Masculinity and Material Culture in Technological Transitions: From Letterpress to Offset Lithography, 1960s–1980s

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Masculinity and Material Culture in Technological Transitions

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ABSTRACT: Between the 1960s and the 1980s the printing industry in advanced capitalist economies underwent dramatic technological change. While the transition from "hot metal" compositing to computerized typesetting has been extensively analyzed, there was another transformation occurring simultaneously: in the pressroom, letterpress was gradually replaced by offset lithography. Many letterpress machinists retrained, moving from a heavy, manual technology (with an entrenched patriarchal culture) to a method that was faster and less physically taxing. However, unlike their compositor counterparts, the press-machinists' transition involved a continuity of traditional masculine craft identities rather than a rupture associated with "deskilling." Intrinsic to this experience of technological change was a masculine embodiment that was attuned to and shaped by the materiality and aesthetics of printing technologies. This article establishes how masculine craft identities do not rely exclusively on skill-based mastery of traditional technologies, but also relate to other dimensions of technology, such as aesthetics, embodied "know-how," and the physicality of industrial machinery.

I could still get on there and operate that, you know.

—Norm Rigney[1]

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1. Norm Rigney, interview.

Introduction

Letterpress printing has traditional associations with craftsmanship and masculinity, where a press-machinist's technologies, tools, and manual skill were all powerful indicators of identity and social status. But what happened to letterpress-machinists between the 1960s and the 1980s when the printing industry in advanced capitalist economies underwent dramatic technological change? Letterpress had been the dominant form of text-based printing since the fifteenth century, but by the second half of the twentieth it came to be seen as redundant in mainstream printing.[2] For large-format printing, letterpress was often replaced by offset lithography, a faster and lighter method preferred by employers because of its substantial productivity gains. Many letterpress-machinists retrained in offset lithography, moving from a heavy, manual, and time-consuming technology to a faster method that was less physically taxing. While letterpress technology was imbued with long-established patriarchal associations due in part to its material characteristics, the gender and skill associations pertaining to offset lithography were not yet fixed. It was a very different technology, using lightweight metal plates rather than unwieldy formes filled with heavy metal type. How did press-machinists manage this transition?

Rather than emerging as a trade with connotations of simplicity and "deskilling," offset lithography was absorbed into prior associations with craft masculinity. This contrasts starkly with the better-known side of the printing process: compositing. The composing trade was widely interpreted during the 1970s and 1980s as having been deskilled and "feminized" as a result of the introduction of computerized phototypesetting.[3] In press-machining, however, "men remained men" and even though the machines surrounding them were replaced, a strong connection to technology endured.

This article examines the transitional processes involved in the switch from a long-established technology to a socially disruptive one. It does so by focusing on the relationships that existed between skilled workers (press-machinists) and their printing technologies (large-format letterpress and lithographic presses) in an Australian public-sector printery: the

2. The period of transition from letterpress to offset lithography differs somewhat from country to country. Broadly speaking, this transition took place somewhat earlier in the United States and parts of Europe, such as Germany, and a bit later in the United Kingdom and Australia. See Frances Robertson, *Print Culture*, 98; Michael Twyman, *Breaking the Mould,* 173; Alan Marshall, *Changing the Word*, 34–42; G. A. Brandjes, "Latest Developments in Sheet-fed Offset Printing"; Macrae, Patterson, and Tobin, "Offset Printing and Its Various Aspects"; Anton Ewald, "The Philosophy of Modern Offset Press Design"; and James Moran, "Printing in the Seventies," 126–27, 139–40.

3. See, for example, Andrew Zimbalist, "Technology and the Labor Process in the Printing Industry"; Michael Wallace and Arne L. Kalleberg, "Industrial Transformation and the Decline of Craft"; and Cynthia Cockburn, *Brothers*.

JANUARY
2016
VOL. 57

New South Wales (NSW) Government Printing Office, Sydney (colloquially known as "the Gov"—a term that will be used hereafter).[4] This research builds on existing studies of gender and the labor process in the fields of sociology, history of technology, and labor history, and examines the complex and intertwining relationships among technical artifacts, gender identities, and the labor process. Charting the printing industry's transition from letterpress to offset lithography opens a window into the significance and associative impact of large-scale technical machinery on the shop floor, and relates this back to the reinforcement of craft masculinity ideals within a late-twentieth-century context.

During the second half of the twentieth century the printing industry, which had long been seen as a stalwart bastion of craft control, was confronted by the need to engage with increasingly automated (and later computerized) technologies. Long after many other manufacturing industries had undergone almost complete automation, printing-industry employers gradually began to introduce offset lithography, electronic phototypesetting, and automated binding in order to speed up production (transitions that often involved complex industrial-relations disputes). The introduction of newer technologies in typesetting, press-machining, and bookbinding resulted in the swift disappearance of specific printing trades and associated job losses, particularly during the period between the 1960s and 1980s.[5] In the pressroom heavy iron letterpresses—some of which were still based on nineteenth-century models—were dismantled and sold as scrap metal, replaced by high-speed offset-lithographic equipment.

While the compositors' experience of technological change in the printing industry has been extensively analyzed, little has been said about how the press-machinists' experience of technological change might have differed from the compositors.[6] Studies by Cynthia Cockburn (among oth-

4. This colloquial nickname for the NSW Government Printing Office became apparent through the oral-history process; it can also be found in the Government Printing Office's staff journals. It is also sometimes spelled "Guv."

5. Cynthia Cockburn, "The Material of Male Power," 41, and *Brothers*, 14–22; Marshall, *Changing the Word*, 10–12.

6. This scholarly emphasis on typesetting (over other aspects of printing) is noted in Robertson, *Print Culture*, 59. For studies of the transition from hot-metal typesetting to computerized electronic typesetting, see Cockburn, *Brothers* and "The Material of Male Power"; Roberta Hill, "From Hot Metal to Cold Type"; Rosslyn Reed, "From Hot Metal to Cold Type Printing Technology"; Marshall, *Changing the Word*; Therese F. Rogers and Natalie S. Friedman, *Printers Face Automation*; Wallace and Kalleberg, "Industrial Transformation and the Decline of Craft"; and Zimbalist, "Technology and the Labor Process in the Printing Industry." In studies of printing during the nineteenth and early twentieth centuries, the emphasis often falls on controversies between typographical unions and employers in relation to the introduction of mechanical typesetting equipment and the use of nonunionized and/or female labor. Again, the story is told more fully for compositors than press-machinists. See, for example, Ava Baron, "An 'Other' Side of Gender Antagonism at Work"; Frances, "Marginal Matters"; Raelene Frances, *The Politics of Work*; and James Hagan, "Craft Power" and *Printers and Politics*.

ers) during the 1980s and 1990s demonstrated how the discontinuation of hot-metal typesetting fundamentally dissolved compositors' identities as skilled craftsmen. Multiple accounts described how compositors' labor practice transformed from what was traditionally perceived as a highly skilled craft, securely placed within the domain of hegemonic masculinity, into the supposedly "feminized" practice of typing at a QWERTY keyboard.[7] Through her analysis of the retraining of newspaper compositors on London's Fleet Street in the 1970s, Cockburn established how the definition of *craft skill* was interwoven into traditional conceptions of working-class masculinity. To change a compositor's tools and machinery of work was to challenge the very basis of his self-definition as a skilled craftsman. Before the compositing trade disappeared entirely in the second half of the 1980s (due to the growth of desktop publishing, which eliminated the need for a compositor to double-handle type), compositing was viewed as a completely transformed trade: from a skilled, masculine craft to a feminized (and thus undervalued) clerical role.[8]

At the same time that offset lithography was replacing letterpress, the rise of second-wave feminism and associated social changes were altering the traditional divisions of labor. Accordingly, we need not assume that all press-machinists at the Gov were men, but the vast majority were. Although women at the Gov entered the trades of bookbinding and compositing in reasonably large numbers, press-machining remained a male-dominated enclave until the Gov's closure in 1989.[9] While this article does

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While lithography has received less attention in print history, the following publications attend to lithography and its technological transitions: Elizabeth Faulkner Baker, *Printers and Technology*; Rob Dunn, Ray Hester, and Andrew Readman, "From Letterpress to Offset Lithography"; Marshall, *Changing the Word*, 34–42; Michael Twyman, *The British Library Guide to Printing,* 76–82, *Breaking the Mould*, and *Printing: 1770–1970*; and Dennis Bryans, "The Double Invention of Printing."

7. The gender and skill impacts of the transition from hot-metal typesetting to electronic photo-typesetting have been addressed in Cockburn, "The Material of Male Power" and *Brothers*; Raewyn Connell, *Masculinities*, 55–56; Raelene Frances, *The Politics of Work* and "Marginal Matters"; Hill, "From Hot Metal to Cold Type"; Rosslyn Reed, "Making Newspapers Pay," "From Hot Metal to Cold Type Printing Technology," and "Journalism and Technology Practice since the Second World War"; Rogers and Friedman, *Printers Face Automation*; Wallace and Kalleberg, "Industrial Transformation and the Decline of Craft"; and Zimbalist, "Technology and the Labor Process in the Printing Industry."

8. Cockburn, *Brothers*, 95–100.

9. The Gov began to indenture female apprentices from as early as 1974 in typesetting and bookbinding, and 1978 in press-machining. This can be partly explained by the implementation of a policy relating to NSW's 1977 Anti-Discrimination Act. It is significant that there were many female apprentices at the Gov before the factory shifted away from hot-metal typesetting and letterpress. See "More Girls Finding Their Way into a Man's World"; "Jobs for the Girls"; Helen Ferguson, *Report on the Equal Employment Opportunity Project at the NSW Government Printing Office*, 50; and Rosslyn Reed and Jessica Mander-Jones, *Women in Printing*.

JANUARY
2016
VOL. 57

not focus on the experience of female press-machinists, it must be acknowledged that the performance of a masculine culture of craft operated to exclude and discriminate against the few women who entered the press-machining trade during the late 1970s and 1980s. Although the increasing use of offset lithography meant that press-machining work was lighter and theoretically more available to women (and to people with smaller, weaker bodies in general), this did not immediately open the press-machining trade to them.[10]

Academic analysis of the technological change in press-machining in the 1970s sometimes dismisses the transition from letterpress to offset lithography as minor.[11] But this change represented a profound shift in the applicable technologies and led to job losses, as well as new positions for which many press-machinists retrained. Importantly, this technological change was experienced neither as emasculating for press-machinists nor as dramatic deskilling, unlike their compositor counterparts. Drawing on research from archival materials and oral-history interviews with former press-machinists who worked at the Gov between the years 1932 and 1989, it becomes clear that many of them retrained willingly and successfully incorporated the newer technology into their skill sets and identity.[12]

They achieved this by reinforcing their (gendered) status as craftsmen rather than becoming emasculated or alienated by the new technology. How was this continuity achieved? Intrinsic to this experience of technological transformation was a masculine embodiment that was attuned to and shaped by the materiality and aesthetics of printing technologies. Ultimately, masculine craft identities did not rely exclusively upon the skill-based mastery of traditional technologies, but were also related to aesthetics, embodied know-how, and the physical presence of large-scale machinery on the shop floor. The press itself (whether letterpress or lithographic) was vital to the continuity of particular gender and labor identities, as the history of the Gov demonstrates. The continued presence of large-scale printing machinery (albeit more automated than letterpress) enabled press-machinists to recycle and transform older notions of craft masculinity, adding detailed technical knowledge about high-speed ma-

10. For examples of analyses of women's experience in heretofore male-dominated professions and trades, see Sally L. Hacker, *Pleasure, Power and Technology* and *Doing It the Hard Way*; Cynthia Cockburn, "Caught in the Wheels"; Ann Game and Rosemary Pringle, *Gender at Work*; Marjorie Johnston, *Jobs for the Girls*; Rosslyn Reed, "Anti-Discrimination Language and Discriminatory Outcomes"; Reed and Mander-Jones, *Women in Printing*; and Marcia Braundy, *Men & Women and Tools*.

11. Zimbalist, "Technology and the Labor Process in the Printing Industry."

12. The interviews took place in Sydney between October 2011 and July 2013; thirty-one individuals were interviewed (twenty-five men, six women). Some participants had retired from full-time work, although many were still working in the printing and publishing industries and in other professions. Archival materials were sourced from the NSW Government Printing Office Files, NSW State Records, Sydney. Ethics clearance was granted by UTS HREC Approval reference no. 2011–285A.

chinery into the craftsman's repertoire while maintaining the elements of embodied control and workers' "ownership" of individual presses.

From Letterpress to Offset Lithography: The Gov

The Gov is an example of a staunch letterpress printing factory that underwent a significant technological transition, which allows us to see how traditional practices and identities are sometimes maintained and reinvigorated when a long-standing institution is threatened with change. A service department of Australia's NSW state government, the Gov is an intriguing case because it was one of the last remaining large-scale printing factories in the developed world to use letterpress, hot-metal typesetting, and hand-binding.[13] By way of comparison, in the United States letterpress, as a mainstream form of printing, was declining in use by the 1960s and 1970s, while the Gov continued to partially use letterpress through the mid-1980s. As a government entity it differed somewhat from the commercial industry. During the late 1970s and early 1980s the Gov began introducing offset-lithographic machinery into its pressroom.[14] Many commercial printing houses had already made the shift. From 1977 onward letterpress-machinists at the Gov gradually transitioned from letterpress to retrain on the offset-lithographic presses that were being incrementally introduced. At the Gov this change was met with some union resistance and controversy on the shop floor, as well as with adaptive measures to accord with division-of-labor restrictions.[15]

Letterpress is the process by which a raised surface is covered in ink, and paper is pressed onto it to produce a printed image. This printing principle can be traced to Chinese printmaking by using methods of relief and impression in the second century CE.[16] Letterpress was not used in western European culture until Johannes Gutenberg's production of moveable type between 1434 and 1450. With moveable type, letterpress eventually had the capacity to become a modern, mass-production process, and it became the dominant method of printing from the fifteenth to the mid-twentieth century. Over this period, while the principle of relief and impression re-

13. The NSW Government Printing Office was a service department of the State Government, Sydney, established in the NSW colony by Governor George Gipps in 1840. Similar institutions existed in other Australian capital cities, in the Pacific, and in the United Kingdom, where it is known as Her Majesty's Stationery Office (HMSO). See Richard C. Peck, *NSW Government Printers and Inspectors of Stamps*; D. Hartridge, "State Government Printing Offices in Australia Today"; Greig Tillotson, "Government Gazettes in Australia"; Hilary Golder, *Politics, Patronage and Public Works*; and Howard Coxon, "Australian Official Publications."

14. G. F. Smith, "Attitudes Towards Technological Change at the NSW Government Printing Office," 2.

15. Ibid.; E. C. Bennett, *New Technology and the Australian Printing Industry*.

16. Dunn, Hester, and Readman, "From Letterpress to Offset Lithography," 84.

JANUARY
2016
VOL. 57

mained the same, faster and more automated presses were gradually introduced. Wooden screw presses were updated with the iron Stanhope press in Britain around 1800, followed by other iron platen presses. The early nineteenth century saw the introduction of steam power into press machinery, and by the second half of the century mechanical replacements were being found for the feeding of paper by hand. By the beginning of the twentieth century, electrical powering options gradually became available.[17] Until the mid-twentieth century, letterpress, in its various forms, had maintained a 500-year dominance in the industry, resulting in deeply entrenched practices, values, and identities that proved hard to alter.

As noted above, letterpress had undergone previous technological change, but, crucially, a letterpress-machinist's labor process remained hands-on throughout this period. This was chiefly because the process of setting up the press remained highly labor-intensive, and also because printing presses remained as autonomous units under the control of a single machinist[18] (fig. 1). In fact, the operation of *all* industrialized printing presses, regardless of whether they are run with heavy letterpress formes or lightweight lithographic plates, requires a detailed series of steps to set up the machine before printing begins. The process of setting up a letterpress machine is traditionally known as a "makeready": paper is loaded, ink levels tested and modified, pressure refined, and proofs run. Much of this process is subject to the individual judgment of the press-machinist; it involves locking a letterpress forme—comprising multiple pages of composed metal type—onto the press and testing for the quality of the impression.[19] When making-ready, the letterpress-machinist must ensure that the printing surface is perfectly flat so that the printed impression is unified, with no imprinted areas too light or too heavy. This involves padding out parts of the cylinder or flatbed with layers of blankets or damp paper patches or adjusting the metal forme so that it is flush.[20] Even during the 1960s and 1970s on electronic letterpresses, the process of a makeready could take several hours, or occasionally an entire day, during which the press was only in use to run proofs.

Press-machinists happily describe in detail the makeready process. Letterpress printer Victor Gunther, who was apprenticed at the Gov in 1946, described the process after being asked about his recollections of apprenticeship:

> Well, when I started on the machines after twelve months, from then on I was offsiding on the machines and the tradesmen'd tell you what to do and you'd do it. . . . You'd help them makeready—see, you put

17. Ibid., 83–85; Twyman, *Printing 1770–1970*, 51–55.

18. Depending on the size of the machine and weight of the forme, press-machinists often had an assistant known as an "offsider."

19. A *forme* is the steel frame that holds the type assembled by compositors into a set of pages, imposed together.

20. Zimbalist, "Technology and the Labor Process in the Printing Industry," 114.

FIG. 1 Main pressroom at the NSW Government Printing Office, Sydney (1965). The press-machinist in the foreground is John Wetherell. (Source: Courtesy of the Mitchell Library, State Library of New South Wales, Sydney.)

> the formes on the machine, with all the type and blocks, and you'd take a proof of it, and you'd find there's all weak spots and heavy spots. So the makeready is cutting out the heavy parts and patching it up with tissue paper in the light spots, to bring it all level . . . and when you took your next proof you'd find most of it is [*sic*] all even.[21]

Letterpress and lithographic printer Glenn MacKellar, who was apprenticed at the Gov much later, in 1973, described the letterpress makeready process in a reverent tone:

> It was a very dark environment in these machines. Very dark, cumbersome sort of machine. To set it up you'd put your paper in the front end, and set it up to run through okay, and then you'd have to do what's known as a "makeready." That was just varying amounts of paper in the packaging, to get it to all print evenly. . . . A real good printer, of top skill, would be able to do all of that and it would be so nice that when you turned over and looked at the back of the sheet, you could see the impression of type on the back. He had it *just right*. And it could take hours to get right.[22]

21. Victor Gunther, interview.

22. Glenn MacKellar, interview (here and throughout the interviews, italics indicate the speaker's emphasis).

JANUARY
2016
VOL. 57

The makeready means that a letterpress-machinist retained considerable control over the pace of his output; it is therefore unsurprising that press-machinists offered so much detail. Like the nineteenth-century shoe lasters described by Irwin Yellowitz, the specific hand-skills required in the makeready process gave these press-machinists an edge, a golden chip for union bargaining, and a strong sense of an acquired skill.[23] Compared to the heavy, painstaking makeready work undertaken by a letterpress-machinist, the makeready process for offset lithography was less physically demanding and faster-paced; it involved setting up a relatively lightweight plate onto the press rather than an unwieldy letterpress forme, and the testing stages were usually faster than with letterpress machinery.[24]

Printing historian Dennis Bryans observes that the history of printing is, in fact, two separate histories operating alongside each other, with lithography often being forgotten and letterpress history receiving more attention. Along with historian Michael Twyman, Bryans emphasizes that the history of lithography is not exclusively a twentieth-century story, but dates back to an invention by playwright-actor Alois Senefelder in Munich in 1799, which made use of the chemical separation of oil and water.[25] The lithographic process prints from a flat surface rather than a raised one, and originally it involved producing an image with greasy ink on a stone; the grease attracted the ink, while the other areas of the stone remained wet, thus repelling the ink.

In terms of mechanical developments, however, it was not until the first half of the nineteenth century that a powered lithographic press was engineered. Printing from stone was cumbersome and could not be easily adapted for rotary printing, but in the late nineteenth century experiments began in printing from tin plates. In the mid-twentieth century lithography increasingly used light-sensitized, lightweight metal plates (often aluminium), making the method more affordable and easily adapted to mass production. During the early twentieth century offset lithography was developed in both the United Kingdom and United States; the process involves the transfer of the image from a metal plate onto another surface, usually a cylinder, and from there the image is then offset onto paper. By the middle of the century industry insiders began to regard web-fed offset lithography as cheaper, faster, and capable of much larger outputs than letterpress. Offset lithography was first introduced by large corporations in newspaper and magazine printing; the process was favored because theoretically it required fewer workers and had the relative ease of pairing

23. Irwin Yellowitz, "Skilled Workers and Mechanization."

24. The physical practice of making-ready on a lithographic press could still be physically challenging, however, as it sometimes involved reaching high up to tighten bolts and climbing onto the equipment.

25. Bryans, "The Double Invention of Printing"; Twyman, *Printing 1770–1970* and *Breaking the Mould*.

images with text.[26] Offset lithography paralleled contemporaneous developments in electronic typesetting technologies, thus reinforcing its popularity. By the 1970s the process had become the principal form of commercial printing within advanced capitalist contexts, with letterpress increasingly relegated for embellishing purposes, such as embossing and foil-stamping.[27]

Lithography Infiltrates the Main Pressroom at the Gov

While many other press-machinists at the Gov were prepared to embrace the change to offset lithography, their identity-affirming affinity with machinery remained a major factor in the transition's acceptance. The process of learning about and becoming familiar with new machinery—thoroughly understanding it—was a theme that the interviewees consistently reiterated. George Larden began working as a letterpress-machinist at the Gov in 1932. During World War II he served in the Royal Australian Air Force (RAAF), chiefly as an instructor in technical training for military aircraft, after which he returned to the Gov as a machinist. He summarized his experience in both printing and the RAAF in specific terms of technical knowledge. For Larden, both press-machining and RAAF instruction were a process of learning specific machinery in detail, from one machine to another:

> Altogether I enjoyed all my working days. I think I had an engineering mind in the first place. And when I seen the automatic machinery in the printing, I think the machinery got me in. . . . [The RAAF] kept me as an instructor. We had to set the syllabus for the Beaufort Bomber. They only had one set of manuals, and that was at the factory. So I used to have to go down there and study it to get enough knowledge to set the syllabus. And then when the Mosquito came along I did the same again. I think I spent all my working days *learning*.[28]

Here, it is clear that the process of shifting onto new machinery was not necessarily perceived as deskilling or loss; instead, it could also function to reinforce a sense of masculine technical mastery. This dynamic opens up a way

26. In smaller printing houses and institutions like government printing offices letterpress retained its association with "proper" text-heavy printing, and hence lasted longer in these factory contexts. See Dunn, Hester, and Readman, "From Letterpress to Offset Lithography," 83; and Twyman, *Breaking the Mould*, 171–73, and *Printing 1770–1970*, 59.

27. Dunn, Hester, and Readman, "From Letterpress to Offset Lithography," 83; Bill Cope, "New Way with Words," 10. While the growth of small, nonunionized offset "copyshops" also changed the structure, technologies, and industrial relations of the printing industry, the topic falls outside the scope of this article.

28. George Larden, interview. Larden passed away in 2014, shortly after the completion of this oral-history project, at age 103.

JANUARY
2016
VOL. 57

FIG. 2 The letterpress-machinists and engineers assigned to work on the new offset-lithographic Heidelberg Speedmasters, NSW Government Printing Office, Sydney (1977). The engineers wear overalls, and the others are letterpress-machinists (l-r): Glenn MacKellar, Leo Duncan, and Graham Gould. (Source: Promotional photo by Seligson and Clare, the distributors of Heidelberg machinery. Courtesy of Glenn MacKellar.)

to see how, within a factory context, management could manipulate messages about why workers had to retrain: if retraining was associated with skill acquisition, masculinity, and craft tradition, then the shift from one type of machinery to another was less likely to cause resistance from workers.

The introduction of offset lithography into the main pressroom of the Gov required negotiations with the Printing and Kindred Industries Union (PKIU) and involved the redefinition of trade demarcations.[29] The gradual incursion of offset lithography into the pressroom resulted in a peculiar array of workplace practices, including decisions that to an outsider might seem illogical. In 1977 the Gov acquired two offset-lithographic Heidelberg ZP11 Speedmasters (fig. 2), which were the first offset-lithographic presses to be installed in the letterpress section. PKIU's clearly defined rules initially meant that the Speedmasters were "off limits" to all letterpress-machinists.[30]

29. Smith, "Attitudes Towards Technological Change at the NSW Government Printing Office," 6.

30. Ibid., 3.

Technologies are not always used to their full capacity nor in the way that their designers may have intended. Simply because in theory a technological system is newer and faster does not ensure efficiency or improvement in practice. New machinery is often modified to suit existing cultural conventions, and social practices are built around disruptive objects. The disruptive and off-putting quality of the Speedmasters was the fact that they represented the new world of offset lithography—an area in which letterpress-machinists were barred from entering by the union, at least initially.

In response to the perceived threat of offset lithography, the Speedmasters were initially rebuilt so that they could handle letterpress plates by using a process known as "dry-offset." The process used a printing plate with a raised surface, meaning that letterpress principles and work practices remained.[31] In effect the Gov retrograded two new, state-of-the-art presses. The use of dry-offset was an unusual adaptation, particularly because it resulted in an inferior printing quality, but it meant that the Speedmasters could be operated by letterpress-machinists.[32] It did not seem to matter that the printing quality suffered: the PKIU demanded the changes because it protected machinists' jobs and consequently management complied.[33]

When the Speedmasters were first acquired in 1977 they were disruptive objects in the workplace, their status unclear regarding who should be operating them.[34] By 1980 an agreement that simplified trade classifications was finalized, thus allowing letterpress-machinists to operate lithographic presses and, in theory, vice versa.[35] The former control of machinery broke down and was redefined. The changing of award distinctions and the retrograding of the Speedmasters into pseudo-letterpress machines rendered them safe, consequently drawing in other workers.[36] Eventually, the pressroom's new machines became less controversial.

Press-machinists who were specifically allied to the Speedmasters had

31. "Nyloprint," 3.

32. Smith, "Attitudes Towards Technological Change at the NSW Government Printing Office," 3.

33. Ibid.

34. Langdon Winner, "Upon Opening the Black Box and Finding It Empty," 365; Bruno Latour, *Science in Action*, 258.

35. Existing letterpress-machinists were reclassified "Printing Machinist Classification A," and, with perhaps a hint of the Gov's letterpress bias, lithographers were reclassified as "Printing Machinist Classification B, Grade I." This meant that press-machinists could also use flexographic and gravure presses. Separate compositor demarcations, such as hand-compositor, Monotype operator, Linotype operator, copy-marker, and so on, were also simplified as "Compositor" under various classifications. See Agreement no. 2,268 of 1980 between the Public Service Board of the State of NSW and the Printing and Kindred Industries Union (21 March 1980); and Don West, "Printing Staff Agreement," *Staff Circular* 47 (1 May 1980), both in "General Correspondence Files," container 18/2091, in NSW-GPO Files.

36. Cynthia Cockburn, "The Circuit of Technology," 34.

JANUARY
2016
VOL. 57

a more positive experience during this period. MacKellar was of a younger generation than some of the other printers interviewed for this project. His perception was that the transition from letterpress to offset lithography was not a major problem for the workers: "There wasn't a lot of resistance from most of the rank and file; they saw it as something different. It made a big difference in terms of speed."[37] When MacKellar commenced his apprenticeship in letterpress-machining in 1973 he already had some lithographic knowledge from his previous technical education. This combination of skills meant that in 1980 MacKellar was able to easily switch between the two methods. When interviewed, he explained that

> [the Speedmasters] were specially built to take a rotary letterpress plate. . . . But the union wouldn't allow them to operate as lithographic printing machines. . . . The machine had a special undercut, and we used to put letterpress printing plates on them, and run them as letterpress machines, or dry-offset, as we call it. We did that until about 1980 when we were allowed to convert them over to litho. So, into the cupboard we went, and got all the litho printing bits that had to get on them, and bolted 'em all on. And I was on the first one. . . . They were just litho printing machines after that. The modernization just continued from then on.[38]

He situated the dry-offset adjustment as central to the narrative of the arrival of the Speedmasters, a story he framed around the notion of technological "modernization." The press itself is central to MacKellar's interpretation of his working history:

> The Speedmaster that I got—it was just a beautiful piece of equipment. It just ran and ran like a Swiss watch. And the one next to it—everyone that went on it—it just used to stop all the time. It just wasn't the same. And people used to say, "Oh that Glenn MacKellar, he's a good printer, look, his machine's runnin' beautiful." But then I went on [the one next to it] one day, and I don't know, it's just like cars, you know there's something about them? Well, it's just something about it, it just wasn't the same as the one that I got. They all had their own little behavioral characteristics.[39]

Notwithstanding his characteristically Australian desire not to boast, this anecdote indicates how MacKellar's thorough, embodied knowledge of a particular printing press lent legitimacy to his identity as a skilled printer, regardless of which printing method was in use.

37. MacKellar, interview.
38. Ibid.
39. Ibid.

Craft Masculinities

Identity is a concept that refers to the social process of inscribing people and bringing them into being as subjects who are individually and/or collectively distinct from others. It is a process that creates barriers to, and opportunities for, individual and collective action, and establishes pathways for what is possible or not in practice. A masculine identity is one that permits individual or groups of men to pursue particular paths of action at the same time as excluding others. It is relational insofar as it usually involves differentiation from women and the feminine. Masculine craft identities are also inextricably embodied through their embeddedness in practice, and they are indivisibly connected to the technology that *craftsmen* have authority over.

None of this is to say that press-machinists experienced this technological change in the same way, nor is there a single form of craft masculinity. As Raewyn Connell has established, there are multiple masculinities, and masculine identities are relational and always in flux.[40] The union-dominated nature of industrial relations and the provision of retraining programs at the Gov would have provided a secure environment for change, but this does not provide the full picture. Importantly, the acceptance of offset lithography by the majority of letterpress-machinists at the Gov must be understood in relation to existing hegemonic masculinities (for example, the ideal of the skilled craftsman) and in reference to the material presence of machinery on the shop floor.

This discussion of male press-machinists must also acknowledge the small number of female press-machinists at the Gov.[41] Resistance to their presence was frequently voiced, often accompanied by the argument that presswork was "too heavy" for women.[42] While the act of lifting a letterpress chase is difficult for all except the strongest bodies, this argument makes little sense in relation to lightweight offset plates.[43] Notwithstanding this focus on women's physical incapacity, female press-machinists themselves tended *not* to speak of issues related to lifting or physical strength; instead, women in nontraditional trades tell stories about coping, managing, and working things out, and they describe an experience that is constantly defined in terms of their "otherness."[44] The female press-machinist interviewed in this project described the daily challenges of working in a "man's domain," but she also spoke of "working out ways" to manipulate

40. Connell, *Masculinities*.

41. Women's press-machinists' experience has been the focus of some of my other research; however, there is not the space in this article to fully explore their vastly different story.

42. Ferguson, *Report on the Equal Employment Opportunity Project*.

43. Reed and Mander-Jones, *Women in Printing*, 13.

44. Johnston, *Jobs for the Girls*; Cynthia Cockburn, *Machinery of Dominance* and "Caught in the Wheels"; Braundy, *Men & Women and Tools*.

JANUARY
2016
VOL. 57

both letterpress and lithographic technologies.[45] These ways involved a gamut of physical actions other than simply lifting; for instance, reaching, climbing, crawling, and balancing. In contrast to male press-machinists, their female counterparts' embodied connection to the machinery was not regarded as a "natural" display of craft mastery, but rather her competency was always felt to be on trial.[46] While concerns about women lifting heavy weights were usually framed in terms of physical injury, it is worth noting that it was often the men who expressed concerns about *seeing* women lift such heavy objects.[47] Hence it may be that it was not women's safety that was really at stake, but rather the men's sense of their own masculinity.

The fact that women in nontraditional trades experienced harassment and institutional discrimination is well-established, and this article foregrounds the issue by exploring the reinvigoration of masculinist craft culture during the second half of the twentieth century. This in turn can be linked to the identity-generating relationship that developed particularly between male press-machinists and their presses. As noted earlier, masculine identities permit individual and groups of men to pursue particular paths of action, at the same time as excluding others; and such an identity is also inextricably embodied, through its embeddedness in practice. It is this embeddedness that helps us to understand the continuity of craft-based masculinity, even after the craft itself appears to have disappeared.

Craft-based masculinity is identifiable in this study through what the interview participants and other sources disclosed about themselves and their paths of action as individuals or members of a group—specifically in relation to their craft and the technologies they used in the process. There is evidence of this process across the two technologies. In oral-history interviews printing machinery was often mentioned early on, without prompting. Lithographer Ken Duffey, who was apprenticed at the Gov in 1958, began by explaining that

> I was the first apprentice into the new Government Printing Office in Harris Street, and the old lithography section was in a building in the bottom of Liverpool Street. When the machinery came over, it was all English machinery, basically machines called Crabtrees. They were a quad-crown machine, which is a 30 feet by 40 feet sheet. And they had a small machine called a Solar, which was a Swedish machine. . . . Yeah so that was basically [it], and they had a lot of small offset machines, like Multiliths.[48]

45. This interview participant's name is withheld by request.

46. One of the clearest examples of this is cited in Johnston, *Jobs for the Girls*, 28.

47. Ferguson, *Report on the Equal Employment Opportunity Project*. This observation is also drawn from my own oral-history interviews.

48. Ken Duffey, interview.

Similarly, press-machinist Ray Utick, who was apprenticed at the Gov in 1955, explained his apprenticeship experience specifically in terms of the different machinery to which he was assigned:

> They put me with an English chap on a Victoria Platen. That was a pretty solid one. Dangerous things, too. Especially when the safety guards don't work properly. And I was on that for ages, because the boss didn't like me much. . . . Then I went onto another, on my own—an Albert Automat—which very few people worked. I just graduated up to different machinery.[49]

At first, it might seem banal that these printers recount specific details about particular machines. But to dismiss this focus on machinery as natural or boring would be to miss the point that these printers' pride and sense of craft masculinity are expressed through their intimate knowledge of printing machinery. There is nothing natural about the way in which these men's identities are simultaneously constructed around notions of craft skill and technological mastery, and an awareness of this dynamic allows us to see how printing presses are historically active agents, and how their presence and use are (and were) intimately tied to press-machinists' sense of professional identity and masculinity.

The idea of the continuity and remaking of craft masculinity on the shop floor recalls historians Steven Maynard's and Stephen Meyer's respective analyses of changes to working-class masculinity in the face of automation and deskilling, research that focused on the automotive industry.[50] Maynard emphasized how a worker whose labor process is potentially degraded by technological change may still preserve the ideological pretension that his work constituted skilled craftsmanship. Essentially, Maynard regarded this process of reassurance and reemphasis on craft skill as a fundamentally gendered activity.[51] Meyer built on Maynard's discussion of the changing forms of working-class masculinity, describing a variety of shop-floor masculinities, a combination of "crude" and "respectable" ideals that existed in the twentieth-century automotive industry. Crude masculinity emerged, asserts Meyer, from the brutal world of the unskilled laborer, while respectability arose from the social pride, skill, and security of the craft tradition.[52]

Both Maynard and Meyer speak of how the Industrial Revolution produced two crises: that of industrialism, and that of masculinity.[53] The in-

49. Ray Utick, interview.

50. Steven Maynard, "Rough Work and Rugged Men"; Stephen Meyer, "Work, Play, and Power."

51. Maynard, "Rough Work and Rugged Men," 164.

52. Meyer, "Work, Play, and Power," 13–16.

53. Ibid., 17. See also Maynard, "Rough Work and Rugged Men," 160, and "Queer Musings on Masculinity and History." Maynard later critiqued his use of the term "cri-

JANUARY
2016
VOL. 57

creasing mechanization of industrial labor not only left workers exploited by capital, but it also emasculated and stripped them of their various working-class male identities.[54] One response to this "crisis of masculinity" was to seek to rebuild modified forms of masculinity in the new, mechanized shop floors. Meyer explains how "the dual crises of industrialism and masculinity prompted working-class (and other) men to re-masculinize their work and identities."[55] Strategies for doing this included enacting boyish forms of play and through controlling the output pace (slowdowns), but also an increasing social display of sexualized masculine bravado.

This notion of a performed, reemphasized masculinity is also a feature of labor historian Paul Thompson's analysis of how deskilled autoworkers were merely "playing at being skilled men."[56] Defending against the decline of the need for their skilled labor, Coventry autoworkers enacted their gender identity through increased masculine rituals and rites of passage, through antics, fighting, and sexual boasting, which took the place of actual skilled labor. Here, Thompson's interpretation of *skill* is construed in fairly traditional terms. Given that it is now broadly established that "the concept of skill itself is gender bound" and its value is more-or-less socially constituted, it is possible to see how Thompson's notion of it remained rather limited and masculinist when he wrote "Playing at Being Skilled Men" in 1988.[57] But his point about a reemphasis on craft masculinity is still useful. In Thompson's view, as workers found themselves deskilled and threatened with redundancy, their only recourse to power was through a performance of masculinity: through playing up and reinvigorating mythical notions of craft prowess in an assembly-line era, or what he calls "their defiantly resilient factory floor culture."[58]

While examining apprenticeship in early-twentieth-century metal trades in Sydney, historian John Shields concludes that the "masculine culture of craft" has not disappeared during this period, despite major transformations in technology. In reference to the degradation of the labor process and the decline-of-skills thesis put forward first by Harry Braverman in 1974, Shields argues that "this scenario of decline has seriously underestimated the historical resilience of the craftsman, his institutions, and his culture."[59] While Shields believes in the authenticity and continu-

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sis of masculinity," noting that the word *crisis* could be considered as referring to a coherent, unified system, which masculinity arguably never was.

54. Meyer, "Work, Play, and Power," 16.

55. Ibid., 17.

56. Paul Thompson, "Playing at Being Skilled Men."

57. On the gender-bound quality of skill, see Ava Baron, "Gender and Labor History," 14. On the social constitution of skill, see Reed, "Making Newspapers Pay," 27–28; Game and Pringle, *Gender at Work*, 7–8; and John Shields, "Deskilling Revisited."

58. Thompson, "Playing at Being Skilled Men," 50.

59. Harry Braverman, *Labor and Monopoly Capital*; John Shields, "Craftsmen in the

ity of the craftsman and does not interrogate craft masculinity as a social construct, Thompson argues that this masculinity came to be *performed*.[60] Notably, however, Shields explains that the apprenticeship system was the tool through which this "fraternal and sectional; laborist and masculinist" culture of craft was maintained.[61] Through apprenticeships the "customary rites and rituals" of nineteenth-century craft labor were replicated and reinforced, initiating boys into a (constructed) ideal of "skilled manhood."[62] As Ava Baron observes, apprenticeships placed machinery as the central measure by which an apprentice gradually became a master craftsman. This learned form of craft masculinity was characterized by a sense of "artisan dignity" and perception of one's moral worth.[63] Since apprenticed trades continued to be explicitly related to concepts in the medieval tradition, the mystique of craft culture was emphasized, imbuing the mechanized factory domain with the notion that a certain class of men was innately meant to be associated with technological and craft skill.[64]

Although Shields was writing about Australia during the first half of the twentieth century, his point can also extend to the second half. Unlike the situation in the United States, apprenticeships remained the prevailing labor-training system within the Australian printing industry (among other manufacturing industries).[65] During the 1980s, in union strongholds like the Gov, a press-machinist's labor process was structured by a union shop known as a "chapel," and the union-elected liaison between the workers and management was still known as the "father of the chapel." Apprentice-ships and access to employment were managed and tightly controlled through the union, in this case the PKIU, which restricted the number of apprenticeships. As in other printing trades, press-machining apprenticeships generally took between five to seven years. Once they were indentured, press-machinist apprentices were generally paired with a tradesman (journeyman or master) during their initial years before being allowed to use presses independently.

Making," 90. Shields notes that in Australian industrial contexts it depends on the industry as to whether "craft strongholds" were retained; he asserts that the carpentry, joinery, masonry, metal, bricklaying, painting, and printing industries were trades that kept the artisanal culture and craft-worker agency. See Shields, "Deskilling Revisited," 4, 6.

60. Thompson, "Playing at Being Skilled Men."

61. Shields, "Craftsmen in the Making," 88; see also Ruth Oldenziel, *Making Technology Masculine*, 56–57, for a discussion of how practical, on-the-job training served not only to formulate men's class identities, but also "represented a formalized ritual of male socialization."

62. Shields, "Craftsmen in the Making," 89.

63. Baron, "An 'Other' Side of Gender Antagonism at Work," 50.

64. See Ruth Oldenziel's "Boys and Their Toys" for another example of the way in which medieval "craft" symbols and mystique were mobilized in a manner that socialized boys into a particular understanding of their technical abilities and skills.

65. Baron, "An 'Other' Side of Gender Antagonism at Work"; John Shields, "A Matter of Skill" and "Deskilling Revisited."

JANUARY
2016
VOL. 57

This background from Shields and Baron enables us to understand the significance of how apprentices measured their success by the machines to which they were assigned. In this way press-machinists linked the belief in their craft skills to a particular understanding of progressing into manhood, and this form of masculinity was something learned, emulated, and passed on from tradesman to apprentice.[66] The reward for attaining manhood was being independently assigned to a press, thus deeply linking concepts of manhood, skill, and machinery.

Embodied Experience and Aesthetics for Press-Machinists

Although press-machinists can be either reticent or expressive in discussing their working life, there are on occasion other ways that they can communicate what was important to them. Utick maintained an independent photographic and filmmaking practice while he worked at the Gov. He retrained in offset lithography and claims that he had little difficulty adapting to the new method. Utick began taking photographs at the Gov as an apprentice, and when asked about what he took them of, he replied obliquely, "[o]h, just machines, and people on the machines. Just average things."[67] The main theme of Utick's photos is close-up images of presses (figs. 3–4). When interviewed he methodically reviewed the photos and named each press:

> This is the Albert Automat, a small letterpress machine. This is a Heidelberg Platen. This one is Warwick Richardson working on the Centurion. These are two small Wharfdale machines in the pressroom on the third floor, western side. This is the pressroom, third floor, eastern side, with the Miehle Perfecta. These are the Heidelberg cylinders in the new building.[68]

This almost singular focus on machinery is not simply something Utick developed later in life; in 1966 he had made an 8-mm film titled *Letterpress Machines of the Government Printing Office*[69] (fig. 5). The film shows a variety of letterpress machines in use at the Gov, and it was shot on the sly, during working hours: "That was one Saturday. I should've been watching my machine all the time. But I started it going, made sure there was plenty of ink in it, and then I used to run around the different spots and do the film."[70]

Most frames in *Letterpress Machines* are of machinery filmed at close

66. Shields, "Craftsmen in the Making"; Baron, "An 'Other' Side of Gender Antagonism at Work"; Oldenziel, "Boys and Their Toys."

67. Utick, interview.

68. Ibid.

69. This six-minute film was originally silent, although in recent years Utick added background music: *The Sorcerer's Apprentice*, a symphonic poem by Paul Dukas.

70. Utick, interview.

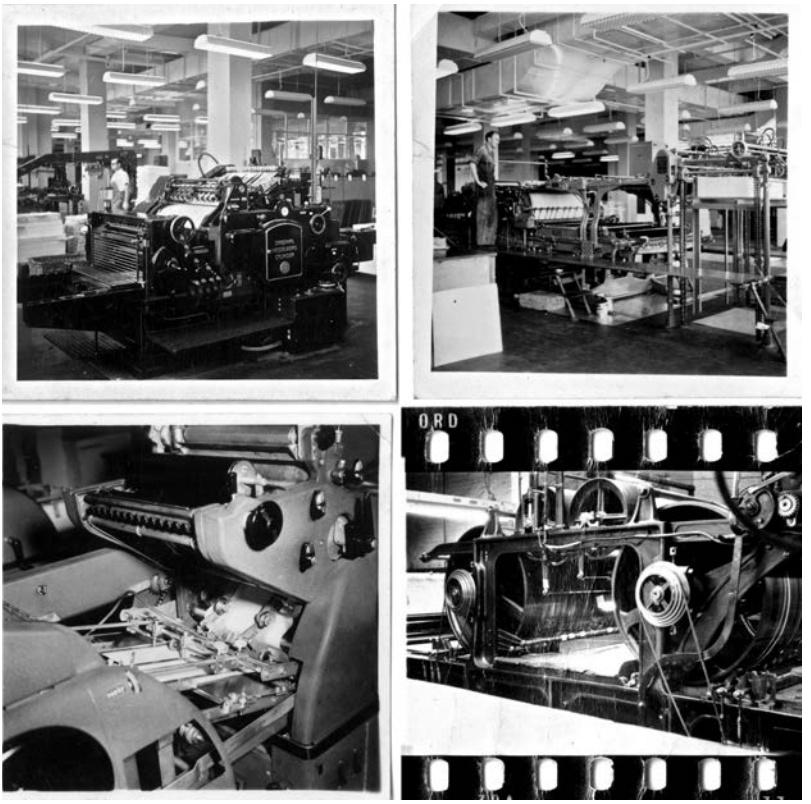

FIG. 3 A selection of undated photos by Ray Utick of presses at the NSW Government Printing Office, Sydney. Top (l-r): Cylinder Heidelberg; Miehle Perfecta. Bottom (l-r): a closeup of a small offset machine, and a decommissioned letterpress Perfecta that Utick described as "heading for the scrapheap." (Source: Courtesy of Ray Utick.)

range. Few people appear in the film, and it is hard to discern the entire pressroom because of the focus on the moving machinery. As we watched the film the discussion of technology returned to the letterpress era, and Utick described how he removed the safety guards from one press so as to get a better camera angle. As the title suggests, *Letterpress Machines* places the presses as the central characters in a story of technological achievement. Again, he named each press; when a man appeared in a frame, Utick exclaimed "Get outta the way!"

His photos and films, like the detailed descriptions of presses given by other press-machinists, tell us much more than factual matter about the presses. Implicit throughout is that being a press-machinist is about a craftsman's skill and knowledge and the aesthetics of printing. It is about the movement, rhythm, and form of presses in action, and the sensual

JANUARY
2016
VOL. 57

FIG. 4 Notwithstanding Ray Utick's machine-focused photos, workers do occasionally appear in them. Note here how Joe Liverman poses with his hand resting on the Cylinder Heidelberg (n.d.). (Source: Courtesy of Ray Utick.)

pleasures to be found in the smooth and efficient operation of large technological artifacts.[71] Of course, the end result mattered (which after all is what made a good printer), but a press-machinist's focus is almost completely on the presses themselves and the hard work and craft of the make-ready, all coming to fruition once the press is in operation. Everything is captured and named by the press-machinist, and in this way a certain kind of repossession is taking place, a quiet reclaiming of a working life's past "glory"; the methodical listing of machinery is to affirm its significance in the narrative of the skilled craftsman printer.

The Exception: Those Who Maintained Letterpress Loyalty

Only a few letterpress printers at the Gov viewed the introduction of offset lithography as the death knell of their trade; most were eager to retrain. Letterpress-machinist Norm Rigney, who was apprenticed at the Gov in 1964, explained that although he undertook training in offset

71. Tine Klief and Wendy Faulkner, "I'm No Athlete [but] I Can Make This Thing Dance!" 298.

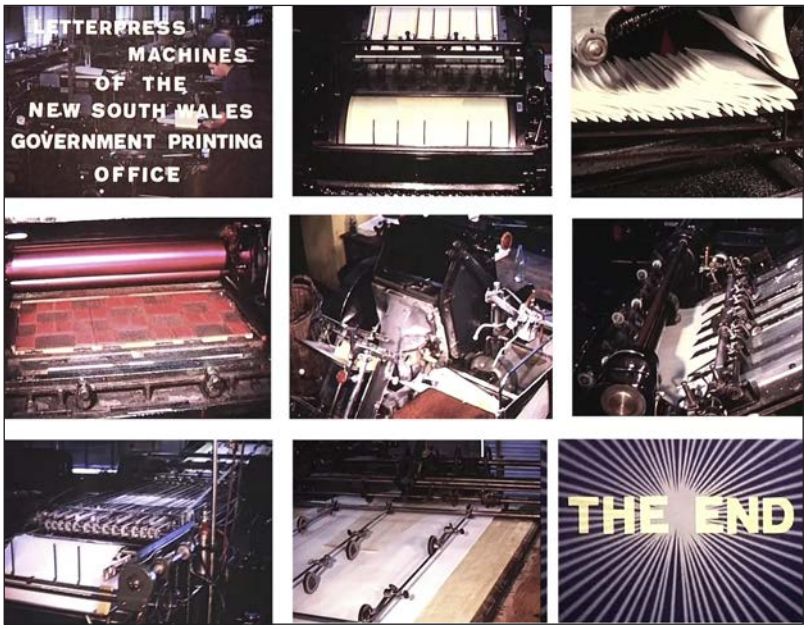

FIG. 5 Video stills from Ray Utick's short film *Letterpress Machines of the Government Printing Office* (1966). (Source: Courtesy of Ray Utick.)

lithography in the late 1970s, he had no desire to work in that trade. Once letterpress was phased out, Rigney took a position in scheduling. In the following he explains his feelings about letterpress and why he did not want to be retrained:

> We had a job for life, you know, and you were lucky. Lucky. We *chose* to go to the Government Printing Office, because in those days you could *choose* to go anywhere. I chose to be a letterpress printer. But that's what I wanted to do. I thought that it was in my blood, but I really don't know. I think history is more in my blood than anything. But, oh, the blokes and everybody, I loved 'em. I really did. . . . All great. We respected each other and helped each other. They taught you to drink, they taught you to, you know, taught you everything. It was great. . . . I always—I never, ever thought that letterpress would finish, I don't suppose. I really had no interest. And if you've got no interest, you really don't want to be retrained in that. And it was my job.

When asked if he did not mind giving up trade work, he answered: "No. Well, I could see it was goin'. And I had to—, and I didn't want to retrain, I really didn't." Rigney was then asked why he did not want to retrain; his response was

JANUARY
2016
VOL. 57

> [b]ecause I had no interest in it. You had to be interested in it. You really had to be focused and interested and I was not at all. I liked the old-fashioned way of doing things. I liked the old mechanics. It was the mechanical side of things that I loved. It was the feel of the old presses and the smells and the feel of what you were doing. You've got more of a satisfaction out of being a letterpress printer than what you did being a litho printer. It was satisfaction for me because I loved it, I really did love it. That was why. . . . When I was a letterpress printer I was never so fit! The formes we used to throw onto the machines—they were heavy. It was an *absolute* pleasure, as I say. Hard work, I never, ever worried about working overtime, or anything like that, if we had to do anything. Working Saturdays, all that sort of thing.[72]

Crucially, Rigney's attachment to letterpress is tied both to his specific commitment to the Gov and to the aesthetic and mechanical qualities of letterpress:

> My *beloved* Government Printing Office. I used to think of it as my own, as did a lot of the fellows that worked there. We were absolutely, you know, Government Printing Office through and through. And we were long term. . . . I was a Grade 1 Machinist, and I loved printing, the old-fashioned style of printing. We had *beautiful* machines. It was an absolute privilege for me to work there, and I worked there for twenty-five years.[73]

Put another way, Rigney's dedication to the materiality of letterpress printing differed from many of the other press-machinists because it was intertwined with his devotion to the Gov as an institution. This in turn is connected to his sense of masculinity and social standing with his male peers. Rigney viewed himself as being in a privileged social position that was inherited from his ancestor, George Howe, who was the second Government Printer of the colony of New South Wales in 1800.[74] Hence losing a connection to letterpress meant denying his heritage and ancestry. This example illustrates that the patriarchal notion of inherited social standing and craft skill was in existence well into the twentieth century, and was not simply a nineteenth-century cultural relic.[75]

72. Rigney, interview.

73. Ibid.

74. George Howe was a convict and printer who arrived in the NSW colony in 1800 and printed material for the colonial government until his death in 1821. His son Robert became the third Government Printer of colonial NSW. See J. V. Byrnes, "Howe, George (1769–1821)."

75. Cockburn also observed this pattern in relation to London's Fleet Street compositors; see her *Brothers*, 44. See also Oldenziel, *Making Technology Masculine*, 59, for a parallel in engineering.

Conclusion

As noted above, evidently there is not a singular kind of craft masculinity, but rather valences and varieties of experience and identification.[76] Press-machinists also brought to their work other experiences and values from their own cultural and domestic backgrounds. There are commonalities, however, and through this research the connection that revealed itself was the workers' continued focus on their machinery. The Cylinder Heidelbergs, GMA Vikings, Miehle Perfectas, Rolands, and Heidelberg Speedmasters, among others, habitually emerged as the vector through which press-machinists articulated their memories. The knowledge that press-machinists continue to maintain about these large, high-powered machines enabled a continuity and transformation of masculine craft culture—from a hands-on manual craft to the expert control of high-speed equipment in which printers' sense of craft skill involved the possession of mechanical knowledge, such as knowing the quirks of your machine so well that you could "almost run it blindfolded." The material, aesthetic, and embodied qualities of printing machinery (often regardless of whether it was letterpress or lithographic printing) enabled press-machinists to maintain and reinscribe masculine craft identities, even when their labor process had been augmented and made easier through the introduction of new machinery.

The key to understanding this issue lies with the relationship between the press-machinists and their presses. The oral-history interviews used in this research, in addition to the photos and film made by the press-machinists themselves, provide evidence that male press-machinists continue to interpret their working lives and identities in almost constant relation to the presses they use. Their attachment to machinery took the form of embodied knowledge (an understanding of the technology experienced through practice), as well as an aesthetic and pleasurable appreciation of presses as smooth-running autonomous objects. What was printed was rarely of interest; it is the machines themselves that appear constantly in press-machinists' stories. This observation allows us to observe the significance of the machinery itself in the way that productive relations of work were reconfigured and settled with technological change.

The technologies involved in the processes of industrial transformation do not operate as a neutral force; in the labor process they have specific material structures, properties, and dynamics that render them distinctive on the continuum of labor complexity. In other words, technologies de-

76. While Connell explains that "hegemonic masculinity" is associated with the technological realm and concepts of technical skill, both he and Judy Wajcman acknowledge that there is no singular hegemonic masculinity and that the concept is not immutable, but subject to transformation over time. See Wajcman, "Technology as Masculine Culture," 143, 151, 159; and Connell, *Masculinities and Gender and Power*.

JANUARY
2016
VOL. 57

mand variations not simply in the kinds of skills among workers, but also in the degrees or levels of sophistication. In the case of the transition from letterpress to offset lithography the new technology demanded skills that differed from its predecessor, but required comparable levels of perceived mastery. The work was widely regarded as easier, but it still allowed a press-machinist to exert a level of control and ownership over his machine. Press-machinists commanded their machines as individuals and were able to maintain their authority over the technology.

This was a case in which increasing automation of the production process did not lead to the perceived degradation of the craft tradition in the labor process. Assuming the mantle of "technical specialists," press-machinists were able to assert control over newer lithographic technologies, and in the process reoriented their craft skill toward new machinery.[77] For these press-machinists, their shared values, symbols, and artifacts were centered around both technical mastery and historical connection to the past—a duality that enabled the traditional and patriarchal notion of craft masculinity to coexist with the effects of technological change.[78] The shift from letterpress to offset lithography shows us how other dimensions of the technology, such as aesthetics, historical tradition, machine ownership, and embodied practice, are as important as workers' perceptions of their own skills, thus offering dignity and control on the job.

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Rigney, Norm, personal interview with the author, Sydney, 30 January 2012

77. This dynamic is not dissimilar to the way in which hand-compositors in the 1890s faced the introduction of the Linotype machine. As Shields writes, compositors were able to "preserve the regime of social exclusion" and take up control over the new technologies, "leaving a substantial area of traditional craft work intact" ("Deskilling Revisited," 8).

78. Regarding shared symbols on the shop floor, see Paul Willis, "Shop Floor Culture, Masculinity, and the Wage Form."

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2016
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JANUARY
2016
VOL. 57

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