

“Mere Maintenance: Stratified Industrial Labor and The Reproduction of Human Difference”

Amy E. Slaton
Department of History
Drexel University

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Who maintains?

In that question, which perhaps sounds more like a prompt for Zen self-reflection than a historian’s starting point, I think we actually have a sharp instrument with which to critique the social character of industrial labor in the United States. Maintenance, broadly conceived, represents a set of tasks in modern production settings encompassing repeated operations of quality assurance, the work of machine or facilities repair, and routine custodial responsibilities. Factories, warehouses, highway departments, railroads, mines, construction sites and industrial offices and laboratories commonly assign personnel to maintenance, and these are overwhelmingly not the same people meant to be doing non-maintenance tasks. Optimized industrial labor in America has historically been conceptualized by employers, educators, policy makers and workers as an epistemic hierarchy having at its highest level so-called knowledge work (research, invention, design and innovation); below which resides production (routine manufacturing or construction tasks); and sited at the bottom, maintenance (the sustaining of existing production systems or infrastructures). Each stratum of productive labor also demarcates different possibilities for workers’ remuneration, autonomy, safety and mobility. When we ask of American workplaces, “who maintains?” we see clearly not just that the three kinds of labor are cast as distinct, bearing with them distinct and unequal working conditions and life opportunities, but also that the stratified nature of industrial labor in the United States maps tidily onto ascribed differences of class, race, gender, sexuality, ethnicity, disability and other categorizations of human type. In the United States today as in preceding eras, persons of minority identities are not proportionately represented in knowledge work. They are disproportionately present in the jobs we label as maintenance.¹

In this brief paper, I want to lay out some new ways to interrogate the historical association of “lower” and “higher level” capacities among industrial employees with taxonomies of human difference. This interrogation might help us better

understand historical inequities, such as unjust distributions of economic opportunity or workplace safety. But I do not want to suggest that racial or gender bias leads to such unjust distributions; that is an understanding of inequity that has not produced much lasting reform or deep reflection in the decades since the Civil Rights act solidified our (supposed) national distaste for workplace discrimination. Rather, I want to sketch the ways in which stratified labor *produces* identity, produces the idea that there are different “kinds” of people.

I want to suggest that the demarcation of maintenance, production and knowledge work from one another is itself a technique of biological demarcation in American culture, facilitating mass production but also naturalizing the idea that individuals are of knowable (and differing) ability and always of some human type (that is, always of some race, some gender, etc.). Again, and crucially, this differs from familiar and I think insufficient understandings of labor inequity that see racial, gender or other biases as historically leading to unfair opportunity structures. Such understandings have, for example, driven “STEM diversity” programming of recent decades that imagines inclusive redistributions of educational and occupational opportunity.² Instead, I would say that the perceived potential of each individual to do a certain level of productive labor *corroborates and necessitates* their membership in a human type, in a race, gender, or sexuality, or their designation as an abled or disabled person. The biological understanding of human difference and the social relations of American industrial capitalism, I believe, are co-produced.

We recognize that Fordist and Taylorist ideologies, now refined over a century of management strategizing, have exerted with increasing precision the idea of different human productive capacities, thus naturalizing the existence of vast differentials in job complexity, autonomy, security, safety and wage levels across every industrial sector and producing such national patterns as race-associated distributions of wealth even in today’s supposedly “post-racial” era. But while the overall system operating here may be clear, the ontological character of this enduring social project—a cultural commitment to co-producing kinds of work and kinds of people—is not well studied. Drawing on critical scholarship on work and management, on innovation, and on emerging theories of intersectionality, I want to trace the production of industrial engineers, production workers, and maintenance personnel as differently governed and governable citizens. Each sort of industrial worker may contribute to the collective good and should expect to find gainful employ, if the tropes of economic and educational policy makers are to be accepted, but for a great many Americans, attributions of race or gender and other identity categorizations predict which occupational stratum they shall occupy. Bearing in mind that the day-to-day labors of persons of every occupation may in reality involve tasks and abilities far removed from their job descriptions or beyond managerial awareness, this paper asks how such conceptual divisions among kinds of work and among working bodies nonetheless together operationalize America’s vision of a meritocratic democracy.

The Right Raced, Gendered, Ethnically Identifiable, and IQ’d Person for the Job

The association of persons of certain ascribed identity with jobs of certain ascribed difficulty or complexity is not new in the United States, needless to say. Management expert Frederick W. Taylor was famously influential in articulating the notion of “the right man for the job,” who obviously could be a person of high ability or low, depending on the work needing to be done. Taylor’s 1911 treatise, *The Principles of Scientific Management*, laid out ideas that have retained their influence for over a century: the book remains in print today and I have discovered that in my own institution, some students read the book in two classes at once, “Management Theory” and “U.S. Labor History” (which if nothing else raises some fascinating questions about the cultural functions of the American university). In his writing and management consulting practice Taylor worked to demonstrate the economic necessity for all “kinds” of persons, the existence of every degree of aptitude, if modern industry was to operate efficiently. Neither training nor pay in significant amounts was appropriately expended on those at the lower end of the spectrum; those of detectable but limited ability would be put to pre-planned and routine physical tasks. Meanwhile, true managerial knowledge, sensibilities and responsibilities would be instilled in those of the highest caliber.³ These are all familiar aspects of Taylor’s outlook. However, looking at them through an ontological lens can help us highlight the enduringly integrated character of prevailing ideas of human difference and industrial productivity.

First, human difference and differing productive capacity each proved the existence of the other for Taylor; no system of divided labor and distributed skills would have come to have meaning if innate differences among human types could not be seen to be expressed in individuals. There is little doubt that Taylor’s “scientific selection” of workers for different tasks proceeded at all junctures from deeply gendered and racialized ideas about human individuals. Here Taylor was perhaps not as purposeful as Henry Ford in outlining race-based workplace policies, but he was notably precise in using his notions of human type to delegate and design work processes, including handling of raw and finished materials, the selection of tools, and the design of machinery.⁴ In *Principles*, for example, Taylor characterized Schmidt, his archetypical worker of German heritage as “mentally sluggish,” saw women as naturally distracted and idle, and otherwise connected every individuals’ learning and earning potential to whatever he saw as their defining identity. Scientific management organized the physical features of work in concordance with those identities. The positioning of bricks and mortar on a construction site or of ball bearings awaiting inspection in a bicycle factory instantiated the inborn natures of the immigrant German bricklayer and the young, female bearing inspector, respectively. Relative endowments of strength, fatigue and dexterity were not detected and measured in each worker; *they were produced by Taylor’s regimen of detection and measurement.*⁵

To see this, we should avoid operating on the premise that Taylor’s bigotry (or Ford’s anti-Semitism, or Sloan’s class biases) led management leaders to insert certain people in certain jobs involving certain materials or tools. Rather, we may

understand that the optimized economic functionality attributed to divided, closely managed labor arose from a worldview in which some people must naturally be, a priori, innately inferior and thus undeserving of livelihoods that might consist of varied, rewarding or autonomous labor. Crucially, Taylor didn't estimate (let alone under-estimate) Schmidt's ability to master physical work; he invented a hundred thousand Schmidts and their Taylorized jobs at the same time.

Taylor would not have been nearly so popular had he not captured long held racist, ethnocentric, sexist, heteronormative beliefs of many American and European industrialists and other experts concerned with bodies and productivity.⁶ But in the work of Taylor and his acolytes, the elision of any of the social values that were driving notions of efficiency offered a particularly incisive instrument of social control, and it is an elision that remains with us now, well beyond the manufacturing sector.⁷ Importantly, this hierarchical arrangement of persons and tasks isn't static, but rather a race to the bottom where any job may be profitably passed downward to those of supposed lower ability and thus fittingly lower pay and job security. The transfer from human to machine of decisions such as how to position one part onto another in an assembly operation, how to set the cutting edge on a machining apparatus, or how to measure ingredients in chemical or food processing operations proliferated through the first half of the twentieth century; the automation of so-called knowledge and service labor accompanied the rise of affordable computing in the second half.⁸ When the human decisions that constitute an industrial operation are no longer required, ostensibly or actually, knowledge work may be converted to production work and production work to maintenance.

It is worth emphasizing here that the social instrumentalities of maintenance work are in one important sense the same as those of knowledge and production labor: all associate the employed person with a constrained set of conditions, opportunities and resources. The work of monitoring, cleaning, repairing, and resupplying in industrial operations has been designed to foreclose even those lowered amounts of intellectual engagement and autonomy associated with production jobs. For those consigned to such maintenance jobs, opportunities to exercise creativity and assert one's autonomy are the most profoundly constrained, and the possibility of learning new or unpredictable things limited, as Taylor deemed appropriate to those of low innate ability. Workers on "higher" levels of employment (again, indisputably a normative term) experience relatively less constraint. But on all levels, managerial perceptions of what workers *may* do (that is, what positions they are allowed to occupy in the production process) and what they are *capable* of doing are unified; what is recognizable to employers as skill can never be disaggregated into either "may" or "can" alone.

Deign to Maintain: Perceptible Skill, Knowable Selves

The identification of skill (whereby, say, a teacher judges a student or a manager evaluates an employee) requires a judgment about what is meant to be accomplished in a given time and place, but it also requires foreknowledge of an

individual as such, and as one who can be read as exerting meaningful effort. Intersectional scholars, seeking to destabilize categories of identity, have helped us see that ascriptions of race or sexuality or age, say, derive from relational conditions; we might use the idea of *personhood* to represent that which matters about an individual to a given observer or self in a given place and time (the evocation of race, sexuality, age, or all of the above). In the same way, I would say that *capacity* can be understood as meaningful activity or agency on the part of an individual. “Capacity” in American industrial labor is thus not to be confused with “potential,” a term that implies the existence of free-floating abilities that any person might manifest. Rather it is the mutual enactment of the white person or non-white person; the male or female person, or troublingly for many, the person who is both or neither; the normal body or disabled body....*and* what shall count as that individual’s productive activities.

To see what using capacity as a heuristic in this way might reveal about industrial labor, briefly consider employees of a commercial genomics research and testing lab in a major Mid-Atlantic city, an enterprise provided with tax breaks by city planners in the early 2000s in order to bring new jobs to an economically disadvantaged community.⁹ In this firm, the lab technician prepares test specimens and continually adjusts the testing apparatus, maintaining optimal conditions for the facility’s large-scale, round-the-clock system of assaying. However, her accumulating knowledge of the specimens she handles cannot comprise meaningful discovery; her ability to repair a faltering machine can never be seen as design. Meanwhile the scientist’s preparation of the same specimens or adjustments of apparatus in the course of experimenting, perhaps in efforts to refine the accuracy or reliability of a testing protocol, cannot be seen as mere maintenance. The technician’s and scientist’s labors may actually comprise the same understanding of the same material, when seen from the perspective of the lab’s operation. But a technician cannot be understood to be a scientist and vice versa, although a technician may certainly aspire to discover, just as a scientist may deign to maintain. Whatever exchanges of findings and labor the lab’s personnel may engage in each day, these “exceptional” activities go unremarked on the employees’ respective performance evaluations, leaving the technician with lower pay and unacknowledged effort and attainments.

That very framing of what counts as exceptional behavior helps to demarcate the two individuals and perpetuate prevailing performance metrics; no one looks for or finds the ability to discover or innovate residing in the technician. She remains a person of different endowments than the scientist. This is also a workplace in which few white, male persons occupy the position of technician, and in which few African American or Hispanic persons occupy scientific or managerial positions. Ascriptions of race, gender, class, mental and physical fitness and other identities function in parallel with metrics of legible production. This assures that the scientist of color remains an unnatural occurrence (manifestly surprising visitors touring the facility with the lab director) and the technician of color presents as predictable personnel, a pleasing fulfillment of urban re-development schemes (and,

the ethnographer reports, one whom the lab director introduces to visitors not just by first name alone, but by the wrong first name).¹⁰

Beyond a reassertion of credentialing systems and job descriptions, what is being enacted here is the simultaneous production of person, skill, and meaningful impacts upon material; or again, what I would label, capacity. But I want to offer one ontological caution, in my effort to disrupt familiar labor history approaches to the analysis of work: Though I used the term above, the “same” specimen held in different hands in the genomics lab is only arbitrarily labeled as such. That which the technician handles and moves is a raw material and signal of her subordinate status; that which is handled and moved by the scientist is a potentially profit-making drug and signal of his ingenuity. We could add that that which the lab director orders from the supplier is a burden on his budget and source of exhaustion; that which the OSHA inspector scrutinizes is a contained health risk or residue of his own authority. But to gage the efficacy or financial value of any one of these person’s labor, an act integral to the wage labor system, one must act as if all are engaging with the same object, that a co-production of subjects and objects is *not* happening. That pretense depends on making a distinction between knower and known about, proceeding as if there is a singular world out there to be understood and manipulated and persons shall do so with differing amounts of energy and talent. We might recognize that as a working definition of Western science and technology but this is hardly an epistemic matter alone.¹¹ Without that distinction between knower and known about, any notion of differences among people’s potential, their skills, and what they produce, and not incidentally among their levels of pay, autonomy, and job security, can have no meaning.

Above all, the perspective I have offered here may disrupt the ease with which we use agendas of inclusion to fix social inequities. Such “diversity” agendas depend on static notions of what counts as difference, and traffic in a disabling objectivity. In contrast, the idea of capacity, by showing how work and worker, historical action and actor, are arbitrarily tied to one another, may give us a more agile and responsive way of seeing, and perhaps confronting, power playing out.

¹ U.S. Bureau of Labor Statistics, “Labor Force Characteristics by Race and Ethnicity,” 2014 Report; November 2015. Accessed March 20, 2016 at: <http://www.bls.gov/opub/reports/cps/labor-force-characteristics-by-race-and-ethnicity-2014.pdf>. The word “identity” is of course problematic, as it reifies arbitrary and essentializing conceptions of human difference. The word “identification” may provide a term that reminds us that such ascriptions are relational and dynamic.

² On the false consolations of STEM diversity agendas of the twentieth century, see Amy E. Slaton, *Race, Rigor and Selectivity in U.S. Engineering: The History of an Occupational Color-Line* (Cambridge, Mass.: Harvard University Press, 2010). This

paper draws my current project covering the training and employment experiences of technicians in emerging manufacturing sectors since 1980, *All Good People: Difference, Diversity and Opportunity in High-Tech America*.

³ Frederick Winslow Taylor, *Principles of Scientific Management* (New York: W.W. Norton, 1967 [1911]).

⁴ Stephen Meyer, *The Five Dollar Day* (Albany, SUNY Press, 1981); Richard Gillespie, *Manufacturing Knowledge* (Cambridge: Cambridge University Press, 1991).

⁵ Taylor, *Principles*.

⁶ Lundy Braun, *Breathing Race into the Machine: The Surprising History of Spirometry from Plantation to Genetics* (Minneapolis: University of Minnesota Press, 2014);

Edward E. Baptist, *The Half Has Never Been Told* (New York: Basic Books, 2014).

⁷ See, for example, Nelson Lichtenstein, *The Retail Revolution* (New York: Picador, 2009), 121-122; Mechthild Hart, "Educative or Miseducative Work: A Critique of the Current Debate on Work and Education," *CJSAE/RCEEA* 7 (1993): 19-36; and Justin Carone, "'It's Not Worth Fixin': The Enactment of Capacity and Deservingness in a Kensington Repair Shop," Master's Thesis (Science, Technology and Society), Drexel University, Philadelphia, 2015.

⁸ David Noble, *Forces of Production* (New York: Knopf, 1984); Simon Head, *New Ruthless Economy* (New York and Oxford: Oxford University Press, 2013); Tamara Kneese, "Airport Ipads are a New Way to Alienate Labor," *Aljazeera American*, accessed January 30, 2016 at:

<http://america.aljazeera.com/opinions/2016/1/airport-ipads-are-a-new-way-to-alienate-labor.html>

⁹ This example draws on unpublished work by a graduate student who wishes to remain anonymous. Consonant descriptions of laboratory labor can be found in Park Doing, "'Lab Hands' and the 'Scarlet O': Epistemic Politics and (Scientific) Labor," *Social Studies of Science* 34 (2004): 299-323; Jeffrey Keefe and Denise Potosky, "Technical Dissonance: Conflicting Portraits of Technicians," in Stephen R. Barley and Julian E. Orr, *Between Craft and Science: Technical Work in U.S. Settings* (Ithaca, NY, Cornell University Press, 1997): 53-81. This setting offers us an example of "the lived experience and political textures of work," in Weeks' words; Kathi Weeks, *The Problem with Work* (Durham: Duke University Press, 2011), 2.

¹⁰ On historical associations of instrumental facility and occupational authority, see Cyrus Mody, *Instrumental Communities* (Cambridge, Mass.: MIT Press, 2011).

¹¹ Jan Golinski, *Making Natural Knowledge: Constructivism and the History of Science* (Chicago: University of Chicago Press, 2005 [1998]); Harry Collins and Trevor Pinch, *The Golem: What You Should Know About Science*, Second Edition (Cambridge: Cambridge University Press, 2012) and *The Golem at Large: What You Should Know About Technology* (Cambridge: Cambridge University Press, 1998).