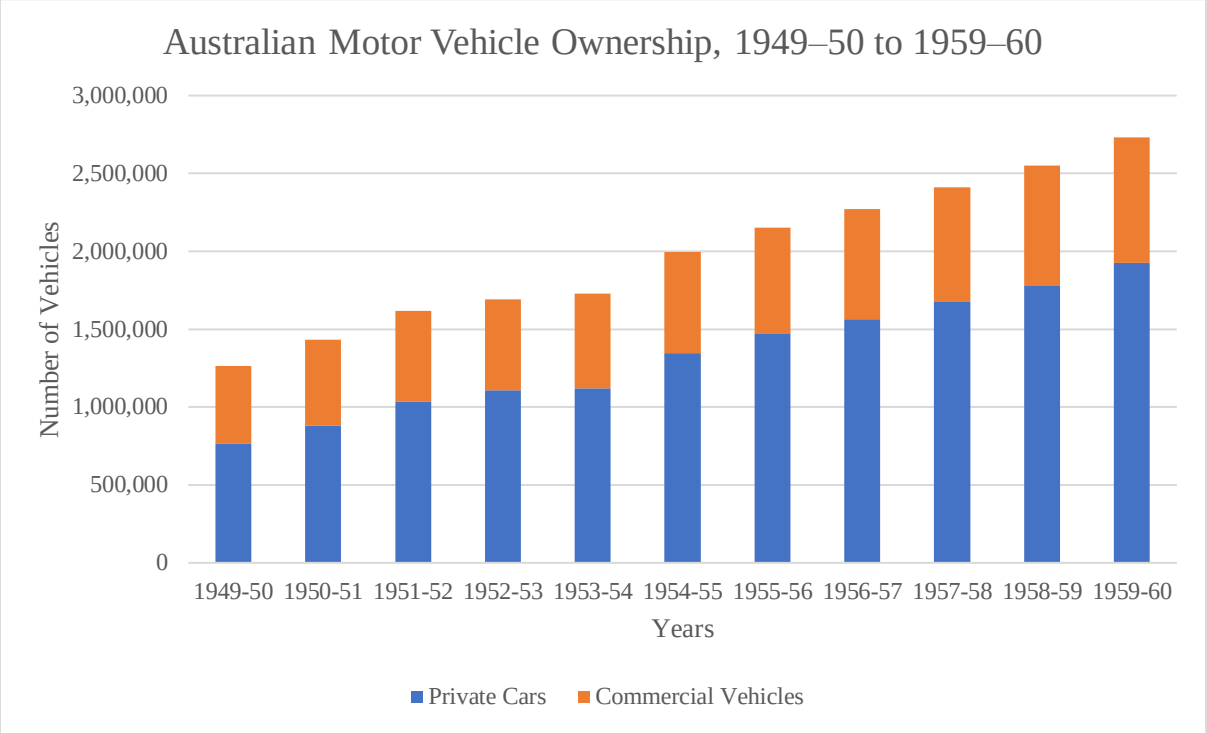

Figure 13 Australian Motor Vehicle Ownership, 1949–50 to 1959–60. Sources: *Year Book Australia 1955*, 169; *Year Book Australia 1958*, 411; *Year Book Australia 1962*, 545.

Even though the costs of motoring were increasing, car ownership was becoming increasingly important for both middle- and working-class families because of rising consumer culture. Living in suburbia required families to purchase a car, but consumer culture made them want one. William Leach has previously described how the rise of consumerism in the early twentieth century was, at its heart, the cultural creation of a desire to own goods in the pursuit of a better life.[29] For many in the post-war era, the car was an indication of a better life after the horrors of the Great Depression and the Second World War. Cars remained too expensive for many middle-class families in the first years after the war. Davison notes that over 200,000 people filed into the 1949 Melbourne Motor Show, but journalists who attended at the time saw these crowds using the outing as 'a day of wonder, of seeing, but not having'.[30] Governments played a role in encouraging this culture of desire, using the manufacturing industry to import both American prosperity and its consumer culture. Post-war wage increases suddenly made modern technology for the home – televisions, refrigerators, washing machines – more affordable for middle-class families.[31] Increasing prosperity helped fuel a new era of consumerism.

[29] William Leach, *Land of Desire: Merchants, Power, and the Rise of a New American Culture* (New York: Vintage Books, 1994), 3–12, 266–69.
[30] Davison, *Car Wars*, 6–7.
[31] White, *Inventing Australia*, 163–65.

Wage increases notwithstanding, the combination of desire and necessity put economic pressure on families. Cars were more affordable, but this did not mean they were cheap – other than the purchase of a house, they remained the most expensive investment most families would make. Cars were often purchased through credit options, which increased the stress on household budgets.[32] This new era of consumerism did not bring immediate improvements to working-class people's lives. Mark Peel's oral histories of working-class families living in the newly built suburb of Elizabeth, on the outskirts of Adelaide, demonstrate this. Elizabeth was central to the automotive manufacturing industry in the 1950s and attracted working-class residents who were employed by Holden. Peel's interviews demonstrate that the Great Depression and the Second World War were not easily forgotten amongst the pressures of consumerism:

> The good times of an unfamiliar prosperity did not really begin until the 1960s, and were not trusted until the 1970s … [the 1950s] were anxious and insecure times, when many still lived in poverty, when illness and accident and bad luck could still have terrible consequences If the decade brought improvements, they were not always apparent until later.[33]

Cars were a symbol of shared prosperity, but for working-class families, they were also a source of pressure, a reminder that financial uncertainty could be an accident away.

By 1952, the public considered the motor industry an important, entrenched part of the Australian economy.[34] This was due to the demand for business created by mass automobility. Over 7,000 new service stations appeared, often taking the places of houses in the suburbs. This mirrored the same occurrences in America.[35] For mechanics, more garages meant more jobs, and more cars created more demand for work. Newer cars were less likely to break down, but were also more complex. Simultaneously, the wide range of manufacturers, each with their own quirks, provided new challenges for mechanics. This counterbalanced the loss of work through increasing reliability – 'more cars in more models … meant more service, not less'.[36]

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[32] Judith Brett, *Australian Liberals and the Moral Middle Class: From Alfred Deakin to John Howard* (Cambridge: Cambridge University Press, 2008), 135–39.
[33] Peel, 'A New Kind of Manhood', 147, 149. See also John Murphy, *Imagining the Fifties* (Sydney: Pluto Press, 2000), 189; Murphy, 'Work in a Time of Plenty', 219–23.
[34] 'Australia Now One of the Most Highly Motorised Nations', *Australian Automobile Trade Journal*, 1 July 1952, 16; Haigh, *End of the Road?*, 73.
[35] Davison, *Car Wars*, 94.
[36] Borg, *Auto-Mechanics*, 129–30. For a broader overview of the effects of mass automobility in America, see Borg, *Auto-Mechanics*, 115–32.

Mechanics' wages increased because of the demand for their services, combined with the ongoing skills shortage. Wage growth was partly, if not entirely, responsible for the rising costs of maintenance in the early 1950s (see Figure 14).[37] For families, this produced new financial anxieties. Many new motorists had not anticipated the ongoing cost of repair and maintenance, leading to financial stresses. Unable to afford maintenance, some motorists ignored it, becoming a danger to themselves and others. Motorist organisations were fearful that drivers, especially new working-class owners of second-hand vehicles, were neglecting to maintain their cars altogether due to the rising cost of maintenance.[38] The cost of repair incentivised many men to open the hood of their own cars and learn how to conduct repairs themselves.

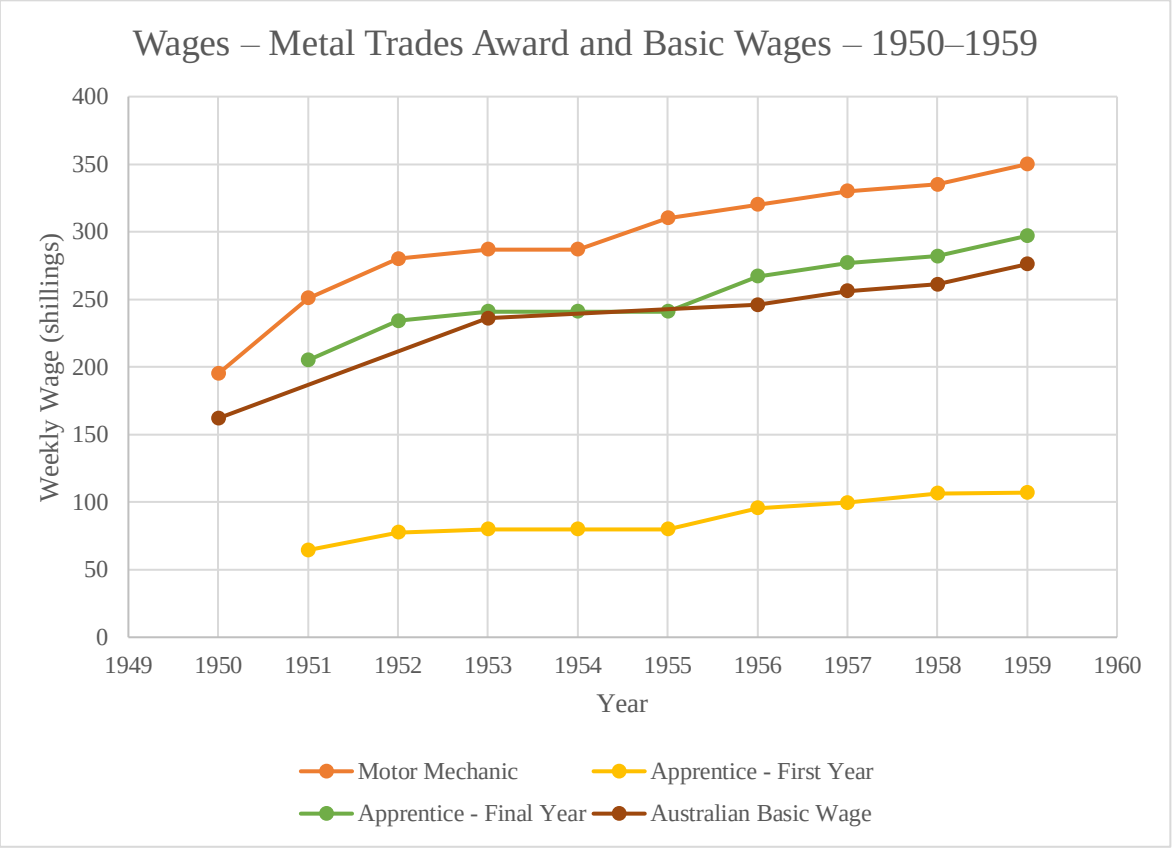

Figure 14 Metal Trades Award Wage Rates for Mechanics and the Australian Basic Wage, 1950–1959. Sources: *Australian Automobile Trade Journal*, November 1950, 76; December 1951, 86; December 1952, 86–88; December 1953, 85–87; November 1954, 85–87; November 1955, 85; March 1956, 93; June 1957, 85; November 1958, 85; December 1959, 93; Fair Work Commission, 'The Australian Minimum Wage from 1906', Waltzing Matilda and the Sunshine Harvester Factory,12 July 2019.[39]

[37] Broomham, *On the Road*, 102.
[38] Ibid., 100–1; Davison, *Car Wars*, 13. Davison observes that many of these fears of the dangerous, second-hand car and neglectful driver were unfounded.
[39] See Figure 4 footnote.

Cars and Their Place in Australian Post-War Hegemonic Masculinity

In addition to economic and cultural changes, gender relations shifted following the war. These developments followed the movement of middle-class families from city centres into the suburbs, which was a symptom of what historian Nicholas Brown has described as a 'decentralist ethic' that dictated Australian politics and society during the 1950s.[40] This idea of a decentralised society became aligned with national ideas of social organisation, described as the 'Australian way of life' or the 'Australian dream'.[41] Decentralisation through suburbanisation was portrayed as an ideal lifestyle and celebrated as a pillar of stability. As a 1951 article entitled the 'Australian way of life' informed its readers, 'a person who owns a house, a garden, and car and has a fair job is rarely an extremist or a revolutionary'.[42] Fiona Allon argues that the 'home centred individualism' of suburbanisation presented a 'bulwark' against the uncertainty of the outside world; an ideal retreat for young families with childhoods shaped by the Great Depression and with fresh memories of the horrors of the Second World War.[43] The car was central to the movement of white, middle-class families into the suburbs but also to this new decentralist ethic. Cars allowed families to remain in 'a semi-private space [while] in the public domain', a form of living room on wheels.[44]

Mass automobility, in turn, altered hegemonic masculinity in Australia. As discussed earlier, Raewyn Connell developed the theoretical concept of hegemonic masculinity in an effort to explain the existence and historical persistence of the subordination of women to men, and at the same time the existence of hierarchies of different ways of being a man largely corresponding to different groups of men. Hegemonic masculine practices associate particular qualities and behaviours with masculinity and encourage a broad acceptance of these as admirably 'normal' or 'natural'; superior to qualities and behaviours deemed feminine or seen as alternative ways of being a man.[45] This is not a static structure; on the contrary, what constitutes hegemonic masculinity is constantly challenged and changes over

[40] Brown, *Governing Prosperity*, 126–27.
[41] White, *Inventing Australia*, 158–66; Fiona Allon, 'At Home in the Suburbs: Domesticity and Nation in Postwar Australia', *History Australia* 11, no. 1 (2014): 13–16; Murphy, *Imagining the Fifties*, 66–77.
[42] Emery Barcs, quoted in White, *Inventing Australia*, 163. See also Graeme Davison and Tony Dingle, 'Introduction: The View from the Ming Wing', in *The Cream Brick Frontier*, 4–6; Jayne Persian, *Beautiful Balts: From Displaced Persons to Australians* (Sydney: NewSouth, 2017), 62.
[43] Allon, 'At Home in the Suburbs', 20–23; Murphy, *Imagining the Fifties*, 15; Connell and Irving, *Class Structure in Australian History*, 201.
[44] Clarsen, 'The Flip Side', 35. See also the rise of 'drive-in' culture, Michelle Arrow, *Friday on Our Minds: Popular Culture in Australia Since 1945* (Sydney: University of New South Wales Press, 2009), 36–37; Davison, *Car Wars*, 80–81.
[45] Connell and Messerschmidt, 'Hegemonic Masculinity', 832, 846–47.

time.[46] An example of the dynamic nature of hegemonic masculinity may be seen in the 1950s, as a deepening division in what was deemed acceptably masculine and feminine behaviour took place at the same time as shifts in emphasis in what was deemed admirable in the middle-class man.

Accentuated norms relating to what was considered acceptably masculine and feminine occurred at individual and social levels. Ideals of domesticity and family were promoted by political leaders, such as Menzies, as central to the task of rebuilding Australian society after the war.[47] This affirmation of gender roles became incorporated into the 'Australian way of life' that celebrated suburban, middle-class lifestyles as a national ideal and identity. Nuclear family life was focused on the home and imagined domestic spaces as a kind of social anchor, a place of structure and stability.[48] But the increasing divide between the male breadwinner and the female homemaker, combined with financial stresses, also transformed the suburban home into a site of tension.[49] As men sought new ways to express their identities, they were increasingly drawn to work around the house, as well as outside of it.

The suburbanisation of the middle class helped forge a connection between men and their cars that would ultimately alter the mechanic's trade. For decades previously, car owners in urban areas stored their cars elsewhere – either in large public garages or close to the house on the street. The inclusion of a car garage at the family home changed this.[50] The space itself afforded by the garage was important. Since the separation of waged labour from the family economy during the Industrial Revolution, the family home had been defined as a feminine space. Even then, as John Tosh notes, men created private enclaves at home, such as in studies or smoking dens.[51] As family life moved into the suburbs, men sought to move this space outside of the house. Large backyards provided space for garages, sheds, and

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[46] Ibid., 832–33; James W. Messerschmidt and Michael A. Messner, 'Hegemonic, Nonhegemonic, and "New" Masculinities', in *Gender Reckonings: New Social Theory and Research*, eds. James W. Messerschmidt, et. al. (New York: New York University Press, 2018), 40.
[47] Barnett, 'Masculinity and Cultural Contestation in the Australian 1950s', 189, 193; White, *Inventing Australia*, 163.
[48] Holmes and Pinto, 'Gender and Sexuality', 319–21.
[49] Marilyn Lake, 'Marriage as Bondage: The Anomaly of the Citizen Wife', *Australian Historical Studies* 29, no. 112 (1999): 116–29; Raymond Evans and Kay Saunders, 'No Place Like Home: The Evolution of the Australian Housewife', in *Gender Relations in Australia*, 178–89, 191; Murphy, 'Work in a Time of Plenty', 228–29; Chelsea Barnett, '*Man*'s Man: Representations of Australian Post-War Masculinity in *Man* Magazine', *Journal of Australian Studies* 39, no. 2 (2015): 153–54, 157–58, 161–69; Murphy, *Imagining the Fifties*, 42–54; Patricia Grimshaw, et. al., *Creating A Nation, 1788–2007* (Perth: API Network, 2006), 262–63, 267; Anne Summers, *Damned Whores and God's Police*, 2nd ed. (Ringwood, Vic.: Penguin, 1994), 472–78; Arrow, *Friday on Our Minds*, 17–18; Cockburn, *Brothers*, 134.
[50] Davison, *Car Wars*, 89–90.
[51] Allon, 'At Home in the Suburbs', 27; John Tosh, *A Man's Place: Masculinity and the Middle-class Home in Victorian England* (New Haven, Conn.: Yale University Press, 1999), 1–8, 60, 182, 196.

workshops, which became the new masculine enclaves. These provided what cultural theorist Glen Fuller refers to as a 'space of opportunity'; a private space for men to experiment and learn.[52] More than just a place to store cars, these private, masculine spaces added a new dimension to the family man – the amateur mechanic. 'For many young men the car was a mechanical toy', Davison notes, 'something like a grown-up Meccano set – to be pulled apart, modified, improved, rebuilt'.[53]

A key reason that so many men found themselves tinkering under the hood of their new car had to do with the association between masculinity and technology discussed by Judy Wajcman and Cynthia Cockburn. The gendering of technology, they argue, is a process which seeks to project hegemonic masculinity through an understanding of skill.[54] Consumer technologies of the 1950s provide examples of this. Post-war consumer culture, however, also produced technologies that were marketed to women. The vacuum cleaner, mixmaster and the washing machine, for example, were technologies intended for women's work. Manufacturers specifically designed such home machines as simplistically as possible, reinforcing suggestions that women were unsuited to technological complexity.[55] In contrast, home automotive repair gave men an opportunity to gain technological skills in ways that directly contrasted to their wives' work. The car, in this setting, helped deepen gendered divisions of labour, while strengthening the association between the performance of masculinity and the mastery of complex machines.

[52] Glen Fuller, 'In the Garage: Assemblage, Opportunity and Techno-Aesthetics', *Angelaki* 20, no. 1 (2015): 125.
[53] Davison, *Car Wars*, 57. This enabled men to become engaged with what Jesse Adams Stein has termed 'craft masculinities' outside of the workforce. See Stein, *Hot Metal*, 83–87, 93–94.
[54] MacKenzie and Wajcman, 'Introduction', 2–24; Cockburn, *Machinery of Dominance*, 142; Wajcman, *Feminism Confronts Technology*, 20–25; Cockburn and Ormrod, *Gender and Technology in the Making*, 1–14; Cynthia Cockburn, 'The Circuit of Technology: Gender, Identity and Power', in *Consuming Technology: Media and Information in Domestic Spaces*, eds. Roger Silverstone and Eric Hirsch (London: Routledge, 1994), 29–32; Judy Wajcman, *TechnoFeminism* (Cambridge: Polity, 2004) 18–31. See also Connell, *Masculinities*, 164.
[55] Cockburn, 'The Circuit of Technology', 35–38; Cowan, *More Work for Mother*.

Image 23 Fixing Graeme's car at the hostel. 1958. Photographer: Audrey Attwood. PH0815/0317. Alice Springs Public Library Collection, Alice Springs, NT.

The Masculinisation of Automobile Culture and the Suppression of Women's Involvement

Mass car ownership and the suburbanisation of masculine culture were key social developments that influenced the motor mechanic trade over the 1950s. More people than ever had access to cars, and now in sheds and garages, men had a dedicated space in which to explore the inner workings of them. As explored in previous chapters, car owners did not necessarily possess an intimate knowledge of their cars. Car owners of the 1910s did not tend to learn maintenance skills, despite the insistence of motorist organisations, because of cultural divisions between technology and maintenance work. Owning a car was a symbol of power and wealth but getting hands dirty and greasy in fixing the engine was anything but. This concept of car ownership as a demonstration of elite status did not exist for middle-class car owners in the 1950s.

Men's magazines in the mid-century period demonstrate how automotive culture became a key fixture of hegemonic masculinity. The increasing popularity of motor maintenance reflected the 'Do It Yourself' boom amongst suburban men. Chelsea Barnett has explored how men's magazines, such as *Man,* reached the heights of their popularity during

the 1950s. *Man* regularly ran articles which portrayed office work as dull, effeminate, and unrewarding. By contrast, 'handyman' work done at home, including motor maintenance work, was enjoyable leisure time that reinforced masculine identities.[56] Automotive work became increasingly popular in men's magazines, with specialist publications like *Australian Handyman* and *Sports Car World* focused on automotive maintenance work, while generalist magazines like *Man* included sections that focused on cars and maintenance.[57]

The growth of home automotive repair in the 1950s had both economic and cultural causes. Families seeking to defray the escalating cost of car maintenance no doubt valued the amateur efforts of the home mechanic. It was no coincidence, however, that car maintenance gave men a role at home with which they could identify, and which offset the emasculating effects, at least in the language of popular men's magazines, of housework and white-collar office work.[58] This development produced a critical turning point for the mechanic trade. As everyday men broadly gained automotive repair skills, this undermined the mechanics' mastery of technology. Mechanics' status in the first half of the twentieth century was based on their talents with technology. This was now threatened. Mass automobility had made the car less special, and the cultural change that came with it across suburban Australia made mechanic work less special too.

Women were pushed away from working in trades, including as motor mechanics, because of suburbanisation and the growing availability of office work. The economic advantages of white-collar work combined with exclusions that discouraged or prohibited women's work in trades. As a result, after the Second World War, women typically abandoned trade work. The few that attempted to remain faced formal barriers, led by trade unions and employers. Margaret Bevege has shown that women tram drivers in Melbourne, who were recruited to fill the shortage of workers similar to motor mechanics, were forced out of work after the Second World War. This was mainly achieved by introducing a formal ban on training women in 1956.[59]

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[56] Barnett, '*Man*'s Man', 153–59, 167; Nanette Carter, 'Man with a Plan: Masculinity and DIY House Building in Post-War Australia', *Australasian Journal of Popular Culture* 1, no. 2 (2011): 167–74. For further discussion of the tensions created by modern work in Australian masculinities, see Waling, *White Masculinity in Contemporary Australia*, 158–65.

[57] Barnett, '*Man*'s Man', 168; Waling, *White Masculinity in Contemporary Australia*, 54–55.

[58] Barbara Ehrenreich, *The Hearts of Men: American Dreams and the Flight from Commitment* (New York: Anchor Press, 1983), 47–50; Kirsty Whitman, 'Looking Out for the "Aussie Bloke": Gender, Class and Contextualizing a Hegemony of Working-Class Masculinities in Australia', PhD thesis, University of Adelaide (2013): 189–208; Waling, *White Masculinity in Contemporary Australia*, 128.

[59] Margaret Bevege, 'Women's Struggle to become Tram Drivers in Melbourne, 1956–75', in *Women, Class and History: Feminist Perspectives on Australia 1788–1978*, ed. Elizabeth Windschuttle (Melbourne: Fontana Books, 1980), 437–43.

Women drivers faced similar discrimination as the car became entrenched in culture as masculine. Misogynistic jokes about female drivers had long existed, but the automotive industry celebrated women motorists. *Australian Motorist*, the trade journal for the RACV in the 1900s–1910s, included a regular column specifically for women motorists.[60] As discussed in Chapter 1, this column had helped women to carve out a place within Australia's early automotive culture. As motorist organisations both enlarged their memberships and became more masculinised in the 1950s, however, automotive magazines changed their tone. Women's columns vanished, while cartoons, jokes and snide letters about women drivers appeared in their pages.[61] While some jokes were local, many were imported from American and British magazines, reflecting similar transformations taking place overseas.[62]

The growing masculinisation of automobiles also played out in imagery. Advertising became more overtly sexual – and sexist. Sexy advertisements portrayed cars as a man's domain, especially when it came to automotive parts.[63] This was not entirely new. Mintex Brake Lining advertisements, which appeared in the NRMA's *Open Road* in the late 1930s, used small cartoons to portray a couple whose travels continually suggested a link between cars and sexual freedom.[64] This was exceptional in that period, however. Advertisements in the late 1950s did away with such subtlety. Scantily clad women were increasingly common, and advertisers strained to link them to oil and piston rings.[65] Many of these advertisers responsible for the inclusion of these sexualised images in trade journals understood that they spoke to a male audience. But even advertisements for cars, which spoke to mainstream audiences of men and women, were gendered. Advertisers spoke to men as the main audience, although acknowledged that women had an important influence on car purchases. What interested men and women differed, at least according to advertisers. Men were portrayed as uniquely interested in the engine, while women were supposedly focused on aesthetics and

[60] Minerva, 'The Woman's Point of View', *Australian Motorist*, 15 December 1908, 195; Artemis, 'Women A-Wheel', *Australian Motorist*, 1 July 1914, 1261–62.
[61] Davison, *Car Wars*, 30–31; Clarsen, 'The Flip Side', 25–26. Examples can be found in *Australian Automobile Trade Journal*, December 1952, 52–55, and *Australian Automobile Trade Journal*, December 1958, 39, 48, 67. Davison (*Car Wars*, 10) has also observed this in mainstream men's magazines, like *Man, Smith's Weekly* and *Sporting Globe*.
[62] Clarsen, 'The Flip Side', 24–25.
[63] Davison, *Car Wars*, 52–57; Frank Bongiorno, *The Sex Lives of Australians: A History* (Collingwood, Vic.: Black Inc, 2012), 211.
[64] These advertisements ran irregularly between 1940 and 1941. See examples in *Open Road*, 3 October 1940, 3; *Open Road*, 14 November 1940, 3; *Open Road*, 12 December 1940, 11; *Open Road*, 9 January 1941, 3; *Open Road*, 17 April 1940, 3.
[65] 'Cords Advertisement', *Australian Automobile Trade Journal*¸ March 1954, 20; 'Bardahl advertisement', *Australian Automobile Trade Journal*, July 1958, 17.

comfort.[66] Cars for women were in fact a major market, but they were consistently described as the family's secondary vehicle, assuming that a woman would not own one before the man of the house.[67]

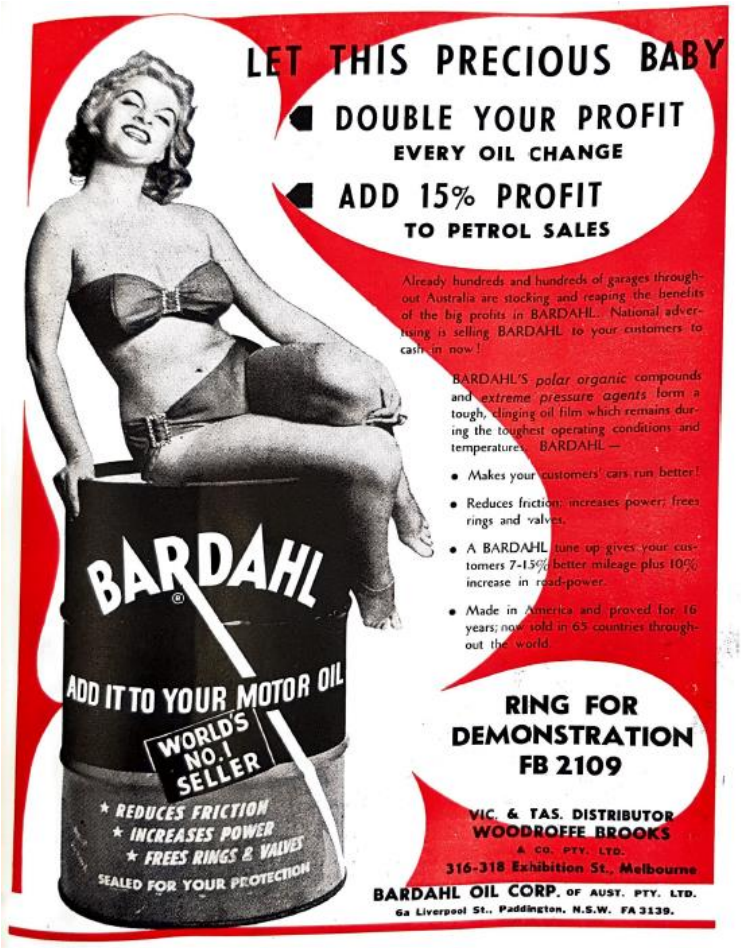

Image 24 'Bardahl Advertisement', *Australian Automobile Trade Journal*, July 1958, 17. Reproduced with permission from VACC.

More women than ever got behind the wheel, contrary to the beliefs of advertisers. This reality was rarely depicted in popular culture and created misnomers about women motorists.[68] Davison notes that a 1968 survey by the RACV revealed that women's approach to buying cars was identical to men; they focused on how the car worked rather than how it looked.[69] Simultaneously, the women who had served in the military and emergency forces retained their mechanical expertise. As Clarsen argues, many such women continued to work on cars, either their own or their neighbours, despite being unable to find employment in the

[66] Davison, *Car Wars*, 38–40; Bell, 'Putting Dad in the Picture', 921–22; 'Women Influence Car Sales', *Australian Automobile Trade Journal*, 1 March 1954, 36; Clarsen, 'Automobiles and Australian Modernisation', 363.
[67] Walker, 'Car Culture', 45; Davison, *Car Wars*, 34–39.
[68] Clarsen, 'The Flip Side', 26.
[69] Ibid., 37–38.

mechanic trade.[70] It is impossible to tell how widespread this was, but it was clear the portrayal of women as uninterested in the internal mechanics of cars was based on gender stereotypes.[71] The separation of women from mechanic work is reflected in the official figures of the period, which show no women mechanics. This is not surprising as the automotive trade was insistent that there were no women mechanics at the end of the 1920s either, when, as Chapter 2 showed, this was not the case.[72] Barred from the trade and ignored by popular culture, women who repaired cars in the 1950s did so out of sight and out of mind from the official structures of the motor mechanic trade.

The erasure of women's historic involvement in automotive industries also occurred in the world of car racing as a result of the masculinisation of car culture. Through the 1950s, car racing became increasingly popular among members of both the middle and working classes. Australians followed new heroes like Jack Brabham with growing interest.[73] Brabham, the mechanic apprentice who moved into the Air Force during the Second World War (as discussed in Chapter 4) began motor racing in 1946. Brabham used his engineering and mechanical skills to build a car of his own and began racing it around Sydney.[74] Australians followed his subsequent triumphs throughout the 1950s, both locally and in Europe. With his Formula 1 World Championship in 1959, which included a notable victory at the Monaco Grand Prix, the public acquired a working-class hero to celebrate as a symbol of Australia's new motoring age.[75]

None of Australia's successful female racers attracted Brabham's public acclaim. After winning championships across Europe in the 1930s and competing in some of the biggest races in the world at Le Mans and Monaco, Joan Richmond was unable to find sponsorship when she returned to Australia after the Second World War and was forced to retire from racing.[76] More broadly, women motorists were used to strengthen stereotypes that women were no good at technical repair work even if they were commended for their driving skills. This was the case for the members of the small number of all-women teams who

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[70] Clarsen, *Eat My Dust*, 163–65; Clarsen, 'The Flip Side', 25–27. A similar situation existed in the United States, see Borg, *Auto-Mechanics*, 121.
[71] Davison, *Car Wars*, 28–40.
[72] 'No Women Wanted – In Engineering Trade', *Daily News* (Perth), 30 October 1929, 7.
[73] Davison, *Car Wars*, 58–61.
[74] Brabham, *Jack Brabham's Motor Racing Book*, 10; Jack Brabham and Tony Davis, in Davis, *Wide Open Road*, 125.
[75] Connell and Irving, *Class Structure in Australian History*, 200.
[76] '[Biographical Cuttings on Joan Richmond, Racing Driver, Containing One or More Cuttings From Newspapers or Journals]', 2007750, Canberra: National Library of Australia; 'Joan Richmond Collection', *National Museum of Australia*, https://www.nma.gov.au/explore/collection/highlights/joan-richmond. See also David Price, *Joan Richmond: The Remarkable, Previously Untold Story from Melbourne to Monte Carlo and Beyond* (Mooroolbark, Vic.: JR Publishing, 2011).

entered the Redex Trials. The only female participant to receive extensive attention in the press was Winifred Conway, the 'Galloping Grandma', after she entered the 1953 and 1954 trials. According to Georgine Clarsen, female participants presented a 'challenge to the prevailing ethic of larrikin masculinity' that surrounded the Redex Trials (larrikin being an Australian colloquialism referring to a mischievous, uncultivated young man), and increasingly automotive culture in general.[77]

Without significant press coverage, women drivers in the Redex Trials had little effect on masculine stereotypes. That women took part in the Trials certainly did little to confront the notions that women were technologically incompetent. After entering the 1953 Trial as part of an all-women team, Lois Rowe explained to the press that she and her colleagues had little confidence in their ability to fix anything mechanical; 'If anything goes wrong, we'll just have to cross our fingers and hope for the best'.[78] Conway promoted her mechanical ignorance as her strength. She was quoted as saying 'My motto is to never touch the engine' and criticised her male competitors for spending too much time 'tinkering' with their cars.[79] Such women's experiences directly contrasted with Brabham's. He used his background as a motor mechanic to encourage men to get under the bonnet of their cars.[80]

[77] Clarsen, 'The Flip Side', 27.
[78] *Australian Women's Weekly*, 26 August 1953, 28, as quoted in Clarsen, 'The Flip Side', 27.
[79] *Australian Women's Weekly*, 26 August 1953, 29, as quoted in Clarsen, 'The Flip Side', 32; Clarsen, 'The Flip Side', 34.
[80] Brabham, *Jack Brabham's Motor Racing Book*, 94–99.

Image 25 Mechanics working on racing cars. 1945–1954?. H2014.129. State Library of Victoria, Melbourne.

Women were not only pushed out of the mechanic trade during the 1950s, but the female mechanics of earlier decades were erased from cultural memory. Other than a short newspaper article on a small number of women garage owners in Perth in 1954, there are no records of women working as mechanics in Australia during the 1950s. Even then, there is no evidence indicating that women garage owners employed other women in their garages, nor evidence that they engaged in any motor maintenance work of their own.[81] It was not until the arrival of second-wave feminist movements in the 1960s that women returned to the trade. Lorraine Faulkner was the first female mechanic registered with the Victorian Apprenticeship Commission in 1964.[82] The appearance of girls at an apprenticeship conference in 1967 made garage owners concerned at the possibility of 'mini-skirt mechanics' who might be disruptive to masculine camaraderie.[83] By the 1970s, 'Give a Girl a Spanner' became a catch cry for feminists invading masculine areas of work, including the motor mechanic trade. But by then, motor mechanic work had been claimed by men. The dirty garage and physically demanding

[81] 'Women Garage Owners Attend a Conference', *West Australian*, 29 July 1954, 8.
[82] Jayne Stuart, 'A Mechanic Called Miss', *Australian Women's Weekly*, 23 December 1964, 7.
[83] 'Mini-Skirt Mechanics!', *Australian Automobile Trade Journal*, April 1967, 14.

work allowed male bosses and workers alike to believe automotive maintenance was no place for women. Both had an interest in keeping garages as male-only spaces.[84]

Even when women found apprenticeships, men tended to be hostile to the intrusion into 'their' spaces. Women mechanics faced discrimination and harassment, verbal and sexual, which sometimes successfully pushed them out of garages.[85] Clarsen concludes that 1970s feminist movements did not create long-lasting change because, in seeking equality of opportunity, they failed to address the 'large and complex issues at the heart of women's absence' – namely the centrality of the performance of hypermasculine cultures by which mechanics actively sought to keep the garage a place for men only.[86] This was exacerbated by pressure from outside of the trade encouraging women to stay away from the dirty work of mechanics. Clarsen notes that high-school classes and career counsellors often tried to pull women away from the 'wrong' subjects and careers, usually in 'masculine' areas of mathematics or engineering.[87] Deepening gender divisions helped repel women from the trade not only by making garages unsavoury and unsafe spaces but by also holding up alternative feminine ideals. For many women, such a sense of what constituted true womanhood directed life and career ambitions away from such 'dirty' work. In this sense, it was not just that women were excluded from the trade by patriarchal institutions. The redirection of desire meant that women also actively excluded themselves.

Embodied Technologies and Mechanical Performance

Mass automobility brought a new generation of young men into motor mechanic work, either formally or as a backyard hobby. A new wave of amateur mechanics were able to conduct

[84] Joan Eveline, 'Heavy, Dirty and Limp Stories: Male Advantage at Work', in *Gender and Institutions*, 92–96. Clare Burton describes a similar line of thought amongst male carpenters, see Burton, *The Promise & The Price*, 6. A spokesman for the Vehicle Builders' Employees' Federation would later claim that women's breasts prevented them from working underneath cars ('Girls "Don't Measure Up" in the Motor Mechanics' Domain', *Canberra Times*, 3 May 1988, 3).

[85] 'Women in Industry', *Australian Automobile Trade Journal*, December 1967, 26; Clarsen, 'Of Girls and Spanners', 33–36; Patricia Weeks, '"Getting Taken Seriously by the Guys": Women Training for Non-Traditional Occupations', *Hecate* 17, no. 1 (1991): 54. See also Eveline, 'Heavy, Dirty and Limp Stories', 97–98.

[86] Clarsen, 'Of Girls and Spanners', 32–34; Calvert, *Girls and Apprenticeships*, 124–27. For a recent analysis of gender relations in the trade, see Michaela Brockmann, '"It Doesn't Take Much Force": The Negotiation of Gender by Two Women Motor Mechanic Apprentices Through the Biographical Lens', *Journal of Vocational Education & Training* 73, no. 3 (2021): 444–48.

[87] Clarsen, 'Of Girls and Spanners', 28–32. See also Pierre Bourdieu, *Masculine Domination* (Cambridge: Polity Press, 2001), 94–95. Gender norms affect children, and their career aspirations, as early as primary school, see Laura Scholes and Sarah McDonald, 'Year 3 Student Career Choices: Exploring Societal Changes in Constructions of Masculinity and Femininity in Career Choice Justifications', *British Educational Research Journal* (2021): doi:10.1002/berj.3767.

maintenance work in their own suburban garages. The 'backyard mechanic' became a catchphrase for all non-garage maintenance work, regardless of who performed it. For clarity, I will use the term 'backyard mechanics' to refer to trained mechanics conducting work off-site, like those discussed in Chapter 3, and 'amateur mechanics' for non-trained mechanics conducting maintenance at home. M.G. Vincent's short story 'Backyard Mechanic', published in *The Bulletin* in 1955, sheds light on the latter men. Its main protagonist was Jock Tarrant, an ordinary white, middle-class figure who became obsessed with tinkering with the new family car. For Tarrant, any and all problems with his 'car had to be located, and, if at all possible, eliminated'.[88]

The *Bulletin* story focused on a Christmas holiday in which Tarrant, his (unnamed) wife, and their son, were planning to take with their neighbours, the Thatchers. In the lead-up to the holiday, Tarrant's obsessive work on the car meant that it was more often than not scattered in pieces across the garage. This caused tension between him and his wife, who became increasingly sceptical that he would have the car working in time. In this respect, the story reinforced the gender stereotypes of the era, in which men's place was the garage and women's the home. Tarrant's wife is portrayed as having no understanding of the work her husband was doing. Each time she tries to assist, she is scared off by explosions or drenched in mud.[89]

The author of 'Backyard Mechanic' suggested that Tarrant's obsession with amateur maintenance was fuelled by two factors: the cost of repairs and the scarcity of trained mechanics in the mid-1950s. Tarrant was convinced that his neighbour's car had significant problems. He was also convinced, however, that 'no garage would be bothered with it. They're snowed under with *easy* jobs. They are not going to take on a headache of a wreck if they can get out of it'.[90] In this respect, the *Bulletin* story reflected the reality of the period. Technological advances at the manufacturing stage had made modern cars safer and more reliable than their predecessors. This had changed mechanics' relations to repair. By the start of the 1950s, automotive industry trade journals were discussing how the role of the mechanic was changing in response. An article published in the *Australian Automobile Trade Journal* in 1951 indeed suggested precisely what Tarrant claimed in 'Backyard Mechanic'. 'No longer do major repairs and reconditioning jobs constitute the bulks of [a mechanic's] work', the

[88] M.G. Vincent, 'Backyard Mechanic', *The Bulletin*, 8 June 1955, 20.
[89] Ibid., 22.
[90] Ibid.

author of the article claimed. Rather, the focus for mechanics was on maintenance, making sure the car continued to run smoothly.[91]

Safety became a major focus for manufacturers, especially amongst the European models that flowed into the Australian market at the end of the 1950s.[92] Though advances in the manufacturing of cars improved their safety, this did not prevent accidents, which increased throughout the 1950s. Evidence of the effects of these safety features can be seen in the number of fatalities caused by accidents. This number remained steady despite the increase in accidents (see Figure 15).

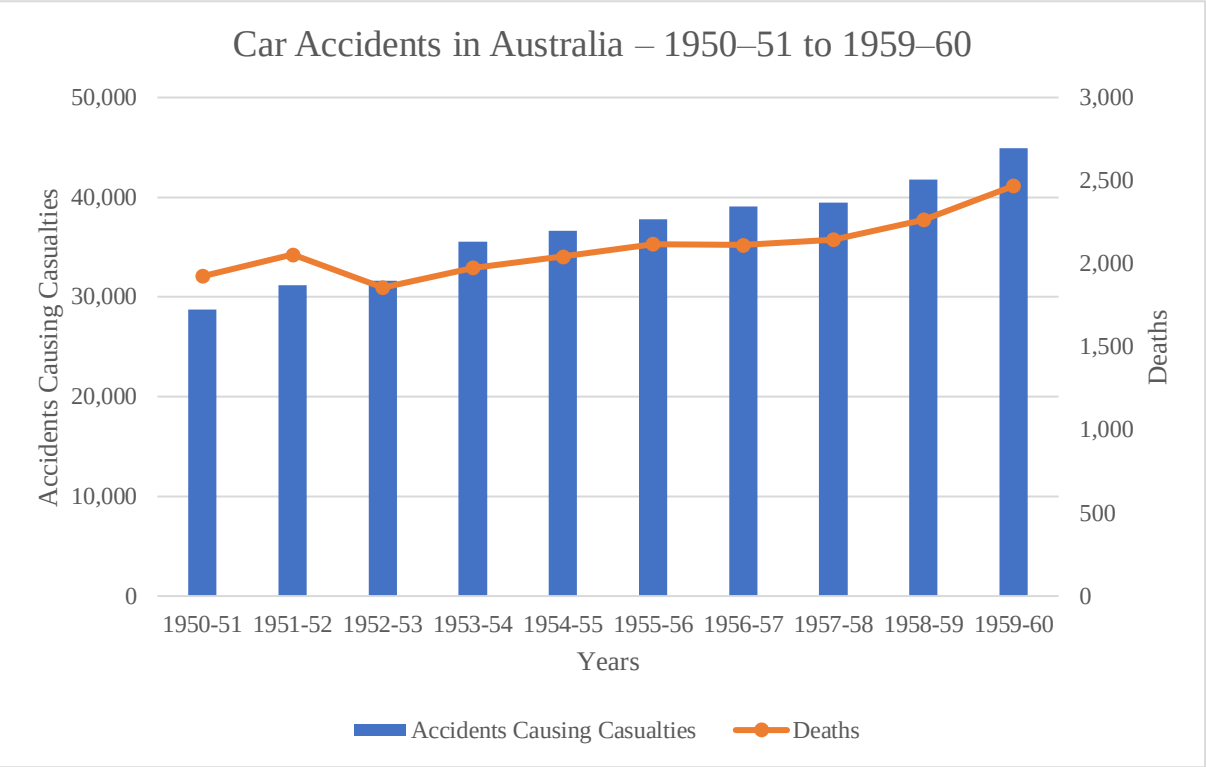

Figure 15 Car Accidents in Australia, 1950–51 to 1959–60. Sources: *Year Book Australia 1954*, 141; *Year Book Australia 1955*, 171; *Year Book Australia 1956*, 249; *Year Book Australia 1957*, 406; *Year Book Australia 1958*, 416; *Year Book Australia 1959*, 539; *Year Book Australia 1960*, 548; *Year Book Australia 1961*, 559.

The changes in automobile technology just described help to reduce mechanics' standing in occupational hierarchies. Cars may have been viewed as complicated, masculine technology, but they were no longer special. Neither was maintaining one. Kevin Borg refers to this as 'a central paradox of technology's middle ground … almost any involvement with

[91] 'Automobile Efficiency', *Australian Automobile Trade Journal*, 1 July 1951, 42.
[92] McDonagh, 'Historical Overview of the Collision Repair Industry', 98.

automobiles – owning, racing, tinkering – bestowed status, except for those who repaired them for a living'.[93] The standing of mechanics was tied inherently to the symbolic status of the technology they worked with. As cars became more affordable, mechanics lost the leverage they possessed over motorists. Borg suggests that this paradox of maintenance workers status was caused by low wages within the trade, which have a 'chicken-and-egg relationship' with status.[94]

In the United States, mechanics' wages were kept low by flat-rate and piecework systems, relics of Ford's control of the trade.[95] Controls in the Australian industrial system prevented the casual wages caused by a piecemeal system. The basic wage established a floor for negotiated award wages, which in turn were tied into broader economic indicators. Mechanics wages rose dramatically in the early 1950s, combined with increased prosperity and the shortage of trained mechanics. Yet the Australian industrial system did not prevent stagnations in wages. The growth in mechanics' wages slowed in 1956, only rising with increases to the basic wage for the rest of the decade (see Figure 14). Wages in the United States slowly increased, so much so that Australian mechanics complained they were making less money than their unionised American counterparts by the end of the decade.[96] But the piecework pay system in the United States meant pay could differ wildly from week to week, garage to garage. In Australia, weekly pay remained consistent even when awards stagnated.

Technological changes also affected the work itself. Increasing safety standards made motor repairs more predictable, allowing maintenance to become monotonous. General Motors-Holden had their service department guided by a 'Standard Time Schedule', noting exactly how long each maintenance task should take.[97] While this was intended to impose Taylorist methods of discipline on wages, it made garages more selective in the work they undertook. Garages began prioritising cars with minor issues to produce a faster turnaround time and maximise profits. This offset the rising costs of wages, combining efficiencies with increased prices for basic repairs.[98] But this also had an adverse effect. Flooding garages with easy maintenance work incentivised them to turn away cars with major issues. In response, car owners learned how to maintain and repair their own cars.

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[93] Borg, *Auto-Mechanics*, 115, 132–33.
[94] Ibid., 136. A more specific discussion over the issues that beset the American trade in the 1950s, such as labour issues and racial tensions, see Borg, *Auto-Mechanics*, 128–35.
[95] Borg, *Auto-Mechanics*, 132–33. See also Stephen L. McIntyre, 'The Failure of Fordism: Reform of the Automobile Repair Industry, 1913–1940', *Technology and Culture* 41, no. 2 (2000): 269–74.
[96] 'Australian mechanics as good as American', *Australian Automobile Trade Journal*, December 1959, 52.
[97] 'Holden FC–FB Service Standard Time Schedule', 1960, M56, George Brooks Library and Learning Centre, Birdwood, SA.
[98] 'Are You in the Automobile Repair Business?', *Australian Automobile Trade Journal*, 1 August 1953, 18.

Motorists' associations had long been pushing for car owners to learn motor maintenance skills (see Chapter 1) but mass-ownership, alongside the difficulty in getting problems repaired, accelerated this process. The NRMA assisted in growing this culture of home repairs by increasing its technical department, which ran basic maintenance courses and published repair manuals written for unskilled owners.[99] Motorists who were unable to get their car seen by an expert mechanic developed their own skills – or were compelled to leave their car under cover.[100]

As Vincent outlined in 'Backyard Mechanic', automobile maintenance was portrayed as a masculine duty, an aspect of providing for the family and ensuring their safety. Vincent's story ended with the Tarrants stuck at home, days after the Thatchers already left for their Christmas holiday. Tarrant's wife was furious with her husband but confused at the sounds from the garage: 'Wearily Mrs. Tarrant listened to her husband's happy whistling and to the little boy's shrieks of joy as he puddled in the grease and played with the spanners. "How can they be so happy!" she wondered'.[101] Tarrant finally got the car working, and the family headed off on their holiday, catching up to the Thatcher's car just in time to see smoke billowing from it. A chance collision between the two cars saved the Thatchers from plunging over the mountain road to certain death. Tarrant thus became the hero in the end, his obsessive car maintenance allowing him to fulfil his patriarchal role as protector of the family.[102]

The 'Backyard Mechanic' story celebrated the characteristics of suburban masculinity. Such fiction resonated with broader cultural changes that men experienced in their lives.[103] While many men may have imagined themselves to be like Tarrant, not all possessed his mechanical skills to save the day. Worse, by tinkering in the garage, many unskilled men became overconfident. By the end of the decade, mechanics complained of the many 'know-it-all' customers who questioned their every decision. This had become so common that in November 1959, the *Australian Automobile Trade Journal* published a guide on how mechanics should deal with customers who challenged them: 'Most times, the customer will be wrong, but it is your business not to try and offend him and yet give his car the service it actually needs, and not what he wants'.[104]

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[99] Broomham, *On the Road*, 102; 'NRMA's Annual Report', *Open Road*, 1 October 1955, 1, 11.
[100] Broomham, *On the Road*, 102.
[101] Vincent, 'Backyard Mechanic', 22.
[102] Ibid.
[103] Grimshaw, et. al., *Creating a Nation*, 268–69.
[104] 'Do Customers Tell You What to Do?', *Australian Automobile Trade Journal*, 1 November 1959, 39.

Image 26 'Mr 'Know-it-all', *Australian Automobile Trade Journal*, 1 November 1959, 39. Reproduced with permission from VACC.

A connection of cars to youth became vital in the emergence of a new wave of apprentice mechanics in the latter half of the 1950s. Vincent's story ended with Tarrant promising to repair the Thatchers' vehicle; his son celebrating the prospect of having a second car to play with and fix up in the backyard. Cars became a focal point in the masculine relationship between father and son.[105] A connection between cars and masculinity as a foundation for both identity and work was encouraged as young boys grew up in the garage watching their dad fix the family car.[106] This spurred youth automotive subcultures in the 1960s. Mark Peel shows that, in outer suburbs like Elizabeth in South Australia, 'maintaining the car generated a whole network of exchanges in parts, labour and advice, through which

[105] Vincent, 'Backyard Mechanic', 22.
[106] Walker, 'Car Culture', 50–55; Ulf Mellström, 'Machines and Masculine Subjectivity: Technology as an Integral Part of Men's Life Experiences', *Men and Masculinities* 6, no. 4 (2004): 369–71. See also 'John Bailey Will Get To Mallacota', *RoyalAuto*, 1 December 1953, 10.

men built links with kin and neighbours in a way they never would through organised "community participation"'.[107]

These cultural relations contributed to the masculinisation of mechanics' work and became a key motivator for apprentices entering the trade. This was particularly the case for young, working-class men who performed their identities through cars. This, however, produced a problem. As the trade became more distinctly masculinised, car culture increasingly ran counter to the conservative values of the period. The car provided freedom for young people, but it also offered privacy for sexual experimentation.[108] This combined with the thrill of speed, as young men imitated idols like Jack Brabham, to form the 'hoon' driver, which frightened adults who saw the increasing dangers cars possessed.[109] Hoons were perceived as a new form of young, reckless 'larrikins'. Larrikinism, as Melissa Bellanta has explored, was a form of hoodlum that emerged from Australian youth cultures and street gangs of the late nineteenth century. Since the post-war era, the term has become sanitised, referring to boisterous men, often with a disregard for authority.[110] Hoons were more closely linked to the former style of larrikinism. Social researcher Linley Walker dates the emergence of hoon culture to the mass automobilisation of the 1950s.[111]

This cultural development affected material relations. While suburban husbands tinkering with automobile maintenance and repair at home supported rather than subverted the new orthodoxy regarding gender relations and middle-class values in the 1950s, taking up a career as a motor mechanic became associated with the hypermasculinised youth culture with the figure of the 'larrikin hoon' at its centre: a rough youth with a hotted-up racing car full of boasts about sexual conquests in the back seat.[112] As Pierre Bourdieu has noted, social status is affected by culture which in turn shapes class relations.[113] This was evident in the fact that the cultural association between the mechanics and the larrikin hoon negatively affected the esteem in which the work of mechanics was held.[114] Parly for this reason, the motor mechanic trade became divided between what Stephen Meyer called the 'respectable' and

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[107] Peel, *Good Times, Hard Times*, 110.
[108] Davison, *Car Wars*, 52–54; Bongiorno, *The Sex Lives of Australians*, 210.
[109] Davison, *Car Wars*, 65–67; R.W. Connell, *The Men and The Boys* (St Leonards, NSW: Allen & Unwin, 2000), 185.
[110] Melissa Bellanta, *Larrikins* (St Lucia, Qld.: University of Queensland Press, 2012).
[111] Walker, 'Car Culture', 45. Andrew Warren and Chris Gibson ('Blue-Collar Creativity: Reframing Custom-Car Culture in the Imperilled Industrial City', *Environment and Planning A* 43 (2011): 2705–20) argue that the hoon typecast is a simplification of a complex production of working-class creativity and identity.
[112] Brett, *Australian Liberals and the Moral Middle Class*, 7–12; Davison, *Car Wars*, 52–58, 62–72; Walker, 'Car Culture', 41–51; Whitman, 'Looking Out for the "Aussie Bloke"', 302–5.
[113] Bourdieu, *Distinction*; Weininger, 'Foundations of Pierre Bourdieu's Class Analysis', 84–85.
[114] Paternoster, Warr and Jacobs, 'The Enigma of the Bogan', 435. See also Waling, *White Masculinity in Contemporary Australia*, 168.

'unrespectable' working class.[115] As the trade became increasingly associated with rough working-class youth, it lost respectability, contributing to the fact that parents from both the middle class and respectable working class warned their children not to become mechanics by the end of the 1950s.[116] More and more, being a mechanic was regarded as a low-waged, low status avocation for disreputable youth with few prospects for career advancement. The growth in mechanic apprentices towards the end of the 1950s thus took place entirely among working-class youth (see Figure 16).

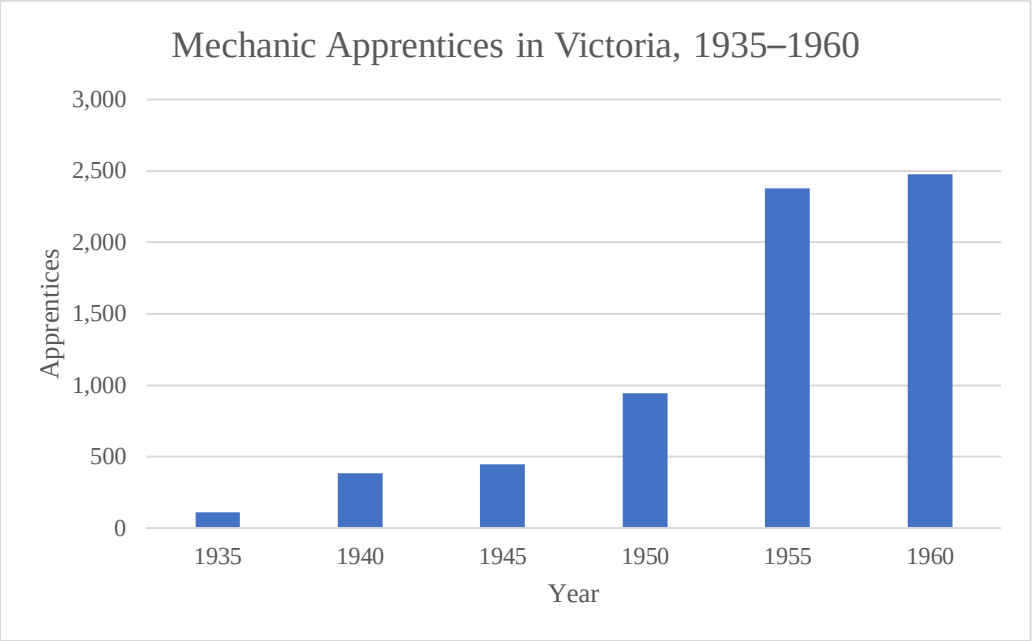

Figure 16 Mechanic Apprentices in Victoria, 1935–1960. Source: *Australian Automobile Trade Journal*, October 1961, 49.

Conclusion

Australian mechanics were beset by unique labour changes, which will be discussed in greater detail in the following chapter, but these material conditions alone do not explain why the status of mechanics declined and pay stagnated. They also fail to explain why so many young men still entered the trade, despite the lesser status and relatively poor prospects associated with mechanics' work. Cultural change helps to explain these factors. Attitudes towards

[115] Meyer, 'Work, Play and Power', 117–18.
[116] George Pockett, 'We Must Sell the Motor Industry as a Career', *Australian Automobile Trade Journal*, April 1957, 14–15.

gender, and the supposed roles of men and women, became entwined with changing understandings of cars as they became more common.

The social and cultural developments of the 1950s discussed in this chapter exposed the mobility, in Urry's sense, of class consciousness and class relations. Worker agency was critical here. Many mechanics at the end of the Second World War baulked at the idea of returning to garage work when better opportunities presented themselves in other areas of engineering. Towards the end of the 1950s, these more experienced mechanics were replaced by waves of male apprentices, attracted to the trade due to their social relationships with cars. Considerations of money and status alone cannot explain this as, by the end of the 1950s, becoming a mechanic no longer promised much in either case.

The development of a working class and youthful 'taste' for cars, in a Bordieuan sense, needs to be understood via cultural developments. The main cause of this cultural change was the association between cars and hegemonic masculinity. As Connell explains, changes within middle- and working-class culture in the post-war era affected how masculine identities were performed. Men's relationships with cars, born out of traditional associations between technology and masculinity, then split along class lines. This was most visible in the act of automotive repair. Middle-class men worked on their cars on a weekend, as a hobby. It was young working-class men who undertook careers as motor mechanics.

The association of car maintenance and various forms of class-aligned masculine identities transformed the trade. The masculinisation of the trade brought with it a range of misogynistic views. Men restricted women from entering the trade, while women themselves were discouraged by the norms of emphasised femininity. This paved the way for the development of a form of hypermasculinity, embodied in young, male 'larrikin hoons' who took up apprenticeships as mechanics. This element directly affected the social status of the trade. Of course, these cultural changes alone were not enough to affect mechanics' class positioning. The final two chapters will explore the material effects of this cultural change, as the influx of fresh new apprentices allowed employers to regain power over their relations with workers through a deliberate regime of deskilling and industrial isolation.

Chapter 6 – Deskilling Mechanics

In the early years of the twentieth century, cars were complex and expensive pieces of technology and mechanics were their 'surgeons' earning widespread admiration. This had changed by the 1950s. As car ownership increased, the law of supply and demand made mechanics more important, but it also paradoxically made them less valuable. While this was partly a result of social and technological change, employer groups – and to a lesser extent motorists' organisations – played an active role. The motor trader groups representing mechanics' employers went to particularly energetic lengths to 'deskill' automotive repair work. These organisations sought to reduce mechanics' work to a narrow range of simpler tasks than they had performed previously. Consequently, mechanics shifted from being regarded as technological 'surgeons' to the quintessential representatives of the working class. They ended up with fewer career opportunities and transferrable skills and performed work that was less creative and innovative than in earlier decades. The contraction of the range of tasks they performed at work not only diminished their ability to change or develop careers but also reduced their perceived social value.

Mechanics were deskilled through a multidimensional process. Technological advancements played a role. Improvements in car engine design and manufacturing quality meant that less work was needed to repair them. As a result, mechanics employed at motor garages spent most of their time on routine maintenance and much less on complicated repairs. Changes introduced by employers to deskill mechanics were more significant, as they served as a deliberate strategy to suppress mechanics' rising wages. The motor trader organisations experimented with multiple strategies directed at this end. Some were unsuccessful, such as the efforts to redefine mechanics' work through arbitration and to 'departmentalise' the work conducted in garages.

The most effective strategies used by motor trader groups to deskill mechanics related to their education. They worked to overhaul educational qualifications for those involved in automobile repair, emphasising the primacy of management over technical workers. In time, the highest mechanics qualifications came to revolve around managerial skills. Foremen, who were previously experienced technical supervisors, were transformed into managers. Overall, this change reduced the control mechanics were able to exercise over their work and denigrated their status in society at large.

Understanding how mechanics came to be deskilled over the 1950s and 1960s requires an analysis of the behaviour of different actors in the automotive repair industry. The focus in

this chapter is on the motor traders' organisations. I am most concerned with exploring the efforts of these organisations and the employers they represented to subdivide mechanical skills into technical and managerial categories, splitting mechanics into individualised departments and reorganising the education of apprentices into specialised and distinct areas of automotive repair.

The deskilling process did not occur without resistance, although rarely in any organised form from trade unions. The key forms of resistance were instead waged by mechanics performing work on their own behalf and in their own time, usually in their own backyards. This illegal – or at least legally 'grey' – work allowed those who carried it out to maintain a range of skills at the same time as supplementing their income. Since this was an individualised mode of resistance only available to certain mechanics, however, it did not translate to effective action for the trade as a whole. The institutional and structural developments that deskilled mechanics went largely unchallenged.

This chapter first describes the historiography of deskilling, exploring the support and criticism for Harry Braverman's deskilling thesis, which focuses on how employers used scientific management to supplant the authority of workers. I identify and describe three contributing factors to the deskilling process for mechanics: firstly, technological change; secondly, new labour sources that simplified and devalued their work; and lastly, and most significantly, employers' efforts to redefine mechanics' work by introducing new specialisations. The chapter considers some mechanics' resistance to deskilling by working outside of formal employment. I then conclude by showing how the promotion of management skills over technical ones entrenched the deskilling process.

The Deskilling of Mechanics

Deskilling is a characteristic of industrial specialisation, old enough to be observed by economic philosopher Adam Smith in the eighteenth century. In his classic description of a pin factory, Smith argued that the specialisation of labour made work more efficient by reducing the skills required for tasks. This was achieved by simplifying each element of the work process and making it more repetitive. New factory technologies then typically accelerated the process. This way of thinking about deskilling cast it as a 'natural' result of

economic and technological progress.[1] If this approach were applied to Australian mechanics, it would suggest that their loss of status was an inevitable consequence of progress. Bosses would appear as mere bystanders, playing no active role in devaluing mechanical expertise.

Some of the theorists who support Smith's positive view of labour specialisation have gone even further to argue that deskilling, in the aggregate, did not even happen. In the 1980s, Paul Attewell argued that while the specialisation of labour created an unskilled workforce, technological change brought a new range of skilled work into being. Rather than a large working class carrying out manual labour in factories, more people now worked with computers in offices. Attewell suggested that the 'natural' process that Adam Smith described did not, on the whole, proletarianise the workforce. Rather, economic progress helped to produce a broad upskilling, increasing educational requirements across the population and enhancing investment in human capital.[2] This 'upskilling' argument suggests that specialisation and technological advances have benefitted both workers and businesses over time: while workers have become more skilled and better paid, businesses have become more productive and profitable.

By contrast to these economistic traditions, labour historians typically regard deskilling as a consequence of class conflict. The specialisation of labour, Marx argued, is driven by a desire to 'break the bargaining power of skilled workers' on the part of capital.[3] From this perspective, the managers of Adam Smith's pin factory did not just break individual tasks into small simple components because it was more efficient. Rather, they reduced their employees' work into simplified and repetitive tasks as part of a quest to reduce their wages. Employers' key aim was to devalue labour and increase their relative share of value produced at work. This resulted in mechanics being confined to repetitive tasks that, as Marx said of all workers, were bad for their bodies and souls as well as their wages.[4]

As a category of analysis, deskilling came to the fore of scholarly inquiry after the publication of Harry Braverman's 1974 book, *Labor and Monopoly Capital.* Following in a Marxist tradition, Braverman sought to explain the deskilling of craft labour in the nineteenth century to explain its occurrence in twentieth-century office work. He argued that a separation of the hand and the brain had taken place in modern workplaces. Deskilling took place, he

[1] Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* [1776] (Harmondsworth: Penguin, 1970); Florian Brugger and Christian Gehrke, 'Skilling and Deskilling: Technological Change in Classical Economic Theory and Its Empirical Evidence', *Theory and Society* 47 (2018): 668–69.
[2] Paul Attewell, 'The Deskilling Controversy', *Work and Occupations* 14, no. 3 (1987): 326–27.
[3] Brugger and Gehrke, 'Skilling and Deskilling', 670.
[4] Marx, *Capital*, 455–91.

said, whenever work was simplified to a point where individual thinking was no longer required. The rise of specialised 'brain work', now the domain of supervisors, meant not only that workers were paid less, but their work was less rewarding. This separation of the hand and the brain enhanced employers' control over workers, since employers took the more interesting and better paid component of the work. With fewer skills required to complete their allocated tasks, workers' status in the occupational hierarchy was reduced. The result was a greatly reduced ability to negotiate with employers to secure improvements in pay and conditions.[5]

As Braverman saw it, workers had fewer transferrable skills as a result of the 'separation of hand and brain' in modern workplaces. They were thus less able to negotiate conditions across different industries, losing the ability to engage in the sort of mobility-effort bargaining conducted by mechanics after the Second World War.[6] Braverman also argued that deskilling in modern craft workforces was historically enhanced by the 'scientific-technical revolution'. He believed that technological development did not result in an aggregate upskilling. Rather, it was accompanied by a rise in managerialism, leading to further worker oppression. As he explained:

> In the capitalist mode of production, new methods and new machinery are incorporated within a management effort to dissolve the labour process as a process conducted by the worker and reconstitute it as a process conducted by management. In the first form of the division of labour, the capitalist disassembles the craft and returns it to the workers piecemeal so that the process as a whole is no longer the province of any individual worker.[7]

Empirical studies by economists and labour historians support the deskilling theory, particularly the deskilling of workers during the Industrial Revolution.[8] Having said this, Braverman's theories of the processes of modern deskilling have attracted numerous criticisms.[9] Sociologists such as Paul Thompson and Michael Burawoy have argued that

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[5] Braverman, *Labor and Monopoly Capital*, 75–83, 125–31. An example of the interconnection of brain and hand work in the mechanic trade can be seen in Harper, *Working Knowledge*, 117–33.
[6] Smith, 'The Double Indeterminacy of Labour Power', 396–98.
[7] Braverman, *Labor and Monopoly Capital*, 170.
[8] Stephen J. Nicholls and Jacqueline M. Nicholls, 'Male Literacy, "Deskilling," and the Industrial Revolution', *Journal of Interdisciplinary History* 23, no. 1 (1992): 1–18; Raelene Francis, *The Politics of Work: Gender and Labour in Victoria 1880–1939* (Cambridge: Cambridge University Press, 1993); Alexandra M. de Pleijt and Jacob L. Weisdorf, 'Human Capital Formation from Occupations: The "Deskilling Hypothesis" Revisited', *Cliometrica* 11 (2017): 1–30; Brugger and Gehrke, 'Skilling and Deskilling', 663–86.
[9] A thorough summary of the critiques of Braverman's thesis can be found in Francis, *The Politics of Work*, 1–10.

Braverman's deskilling theory is deterministic, underplaying workers' ability to mount resistance campaigns in the workplace.[10] Cultural historians following a similar logic have sought to locate power in the meanings produced in workplaces rather than in the conflicts produced by material conditions. Following Robert Darnton's famous work on the French cat massacre, such cultural historians have looked for performances of class consciousness rather than the effects of class structure.[11] But while deskilling was interlinked with such cultural performances, it was also, as this chapter shows, a matter of industrial relations. These, I argue, affirm a number of Braverman's structural, materialist claims.

Educationalists, who have a stake in arguing for the existence and value of continuous upskilling, have argued that capitalism cannot have relied on relentless deskilling, since education has increased so inexorably over the twentieth century. Several have suggested that Braverman's analysis, despite his own metal trade experience, relies on a romanticised notion of craft work, based on nineteenth-century handloom weaving and metalsmithing.[12] After decades of mass higher education, Paul Attewell and Ulrich Heisig argue that Braverman's theory of control over workers through deskilling is inconsistent with the world in which we live. Moreover, Heisig offers an alternative narrative that relies on European reconstruction during the post-war economic boom. In this narrative, Europe faced skilled labour shortages in the 1950s and 1960s, forcing employers to bring in unskilled workers to fill the shortage. Heisig gives the example of the reliance on Turkish migrants to fill labour shortages in West Germany. While the influx of unskilled workers to meet a skilled labour shortage *did* result in aggregate deskilling, Heisig contends that this 'was not an explicit management strategy'.[13] He points, in contrast, to the desirability of increased educational qualifications across the labour force since Braverman's time. As Heisig sees it, any industrial deskilling that has occurred in the latter half of the twentieth century has been countered by modern management's desire to '[exploit] the productive capabilities that result from high qualifications and knowledge'.[14]

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[10] Paul Thompson, *The Nature of Work* (London: Macmillan, 1983); Michael Burawoy, *The Politics of Production* (London: Verso, 1985), 40–42; Attewell, 'The Deskilling Controversy', 325–26. See also David Spencer, 'Braverman and the Contribution of Labour Process Analysis to the Critique of Capitalist Production – Twenty-Five Years On', *Work, Employment & Society* 14, no. 2 (2000): 227–28.
[11] Robert Darnton, *The Great Cat Massacre: and Other Episodes in French Cultural History* (New York: Vintage Books, 1985), 75–104; Hannah Forsyth and Sophie Loy-Wilson, 'Seeking a New Materialism in Australian History', *Australian Historical Studies* 48, no. 2 (2017): 181–85.
[12] Attewell, 'The Deskilling Controversy', 326–27, 331–32; Ulrich Heisig, 'The Deskilling and Upskilling Debate', in *International Handbook of Education for the Changing World of Work*, eds. Rupert Maclean and David Wilson (Dordrecht: Springer, 2009), 1642.
[13] Heisig, 'The Deskilling and Upskilling Debate', 1640.
[14] Ibid., 1642.

Like Heisig, Attewell argues that the complexity of modern work required education to become more complicated, and that this led to specialisation. Attewell uses clerical work as an example of how deskilling is complemented by educational upskilling.[15] It is well beyond the scope of this thesis to consider the significance of investment in human capital for European reconstruction in a global economy newly dominated by the United States. It is also outside my current remit to enter debates about the credentialising effect of education standards that made accessing work more expensive while proletarianising the white-collar workforce at the same time.[16] Nevertheless, the educationalist position raises important historical questions about how deskilling could have coincided with increased educational standards across the workforce globally. This question is relevant to mechanics in the mid-twentieth-century period and is the subject of chapter 7. To understand how the employers implemented a deskilling process, however, we need to explore how they reshaped the mechanic trade in the 1950s to reverse the gains in conditions won by mechanics in the immediate post-war period.

Limiting Mechanics' Work: Technological Changes and New Labour Sources

The ten years immediately after the Second World War overhauled the mechanic's trade as many skilled, experienced mechanics left the trade for various engineering roles. This left those mechanics who remained in the trade in a position of industrial strength. Mechanics were able to leverage the supply shortage to negotiate for higher wages, often above the award wage. In response, motor traders looked for ways to counter the imbalance of power by redefining the mechanic's role. Two major catalysts that altered the trade in the post-war period were technological change and solving the labour shortage with apprentices and migrant workers. The continued development of the motor car improved its reliability, and cars of the post-war era did not require the constant maintenance and repairs of their early century predecessors.

The combination of a developing culture of amateur repairs, improvements in engine design and manufacturing influenced mechanics' role. Large repair jobs became less common as garages increasingly altered their work to focus more on pre-emptive maintenance. An article from the *Queensland Motor Industry* in 1948 noted that there was no legal definition of a difference between maintenance and repair work, despite there being a clear difference in

[15] Attewell, 'The Deskilling Controversy', 330–41.
[16] Mills, *White Collar*.

the skill required for these two roles.[17] This left mechanics caught between two distinct areas of work with differing skill requirements. While employers were not responsible for these changes, the increased movement towards maintenance work encouraged a shift of focus from reactive repairs to proactive maintenance.[18] Inspection and maintenance provided a steady stream of easy, guaranteed work for motor traders, rather than irregular, large repair jobs.[19] This became the focus of mechanics' work, leaving them with less experience in conducting major repairs.

Technological change gave employers leverage over mechanics, but they still needed to fill the labour shortage to gain control over the trade. Employers initially did this by sponsoring migrant mechanics to work in Australia. Migrants, mainly from Southern Europe, were recruited by motor traders to fill the shortage of workers.[20] The idea of using migrants to address the crisis was floated as early as 1951, with trade journals noting the first arrival of migrant motor mechanics in 1953.[21] These migrant mechanics had a variety of skill levels. Migration documents referred to these by distinguishing between skilled 'motor mechanics' and lesser-skilled 'driver-mechanics'.[22] Many skilled migrant mechanics were not employed in garages, however, but rather as labourers working on state infrastructure projects such as the Snowy Mountains Hydroelectric Scheme and the Woomera Rocket Range.[23] While Australian writer Gideon Haigh claims that migrants made up 'a third of the workforce in motor vehicles, parts and repairs' by the end of the decade, this figure refers to all workers in the Australian automotive industry, including those working on production lines and in metal finishing and painting.[24] The percentage of migrant mechanics working for motor traders was lower than those including workers involved in automotive manufacturing. In 1966, twenty-three per cent of all mechanics – less than one in four – were born overseas.[25]

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[17] 'What Are Repairs?', *Queensland Motor Industry*, 2 August 1948, 23.
[18] 'Automobile Efficiency', *Australian Automobile Trade Journal*, July 1951, 42.
[19] 'The Trade Can Handle Safety Checks', *Australian Automobile Trade Journal*, March 1967, 5.
[20] Robert Tierney, 'Immigration and Production Line Margins in the 1950s Vehicle Building Industry', *Journal of Industrial Relations* 36, no. 1 (1994): 22–24.
[21] 'To Get Better Car Mechanic', *Courier-Mail*, 12 July 1951, 3; 'Sponsored Migrants', *Australian Automobile Trade Journal*, 1 February 1953, 12.
[22] Persons Registered for Emigration to Australia as at 1.4.47, 'Implementation of Australian Maltese Migration Agreement 1938–1947 Part 2', A446, 1962/65479, National Archives of Australia, Canberra. The undercutting of the skill of migrants was used to keep migrant workers out of higher paid professions (Persian, *Beautiful Balts*, 52–56, 64–65).
[23] Department of Immigration – Allocation of Workers to Sugar Industry and Rocket Range, 20 April 1948, 'Woomera Long Range Weapons Project – Employment of Displaced Persons', A434, 1948/3/4846, National Archives of Australia, Canberra.
[24] Haigh, *End of the Road?*, 80; Tierney, 'Immigration and Production Line Margins', 21–27; McDonagh, 'Historical Overview of the Collision Repair Industry', 58.
[25] Workforce by Occupation and Birthplace – 1966 Census, 1966, 'Migrant Contribution to Work Force – Part 2', A446, 1966/451598, National Archives of Australia, Canberra.

Image 27 Scottish-born motor mechanic David Watson emigrated to Australia in 1949. He established his own garage in 1957. 1958. A12111, 1/1958/16/45. National Archives of Australia, Canberra.

Migrant workers were imported for other reasons besides the desire of employers to fill labour shortages. As historian Robert Tierney has observed:

> Powerful corporate interests in the automotive and iron and steel industries … shared the view that migrants of non-English speaking background provided an almost inexhaustible source of hard working and politically docile labour, which could be hostile to trade unionism and readily disciplined in the work place.[26]

This view is supported by Raewyn Connell and Terry Irving in *Class Structure in Australian History*. They note that 'sponsored immigration had been a traditional resort of capitalists wishing to drive wages and conditions down'.[27] This sometimes backfired. Migrant workers did organise, join unions and develop forms of solidarity with their co-workers to resist exploitation.[28] However, in this case, migrants were expected to work for at least two years where directed, and sponsored migrants were denied the opportunity to negotiate and resist industrial changes.[29] These immigrant mechanics had already acquired skills and did not require training. Along with the boom in new apprentices in the late 1950s, discussed in the

[26] Robert Tierney, 'Migrants and Class in Postwar Australia', in *Class & Class Conflict in Australia*, eds. Rick Kuhn and Tom O'Lincoln (Melbourne: Longman, 1996), 98–99.
[27] Connell and Irving, *Class Structure in Australian History*, 195.
[28] Robert Tierney, 'Racial Conflicts in the Australian Automotive Industry in the 1950s: Production Line Workers, the Vehicle Builders Employees' Federation and Shop Floor Organisation', *Labour History* 76 (1999): 31–37; Motor Engineers Branch Proposition Book, 1950–1968, 'Amalgamated Engineering Union, Sydney District Deposit (1942–1968)', NBAC E227, 7, Noel Butlin Archives Center, Canberra.
[29] Buckley and Wheelwright, *False Paradise*, 189–90.

previous chapter, this influx allowed employers to reduce the leverage of mechanics by reorganising the trade.

Limiting Mechanics' Work: Challenging Definitions of Work

Motor traders reduced the bargaining power mechanics had gained in the immediate post-war period by reducing the skills shortage. Following this, they set about deskilling the trade through multiple means. One way they set about doing this was through redefining mechanics' work through the Arbitration Courts. Motor mechanics had long benefited from the transferability of their skills, as seen in a 1910 definition of mechanics which described them as 'capable of all routine jobs without detailed instructions from the foreman'.[30] This incredibly broad definition did little to specify what a mechanic's role was, nor what skills they needed to possess. The formalisation of mechanics' education over the 1920s and 1930s provided a definition to mechanic work, but the actual skills and knowledge mechanics needed to possess remained broad. By 1948, definitions across multiple awards had two key aspects: firstly, motor mechanics were defined by their work with motor cars, and secondly, their work was related to repair and maintenance.[31]

The broad definition of mechanics' work enshrined in a number of awards became complicated during the Second World War as employers sought ways around the award system. Motor traders had a history of hiring young workers as 'improvers', an unskilled position which meant that employers had no obligations to provide training. While individual garage owners were able to keep wages low by employing 'improvers', however, their representative organisations observed this as a threat to the industry. At the end of the war, as the trade suffered a massive labour shortage, motor traders' associations found that individual garages were hiring apprentices as low-paid improvers rather than mechanics. This contributed to the labour shortage, as improvers were only allowed to undertake limited tasks. As mechanics' wages rose, motor traders' organisations sought to ban improver positions, with the intention of using apprentice mechanics to stabilise wages.[32]

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[30] 'Notes on Definitions from 1910 Journal', *Automotive Engineer,* August 1984, 17.

[31] Motor Mechanics Road Service (N.R.M.A.), *NSW Industrial Gazette*, vol. 86 (August 1947), RAA Motor Mechanics Conciliation Notes 1948–1976, 'Australian Manufacturing Workers Union South Australian Branch Deposit 2', NBAC Z741, SA63, Noel Butlin Archives Centre, Canberra; Murray M. Stewart, Motor mechanic or Assembler, 15 May 1944, VBEF – Definition of "Motor Mechanic" – 1948–1967, 'Australian Manufacturing Workers Union South Australian Branch Deposit 2', NBAC Z741, SA63, Noel Butlin Archives Centre, Canberra.

[32] Ben Maddison, '"The Skilful Unskilled Labourer": The Decline of Artisanal Discourses of Skill in the NSW Arbitration Court, 1905–15', *Labour History* 93 (2007): 82; Roy Tatchell, 'Industrial Roundabout', *Australian Automobile Trade Journal*, June 1948, 98. For a broad history of the use of improvers across trades in Australia,

Industrial action brought by the Amalgamated Engineering Union against Neals Motor Ltd in 1944 demonstrates that individual garages used a variety of unskilled titles to employ mechanics, not just 'improvers'. The Union took Neals Motor Ltd to the Court of Conciliation and Arbitration for employing tradesmen responsible for testing motor cars as assemblers rather than mechanics. Assemblers were bodybuilders responsible for building cars, usually from kits provided by international manufacturers. The Motor Body and Coachbuilding Award required assemblers to be paid marginal rates between 15s and 22s; much lower than the mechanics' 27s.[33] Neals claimed in response that there was no formal definition of assemblers' work.[34] The company asserted that their workers' duties were 'checking' engines, headlamps, wheels and brakes, rather than repairing them. The Court ruled that any employee working on aspects of a car's mechanical functions was a mechanic. Employees who carried out work related to engine and brakes thus qualified as mechanics, but those working on other aspects such as the headlights and wheels were assemblers.[35]

The Conciliation and Arbitration Court's definition of the tasks that qualified as mechanical work was an important turning point in the deskilling process. By defining relevant work tasks, the arbitration system (perhaps inadvertently) also limited them. Yet attempts to formally define mechanics continued to run into problems. This was evident in a dispute over the definition of motor mechanics before the Commonwealth Conciliation and Arbitration Court in 1953. The dispute was based around mechanics employed by Ford to conduct the assembly and repair of tractors rather than automobiles. The Court had great difficulty drawing a definition between the work of an assembler and the work of a motor mechanic. Although the work of assembling new tractors in a factory clearly fell under the role of 'assembler', mechanical work on tractors and other farming vehicles was crucial in rural areas, including work that might be regarded as assembly rather than outright repair.[36] The Court eventually came up with a long-winded definition of mechanics' work:

> Motor mechanic means a tradesman engaged in making under jobbing conditions, repairing, altering or assembling (except in the production of new vehicles), or testing the metal parts (including electric) of the engines of motor vehicles, but

see Shields, 'A Matter of Skill', 248–59; Maddison, 'Skill and the Commodification of Labour', 146; Buckley and Wheelwright, *No Paradise for Workers*, 142.

[33] Stewart, Motor Mechanic or Assembler.

[34] Ibid.

[35] Ibid.

[36] Cahill, 'Oral History Interview with Harold Luke O'Malley'.

> does not include an employee engaged only in making minor adjustments to engine and chassis or in the reconditioning of engines by specialised methods.[37]

Wordy as this definition was, it was still flawed. Employers had long argued that all work on car electrics fell within the domain of electrical, not motor, mechanics.[38] These definitional difficulties meant that arbitration was ultimately unsuccessful in limiting mechanics' tasks, but the cases just described highlight the lengths to which motor traders went to limit mechanics' work.

Departmentalisation and Employer-Directed Specialisation

Just as employers campaigned to change what was classified as a mechanic's role, they also began changing work practices in their garages. Departmentalisation and specialisation were two related yet different processes that employers used to deskill mechanics. Departmentalisation refers to the creation of separate roles in the workshop, taking already trained mechanics and limiting their work to a certain section. Specialisation, on the other hand, refers to changes in the education of new mechanics, separating certain areas of maintenance work from tasks specifically designated for motor mechanics.[39] Initially, departmentalisation appeared in the garages as a marketing gimmick more than an actual redistribution of the work process. The *Australian Automobile Trade Journal* sold departmentalisation to motor traders as a way of impressing customers. Garage owners believed that by emphasising each individual part of the maintenance and repair process, it highlighted the expertise of the wider process to customers, appealing to Fordist principles of workshop specialisation.[40] By forcing mechanics into separate departments and limiting their work to specialised tasks, garages – like Smith's pin factory – could use specialisation to increase productivity and thus profitability.[41]

Specialisation was responsible for more than just deskilling. In at least one case, it resulted in new branches of automotive repair that subsequently developed into their own

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[37] *Commonwealth Arbitration Reports*, no. 152, 76 CAR 280 (1953): 349.
[38] 'The Motor Mechanic as Trouble-Shooter', *Australian Automobile Trade Journal*, March 1950, 13.
[39] Raelene Francis has previously explored this distinction between the two. Francis uses the terms 'specialisation' to refer to 'the situation where a worker brings a more general expertise to bear in performing a narrower range of tasks' and fragmentation to describe the 'performance [of work] which requires no knowledge or experience of a formerly unified process,' (*The Politics of Work*, 3–4).
[40] 'You're Not Too Small to Departmentalise!', *Australian Automobile Trade Journal*, May 1948, 48; Model T Ford Service Manual – Detailed Instructions for of Servicing Ford Cars, 1927?, M40, George Brooks Library and Learning Centre, Birdwood, SA.
[41] Attewell, 'The Deskilling Controversy', 327–28. A similar process of departmentalisation within white-collar offices jobs was occurring simultaneously in the 1950s, see Mills, *White Collar*, 124.

fields. This was a process that began some decades earlier. By the 1920s, automotive repair work was divided into two distinct sections: mechanical issues, handled by motor mechanics, and damage caused by accidents, which were the domain of collision repairers (known colloquially as 'smash repairers'). The distinction between mechanics and collision repairers emerged and deepened through the changing skills that developed with each specialism. Collision repairers needed to possess metalworking and woodworking skills to conduct repairs to a car's bodywork, resulting in the development of specialities beyond the realm of mechanics' work.[42]

Over the decades between the 1920s and the 1950s, the motor mechanic and 'smash repairer' trades developed into independent, though related, fields. Mechanics re-entered the smash repair industry in the 1980s, however, when insurance agencies began employing motor mechanics as assessors for their negotiations with smash repairers. This was a cost-saving exercise, as mechanics cost less than assessors with experience in the collision repair industry. These mechanics-turned-assessors possessed an understanding of the mechanical aspects of the car but had no experience in the body-working skills essential in collision repairing.[43] According to Graham McDonagh, the negotiations between insurance agencies and repairers regarding the cost of repairs was 'a guessing game based on negotiating skills rather than an actual discussion and understanding of the job at hand'.[44] Using mechanics as assessors altered the relationship between insurance agencies and repairers. As mechanics underquoted the difficulty of repairs, insurance agencies offered repairers lower rates for individual jobs. In retaliation, repairers quoted longer repair times, to make up the cost of jobs and stabilise wages. This distorted the way the smash repair industry worked, which to this day remains dominated by this deceptive system.[45]

In contrast to the branching out of collision repair services into a new field, other kinds of specialisation introduced new opportunities for employer-led deskilling. The repair of diesel engines provides a good example. Specialised diesel mechanics existed before the Second World War, but generic motor mechanic courses also gave their participants a basic knowledge of the inner workings of diesel engines. Theoretically, at least, all mechanics could repair these engines. This was reflected in the Metal Trades Award, where no listing existed for specialised diesel mechanics.[46] After the war, however, employers rarely allowed

[42] McDonagh, 'Historical Overview of the Collision Repair Industry', 44–51.
[43] Ibid., 112.
[44] Ibid.
[45] Ibid., 113, 190–91.
[46] 'This Legal Advice Costs You Nothing – Mechanic', *Weekly Times (Melbourne)*, 26 August 1939, 57.

mechanics to repair diesel engines. Since diesel engines were mostly only found in heavy vehicles and farming machinery, urban garage owners denied their mechanics access to diesel equipment as a cost-saving exercise. By 1948, apprentices were still tested on diesel engines as part of the A-Grade certificate examination but very few possessed hands-on experience. The resulting specialisation of diesel mechanics led to skyrocketing fail rates of the qualification. Examiners noted a decline in mechanics who possessed a working knowledge of diesel engines but blamed employers for not giving mechanics access to diesel equipment.[47]

By specialising in sub-fields of automotive repair, employers restricted which tradespeople were able to do each work task. The specialisation of diesel mechanics did not establish a separate trade with a complicated skillset, but rather the dissolution of labour processes at the direction of employers. Braverman observes this as 'a management effort to dissolve the labour process' by deconstructing an occupation into separate tasks and reassembling it through specialised divisions.[48] Motor traders had this form of deskilling through specialisation in mind when they enacted changes to the A-Grade Certificate in the 1950s. Specialisation made it more difficult for mechanics to achieve a passing grade, as the certificate tested mechanics on all aspects of motor maintenance.[49] In 1957, an examiner for the Victorian Automobile Chamber of Commerce A-Grade Board summed up the effect of the post-war trend towards specialising elements of mechanics' work when he said that it was 'do[ing] away with the overall skill of the qualified mechanic', ensuring that 'his status is lowered to that of a glorified parts assembler or a specialist in a narrow field of work'. This examiner also noted that specialisation meant that work was often performed by 'partly skilled personnel who receive as much as, and sometimes more than, the fully qualified, versatile mechanic'.[50]

The effects of specialisation took at least a decade to become visible. A commentator for the *Australian Automobile Trade Journal* in 1961 reflected that there had once been a time when motor mechanics had known 'all that there was to be known about all makes of vehicles'. In contrast, by the 1960s there was a division between specialised mechanics as older workers who were 'holding on grimly to the old established practice of servicing all sections of every make'.[51] By the 1970s, the deskilling effects of specialisation had become so

[47] 'A-Grade Board of Examiners', *Australian Automobile Trade Journal*, September 1948, 67.
[48] Braverman, *Labor and Monopoly Capital*, 170.
[49] 'High Standard of A-Grade Leads to New Grading System', *Australian Automobile Trade Journal*, October 1960, 67.
[50] 'Meet The Examiners – Mr W.T. Grey', *Australian Automobile Trade Journal*, January 1957, 18, 20.
[51] 'Motor Mechanics: They're Not all "Dragon Slayers"', *Australian Automobile Trade Journal*, January 1961, 35.

conspicuous that they destabilised the old structures of the trade. The South Australian Motor Mechanics Examination Board was founded in 1929. They held the responsibility of certifying motor mechanics in South Australia and conducted broad, non-specialised examinations into the 1970s. The Board tested motor mechanics on subjects such as air conditioning and diesel engines, which in other states were perceived as its own, specialised field.[52] By 1974, however, the Board's examination process was completely overhauled to fall in line with other states, as the organisers could no longer find enough 'suitably qualified examiners' to continue running exams that covered such a wide range of skills.[53]

By the 1980s, industry trade journals confirmed the deskilling of mechanics. According to *Automotive Engineer,* 'the old idea of the "know it all" tradesman is a thing of the past'.[54] This was supported by a report into the industry in 1985 which confirmed that 'the occupation of automotive mechanic is comprised of many routines, mainly servicing tasks performed continuously to the point of monotony and boredom'. The report noted that 'interesting and stimulating tasks are rarely, if ever, performed'. Engines and transmissions were no longer 'rebuilt in house', but were rather 'sub-contracted out to the specialist'.[55] By the 1990s, the deskilling of mechanics through specialisation was so wide-reaching that McDonagh tells us 'the traditional mechanical skills of the local garage tuning or fault finding were gone'.[56] Specialisation had effectively defined mechanics as generalised maintenance workers who needed to refer complicated problems to specialists, and were limited to changing oil and 'checking fluid levels'.[57]

Resisting Deskilling Through Backyarding

Economists and educationalists have long criticised Braverman's thesis, arguing that if deskilling had in fact occurred, it would have sparked fierce organised resistance from workers.[58] This is worth exploring. There were two Australian organisations that could have

[52] South Australian Automobile Chamber of Commerce, Motor Mechanics Examination Control Board Meeting Minutes, 27 November 1973, 'Motor Mechanics Examination Board (SA) Minute Book', State Records of South Australia, Adelaide.
[53] South Australian Automobile Chamber of Commerce, Motor Mechanics Examination Control Board Meeting Minutes, 16 May 1974, 'Motor Mechanics Examination Board (SA) Minute Book'.
[54] Garth Bond, 'Letter to the Editor – re: Apprenticeship, The Automotive Engineer – June 1984', *Automotive Engineer*, October 1984, 10.
[55] Australian Automotive Industry Training Committee, *Report on Australian Automotive Industry Training Research and Manpower Planning Data Bank Project for Automotive Mechanics in the Passenger Car and Light Commercial Stream* (Melbourne: Australian Automotive Industry Training Committee, 1985), 9.
[56] McDonagh, 'Historical Overview of the Collision Repair Industry', 107.
[57] Ibid.
[58] Attewell, 'The Deskilling Controversy', 325–26.

organised resistance to the deskilling of motor mechanics: trade unions and mechanics' technical institutes. While most mechanics were non-unionised, a detailed exploration of unions' efforts to resist their deskilling will be explored in the following chapter. For now, it is important to note that the small number of mechanics who *were* unionised engaged in some forms of organised resistance to changes within the trade such as strikes. Since these mechanics' efforts were focused on specific attacks on work conditions, however, they were not effective in resisting the broad deskilling of their work.

Technical institutes, such as the Institute of Automotive Mechanical Engineers (renamed from the Institute of Automotive Mechanics) and the Institute of Automotive and Aeronautical Engineers, served as the authorities of the trade's educational standards. One might have imagined that members of these Institutes would have opposed efforts to deskill mechanics. In reality, however, the Institutes were established by motor traders and worked in tandem with them and with motorist organisations to control repair work in the interests of these groups. The Institute of Automotive Mechanical Engineers stated in its trade journal that its main aim was to raise the standards of the mechanic trade to protect motorists, not to promote the standards or skills of mechanics.[59] The Institute was so integrated with motor traders that it shared its Queensland trade journal, the *Garage and Motor Trader*, with the Queensland Automobile Chamber of Commerce.

With no organisation able to provide support, mechanics' resistance to deskilling tended to occur at an individual level. This was seen most predominantly through backyard work. There were three main effects of backyarding. Firstly, mechanics made extra cash. This was their primary goal. Secondly, backyard work allowed mechanics to practice their trade away from the increasing managerial surveillance and control in the workshop. This meant that while mechanics were having their skills blunted in garages, illegal backyard work allowed them to learn and refine skills well beyond repairing cars. Thirdly, like the mobility-effort bargaining discussed earlier in this thesis, when backyarding became very widespread it unintentionally operated as a kind of collective resistance.[60]

As discussed in Chapters 3 and 5, backyard mechanic work was first observed in the late 1940s. It was performed by career mechanics and hobbyists alike and was a symptom of the car's affordability. This showed everyone that mechanics could work outside of the garage

[59] 'I.A.M.E. Improves Service Quality', *I.A.M. Journal*, 2 February 1962, 82.
[60] These various motivations share similarities with the practice of 'foreign orders', unauthorised personal projects that manual workers make on company time, hidden from foremen. Stein (*Hot Metal*, 160–77) has described the various motivations for these projects through the 1960–1980s, which includes developing skills and serving as a means of resistance to authority.

and produced opportunities for them to be paid to do so. Mechanics then used backyard work to benefit from the skilled labour shortage in garages as motor traders faced a dual problem of rising business costs and consumers' frustration at the rising costs of repairs. Trade journals first noted the occurrence of backyarding in 1948 as mechanics' wages began increasing, driving up the price of repairs.[61] Backyard work soon became endemic because mechanics working at home could charge less than garage owners, not having the same range of expenses. In 1952, the *Australian Automobile Trade Journal* thus despondently noted that backyarders 'quote absurd labour rates, … obtain trade discounts and remit them to customers, with a consequence that the legitimate trade is pulled down to a level of prices that is disastrous'.[62] The problems faced by garage owners because of backyarders were heightened by the fact that they often drew on relationships with customers developed while employed at a garage, further eroding the latter's business.

Backyarding became garage owners' major concern during the 1950s. Motor trader associations were torn in their reaction to backyard work. Initially, motor traders saw backyard work as a financial threat. Some speculated that the unions were supporting this work by negotiating for garages to adopt conditions that allowed backyarding to flourish.[63] Finding themselves unable to stop backyard work, however, motor traders' associations began to discuss welcoming backyard mechanics as business owners in their own right. The Victorian Automobile Chamber of Commerce considered the possibility of categorising backyarders as motor traders, rather than workers, which would allow them membership to the Chamber of Commerce as independent business owners.[64]

The debates that surrounded backyarders demonstrate their effectiveness as resistance to deskilling. By the 1960s, motor traders had agreed to block recognition of backyard workers, stepping up attempts to enforce prohibitions on work outside of the garage.[65] Though this lessened the threat of backyard work, it did not stamp it out entirely. According

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[61] 'The Executive Committee Wants Your Ideas on - "What Should Be Done About Backyarders?"', *Queensland Motor Industry*, 1 March 1948, 22–24; 'Skittle the Backyarder on a Wet Wicket', *Australian Automobile Trade Journal*, 1 June 1948, 11; Roy Tatchell, 'Industrial Roundabout', *Australian Automobile Trade Journal*, 1 August 1948, 91–92.
[62] 'Trade Discount for the Trade Only', *Australian Automobile Trade Journal*, 1 May 1952, 14.
[63] 'The Executive Committee Wants Your Ideas on – "What Should Be Done About Backyarders?"' 22–24; 'Points from February Meeting of the Federal Executive Committee of the A.A.C.C. in Melbourne', *Queensland Motor Industry*, 1 April 1948, 14; 'Has Backyarding Increased Since the 40-Hour Week Commenced?', *Queensland Motor Industry*, 1 September 1948, 13–14.
[64] 'Automobile Repairers Division Discusses How to Deal with Backyarders', *Australian Automobile Trade Journal*, 1 March 1956, 49.
[65] 'Backyarding: Queensland Moves to Strengthen Award Prescription Fail', *Australian Automobile Trade Journal*, 1 November 1961, 88; '"Backyarders" Can Kill Your Business', *Australian Automobile Trade Journal*, July 1967, 38.

to the historian Bill Tuckey, backyard work remained a 'nagging problem' for motor traders throughout the second half of the twentieth century.[66]

Although the primary motivation behind most backyard work was financial gain, its ability to allow mechanics to expand their skill set added to its appeal. It thus makes sense to see backyarding as a form of resistance against the specialisation of the automobile repair trade. Backyarders had a greater latitude to engage in general repairs and motoring work than most mechanics formally employed in a workshop. An example of this may be seen in the transition of an unnamed group of mechanics in Melbourne into automotive engineers in 1950. These mechanics had sought to profit from the rising demand for automobiles by banding together to assemble cars from scratch in their own time. The mechanics sourced the bodies of these vehicles 'from garages which do Holden body repairs', the *Daily Telegraph* reported. They then obtained the necessary parts, 'from complete engines to upholstery studs', sourced from various showrooms and garages.[67] A customer purchasing a car from this group of mechanics only had to wait for two weeks, rather than the two years that it took a new Holden to roll off the assembly line in 1950.[68]

Building a new car from scratch provided an exceptional example of the work in which backyard mechanics engaged. These mechanics challenged the ever-shrinking boundaries of their work. While backyard work served primarily as an economic threat to employers, mechanics' challenged employer-initiated deskilling by learning and enhancing their skills outside of the garage. Nevertheless, by failing to organise collectively, such resistance was limited in its effectiveness.

Managerialism: Separating Brain from Body Work

While backyard work allowed numerous mechanics to resist deskilling and circumvent managerial control of their work, its individualised nature meant that it was unable to address the growing structural power imbalance between employers and employee mechanics. In separating car repair into multiple, specialised trades, employers undercut broad industrial mobility. Managerial authority, asserted in workshops, now controlled the progression of mechanics' careers. The trade's structure increasingly sought to separate the foreman's role

[66] Tuckey, *On Solid Ground*, 48.
[67] 'Backyard Mechanics' Car Boom', *Daily Telegraph*, 4 June 1950, 12.
[68] Ibid.

from that of the mechanics, so that the high-status jobs were managerial, rather than technical. This meant that mechanics' skills were not valued as they used to be.

Separating foremen from mechanics split technical and management skills in exactly the way Braverman defined as 'the separation of hand and brain'. In *Labor and Monopoly Capital*, he described the development of modern scientific management as a process of dividing labour between mental planning and physical tasks. This division gave managers more status than workers and also more control over them, by charging them with the responsibility of planning how workers allocated their time. Braverman showed the way control of tasks also controlled worker autonomy:

> Perhaps the single most prominent single element in modern scientific management is the task idea. The work of every workman is fully planned out by management at least one day in advance, and each man receives in most cases complete written instructions, describing the task which he is to accomplish, as well as the means to be used in doing the work ... This task specifies not only what is to be done, but how it is to be done and the exact time allowed for doing it.[69]

With no opportunity to use their ingenuity or select approaches to tasks, mechanics' work was deskilled at the same time as it was devalued.

Internationally, methods of scientific management were another factor in the increasing control of automobile repair work exerted by employers. Mechanics in the United States had long worked under a flat-rate system that scheduled time and pay for each task associated with their work, organised by Fordist principles.[70] In Australia, large manufacturers also adopted scientific management during the First World War. This was the case for both automotive manufacturers and engineering workshops, notably those under the control of the New South Wales Railways and Tramways Department. These manufacturers faced heavy resistance from workers, however, ensuring that scientific management techniques were not adopted widely by many Australian employers until after the Second World War.[71]

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[69] Braverman, *Labor and Monopoly Capital*, 118.
[70] Borg, *Auto-Mechanics*, 86–87, 104–6, 132–34; McIntyre, 'The Failure of Fordism', 269–99.
[71] Connell and Irving, *Class Structure in Australian History*, 157–58; Richard Dunford, 'Scientific Management in Australia: A Discussion Paper', *Labour & Industry* 1, no. 3 (1988): 506–12; Chris Wright, 'Taylorism Reconsidered: The Impact of Scientific Management Within the Australian Workplace', *Labour History* 64 (1993): 39–40; Buckley and Wheelwright, *False Paradise*, 75; Lucy Taksa, 'All a Matter of Timing: The

While there is scant evidence of the use of scientific management in Australian mechanical repair workshops before the Second World War, pay rate books suggest that mechanics working in garages owned by larger companies were controlled more closely. This was particularly the case for car manufacturers. Ford Australia was a key enthusiastic proponent of scientific management, introducing fixed labour rates from as early as the 1910s. Yet Ford in Australia gave their mechanics greater flexibility in their work than their American counterparts did. In Australia, Ford warned its customers that a mechanic's work could not be rushed.[72] The Victorian Automobile Chamber of Commerce began producing flat rate books in the late 1930s to give both customers and employers alike an indication of how long individual repairs should take and cost. The Chamber of Commerce was careful to note that the guide was a suggestion, providing an estimate rather than a strict model of timing work.[73]

The way a garage was organised differed from business to business. Mechanical workshops operated by car dealerships, linked back to manufacturers, operated within a large corporate structure. These workshops operated under instruction from manufacturers, although orders from above regarding repairs were not always followed on the workshop floor.[74] In smaller businesses, the line between management and worker were sometimes blurred. The degree to which a business proprietor was able to control the workshop floor depended on their technical skill. The lack of scientific management in Australian workshops suggests the speciality of mechanics' knowledge gave them a modicum of authority over their work. Mechanics were able to make certain decisions about repairs, consulting with garage owners as to the time and cost of this work. In acknowledging the skills of mechanics, this structure made it difficult for motor traders to remove technical workers' ability to direct their work.

Technical work and management were interconnected through the role of foremen. Foremen served a complicated place in the trade's structure. The foreman was a skilled technician who served as an intermediary between mechanics and management, acting as the boss on the garage floor. Simultaneously, foremen were senior motor mechanics who took leadership roles in the workshop, serving both as managers and workers. This dual role gave

Diffusion of Scientific Management in New South Wales, Prior to 1921', PhD thesis, University of New South Wales (1993): 457–62; Taksa, '"All a Matter of Timing"' (1998): 1–26.

[72] 'Fixed Labor Charges for Repairing Ford Cars and Ford 1 Ton Trucks', 1910–1920, M40, George Brooks Library and Learning Centre, Birdwood, SA.

[73] Victorian Automobile Chamber of Commerce, *Flat Rate Book* (Sydney: The Land Newspaper Ltd., 1938), 3.

[74] *Ford Service Bulletin* 5, no. 4 (24 July 1933), M49, George Brooks Library and Learning Centre, Birdwood, SA; 'Ignorance', *Ford Service Bulletin* 9, no. 3 (17 May 1937), M49, George Brooks Library and Learning Centre, Birdwood, SA.

them authority amongst other mechanics who acknowledged their seniority through their skill rather than their position in management. This was mainly reflected through the A-Grade certificate, which was initially targeted at foremen before being expanded to include motor mechanics.[75] In smaller garages, the role of foreman was often taken up by a technically skilled proprietor. Back in the 1920s, Alice Anderson had served the triple role of business owner, forewoman directing operations on the workshop floor, and skilled mechanic working directly on the vehicles entering into her garage.[76]

The deep interconnection between the management and technical operations meant that authority in the workshop had long been grounded in technical experience and knowledge. Motor trader associations were always hesitant to acknowledge the connection between management and workers. Before the Second World War, motor traders promoted the benefits of a skilled foreman who acted separately from the workers on the garage floor.[77] Motor trader organisations were unable to attack the many mechanics turned small business owners, however, as many filled the ranks of the organisations, including Anderson herself.

With the adoption of scientific management processes after the Second World War, motor traders became more amendable to the separation of mechanics from management. This was part of a broader move towards changes in business structures in the automotive industry, which focused on management.[78] This began to see business skills as more important, in terms of efficiencies achieved, than technical skills. In the 1950s, trade journals began advising new motor traders that they needed to focus more on management skills rather than technical ones to advance in business.[79] This tonal change was followed by structural reform. Mechanics' education was altered, with the A-Grade certificate changed from a technical to a managerial certificate. New credentials, such as the Motor Mechanics certificate, were introduced below the A-Grade, firmly positioning technical skills below managerial work.

These changes to the education of mechanics altered their career prospects. New apprentices in the 1960s, whose training was limited to a narrow set of repair tasks, lacked the technical confidence of their predecessors to resist managerial control. The changes in technical education, to limit the transferability of mechanics' skills, enabled the degradation of mechanics' authority. This allowed employers to implement scientific management

[75] 'A-Grade Engineers Certificate Information', *Australian Automobile Trade Journal*, 27 March 1928, 28.
[76] Clarsen, *Eat My Dust*, 107–15; Smith, *Spanner in the Works*, 178–82.
[77] 'Who is the Boss?', *Australian Automobile Trade Journal*, 27 May 1928, 4–6; 'A Good Service Shop Foreman', *Australian Automobile Trade Journal*, 27 March 1929, 30.
[78] K.F. Mainon, 'The President's Viewpoint – Flow', *Australian Automobile Trade Journal*, February 1950, 11.
[79] John Garrison, 'Few Good Mechanics Are Also Good Businessmen', *Australian Automobile Trade Journal*, June 1950, 13.

techniques across the trade. Formal time limits for individual tasks, for example, were introduced by Holden by 1960.[80] Braverman saw such a concentration of technical knowledge in the hands of management as a key tool of scientific management to corral labour.[81] Chris Smith emphasises that this deskilling process occurs hand-in-hand with the removal of industrial mobility.[82] Whereas mechanics could previously leverage their skills into engineering, newly specialised mechanics were now isolated from other industries. Now, career advancement consisted solely of advancement into business management. Highly skilled mechanics became managers, not engineers. This gave employers control over education on the workshop floor, entrenching their authority over skill hierarchies.

Conclusion

The process of deskilling as outlined by Harry Braverman applies to the mechanic trade in the decades following the Second World War. Deskilling occurred as both an accidental and deliberate process. Combined, it undercut the strong bargaining position that mechanics held at the end of the Second World War. On the accidental side, technological advances improved the reliability and safety of cars, resulting in simpler and more regular maintenance than complicated repair work. This set the scene for a more deliberate, employer-driven deskilling process. Employers used the large influx of new workers as an opportunity to restructure the trade. Understanding that mechanics' strong industrial bargaining position lay in their transferrable skills to engineering, employers ran a long campaign to restrict these opportunities.

This was accomplished through specialisation, which increasingly placed parameters around the work mechanics conducted. This reduced mechanic work to physical labour, giving authority in the garage to technocratic managers. It also limited mechanics' power in the garage, and opportunities for social mobility outside of it. Deskilling gave bosses control over career progression. Exceptional mechanics were promoted into management, which prevented the re-creation of a pathway to engineering while simultaneously strengthening the position of employers. This left mechanics in narrow, poorly appreciated working-class roles, with neither opportunity to move upwards into professional work nor allowing them to

[80] 'Holden FC–FB Service Standard Time Schedule', 1960, M56, George Brooks Library and Learning Centre, Birdwood, SA.
[81] Braverman, *Labor and Monopoly Capital*, 85–121; Heisig, 'The Deskilling and Upskilling Debate', 1641.
[82] Chris Smith, 'Continuity and Change in Labour Process Analysis Forty Years After *Labor and Monopoly Capital*', *Labor Studies Journal* 40, no. 3 (2015): 230–32.

develop skills they could use in other trades. As a result, their already weak position in terms of industrial bargaining was further diminished.

Mechanics lacked the organisational means to resist these developments. Instead, some began taking work home to the backyard. Backyard work was financially beneficial to mechanics but also allowed them the opportunity to conduct their work away from the increasingly restrictive garages. Since this form of resistance occurred only sporadically among individual mechanics, however, it was unable to significantly disrupt the deskilling process. This allowed employers to enact a form of social closure, restricting mobility through the reduction of skill. While employer groups were the major players in this story, they were not the only participants. In the next chapter, I turn to the involvement of middle-class engineers and technical colleges in shoring up social closure, while showing that unions were unable and unwilling to mount resistance to these developments.

Chapter 7 – The Industrial Isolation of Motor Mechanics

For mechanics, deskilling paradoxically occurred just as upskilling was becoming a prominent feature of the global economy. In mechanics' case, however, expansions in tertiary education acted as a barrier to social mobility and even worked as an instrument of deskilling. The reason for this was that educational institutions devised courses and qualifications for mechanics in consultation not just with employers, but with engineers keen to shore up their elite status at mechanics' expense. The engineers had already been using Australia's conciliation and arbitration system to cut off the bottom rungs of their professional hierarchy from mechanics. By the 1960s, they were at pains to ensure that mechanics' education and qualifications worked to achieve the same end. The unions representing workers in broadly defined engineering trades did not serve mechanics' interests amid these developments, because they were distracted by the concerns of larger, more homogenous groups within their membership.

In the following pages, I add to the story about the deskilling of mechanics told in the last chapter by focusing on the role of three institutions: technical colleges, the Amalgamated Engineering Union and the Professional Engineers' Association. I also consider three further institutional categories: firstly, tertiary education institutions who stood to benefit from a monopoly on professional engineering qualifications; secondly, other trade unions, who jostled with the Amalgamated Engineering Union for coverage of worker categories; and lastly, other middle-class professions who were similarly interested in using arbitration to bolster their status.

The interaction of these various institutions and the interests they represented offer new insights into the effects of the generalised 'upskilling' that characterised the post-war global economy. Higher education expanded rapidly in the decades after the Second World War. Initiated in the United States by what was known as the 'GI Bills' and in Australia by the Commonwealth Reconstruction Training Scheme, universities began an upward trajectory of growth that has seen little to slow it since – except, perhaps, disruptions caused by the COVID pandemic in 2020–21. In each case, the GI Bills and the Commonwealth Reconstruction Training Scheme offered little more than a kickstart to this process; the latter flooding Australian technical colleges with veterans seeking to build post-war careers. In addition to looking to tertiary education to aid post-war reconstruction, governments wanted to expand the higher education sector in order to develop the fields of science and engineering, fast becoming the basis of post-war competitiveness. The most spectacular

example of this post-war emphasis on science and engineering could be found in the 'space race' between the United States and the Soviet Union. Intensifying emphasis on technology benefitted Australia by creating demand for its uranium mines, steel works and iron ore deposits.

Most historians of education cast the upskilling taking place in the post-war era in entirely positive terms. The expansion of universities was certainly good for members of the middle class. Yet the use of upskilling to bolster middle-class interests was achieved, at least in part, by deskilling others. This process may most pertinently be seen in the way that professional engineers used tertiary educational qualifications to reduce the range of work and social status available to motor mechanics. The resulting reduction of opportunity for mechanics reveals some often-overlooked impediments to solidarity between white- and blue-collar workers that germinated in the mid-twentieth century.

The chapter explores the role that technical colleges played in deskilling mechanics. New qualifications and curriculums, disguised as upskilling, limited the knowledge taught to mechanics. The chapter then explains why the union movement offered no resistance to the deskilling process. This is achieved first by outlining the industrial actions commenced by unions in the 1950s that were at odds with the interests of most mechanics. It then explains why the union movement fractured the representation of mechanics across multiple unions, due to disputes surrounding control of industrial awards. As a result, the representation of mechanics was transferred from engineering unions to automotive unions. Focused on other related fields, the representatives of these automotive unions had little motivation to advocate for mechanics in the Arbitration Courts. The chapter concludes by showing how professional engineers deliberately cut off pathways for mechanics to join their ranks. By redefining their work in order to advance their own interests, these beneficiaries of upskilling pulled the ladder up behind them. In the process, they prevented mechanics from using the possibility of occupational mobility to negotiate improved conditions for the trade.

Technical Colleges: Deskilling in the Age of Upskilling

While technical colleges delivered training to mechanics, they relied on the automotive industry to provide the structure and content of their courses. As shown in Chapter 2, motorist organisations and motor traders helped establish the first courses for motor mechanics in the 1920s. The most notable example was the A-Grade Automotive Engineer certificate. Established as the major mechanic qualification in Victoria by the Victorian Automobile

Chamber of Commerce in 1927, this certification served as the blueprint for most other states, except for South Australia. The intention for the A-Grade was to serve as a qualification for foremen, establishing their authority over mechanics.[1] With no other certifications for the trade, however, the A-Grade quickly developed into a general qualification of technical competence. This remained the case into the 1950s, when the A-Grade predominantly focused on technical skills, such as fitting, machining, and welding.[2]

In line with the move to deskill mechanics, the A-Grade was redesigned in 1954. Changes to the certification came as a result of actions by the Institute of Automotive Mechanics. This Institute was the key technical authority of the trade, and its leaders worked in combination with employers and motor traders. These three groups served on the advisory committees and examination boards of the technical colleges which granted certifications.[3] Motor traders used their influence on these boards to push for a restructuring of mechanics' certifications as part of their broader deskilling campaign, as discussed in the previous chapter.

The inspiration for a formal separation of technical and managerial skills in qualifications came from South Australia. The eastern states had followed the Victorian model, which charged the Institute of Automotive Mechanics with the certification of the mechanic trade in the early 1930s. The situation differed in South Australia. There, the Motor Mechanics Examination Control Board was the major authority charged with the education of mechanics. Comprised of delegates from the South Australian Department of Education and South Australian motor traders and motorist associations, this Board introduced two separate certificates for mechanics and foremen in 1930. South Australia had no equivalent of the Institute of Automotive Mechanics until a local chapter of the Institute was founded in Adelaide in 1938.[4]

The arrival of the Institute of Automotive Mechanics led to a power struggle over the control of technical certifications in South Australia. The Institute intended to roll out the Victorian model across South Australia, standardising certifications across states. Its members argued that the Victorian A-Grade was equal to the highest level achievable in the South

[1] 'A-Grade Certificate Information', *Australian Automobile Trade Journal*, 27 May 1928, 28.
[2] 'A-Grade Certificate – Full Details of Requirements', *Australian Automobile Trade Journal*, 1 November 1952, 36, 39–40.
[3] Victorian Automobile Chamber of Commerce, *The "A" Grade Automobile Engineer* (Richmond, Vic.: P. Page Printing and Distributing Co., 1950), 15; Neill, *Technically & Further*, 70. The Institute of Automotive and Aeronautical Engineers were the other notable engineering institute that served on the examination boards.
[4] Motor Mechanics Examination Control Board (SA) Register of Certificated Foremen Mechanics, 'Motor Mechanics Examination Board (SA) Minute Book'.

Australian system: the foreman's certificate.[5] This was disputed in South Australia. As the A-Grade only taught technical skills, the Motor Mechanics Examination Control Board argued that it was only equivalent to their motor mechanics' certificate.[6] An eventual compromise was reached in 1939. The Board agreed to recognise the Institute as the technical authority of the trade, while the Institute agreed to retain the South Australian division of the motor mechanic and foreman certificates.[7]

At the end of the Second World War, motor traders in the eastern states saw the benefits of separate qualifications for mechanics and foremen, mainly as a way of undercutting the leverage mechanics had gained in the industrial bargaining process. The trend then reversed. The Victorian Automobile Chamber of Commerce, the motor trader association for that state, recognised the two levels of South Australian qualifications in 1948 and began to agitate for Victorian technical colleges to adopt this South Australian model. The Chamber of Commerce's representatives did so under the guise of creating uniformity across the different state-based qualifications.[8] They achieved their aim in 1954 when their organisation successfully introduced a new Motor Mechanic Certificate. This paved the way for the redesigning of the A-Grade as a managerial certification, rather than a technical one.[9]

The Victorian Automobile Chamber of Commerce marketed the redesign of certifications as a new structure, intended to encourage career progression. Its members promoted the restructure as an engineering one and told their mechanics that the A-Grade would provide a direct pathway for mechanics to become engineers.[10] This, they hoped, would stop the bleed to other more esteemed and better-paid engineering fields.[11] In reality, the new A-Grade was exclusively a managerial certification, tied to the automotive industry.

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[5] Minutes of Meeting of Committee Examiners, 14 December 1938, 'South Australian Motor Mechanics Examiners Board Meeting Notes', State Records of South Australia, Adelaide; Minutes of Joint Meeting of Board of Control and Committee of Examiners, 19 November 1939, 'South Australian Motor Mechanics Examiners Board Meeting Notes'.

[6] Minutes of Meeting of Committee Examiners, 14 December 1938, 'South Australian Motor Mechanics Examiners Board Meeting Notes'; Minutes of Joint Meeting of Board of Control and Committee of Examiners, 19 November 1939, 'South Australian Motor Mechanics Examiners Board Meeting Notes'.

[7] Minutes of Joint Meeting of Board of Control and Committee of Examiners, 6 December 1939, 'South Australian Motor Mechanics Examiners Board Meeting Notes'; The Motor Mechanics' Examination Control Board (S.A.) Rules and Bylaws, 28 June 1940, 'Motor Mechanics Examination Board (SA) Minute Book'.

[8] 'Move for Uniformity of Mechanics Certificates', *Australian Automobile Trade Journal*, 1 March 1948, 73.

[9] 'Mechanic's Certificate to be Introduced by VACC', *Australian Automobile Trade Journal*, 1 April 1954, 11; 'A-Grade News – New Senior Motor Mechanics Certificate', *Australian Automobile Trade Journal*, 1 January 1960, 18; 'Course Provides Confidence', *Australian Automobile Trade Journal*, July 1964, 20. For more on dividing workers and foremen through qualifications, see Montgomery, *The Fall of the House of Labor*, 225.

[10] 'New Opportunity for A-Grade Men', *Australian Automobile Trade Journal*, 1 February 1954, 12.; 'VACC Moves to Improve Service', *RoyalAuto*, December 1954, 11; 'Mechanic's Certificate to be introduced by V.A.C.C.', *Australian Automobile Trade Journal*¸ April 1954, 11.

[11] 'Can You Assist Our Industry Apprentices?', *Australian Automobile Trade Journal*, 1 May 1954, 11.

The certification included no possibility for movement beyond its own industry, let alone into engineering.

Additionally, the Chamber of Commerce made the A-Grade examination arbitrarily difficult to make the certificate seem more prestigious. Before 1954, the A-Grade examination syllabus was easily available. Mechanics knew ahead of time that the exams were structured around practical knowledge, regarding fitting, engine reconditioning, welding and various mechanisms related to the automobile.[12] Following the introduction of the Motor Mechanic certificate, the syllabus for the A-Grade was hidden and no longer discussed in trade journals. Mechanics now went into A-Grade examinations with no knowledge of what the test would cover. As a result, the pass rate plummeted, falling below 10 per cent in 1960.[13]

There are two potential reasons for the collapse in the number of mechanics able to achieve the A-Grade. The first is that the new A-Grade examination was an extensive written examination. Any technically-educated mechanics who 'lacked the ability to express themselves on paper' thus failed the test.[14] Migrant mechanics from non-English speaking backgrounds were particularly disadvantaged.[15] The second potential reason is an increasing focus on business and managerial skills as part of the A-Grade. In 1954, the Victorian Automobile Chamber of Commerce argued that:

> It is strange that the automobile engineer should spend so much time studying the construction, operation and control of intricate mechanisms and yet should regard the control of the most fascinating mechanism of all – a group of individuals engaged in a task to a common end – as not being applicable to his vocation.[16]

Motor traders used the tiny pass rate to celebrate the revised A-Grade certificate as a success. To them, the low pass rate was proof that most mechanics lacked the intelligence to become managers and required supervision over their work.[17]

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[12] Victorian Automobile Chamber of Commerce, *The "A" Grade Automobile Engineer*, 7–12; 'A-Grade Certificate – Full Details of Requirements', *Australian Automobile Trade Journal*, 1 November 1952, 36, 39–40.
[13] 'A-Grade News– New Senior Motor Mechanics Certificate', *Australian Automobile Trade Journal*, January 1960, 18.
[14] 'Motor Mechanics: They're Not All Dragon Slayers', *Australian Automobile Trade Journal*, January 1961, 35.
[15] Ibid.
[16] 'New Opportunity for A-Grade Men', *Australian Automobile Trade Journal*, 1 February 1954, 12.
[17] 'A-Grade News – New Senior Motor Mechanics Certificate', 18.

Image 28 RMIT University Photographer, SN Rodda School of Motor Mechanics building. 1940. Image No. 1934. PH2.4.9. RMIT University Archives, Melbourne.

While restructuring the mechanics' certifications, the Victorian Automobile Chamber of Commerce briefly considered breaking its relationship with technical colleges to allow employers complete control over mechanics' technical education. This was partly because motor mechanics were barely an afterthought for technical colleges. The Melbourne Technical College's motor trades school, for example, were kept in appalling conditions. The SN Rodda building, which housed the motor mechanic school and was subject to the complaints discussed in Chapter 3, was not upgraded in the decades following the war. Its roof was notorious for leaking when it rained, and trainee motor mechanics inside were taught on Ford Model T engines from the 1920s, well out of date by the 1950s. Simultaneously, mechanics in the College saw that their counterparts in aeronautical, automotive, and mechanical engineering were taught with brand new equipment in well-kept buildings.[18]

Once motor traders were aware of the difference in conditions between the engineering and mechanics trade schools, they became concerned that they would lose apprentices to other trades. The Victorian Automobile Chamber of Commerce called on large automotive firms in 1954 to consider building a 'self-contained automotive school' to combat this.[19] This system mirrors developments observed by David Montgomery in factories in the United States in the 1920s. There, major corporations had their own training schemes for foremen but left the education of workers to trade schools. This separation created a distinct

[18] Murray-Smith and Dare, *The Tech*, 312–19. Technical colleges in New South Wales also reported relying on old Model Ts to teach apprentice mechanics (H.T. Howard, 'Technical College Equipment', *Sydney Morning Herald*, 24 July 1953, 2).
[19] Murray-Smith and Dare, *The Tech*, 313.

class divide between managers and technical workers.[20] The Chamber of Commerce eventually decided against the idea, as the established colleges provided legitimacy to their qualifications. That the Chamber of Commerce even considered this move, however, emphasises both the level of control that employers held over the education of mechanics and their ability to restructure the trade.

The combined changes to the A-Grade and implementation of the Motor Mechanic certificate concerned teachers of the motor mechanic courses. George Pockett was one of these. He was the chief examiner of the A-Grade certificate and had served on its examination board since its beginnings in 1924. Pockett also served as a technical advisor to the federal government's Department of Transport and was recognised as one of the most senior technical advisors on automotive issues in Australia.[21] In April 1957, he wrote an article outlining his fears in the *Australian Automobile Trade Journal*. He was increasingly worried that the status of mechanics was declining, and that they were becoming 'closely allied to a dead-end job'.[22] The trade needed a long-term vision to enhance its status and to open opportunities for technical and career advancement. Pockett believed this change needed to come through further recognition of technical skills, and the promotion of practical training. As he put it:

> Technical know-how becomes more important with each advancement of vehicle design and I invite the motor industry to give serious thought to the recruitment and training of the required number of technical-practical craftsmen.[23]

The *Journal* was flooded with letters responding to Pockett's article. No article in a decade received anywhere close to the attention as Pockett's call for change. For months afterwards, the journal published many letters supporting Pockett's views.[24] Instead of working to implement the educational changes advocated by Pockett, however, the Chamber of Commerce suggested an advertising blitz, showing what a career in the motor mechanic trade could offer to young people.[25] They believed that television commercials and promotional pamphlets distributed to schools were more important than acting on Pockett's suggestions.

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[20] Montgomery, *The Fall of the House of Labor*, 225.
[21] Tuckey, *On Solid Ground*, 19; Victorian Automobile Chamber of Commerce, *The "A" Grade Automobile Engineer*, 15.
[22] George Pockett, 'We Must Sell the Motor Industry as a Career', *Australian Automobile Trade Journal*, 1 April 1957, 14.
[23] Ibid.
[24] 'Selling the Motor Industry as a Career – Widespread Support for Mr Pockett's Suggestion', *Australian Automobile Trade Journal*, 1 May 1957, 15–16; 'Selling the Motor Industry as a Career – Further Support for Formation of Promotion Panel', *Australian Automobile Trade Journal*, 1 June 1957, 14.
[25] Pockett, 'We Must Sell the Motor Industry as a Career', 14.

No action was taken to improve the status of mechanics, and Pockett retired from the A-Grade Examiners Board in December 1958.[26]

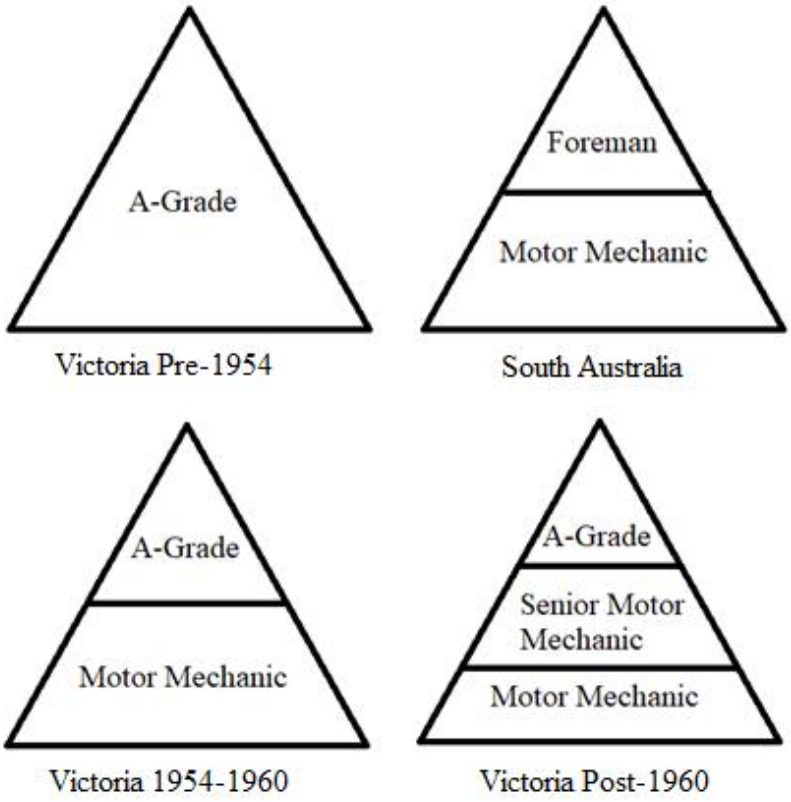

Figure 17 The structure of Victorian and South Australian mechanic's qualifications, 1924–1960.

A major flaw in the two-tiered structure of certifications was that it left experienced motor mechanics stranded – too senior for the Motor Mechanic certificate, but unable to achieve the A-Grade. With the acquiescence of technical colleges, the Chamber of Commerce sought to fix this by introducing a Senior Motor Mechanic certificate in 1960. The Senior Motor Mechanic certificate was essentially the A-Grade certificate prior to the reforms in 1954; a comprehensive, all-around technical certification. The examination for the Senior Motor Mechanic certificate was extensive, consisting of 250 questions, but unlike the A-Grade, the exam was devised to require only short answers.[27] The introduction of a third level allowed skilled mechanics to have their experience formally acknowledged, while

[26] 'Well-Known Auto Engineer Retires', *Australian Automobile Trade Journal*, December 1958, 27.
[27] 'Senior Motor Mechanic Certificate – Emphasis in Examination is on Practical Ability', *Australian Automobile Trade Journal*, March 1961, 11.

simultaneously keeping them separated from the managerial qualification that the A-Grade had been transformed into (see Figure 17).[28]

The educational reforms of the 1950s demonstrate the control employers exerted over the education of mechanics. Technical colleges obeyed the authority of motor traders in terms of the content of the curriculum, which allowed employers to restructure qualifications to place themselves as the recognised authorities of the trade. This allowed them to change the education of mechanics, to isolate them from engineering fields and separate technically skilled mechanics from managers. Rather than upskilling mechanics, the restructuring of the A-Grade certificate deskilled them by isolating them as industrial labourers. This completed the deskilling process, as described in the previous chapter, as employers achieved what Harry Braverman memorably described as the separation of 'brain' and 'hand' work.[29]

The Amalgamated Engineering Union: Union Bureaucracy and Fragmented Membership

Numerous scholars with a generally optimistic perspective on upskilling (many of whom are involved in delivering higher education themselves) have argued that Braverman was wrong to argue that an increasing distinction between 'brain' and 'hand' emerged to workers' detriment in the twentieth century. Attewell is an influential example. He argues that workers would have engaged in massive industrial action had Braverman's thesis reflected historical reality.[30] Such a massive response to the changes of deskilling was impossible for mechanics in Australia. Unions did work to resist some deskilling among mechanics, as Attewell predicted, but they were impeded by the lack of unionisation amongst the majority of mechanics, and the union's imperative to protect their own institutional interests.

Small, specialised sections of the mechanic trade did unionise and were successful in improving their conditions. The rise in demand for the NRMA's roadside services gave its mechanics leverage to fight for better conditions and wages. Union records show that by 1945 the Amalgamated Engineering Union successfully negotiated preferential employment for union members with the NRMA.[31] Regular garage-employed mechanics were not so

[28] 'Annual Report – Automobile Repairers' Division', *Australian Automobile Trade Journal*, 1 October 1959, 42–43; 'A-Grade News – New Senior Motor Mechanics Certificate', 18.
[29] Braverman, *Labor and Monopoly Capital*, 109–21.
[30] Attewell, 'The Deskilling Controversy', 325–26.
[31] Motor Mechanics Road Service (N.R.M.A.), *NSW Industrial Gazette*, vol. 86 (August 1947), RAA Motor Mechanics Conciliation Notes 1948–1976, 'Australian Manufacturing Workers Union South Australian Branch

fortunate. Unlike small-scale employers, the NRMA carefully protected their mechanics, whose status, in terms of pay rates and respectable presentation, was key to the NRMA brand as the 'experts' of the automotive industry in New South Wales. This branding ensured NRMA mechanics were recognised as highly qualified automotive engineers at the pinnacle of the trade.

Throughout this period, the Amalgamated Engineering Union gained a reputation for industrial action. The union coordinated a strike for NRMA mechanics in February 1955. Despite NRMA interests in attributing a high status to their mechanics, mechanics responded that they were underpaid and overworked. Answering an average of 743 calls per day, NRMA mechanics demanded an expansion of the technical division. Two days on strike were enough to create a backlog of over a thousand jobs, enraging NRMA members. In response, the NRMA quickly agreed to the mechanics' demands. Following the successful strike, the NRMA negotiated pay rises with the Amalgamated Engineering Union and expanded its technical department. This resulted in the NRMA hiring another eight servicemen and an additional nineteen staff at its Service Patrol Headquarters.[32]

The NRMA mechanics were not the only ones to go on strike in the 1950s. Sydney bus mechanics were employed by the New South Wales government alongside other strongly unionised vehicle workers, including bus drivers. Bus mechanics were unionised across Australia, but Sydney was a hub of industrial agitation. The bus mechanics there were organised under the Amalgamated Engineering Union during the Second World War and became increasingly radicalised in its aftermath. They engaged in multiple small strikes and 'go slows' from 1947 to 1949.[33] Over 200 bus mechanics belonging to the Amalgamated Engineering Union then launched a fortnight-long strike over penalty rates in May 1951.[34] The strike caused chaos to Sydney's transport system. Over half of the city's buses had to be removed from active service due to mechanical issues during the strike, stranding over 45,000 passengers. As regular bus passengers turned to cars to get around the city, major roads

Deposit 2', NBAC Z741 SA63, Noel Butlin Archives Centre, Canberra. The NRMA gave preference to two unions: the Amalgamated Engineering Union and the Australasian Society of Engineers.

[32] Broomham, *On the Road*, 101; Wilkinson, *The NRMA Story*, 297.

[33] 'Resumption of Work in Three Disputes', *Sydney Morning Herald*, 1 November 1944, 4; 'Union Threat to Extend Bus Strike', *Daily Telegraph*, 21 October 1947, 4; 'Bus Mechanics Dispute Ends', *Daily Telegraph*, 26 March 1948, 9; '"Go-Slow" on Bus Repairs', *Sun (Sydney)*, 7 March 1949, 8. Melbourne based bus mechanics, not as active as their Sydney counterparts, also engaged in short-lived industrial action in 1949–1950 ('Mechanics' Threat to Bus Services', *Age*, 2 December 1949, 3).

[34] 'Strike By Bus Mechanics', *Sydney Morning Herald*, 21 May 1951, 1; 'Strike May Stop Sydney Buses', *Sydney Morning Herald*, 23 May 1951, 1; 'Bus Crews Await Decision by A.E.U. Strikers', *Sydney Morning Herald*, 29 May 1951, 3; 'Mechanics Refuse to Go Back', *Sydney Morning Herald*, 1 June 1951, 1.

became gridlocked.[35] In the meantime, bus mechanics continued to work – just not on fixing buses. Some painted their workshops, repaired garbage trucks, while newspapers speculated that some strikers moonlighted at other garages around the city.[36] Overall, the strike was unsuccessful in raising penalty rates, but the effectiveness of its tactics encouraged bus mechanics to engage in multiple strikes throughout the rest of 1951.[37]

The bus mechanics were a vital part of the Amalgamated Engineering Union's industrial action campaign to improve the marginal rates paid to engineers. When the Arbitration Court sought to delay negotiations, rank and file members of the Union took industrial action to pressure the Court into a decision. In his history of the Amalgamated Engineering Union, Tom Sheridan observes that the Sydney bus mechanics were the critical group leading this action.[38] Using the lessons learned from the 1951 strikes, they launched a series of rolling strikes in 1953 across various Sydney depots.[39] The strikes occurred independently from the union hierarchy, who were unable to control the mechanics' industrial action but did nothing to prevent them either.[40] The Amalgamated Engineering Union gained a reputation as a militant union, partly because of the actions of the bus mechanics, but this did not come close to describing most members – and certainly not most mechanics.[41]

[35] 'Record City Car Jam: Result of Bus Shortage', *Sydney Morning Herald*, 26 May 1951, 1; '45,000 Travellers Without Bus Transport Today', *Sydney Morning Herald*, 28 May 1951, 1; 'Buses May Cease By Weekend', *Sydney Morning Herald*, 31 May 1951, 1.
[36] 'Strikers Repair Garbage Trucks', *Sydney Morning Herald*, 25 May 1951, 1; 'Big Cuts Made in Services: 239 Buses Off Roads', *Sydney Morning Herald*, 29 May 1951, 1.
[37] 'End of a Disgraceful Strike', *Sydney Morning Herald*, 5 June 1951, 2; 'Bus Mechanics Call Another Strike', *Sydney Morning Herald*, 3 July 1951, 1; 'Bus Mechanics Strike at Leichhardt', *Sydney Morning Herald*, 13 July 1951, 6; 'Mechanics Strike – Bus Servicing Dispute', *Sydney Morning Herald*, 29 December 1951, 3.
[38] Sheridan, *Mindful Militants*, 227–28; 'Bus Services Despite Strike', *Sydney Morning Herald*, 16 August 1954, 4.
[39] Sheridan, *Mindful Militants*, 227.
[40] Ibid.; 'Strikers Not Disciplined, Says Witness', *Sydney Morning Herald*, 20 August 1954, 6.
[41] 'Strike By Busmen "Crazy and Tragic"', *Sydney Morning Herald*, 23 July 1954, 6; 'Strikers Not Disciplined', 6; Sheridan, *Mindful Militants*, 228–29; Sheridan, 'Democracy Among the Aristocrats', 166–68, 180–83.

Image 29 Bus employees' meeting on Gordon Street, Randwick, during a 1953 strike. 1953. FL1285166. State Library of New South Wales, Sydney.

Sheridan argues that the Amalgamated Engineering Union represented an 'apathetic majority' of non-financial members in spite of its reputation for militancy.[42] The disconnect between the Union and mechanics, however, was exceptional. At times, the Union even took positions contrary to what most mechanics wanted. In 1948, for example, the Union revived an old dispute that originated in the 1920s over whether mechanics or employers should supply tools of the trade. Mechanics had been covered by the Metal Trades Award at the time. In 1924, an amendment to this Award had stipulated that 'employers shall provide all necessary tools … excluding other measuring and precision tools'.[43] This had established a norm that mechanics were to supply commonly-used hand tools, while employers were to supply 'special equipment'.[44] For mechanic Harold O'Malley, owning his own tools had allowed him to leave a garage where he was unhappily employed and work freelance for a number of years in the 1920s.[45] Confusion had arisen about tool ownership in the 1930s, however, following changes to the award at the start of the decade. In 1937, writers for the trade journal of the Victorian Automobile Chamber of Commerce had suggested that employers should be responsible for

[42] Sheridan, 'Democracy Among the Aristocrats', 180–83.
[43] Roy Tatchell, 'Industrial Roundabout', *Australian Automobile Trade Journal*, 1 September 1948, 92.
[44] Ibid.
[45] Cahill, 'Oral History Interview with Harold Luke O'Malley'.

supplying all tools to their employees. The idea was that this would force garage owners to guarantee the quality of tools used and make the workshop more efficient, but the costs of doing so meant that the suggested change never occurred.[46]

The 'tools of the trade' dispute began anew in 1948, setting off a decade-long clash between motor traders and unions. Unions were following the direction of Sydney bus mechanics, who demanded that all tools be supplied by the New South Wales Department of Transport.[47] The Amalgamated Engineering Union supported the bus mechanics and sought to force the issue through continued industrial action. In 1950 and 1954, the Union ordered all mechanics to take their tools home, pressing the government and motor traders alike into arbitration.[48] The Sydney bus mechanics also utilised this dispute over tool ownership after the collapse of a 1954 strike. When ordered back to work, bus mechanics came without tools and refused to work until they were supplied.[49]

The dispute over bus mechanics' tools exposed a division between the minority of unionised mechanics in unique industries and the majority of mechanics working in garages. Unlike the bus mechanics belonging to the Amalgamated Engineering Union, most motor mechanics wanted control over their tools. In 1959, the Australasian Society of Engineers, a rival union to the Amalgamated Engineers who had attempted to win the support of unionised mechanics, took the Motor Traders Association of New South Wales to the Commonwealth Conciliation and Arbitration Commission, the federal arbitration court. This New South Wales body was seeking to settle the 'tools of the trade' dispute by forcing employers to supply all tools for mechanics. The case collapsed, however, when employers called upon their mechanics to give evidence. A number testified that they would use their own tools even if others were provided by their employers, prompting the Court to rule in favour of the Motor Traders Association.[50]

Mechanics testified against their own union in 1959 because tool ownership was crucial in allowing them to retain control over their work and to guarantee its quality. Owning their own tools was also essential for any mechanics wanting to engage in backyarding. The 'tools of the trade' dispute thus demonstrated the disconnect between most mechanics and the

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[46] 'The Management of Small Workshops', *Australian Automobile Trade Journal*, 1 August 1937, 8, 10.
[47] 'Tool-Kits Demand – Threat by Bus Mechanics', *Sydney Morning Herald*, 2 November 1948, 4.
[48] 'Union Claim Supply of Tools for All Mechanics', *Australian Automobile Trade Journal*, 1 January 1951, 30; L.B. Archer, 'Tools of the Trade Dispute', *Australian Automobile Trade Journal*, 1 August 1954, 81; 'Tools of the Trade issue again' *Australian Automobile Trade Journal*, 1 November 1959, 89.
[49] 'Strike Collapse', *Sydney Morning Herald*, 13 August 1954, 3.
[50] 'A Summary of the Tools of the Trade Case', *Australian Automobile Trade Journal*, 1 June 1960, 86–87; 'Unions Lose Tools of Trade Case', *Australian Automobile Trade Journal*, 1 July 1960, 87; 'Tools of Trade', *The M.T.A. Official Journal*, July 1960, 24.

Amalgamated Engineering Union. The dispute also served as a distraction for the union, diverting its attention from the changes occurring in mechanics' education and training. Representatives of the union offered no resistance to changes to this education, even though this was the key method through which mechanics were being deskilled by their employers.

Competing Unions and Automobile Awards

Industrial disputes were not the only thing diverting the Amalgamated Engineering Union's attention from the deskilling process. Through the 1950s and 1960s, many unions were distracted by complicated changes to the awards system. In negotiating these changes, they began to jostle for one another's members. The Amalgamated Engineering Union faced competition from two other engineering unions, the Australasian Society of Engineers and the Vehicle Builders Employees' Federation.[51] These unions were already competing against each other for members in other trades by the 1950s.[52]

Fractures in the union movement left mechanics vulnerable to changes in the award system. Before the Second World War, the automotive industry was split between two awards: the Federal Metal Trades Award, arbitrated by the Amalgamated Engineering Union, and the Motor Body and Coachmakers Award, arbitrated by the Vehicle Builders Employees' Federation. The Coachmakers Award covered manufacturing industries, serving as the award for companies such as Holden which had developed from building coaches to building cars. The Federal Metal Trades Award was recognised as the award for mechanics employed in garages, including them under the engineering division.[53] While mechanics were listed under the Coachmakers Award prior to the Second World War, it was not acknowledged as an official award for the industry. In 1937, the Amalgamated Engineering Union successfully prosecuted a garage that had been paying a mechanic under the Coachmakers Award rather than the Metal Trades Award.[54]

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[51] John Wanna, 'The Politics of Organised Labour: An Analysis of South Australian Trade Unions in Metal and Vehicle Industries', PhD thesis, University of Adelaide (1984): 275–76. For a discussion of the differences between the Amalgamated Engineering Union and the Australasian Society of Engineers, see Malcolm Saunders and Neil Lloyd, 'Arbitration or Collaboration? The Australasian Society of Engineers in South Australia, 1904–1968', *Labour History* 101 (2011): 123–44.

[52] Saunders and Lloyd, 'Arbitration or Collaboration?', 138–40.

[53] *Commonwealth Arbitration Reports* no. 256, 38 CAR 221 (1937): 225; 'Wages', *Australian Automobile Trade Journal*, 1 December 1932, 48; 'Wages', *Australian Automobile Trade Journal*, 1 August 1937, 58.

[54] 'Employee Covered by State Award, Says Magistrate', *Telegraph (Brisbane)*, 12 October 1937, 17. Evidence of Edward Precht's employment as a mechanic can be found in 'Fatally Injured in Truck Smash', *Courier-Mail*, 5 March 1935, 10.

Following the growth of the motor vehicle industry after the Second World War, the Coachbuilding Award became increasingly recognised as the award of the automotive industry. In February 1948, the Victorian Automobile Chamber of Commerce began recognising both the rates of pay for mechanics from the Metal Trades Award and the Coachbuilding Award.[55] The expansion of the Coachbuilding Award, now outdated and serving as the *de facto* award for the motor industry, brought the Amalgamated Engineering Union into conflict with the Vehicle Builders. The two unions entered into arbitration in 1951 to update the Coachbuilding Award, resulting in the formation of the Federal Vehicle Award in 1953 as the official award of the automotive industry.[56]

The Arbitration Court decided that mechanics should be covered by the new Vehicle Award rather than the Metal Trades Award. They deemed the inclusion of mechanics in metal trades an archaic hangover from the time when automotive repair work was not yet recognised as its own trade. A compromise was struck in the interim: mechanics would appear in both awards, at an interlinked rate of pay. Any raise in one award would result in a raise in the other award.[57] This decision left mechanics torn between two awards as well as two unions. Disconnected from both unions, mechanics had little ability to contribute to either Award negotiation. The new Vehicle Award was supported by motor traders. Previously, the various employees in a garage, from salespeople to secretaries and the various technical workers, all operated under different awards relating to their occupations. The creation of an automotive industry award instituted one single award which covered all garage employees.[58]

Following the establishment of the Vehicle Award, the Vehicle Builders Employees' Federation attempted to organise mechanics. This proved unsuccessful, given that their understanding was influenced by their experience as the main union for manufacturing employees. The Federation had admittedly helped to organise mechanics working for South Australia's Royal Automobile Association in 1947, successfully negotiating a new award and preferential employment for unionists.[59] The Federation's representatives, however, were labouring under the impression that all mechanics were like NRMA servicemen– indeed, their

[55] 'Wages Applicable to Motor Industry Employees', *Australian Automobile Trade Journal*, February 1948, 85.
[56] Tierney, 'Immigration and Production Line Margins', 27; *Commonwealth Arbitration Reports*, no. 152, 76 CAR 280 (1953): 281–90.
[57] 'Motor Industry Award Rates', *Australian Automobile Trade Journal*, March 1953, 77. It is worth noting that the application of awards differed from state to state. While Victoria accepted mechanic pay for both awards, New South Wales only accepted mechanics under the Metal Trades Award ('Industrial Information', *The M.T.A. Official Journal*, January 1959, 57).
[58] Bill Tuckey, *VACC: Powering Automotive for 100 Years* (Melbourne: Victorian Automobile Chamber of Commerce, 2019), 47.
[59] Notice of Application to Conciliation Commissioner for a New Award, 1947, 'RAA Motor Mechanics Conciliation Notices – 1948–1976', NBAC Z741, SA63, Noel Butlin Archives Centre, Canberra.

negotiation strategy was directly borrowed from tactics employed by their comrades at the Amalgamated Engineering Union in New South Wales when negotiating with the NRMA.[60] It would soon be clear that it was a mistake to assume that the union's success in organising the NRMA servicemen and Sydney bus mechanics could be replicated for all other motor mechanics.

In 1962, the Arbitration Court ruled that all motor mechanics should fall completely under the Federal Vehicle Award rather than being split between this and the Metal Trades Award.[61] As a consequence, the Vehicle Builders Employees' Federation became the major union to represent mechanics. The Federation's representatives promptly tried to better organise the trade by supporting mechanics' qualifications. Its representatives thought that if they became involved in the arrangements for mechanics' education, more of these workers would become unionised while serving their apprenticeship.[62] In doing so, however, the Federation was unwittingly supporting the ongoing deskilling process occurring through certifications. Its representatives also had little to contribute to the educational process. While Federation representatives served on the examination board, motor traders continued to wield the most power over qualifications due to their relationships with technical colleges.

Unable to organise mechanics on any notable scale, the Federation became increasingly frustrated through the 1960s. In response to this failure, Federation officials became reluctant to represent non-unionised mechanics. This reluctance was also influenced by the militancy of the Federation's rank-and-file members. While Federation officials took a conservative approach to industrial relations, relying upon arbitration to negotiate changes to conditions, its rank-and-file members increasingly turned to industrial action and strikes in the 1960s – and they were hostile to the idea of their union advocating for workers who played no part in these actions.[63] The Federal Secretary of the Vehicle Builders Employees' Federation admitted this in his 1967 annual report. As he put it: 'Frankly, it is the feeling of the Federal Executive that we should not be engaging ourselves in claims for people – non-unionists –

[60] Letter to S.J. Lawn, 11 March 1948, 'RAA Motor Mechanic Conciliation Notes – 1948–1976', NBAC Z741, SA63, Noel Butlin Archives Centre, Canberra.
[61] 'Retail Motor Industry Federal Award Wages', *Australian Automobile Trade Journal*, May 1962, 77; 'Industrial Information', *The M.T.A. Official Journal*, May 1962, 41.
[62] Vehicle Builders Employees' Federation of Australia, *Annual Report 1961* (Carlton, Vic.: The Federation, 1961), 10; Vehicle Builders Employees' Federation of Australia, *Annual Report 1963* (Carlton, Vic.: The Federation, 1963), 5.
[63] Thomas Bramble, 'Trade Union Organization and Workplace Industrial Relations in the Vehicle Industry, 1963 to 1991', *Journal of Industrial Relations* 35, no. 1 (1993): 44–49; Thomas Bramble, 'Conflict, Coercion and Co-Option: The Role of Full-Time Officials in the South Australian Branch of the Vehicle Builders Employees' Federation, 1967–80', *Labour History* 63 (1992): 138–42.

with the advantage to the employer'.[64] The Secretary's frustrations reflected those of the Federation's members, who had always been more organised and militant than their mechanic counterparts.

The increasing isolation of mechanics from the Vehicle Builders Employees' Federation left them disadvantaged in wage negotiations. In response to a raise in wages in the Metal Trades Award, unions applied for a related wage increase in the Vehicle Industry Award. This application was rejected by the Senior Commissioner James Taylor. He ruled that the wages increased for the Metal Trades Award was based on a work value case only applicable to the metal trades.[65] Taylor's ruling also isolated motor mechanics from the skilled engineering trades with which they had traditionally been associated. While mechanics' wages continued to be included in the Metal Trades Award after 1968, Taylor noted that the Vehicle Industry Award would from then on be the primary award for the motor industry.[66] This arrangement was only temporary. By the end of the year, mechanics were split off from the Vehicle Industry Award into the similarly-named yet separate Vehicle Industry Repair, Services and Retail Wages Award.[67]

Motor traders hailed the Repair, Services and Retail Award as a success as soon as it was created. According to the Motor Traders Association of New South Wales, 'the making of the new award has achieved a long-term aim'.[68] The award contained a pay raise for mechanics, but this was a necessary compromise, as a new shortage of mechanics drove wage rises. Historian Bill Tuckey notes that wages for non-trained mechanics were at times the same as those of their trained counterparts in the late 1960s.[69] The compromise for employers was that the Repair, Services and Retail Award finally separated mechanics from both the metal trades and the automotive manufacturing industry. Now that mechanics' industrial entitlements were covered solely by a specialist automotive award, employers found it easier to limit the recognition of their skills.

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[64] Vehicle Builders Employees' Federation of Australia, *Annual Report 1967* (Carlton, Vic.: The Federation, 1967), 3.
[65] 'Vehicle Industry Wage Rises Not Automatic', *Australian Automobile Trade Journal*, March 1968, 6; *Commonwealth Arbitration Reports*, no. 471, 124 CAR 295 (1968): 295–99.
[66] *Commonwealth Arbitration Reports*, no. 208, 122 CAR 841 (1968): 847.
[67] *Commonwealth Arbitration Reports*, no. 869, 125 CAR 977 (1968): 978–81.
[68] Ray Daggar, 'Industrial Officer's Report', *The M.T.A. Official Journal*, August 1968, 7.
[69] Tuckey, *On Solid Ground*, 64.

Upskilling for the Middle Class: The Professional Engineers' Case 1957–1961

While mechanics had previously been able to use their technical skills to move from trade engineering into other, more prestigious or rewarding roles, the transformations in technical colleges, informed by employer interests, imposed new barriers to this occupational and social mobility. In the late 1950s, professional engineers in Australia took this even further. Between 1957 and 1961, a new union, a spin-off from the Institution of Engineers Australia, brought a work value case to the Commonwealth Conciliation and Arbitration Court. The union's officials sought enhanced status and employment benefits for engineers whose class status and income, they argued, should parallel doctors and lawyers. In making their case, the unionists representing professional engineers sought to cut off the lower ranks of their profession.

This division between engineering and mechanics was new. Professional engineering societies had long regarded hands-on trades as an important source of experience. They often described practical 'workshop' experience as an essential part of any engineer's education. In areas heavily reliant on innovation, especially in mining engineering, the experience of so-called practical men was crucial to informing technological improvements to efficiency and safety.[70] The same applied to aeronautical engineering. As Chapter 3 demonstrated, mechanics and professional engineers had worked together to improve the operation of aircraft, first during the Second World War and, later for commercial use. In addition, mechanics had sometimes been eligible to become members of professional engineering societies. Until the 1950s, the Institution of Engineers Australia, which acted as gatekeeper to the profession, offered membership via a technical entrance exam. This meant that skilled trade workers could use their experience and a modicum of reading to gain membership, rather than needing specific qualifications.[71] In this sense, the structure of trade and professional engineering facilitated upskilling. As technologies (in this case motor vehicle engines) increased in complexity, trade engineers could upskill and access an array of career opportunities.

The need for engineers increased dramatically after the Second World War. Post-war reconstruction came on the back of large infrastructure projects, such as the Snowy Mountains

[70] Brian E. Lloyd and Michael R. Rice, *Engineering in Australia: A Professional Ethos* (Melbourne: Histec Publications, 2008), 27; Lloyd, *Engineers in Australia*, 86–97; Forsyth and Pearson, 'Engineers and Social Engineering', 175.
[71] Forsyth and Pearson, 'Engineers and Social Engineering', 175; Arthur Hardie Corbett, *The Institution of Engineers, Australia: A History of the First Fifty Years, 1919–1969* (Sydney: Institution of Engineers Australia, 1973).

Hydroelectric Scheme.[72] In the private sector, factories that built munitions during the war were converted into manufacturing plants. The demand for skilled engineers outstripped the capacity for Australian universities and technical colleges to produce engineering graduates.[73] As a result, both industry and government looked for alternative sources for engineers, namely through prioritising engineers in post-war immigration schemes and by upskilling trade workers who had returned from the war.[74] Tradespeople were thus upskilled and then able to use their skills to enter a career in engineering.

Darby Murray exemplified this pathway. First mentioned in Chapter 3, Murray was a motor mechanic who served with the 2nd 1st Company of the Royal Australian Engineers during the Second World War. Upon his return to civilian life, Murray used his wartime experience to carve out a career in engineering. Murray began as an aircraft mechanic with manufacturer Hawker de Havilland but found that the skills he gained with explosives during the war allowed him to adapt to mining engineering. Murray worked at various mining engineering companies throughout the 1950s, settling into beach mining engineering around northern New South Wales. When this industry collapsed in 1962, Murray briefly became a mechanic again to make ends meet. He was soon offered a position with the Snowy Mountain Hydroelectric Company as a Technical Officer, however, where he was responsible for supervising drilling and blasting sites.[75]

Murray's story illustrates how the demand for engineers created opportunities for mechanics immediately after the war. The federal government provided new opportunities for education via the Commonwealth Reconstruction Training Scheme, while New South Wales and Victoria built new universities for this purpose. For mechanics, such as Murray, it was important that this pathway did not impose formal limitations in the way of status or qualifications. Murray had a general high school intermediate certificate and was never a member of any engineering association. Instead, his engineering experience in the military was acknowledged, and the recognition of his flexibility and problem-solving was also key to his successful career.[76]

Even as Murray and other wartime mechanics were transitioning into engineering, the engineering profession began resisting the entry of tradespeople. The Institute of Engineers

[72] 'Snowy Mountain Hydro Electric Scheme', *National Archives of Australia*, https://www.naa.gov.au/home/snowy-mountains-hydro-electric-scheme.
[73] Rasmussen, *Increasing Momentum*, 132–44.
[74] Forsyth and Pearson, 'Engineers and Social Engineering', 170–72.
[75] Pearson, 'Interview with Stephen Murray'.
[76] Ibid.

Australia changed its examinations to limit upskilling. According to Arthur Corbett's official history of the Institute, 504 engineers sat the exam in 1956, but only ten passed.[77] The Board of Examiners stated that the education of engineers in Australia was inadequate – otherwise, they would all have passed the exam. They mandated that engineers should study at the tertiary level and that all tertiary courses should be subject to inspection by the Institute.

The Board of Examiners was acting in concert with other leaders of the Institution of Professional Engineers Australia, all of whom were directing considerable energy and resources into claims for increased pay and status on behalf of a limited number of highly trained engineers. The Institution of Professional Engineers formed an industrial offshoot, the Australian Professional Engineers Association, in 1946. Over the following decade, this Association proved decisive in inhibiting the upskilling possible for mechanics at the end of the war. As discussed in the previous chapter, professional engineers were becoming increasingly agitated about their association with trade engineers at this time. The engineers' new industrial organisation furthered this cause. In 1957, the Australian Professional Engineers Association entered into a dispute with employers in the public and private sectors through the Commonwealth Conciliation and Arbitration Commission. The Association argued that the work of engineers was undervalued. They believed that engineering work should be considered a profession with status equivalent to other professions, such as medicine and law, and entitled to elevated status above 'draughtsmen'.[78] As the Association's members saw it, the reason that there was currently a shortage of engineers was that engineering attracted less pay and status compared to other professions.[79]

Lawyers for the Professional Engineers Association argued that engineering work was at least as difficult as that performed by members of other professions. Lawyers representing employer groups, however, noted that the diploma in engineering required only an apprenticeship and an associated course at a technical college. This proved a key difference between engineering and other professions, especially law, which required university qualifications. To counter this, the Professional Engineers Association agreed to only accept engineers with degrees or diplomas, combined with a year of experience, as professionals.[80] This left behind many trade engineers with only a certificate qualification.

[77] Corbett, *The Institution of Engineers, Australia*, 81–82.
[78] Forsyth and Pearson, 'Engineers and Social Engineering', 183–88.
[79] Ibid.; P.C. Molhuysen, 'The Professional Engineers' Case', *Australian Economic Papers* 1, no. 1 (1962): 57–63, 66–77.
[80] Forsyth and Pearson, 'Engineers and Social Engineering', 187–88.

The Professional Engineers Association achieved a significant victory for its members in 1961 when the Commonwealth Conciliation and Arbitration Commission awarded increased pay to professional engineers. In response, the Institution of Professional Engineers Australia reduced their recognition of practical experience. They agreed to restrict membership, which by now was key to professional practice, to those with a four-year post-matriculation qualification. This not only excluded certificated colleagues but those with diplomas as well. Understandably, those who had trained via the workshop route were upset. So too were the technical colleges. To placate them, the Institution granted 'associate' membership to technical college graduates, but this move stopped trade workers from using workshop experience as a pathway into the engineering professions.[81]

This formal separation of professional and trade engineering limited opportunities for mechanics. This was precisely the intention, as the Institution of Professional Engineers explicitly feared that working-class members would threaten their newly won status and pay.[82] In 1980, the Institution went even further, and membership was limited to university graduates. In 1979, President of the Institution Brian Lloyd celebrated these (then proposed) changes. The goal of education, according to Lloyd, was to produce workers who were confined to specific categories within a hierarchy. Engineering tradesmen were solidified at the bottom of this hierarchy, which did not acknowledge skills as transferrable. As a result, the professionalisation of engineering isolated mechanics to their trade.[83] Lloyd supported this move nevertheless because it benefited professionals. When Institution leaders considered reversing the exclusion of trade engineers from the society in the 2010s, Lloyd self-published an angry tome, entitled *A Profession Debased*, criticising the reassessment of the relationship between trades and the profession of engineering.[84]

The separation of professional and trade engineering at the institutional level altered the relationship between mechanics and engineers but did not fracture it entirely. Since the Professional Engineers' Case did not rectify the shortage of engineering workers, it was still occasionally possible for mechanics to engage in engineering work. In 1964, Ivan Winter applied for a position at Hawker Siddeley Dynamics as a rocket technician at the Woomera

[81] Ibid., 188–92; Molhuysen, 'The Professional Engineers' Case', 63–64.
[82] R.W. Birrell and R.S. Davie (Principal and Vice-Principal of Bendigo Institute of technology), Letter to the Editor, *Transactions of the Institution of Engineers Australia*, vol. 39, 1962, N5; E.J. Crawford, Presidential address, *Transactions of the Institution of Engineers Australia*, vol. 39, 1962, 19–22; A.E. Lambert, Letter to the Editor, *Transactions of the Institution of Engineers Australia*, vol. 39, 1962, N49; M.A. Muspratt, Letter to the Editor, *Transactions of the Institution of Engineers Australia*, vol. 39, 1962, N19.
[83] Brian E. Lloyd, *The Organization of Engineering Work* (South Melbourne: Macmillan, 1979), 14, 23–29, 31.
[84], Brian E. Lloyd, *Engineering in Australia: A Profession Debased.* (Hampton East, Vic.: Histec Publications, 2011).

Test Range. Winter had already accepted a position as a cadet in the Royal Australian Air Force but sent the application out of hope. As he would later recall: 'From the outset it was a stretch of the imagination for a motor mechanic to get a job on rockets!'[85] Isolated in the South Australian desert, the Woomera Test Range struggled to retain skilled labour. Those in charge of staffing the facility relied heavily on skilled migrants and foreign companies but found it extremely difficult to keep anyone in the long term.[86] Hawker Siddeley opened the application process to tradespeople out of desperation. They began accepting apprentices with relevant experience with the intention of upskilling new employees into professional engineers. Winter's application was accepted, and he worked with Hawker Siddeley as a mechanical trials technician, which opened the door to a career with various companies as an engineer with expertise in mechanical and combustion engineering.[87]

Whereas Darby Murray's career trajectory from mechanic to professional engineer was a common one in the period immediately after the Second World War, Winter's opportunity at Woomera two decades later was exceptional. Most mechanics were completely isolated from opportunities in engineering by this time. This was exemplified by the deteriorating relationship between mechanics and aeronautical engineering. This was not only the result of action by the Institution of Engineers but also by another emerging union, the Australian Licensed Aircraft Engineers Association. As explored in Chapters 3 and 4, the air force and private airlines both recruited mechanics to become involved in aeronautical engineering during the Second World War. By the 1950s, aircraft maintenance engineers had developed their own industrial identity, but their organisation was fractured across multiple different unions. Motivated by a desire to protect their industry from deskilling, aircraft engineers split from these unions to create a new union in 1964.[88]

Licensed aircraft engineers used certifications to defend their status, separating themselves from contemporaries in the aviation and engineering industries. The Australian Licensed Aircraft Engineers Association vigorously protected the status of their licenses, clashing with the Department of Civil Aviation over the work value and skill required to

[85] Ivan Winter, *Those Were the Days! My Life in South Australia: 1943–1970* (Seacliff Park, SA: Magpie Press, 2010), 314.
[86] Peter Morton, *Fire Across the Desert: Woomera and the Anglo-Australian Joint Project 1946–1980* (Canberra: AGPS Press, 1989), 99–100; Notes on Proposal to Permanently Appoint a Percentage of Tradesmen at Salisbury, 'Trades Staff, Woomera – Provision of Permanent Positions – Papers 1954', B3996, 1966/1121, National Archives of Australia, Canberra.
[87] Winter, *Those Were the Days!*, 314–15, 378–79, 404.
[88] Sarah Gregson, Michael Quinlan, and Ian Hampson, 'Professionalism or Inter-Union Solidarity? Organising Licensed Aircraft Maintenance Engineers, 1955–75', *Labour History* 110 (2016): 35–42.

conduct aeronautical maintenance.[89] This Association argued for the protection of their licenses under a national government standard, rather than leaving qualifications in the hands of employers. The Association's officials argued without this protection, employers would turn to cheaper, lesser-skilled workers instead of aircraft engineers. According to the Association's Federal Secretary, these cheap labourers would most likely be 'Joe Blow from [Holden] down the road', an insulting reference to automotive workers.[90]

Within two decades, mechanics had gone from a key source of labour for aeronautical engineering to being widely perceived as poorly skilled workers ill-equipped to qualify as engineers. This changing perception exposes how successfully engineering organisations elevated and protected their status at mechanics' expense. Another way of putting this is to say that middle-class unions – those representing professional workers – were crucial to obstructing the upskilling and occupational mobility of wage-earners in working-class trades. As workers falling into the latter category, mechanics were not privileged enough to attract spirited defence of their interests. While mechanics were theoretically represented by the Institute of Automotive Mechanical Engineers, this body was not a union. As discussed in Chapter 2, the Institution was established in partnership with motorist groups and motor trader associations and displayed no interest in protecting the status or working conditions of motor mechanics.[91]

The experiences of Murray and Winter show that mechanics' technical capacity during the 1950s and 1960s had not changed. What *had* changed was the relationship between mechanics and engineering, brought about because of professional engineers' determined efforts to assert their middle-class status and protect their industrial conditions by separating themselves from trade engineers. In imposing new barriers to the profession, professional engineers drastically reduced the ability for mechanics to upskill and cut off avenues of entry that the 'long ladder' had previously facilitated.[92] Isolating mechanics from engineering contributed to the trade's declining status, and the dissolution of pathways to professional engineering entrenched the trade as working class.

[89] Ibid., 47–55.
[90] Ibid., 54.
[91] 'What the IAME is', *IAM Journal*, 7 December 1961, 535.
[92] Forsyth and Pearson, 'Engineers and Social Engineering', 190–94.

Conclusion

Education upskilled workers and provided avenues of social mobility in the post-war era. This chapter has demonstrated, however, that class played a central role in determining who received these opportunities. Alterations to the structure of technical education worked to deskill mechanics under the guise of upskilling. Deliberate efforts by technocrats working in partnership with capital interests formed through technical colleges produced this structural deskilling of mechanics. Restructuring qualifications served to reduce the breadth of skills taught to mechanics. With fewer skills, mechanics were unable to move into other trades or professional engineering, which weakened their negotiating power.

Changes within the union movement indirectly accelerated this deskilling process. Throughout the 1950s, the Amalgamated Engineering Union was focused on issues of tool ownership, adopting a stance contrary to the interests of most mechanics. Changes to the metalworking awards aimed at incorporating the growing automotive industry also disadvantaged mechanics. Squabbling among various unions over members actively separated mechanics from representation in the arbitration system, isolating them from opportunities to address stagnating wages.

Finally, middle-class engineers, some of whom had previously been mechanics themselves, actively engaged in social closure to advance their own interests. The movement to professionalise engineering, culminating in the Professional Engineers' Case, raised the status and wages of engineers. This professionalisation had the opposite effect for trade workers such as mechanics, however, cutting off their opportunities for greater occupational and social mobility by becoming involved in engineering work. The outcome was that by the end of the 1960s, mechanics had lost autonomy over their work. The major issues that mattered to mechanics remained unaddressed: control over their work, their means of conducting it, and the right to repair cars on their own terms. This combination of brain and hand work had been a major source of the status of mechanics. The deskilling and industrial isolation of mechanics reduced this. They were no longer considered 'doctors of machinery' but rather 'grease monkeys' who conducted repetitive maintenance work and had limited opportunities for social mobility.

Conclusion

Motor mechanics now look classically working class, but this was not always the case. The first motor mechanics did not share a cohesive class identity. Mechanics came from a variety of backgrounds, across social divides of class, race, and gender. What defined them was their skill, which mechanics leveraged to create a new area of work. In contrast, motorists were an extension of the established elite, inherently wealthy and interlinked with capital. Both motoring business owners and car owners were united through emerging motorist organisations and had a shared interest in keeping mechanics' wages low. These relationships formed the basis of the motorists' organisation. As such, they used their status and connections to businesses and governments to become the recognised authorities of the automotive industry, rather than the technical workers who actually understood how cars operated. While the working class made itself in response to its relations to employers, the tensions that produced a working class of motor repairers was a result of inbuilt conflict between motorists and mechanics.

This thesis argues that employer control over technical education became central to class formation of mechanical repairers. At first, there were no barriers of entry to the mechanic trade. Any worker with enough knowledge and skills could become a mechanic. The imposition of educational qualifications changed this. Motorist organisations, in collaboration with newly formed motor trader (employer) associations, introduced qualifications to control the pay rates, and thus to a large extent the social status, of mechanics. Standardising training focused on automotive repair skills specifically, which denied mechanics the opportunities that more generalised apprenticeships earlier provided. Qualifications also served as a tool for the enforcement of social norms, including inhibiting the access women had to the trade. This has consequences for our understanding of education, which from R.H. Tawney's time to the present has been associated with the empowerment of the working class.[1] In this case education, under the control of bosses, served to alienate workers from the skills necessary to allow for social mobility – or in the case of women, enforced a form of credentialism that barred them from the trade completely.[2]

These emerging structures, so influential in class formation, were disrupted during the Second World War. Chapters three and four have demonstrated how Australia's need for

[1] R.H. Tawney, *Secondary Education for All: A Policy for Labour* [1924] (London: Hambledon Press, 1988), 60–72.
[2] Collins, *The Credential Society*; Wright, *Classes*, 127.

skilled labour for the war effort led to the upskilling of workers, both in and outside of the military. This provided mechanics with opportunities for upskilling in engineering and thus upward social mobility. The war also disrupted the gendering of work. When the ongoing demand for maintenance workers could not be filled by an increasingly diminished supply of the male workforce, women were called upon to fill the gap left by departing men.

Post-war reconstruction produced the conditions for social mobility. These opportunities were gendered, however. Bosses and unions conspired to remove women from the trade in expectation of a large wave of returning servicemen. The flood of returning workers did not eventuate, however. Instead, mechanics left the trade in big numbers, creating an acute demand for their labour. The men that remained in the trade were able to use their scarcity to negotiate higher wages with their employers, but they only did so on an individual basis. These workers used a tactic, later termed 'mobility-effort bargaining', to transition between sectors and increase wages as garages competed for prized skills.[3]

The post-war conditions that benefited workers were short-lived. Cultural changes combined with economics to associate mechanical repair work with a firmly working-class identity. Mass-automobility changed social and cultural structures, making the car less elite, but more common. Young men were drawn to cars as part of the performance of a new kind of Australian hegemonic masculinity. This produced a cultural force that encouraged young men, and dissuaded women, to enter automotive maintenance work both as amateurs and as a career path. The resulting increase in apprentice motor mechanics, augmented by increases in migrant labour, helped depress wages by increasing the workforce. It also resulted in the development of a hypermasculinised hoon youth culture, that was associated with cars and mechanics.

This oversupply of workers gave motor traders and motorist groups an opportunity to enact a deliberate deskilling process to reduce the leverage mechanics had gained after the Second World War. This process emerged in multiple different ways – from the restructuring of the way work was organised on the garage floor to the enforcement of scientific management. Mechanics were able to individually resist such changes through off-books backyard work. Outside of the supervisor's gaze, individual mechanics sought to educate themselves and learn new skills. The most effective vehicle for deskilling was the control bosses gained by their alliance with educational institutions. New curriculums were enacted

[3] Smith, 'The Double Indeterminacy of Labour Power', 389–400.

which inherently limited the skills mechanics acquired, limiting mechanics' ability to engage in mobility-effort bargaining.

This deskilling process effectively entrenched mechanics' class position as changes in the mechanics' qualifications limited avenues of mobility to the benefit of employers. The union movement had been unable to organise mechanics in large numbers, owing to their complicated origins, and was unable to prevent these changes. On the contrary, they exacerbated problems with the deskilling process as they advocated for changes to support the very small number of union member mechanics, whose interests and issues often differed from the majority. Professional engineers were more than willing to cut mechanics off from their areas of work to increase their own prestige. This emergence of solidarity between business owners and engineers transformed class structures. Whereas the mechanic trade once presented an opportunity for workers to develop skills that provided the possibility of social mobility, it was transformed into a dead-end trade, exploited by employers, for the benefit of the middle class.

This thesis opened with a scene from Mick's garage, portrayed as a stereotypical suburban motor mechanic. I have shown that the timelessness of this scene disguised the complicated formation of the mechanic trade, which challenged Australian class structures in the early twentieth century. This timelessness, moreover, is a symptom of stereotypes that automotive repairers produced by their post-war gendering, deskilling, and industrial isolation. Sasha Shtargot's depiction of Mick the mechanic is a romantic image, but also a tragic one. Motor mechanics might have been present at their own making as a class, but they also presided over key elements of their own proletarianisation, making themselves ever more vulnerable to exploitation.

Epilogue – The Death of the Motor Mechanic

Car repair is everywhere. I've recently been reminded of this by an old friend from high school, Matt Burgess, now a geologist in Kalgoorlie, rural Western Australia. Matt has always been technically minded – he built me my first computer in high school. Since then, he has developed a hobby of maintaining and altering four-wheel drives to use in the surrounding deserts. He learned how to fix things the old-fashioned way, through trial and error. With no formal training, Matt has at times turned to friends and colleagues to help learn new skills, such as welding, to conduct work on his cars. In the outback as well as in the cities, maintaining and fixing cars is how Australians sustain their contemporary, mobile society.

Image 30 Geologist Matthew Burgess performing maintenance on a car in a backyard. 20 September 2021.

This is set to change dramatically. As I write in 2021, the death of the petroleum-powered automobile is inevitable. The United Kingdom has already signalled that this decade will be the last in which new petrol-fuelled cars will be sold, while other European nations set similar deadlines. This is necessitated by the threat of cataclysmic, human-caused climate change.[1] In Australia, the transport sector contributes to 18 per cent of its fossil fuel

[1] Jillian Ambrose, 'UK Plans to Bring Forward Ban on Fossil Fuel Vehicles to 2030', *Guardian*, 21 September 2020, https://web.archive.org/web/20211205115231/https://www.theguardian.com/environment/2020/sep/21/uk-plans-to-bring-forward-ban-on-fossil-fuel-vehicles-to-2030; 'France Moves to Ban Petrol and Diesel Cars in a Bid to Meet Paris Agreement Targets', *ABC News*, 7 July 2017,

emissions, mainly from gasoline. Electric vehicles, while not the cleanest of technologies, provide an alternative for the future of independent travel.[2] Will this lead to the death of the motor mechanic?

The question requires an investigation into technological changes more broadly. New forms of technology that rely on the internet, from refrigerators to lighting and even cars, have created a collective Internet of Things. New on-board computers for cars in the 1980s were designed to assist mechanics in diagnosing problems. More recently, car computers have been expanded to incorporate the Internet of Things through a suite of entertainment and convenience features for drivers – from music streaming to messaging services.[3] Manufacturers have marketed these smart devices as creating a more convenient world, but devices built into the Internet of Things often complicate technology more than necessary. Minor issues, once trivial, can now fundamentally break cars. As director of the 2001 Australian Broadcasting Commission television series *Bush Mechanics*, David Batty saw scores of brand-new cars abandoned in the desert during his travels to remote Indigenous communities. Those cars were not broken. Rather, the owner had lost their keys. Without the electronics inside the keys, the computers inside those cars refused the efforts of experienced local mechanics to start the engine. With no dealership for hundreds of kilometres, the cars were rendered useless and unfixable.[4] Far from the simple machines of the 1950s, without licenced equipment or software, modern cars are practically impossible to repair.

The work mechanics do these days to repair the actual mechanical components of the car is increasingly limited. To maintain and repair cars today, mechanics also need to be technicians. Copyright laws, however, have been a new source of deskilling, increasingly allowing manufacturers to deny unauthorised access to the internal workings of their cars. This has come in the forms of digital locks, that prevent access to the computer systems necessary to repair cars, as well as physical barriers, like impenetrable covers placed over the top of engines. Maintenance workers in general, including mechanics, have campaigned over the last ten years against being locked out of work. They seek a right to repair, acknowledging individual skill and autonomy, to be enshrined in law. Research into the role of maintenance in the latter half of the last decade, led by Andrew L. Russell and Lee Vinsel in the United States, and by Jesse Adams Stein in Australia, have focused on finding solutions to the

https://web.archive.org/web/20211018024333/https://www.abc.net.au/news/2017-07-07/france-moves-to-ban-petrol-and-diesel-cars/8686944.

[2] Motor Trades Association of Australia, *Directions in Australia's Automotive Industry*, 22, 62–63.

[3] See Borg, *Auto-Mechanics*, 152–69, and Harper, *Working Knowledge*, 23–24, 127–33, for a summary of the computerisation of cars, and its effects on mechanics from 1970–2000.

[4] Batty and Kelly, 'The Making of Bush Mechanics', 49.

inherent waste of modern consumerism.[5] Russel, Vinsel and Stein have helped establish social movements that go beyond the academy, organising educational and activist groups that have pushed for legislation to protect the right to conduct repairs, and an improvement of the social status and conditions of maintenance workers.[6]

Right to repair laws have been introduced in limited areas in the United States to great effect.[7] Here in Australia, the 2020–2021 Productivity Commission Inquiry into the Right to Repair is already affecting the automotive industry with the introduction of the Motor Vehicle Service and Repair Information Sharing Scheme scheduled for 2022.[8] Matt Burgess' experiences in fixing cars, a kind of 'reskilling' after decades of undermining worker autonomy, demonstrate that the old ways that encouraged skill development by autonomous tinkering are still effective. Their decline, as Jesse Adams Stein has recently stated, 'isn't a natural result of market economics or automation [but] a political choice to ignore these skills'.[9] The right to repair movement seeks to revive them by protecting the work of professional and hobbyist mechanics alike, guaranteeing their independence free from the interference of big businesses.

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[5] Andrew L. Russell and Lee Vinsel, 'After Innovation, Turn to Maintenance', *Technology and Culture* 59, no. 1 (2018): 1–19; Vinsel and Russell, *The Innovation Delusion*; Jesse Adams Stein, 'Masculinity and Material Culture in Technological Transitions from Letterpress to Offset Lithograph, 1960s-1980s', *Technology and Culture* 57, no. 1 (2016): 25–48; Alexandra Crosby and Jesse Adams Stein, 'Repair', *Environmental Humanities* 12, no. 1 (2020): 179–183. See also Perzanowski, 'Consumer Perceptions of the Right to Repair', 370–375; Perzanowski, *The Right to Repair* 86.

[6] See *The Maintainers*, https://themaintainers.org/ and *Repair Design*, https://repair.design/. See also Jesse Adams Stein and Alexandra Crosby, 'Public Submission to the Productivity Commission's Right to Repair Inquiry', 28 January 2021; Griffith University Law Futures Centre, *Repair Australia*, https://www.griffith.edu.au/law-futures-centre/our-research/repair-australia.

[7] Kahane, 'The Impact of the Massachusetts 2012 Right to Repair Law', 7; Hatta, 'The Right to Repair', 145, 152–54; Perzanowski, 'Consumer Perceptions of the Right to Repair', 375–77; Perzanowski, *The Right to Repair*, 257–68.

[8] Perzanowski, *The Right to Repair*, 223–24; Productivity Commission, *Right to Repair*, 20–21, 292; Motor Trades Association of Australia, *Directions in Australia's Automotive Industry*, 72–73; 'Competition and Consumer Amendment (Motor Vehicle Service and Repair Information Sharing Scheme) Bill 2021', *Parliament of Australia*, 24 June 2021, https://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;query=Id%3A%22legislation%2Fbillhome%2Fr6695%22.

[9] Jesse Adams Stein, 'A Dying Trade That Is Still in Demand? The Engineering Patternmaking Trade in Focus', *Australian TAFE Teacher*, June 2021, 21.

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*These files were viewed at the State Records of South Australia on 5 June 2019. They were donated to the State Records’ office by the National Motor Museum and were, at the time, still under consideration for inclusion into the State Records’ collection. They have since been rejected for admission into their collection. At the time of thesis submission, discussions were ongoing regarding relocating these files into the possession of the State Library of South Australia.

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