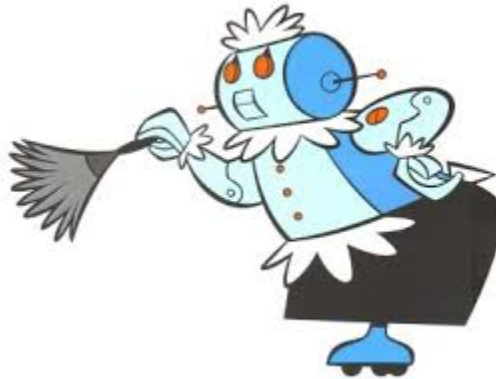


We Robot 2014 Paper Submission



Robots as Labor Creating Devices: Robotic Technologies and the Expansion of the Second Shift

By Ann Bartow¹

A recent article in *The Economist* noted that at least in the past, “technological innovation has always delivered more long-run employment.”² This fact was characterized quite positively, as reassuring evidence that robots have at least so far created jobs for humans, rather than replacing them in the work force. But it’s also worth noting that robots haven’t relieved humans of unpaid labor either. The eponymous “second shift” of this paper’s title is the extra work women do in addition to paid employment outside the home. One might assume that when robots can complete tasks that female humans would otherwise have to undertake in the home or on the job, the workload on human women is reduced.³ This paper challenges that notion, and posits that in some contexts robots actually increase the workloads of the humans they putatively serve,⁴ that this trend is significant, and that it has a

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² <http://www.economist.com/news/briefing/21594264-previous-technological-innovation-has-always-delivered-more-long-run-employment-not-less>

³ Cf <http://www.irl.berkeley.edu/worktech/worktech.pdf> (noting difficulties in assessing the changes that new technologies have upon wages and employment dynamics)

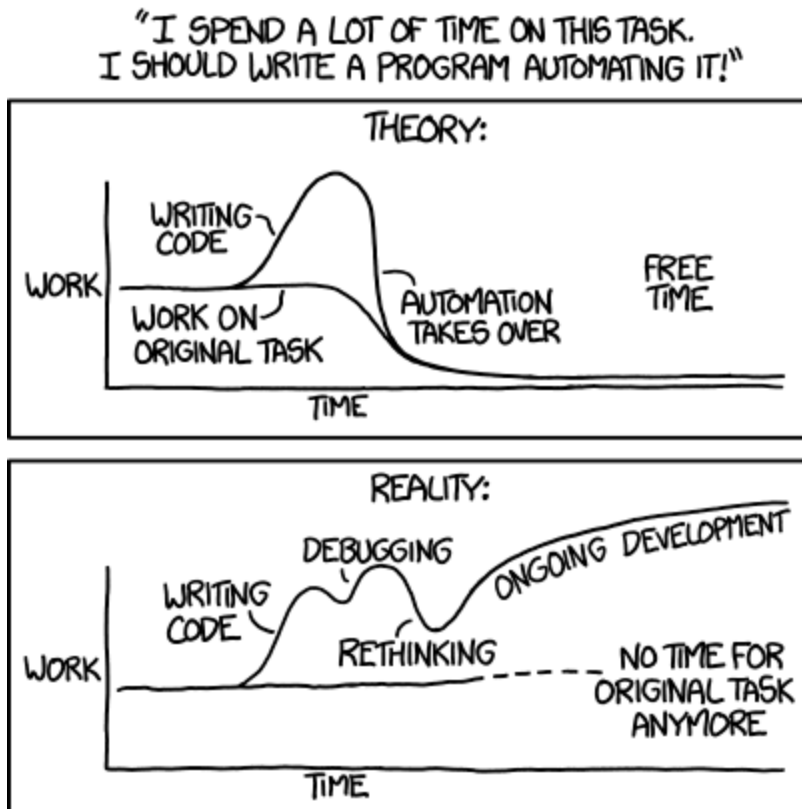
⁴ But see <http://mobile.nytimes.com/2013/12/25/business/companies-shifting-production-expand-to-accommodate-robots.html?from=technology> (“Sentry’s robots are smaller than those used by Weber; Mr. Sanguinito said they built two-foot-deep pads of rebar-reinforced concrete for each of four new robots, a four-month project that was completed in November. The investment lets Sentry increase productivity, Mr. Sanguinito said. “Probably what took 12 people to do, these four robots can do,” he said. “It’s more reliable and more steady than a human and they don’t get ergonomic issues.” Sentry was able to cut down on the number of errors and reduce its “dropout rate” with the new robots, as well as decrease maintenance time.”)

disproportionately negative impact on women, thereby exacerbating preexisting gendered work gaps related to housework, child rearing, and caregiving.

A. The New Do It Yourself Paradigm and the Conterminous Ascendancy of Perfectionism

There are two main ways that automation can increase one's workload: through labor shifting, and by raising standards.⁵ Automation often incompletely replaces human employees in service related positions, and the leftover tasks become the responsibility of the consumer, who is forced into performing ever increasing amounts of self service. The reader may have already noticed from her own life experiences that sometimes when robots arrive to automate a series of related tasks, the labor savings does not fall in her favor. A look back into the recent past, or a visit to a country with very cheap labor, can remind us how much customer service is lost when tasks are mechanized or computerized, and how often we are forced to pick up the slack. For example, ATMs and online banking programs require account holders to perform the tasks that human bank tellers used to undertake for depositors.

⁵ Cf <http://imgs.xkcd.com/comics/automation.png> - <http://xkcd.com/1319/>



A bank statement used to arrive regularly in the mail, but now one must track our savings and expenditures online, using complex passwords and secure servers if one wishes to avoid automated bank robbery. A hard copy must be self-printed at home. If one has any unique questions about one's finances, she must survive a gauntlet of automated phone options to reach a live person.

Almost everybody in the United States with a car pumps her own gas these days. Visitors from China whom I hosted and drove around the East coast found this absolutely shocking: None of these middle class, advanced degree holding Chinese visitors owned dishwashers, washing machines or dryers, so they were no strangers to physical labor in the domestic sphere. Yet because pumping gas is potentially a dirty, smelly job, and gasoline a potentially dangerous substance, in their view it made better sense to leave this task to trained attendants. We Americans pump our own gas because logistically we usually have to, though by law in New Jersey all the gas stations are still full-service, and gasoline is still competitively priced even when a human pumps it for you and washes your windshield. I no longer need to check my car's oil level or tire pressure when I fill up with gas, because my car constantly monitors itself, warning me if there is a problem. But I miss full service gas stations every time I pump my own gas in the cold or the rain, or spill a little bit of gas on my clothing or shoes and spend the rest of the day with odious fumes wafting about me.

Lawyers and law professors of a certain age remember when we had dedicated support staff to significantly assist us with data entry, event planning, calendar keeping, word processing, travel planning and expense and budgetary concerns. Automation has made the component tasks of lawyering and law professoring easier, but concomitant staff reductions mean that each administrative assistant has more people to support. Thus as a consequence of computers and the Internet, for most of us the bulk of the tasks associated with law practice and law teaching are far more "do it yourself" than they used to be, and this trend may continue to our detriment. One observer noted:

Jobs that are not easily automated may still be transformed. New data-processing technology could break "cognitive" jobs down into smaller and smaller tasks. As well as

opening the way to eventual automation this could reduce the satisfaction from such work, just as the satisfaction of making things was reduced by deskilling and interchangeable parts in the 19th century.⁶

One recent report claimed that the jobs with the highest likelihood of being replaced by machines and software “are mostly routine-based jobs (telemarketing, sewing) and work that can be solved by smart algorithms (tax preparation, data entry keyers, and insurance underwriters)” while those least likely to be automated included “health care workers, people entrusted with our safety, and management positions.” Yet regardless of which sets of human employees are most quickly phased out, we can anticipate performing aspects of all of these occupations when businesses figure out how to shift the labor onto their customers. While I am unlikely to telemarket myself or my acquaintances directly, the data generated by my use of social media platforms helps put myself and my friends into the bulls eye of target marketing. Tax preparation services require me to do the necessary data entry, as do my house, car and health insurance companies. Cameras record motor vehicles that commit traffic infractions and tickets are automatically mailed to their drivers.⁷

“Robo-call” technologies decrease the need for human labor output for telephone based one to one communications such as telemarketing and political polling, while increasing the number of calls targeting a particular recipient and adding to her time and inconvenience burdens. The Mayor of White Plains, New York directs robo-calls to White Plains residents on an almost weekly basis, informing us of school closings and scheduled garbage pick-ups, reminding us to recycle, asking us to keep water drainage inlets free of debris, and wishing us happy holidays. If he had to dial our numbers individually Mayor Tom would never make all these calls, nor would he if he heard the way some of us curse like sailors when we receive them.

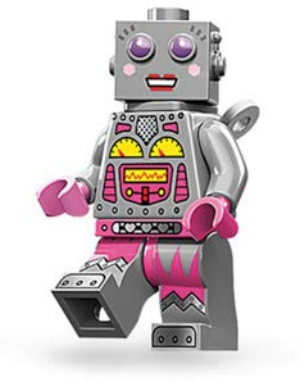
⁶ <http://www.economist.com/news/briefing/21594264-previous-technological-innovation-has-always-delivered-more-long-run-employment-not-less>

⁷ See e.g. <http://www.wnyc.org/story/city-speed-cameras-issue-900-tickets-15-days/>

A different but related consequence of automation is a ratcheting upward of standards. Automation may reduce the labor associated with a task, but there is a new expectation that the task should therefore be performed more often. For example, rather than being cleared with the onerous labor intensive seasonal rakings of the past, lawns are now blown free of leaves on a far more frequent basis with machines that threaten to shatter one’s ear drums as they move plant debris into neat piles.

Computers and word processing programs make producing easily readable written documents a lot faster and easier than typewriters did. Multiple editors can refine version after version of a paper simultaneously, with changes that are carefully tracked. In consequence, every finished document is supposed to be perfect, with geometric margins, consistently formatted using uniform standard setting, sporting copious footnotes and utterly devoid of grammatical and spelling errors.

B. Robots with Lady Parts



I’ve heard vegetarians describe their gustatory parameters as “not eating anything with a face.” Though some similarly restrict the word robot to machines that possess anthropomorphic characteristics, “robots” can be reasonably defined very broadly, as mechanical devices that are capable of performing a variety of tasks on command or according to instructions programmed in advance, or

even as computer programs.⁸ It is simply a specific subset of robots are made to look or sound like living beings, such as humans or dogs. They are designed that way because it is reassuring to have machines that perform human or pet like tasks look and sound at least somewhat like the living creatures they supplant. There has also been a suggestion that robots be treated like animals for purposes of “liability and responsibility in human-robot interactions,”⁹ and perhaps it is helpful to have them look the part. But rarely indeed is it functionally necessary that robots be designated female or male. Yet robots are still sometimes ascribed gender through their names, or appearances, or the timber of the sounds they make, or because the tasks they perform have significantly gendered associations. Most robots that perform tasks associated with housework, however, are not humanoid per se. They are feminized simply by their socially constructed associations with women’s work.

The advent of electricity and running water, and the inventions these advances enabled – refrigerators, washing machines, indoor plumbing and central heating, reduced the amount of manual labor that running a home required.¹⁰ But there is still a substantial amount of housework and childcare that remains un-automated,¹¹ and generally automation is not a substitute for labor, it just changes the nature or frequency of the tasks that remain for humans to perform. This is not a new phenomenon. For decades now, in most households articles of clothing are washed and dried after a single wearing, rather than when they are truly dirty, because washing machines and driers have enabled an elevated standard of clothing cleanliness. This requires a lot of loading and unloaded, schlepping and folding. There are even inventions to facilitate “home dry cleaning” between episodes of professional chemical laundering for items that cannot be cleaned with ordinary soap and water.

⁸ See generally http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1599189 ; http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1706293

⁹ <http://ssrn.com/abstract=2271466>

¹⁰ http://www.eurekaalert.org/pub_releases/2009-03/uom-aw031209.php

¹¹ But see <http://well.blogs.nytimes.com/2013/02/27/what-housework-has-to-do-with-waistlines/>

In homes that have mechanical dishwashers, the expectation is that glasses plates and cutlery will be spot free and sanitized, rather than simply largely free of visible food particles, the apex of the hand washing standard. This often requires that all dishes and especially pots and pans cooking utensils be thoroughly hand washed before they are placed into a dishwasher, which of course has to be unloaded again later.

In 2012 academic sociologist Arlie Hochschild published a revised edition of her bestselling book of 1990, *The Second Shift*. In it, she described the division of labor in typical dual-career households, asserting that working mothers work significantly more hours than their male spouses.¹² Though there is some evidence that the “second shift” hours women put in may be decreasing, there are also indications that they are consistently under counted due to phenomena like multitasking.¹³ A team of UCLA researchers recently found:

Among couples we studied, on average, men worked longer hours outside the home, yet even in families where women worked equivalent or longer hours and earned higher salaries they still took on more household responsibilities. When our data were merged with the Chicago Sloan Study of 500 working families, we learned that men spent 18 percent of their time doing housework and took on 33 percent of household tasks,

¹² See http://www.nyparenting.com/stories/2012/3/fp_womensmovement_2012_03.html

¹³ <http://fisherpub.sjfc.edu/cgi/viewcontent.cgi?article=1100&context=ur> Van Gorp, Kayla. "The Second Shift: Why it is Diminishing but Still an Issue." *Undergraduate Review: a Journal of Undergraduate Student Research* 14 (2013): 31-37. Web. [date of access]. <<http://fisherpub.sjfc.edu/ur/vol14/iss1/7>>. <http://secondshiftherein.blogspot.com/2013/11/artificial-womb-and-future-of-sexual.html> (“It almost sounds as if we are there, in an equality idyll where all men and women share in daily pleasures and duties equally. Not yet. For all the progress, men still spend more time on average in market activities, and women on housework and childcare (Berniell and Sanchez-Paramo 2011). In Italy, a woman allocates on average 5.5 hours a day to the household and children, while a man contributes a meager 1.6 hours. Even in Sweden it is 3.8 against 2.6 hours. Eastern European women seem to have it worst. In Bulgaria women work almost as much as men, yet they spend 2.1 hours more than men on domestic duties. It is true that in last decades women have increased their market and decreased household time. But the changes have not necessarily been commensurate. Even in the USA, while Krueger et al. find that the changes have been almost offsetting, the composition of tasks that are allocated to women belong to less enjoyable categories. Men might work less but they spend more time watching TV. Women now work more, have relatively less time to pursue hobbies, but they are relatively more involved in neutral activities such as having conversations or preparing food. They still perform most tasks related to childcare! In fact my reading of Krueger’s data is that the share of women’s time spent with children has increased a lot since 1960s, presumably at the expense of dusting and cleaning. The share of men’s time with kids has risen too but far less spectacularly, which is a disappointment given that men work so much less these days. “)

whereas women spent 22 percent of their time on housework and carried out 67 percent of household tasks. Women performed over twice the number of tasks and assumed the burden of "mental labor" or "invisible work," that is, planning and coordination of tasks. Moreover, leisure was most frequent for fathers (30 percent) and children (39 percent) and least frequent for mothers (22 percent).¹⁴

In her 1970 canonical book *The Dialectic of Sex*, feminist Shulamith Firestone described the burden that procreation places upon women as being at the root of men's power over women, and called for robots that would gestate fetuses to reduce inequality between women and men.¹⁵ Yet when tasks primarily undertaken by women are automated, expectations about the number and quality of related jobs these same women are required to perform increases. Law professor Joan Williams has described what she calls the Martha Stewart Syndrome, writing: "There's been a speed-up in American family life in the past 20 years, a sense that no Halloween is complete without a homemade costume, and that no Hannukah is complete without homemade applesauce. If I were a conspiracy theorist I might point out that the sharp increase in household standards came at precisely the same time that married women joined the workforce in large numbers, ensuring that women would run themselves ragged staying up til 2 a.m. making Christmas cookies -- and still feel they weren't meeting their own standards either at home or at work."

Whether the second shift that women work at home is part of the reason that women are unhappy relative to men, and have gotten unhappier in absolute terms, is somewhat contested.¹⁶ That the automation of everything can sometimes increase rather than reduce women's work load, while simultaneously increasing performance expectations, however, seems a fairly easy case to make.

C. Going Into Labor

¹⁴ <http://www.theatlantic.com/sexes/archive/2013/03/the-difference-between-a-happy-marriage-and-miserable-one-chores/273615/>

¹⁵ <http://www.marxists.org/subject/women/authors/firestone-shulamith/dialectic-sex.htm>

¹⁶ <http://www.jstor.org/discover/10.2307/25760045?uid=32126&uid=3739832&uid=32123&uid=2&uid=3&uid=67&uid=62&uid=3739256&sid=21103580038987>



There have been many changes in the ways women perform service functions. As the social organizers of companies, universities,¹⁷ organizations and families, we are often our own travel agents now, searching for appropriate flights and booking them online. We do the same with hotel and dinner reservations, finding and reserving rooms and tables over the internet, without speaking to anyone. We can find recommendations about these venues online too, through the ostensibly impartial feedback of strangers¹⁸ rather than the kind counsel of friends, words and quality ratings which are plentiful but all too often manipulated via astroturfing robots deployed by commercial enterprises.

Increasingly we are pressured to be our own supermarket cash register clerks, scanning the bar codes on our purchases, weighing our own produce, tendering payment to a machine and then bagging everything up ourselves. This requires us to learn all the skills of a job that a human used to do for us, and to perform the related tasks in order to secure food for our families, often with one or more children in tow. Once the groceries have been transported home and unloaded them from the car, appliances such as juicers, salad spinners, food processor, convection ovens, pasta makers steamers and

¹⁷ <http://www.aaup.org/article/ivory-ceiling-service-work#.UxeYQM42Pw0> ;
<http://www.insidehighered.com/news/2008/06/12/women> ;
http://www.insidehighered.com/news/2011/01/12/new_study_finds_unequal_distribution_by_gender_in_academic_service_work

¹⁸ <http://www.businessweek.com/articles/2013-10-31/does-that-review-of-a-disappointing-burger-make-you-a-yelp-employee>

dehydrators facilitate fairly sophisticated food preparation, but at the cost of the time it takes to plan and prepare to use these devices, to use them, and then to disassemble and clean them.¹⁹

Women perform more housekeeping duties than men.²⁰ Housekeeping tasks like floor cleaning can be delegated to robots,²¹ but preparing a floor to be cleaned by a robot can require de-cluttering, moving power cords and rearranging furniture.²² At the end of each robotic floor cleaning session, everything must be put back into place. Because sweeping and vacuuming robots have the capacity to clean continuously, this creates expectations that floors should always be freshly cleaned. While the per episode work input required might be lessened by a robot, any labor savings are likely offset by the increased frequency of the cleanings.²³ Demand for robotic housecleaning devices is predicted to increase.²⁴ Conterminously, standards of cleanliness are likely to increase, while employment of human housecleaning assistants may decline.

¹⁹ See generally <http://www.nytimes.com/2013/10/17/technology/personaltech/gadgets-to-help-the-party-host.html>

²⁰ E.g. <http://www.usatoday.com/story/news/nation/2013/03/14/men-women-work-time/1983271/> (“Work time — paid at a job and unpaid at home — is almost equal for American men and women, says a report out today that shows men clocking in at 45.6 hours a week and women at 45.2. But it's not 50-50 in terms of work on the job and at home. Men spend about 10 hours a week more than women in paid work, and women spend about six hours more in household work and an additional three hours more in child care, says the analysis, by the Pew Research Center. And for parents with kids under 18 living at home, the hours are also lopsided. The average hours spent a week at a paying job declined from 42 hours in 1965 to 37 hours in 2011 for fathers, and increased from eight hours to 21 hours for mothers. Fathers today spend more than twice as much time doing housework as they did in the 1960s (10 hours vs. four hours a week), and mothers — while they still do more — have cut their housework time almost in half during the same period (18 hours vs. 32 hours per week).”)

²¹ Cf <http://www.telegraph.co.uk/news/newsttopics/howaboutthat/7559218/Robot-to-help-with-housework.html>

²² Cf <http://www.nytimes.com/2013/10/15/business/energy-environment/putting-robots-to-work-in-solar-energy.html>

²³ But see <http://www.nytimes.com/2014/01/23/technology/personaltech/review-the-roomba-880-from-irobot.html?action=click&contentCollection=Politics&module=MostEmailed&version=Full®ion=Marginalia&src=me&pgtype=article> (“Here is my thinking: The Roomba saves me a half-hour of vacuuming every other day. That’s about two hours a week, 52 times a year. If I value my time at \$15 an hour, the Roomba saves me \$1,560 a year. Slam dunk for this wonderful machine. Right? Not so quick. On second thought, I’d still have to own another vacuum cleaner and use it on occasion to clean tight corners, the stairs, couches and chairs, and the spots between the furniture that the Roomba can’t reach. And to really have a work-free life with robot vacuum cleaners, I’d ideally have one for every floor. So my outlay could be at least \$1,400, making my timesaving investment far less appealing. But oh, did I enjoy the extra free time that the Roomba provided.”)

²⁴ <http://www.digitaltrends.com/home/dyson-drops-8-million-domestic-robotics-research/#lybLw9> (“Over the weekend, Dyson announced in a press release that it plans to invest five million pounds (roughly \$8,000,000 USD) into a joint robotics lab with the Imperial College of London, focusing on research around new vision systems for

D. Robot Exclusion Headers



Some robots aren't good at their assigned tasks. Robots have proven to be poor commodities traders,²⁵ may not be good astronauts at least at present,²⁶ and make very complicated soldiers.²⁷ Mechanized dispute resolution systems have proven deeply problematic for consumers trying to fix errors in their credit reports.²⁸ And sometimes robots completely fail at pretending to be human, as illustrated by this anecdote:

Recently, Time Washington Bureau Chief Michael Scherer received a phone call from an apparently bright and engaging woman asking him if he wanted a deal on his health insurance. But he soon got the feeling something wasn't quite right.

After asking the telemarketer point blank if she was a real person or a computer-operated robot, she chuckled charmingly and insisted she was real. Looking to press the

domestic robots. Officially named "The Dyson Robotics Laboratory at Imperial College," the lab will initially recruit 15 scientists; including five PhD researchers, six post-doctoral researchers, and additional space for Dyson research, software, and electronics engineers. The goal is to create a generation of robots that understand – and intelligently react to – the world around them. This definitely isn't Dyson's first foray into household robotics. Back in 2001, Dyson's prototype vacuum cleaner – the DC06 – nearly made it to production, but the product was scrapped at the last minute, with the company saying that it was too bulky and expensive. It's been well over a decade since then, and despite the fact that the robotic vacuum bandwagon has become relatively crowded by now, Dyson believes that there's still plenty of room for innovation. Based on the information they've released, it appears that their main area of focus is developing improved navigational systems for various types of household robots.")

²⁵ http://papers.ssrn.com/sol3/papers.cfm?abstract_id=415220 ; cf

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1282216

²⁶ http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2120254 ;

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2120256

²⁷ http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2046375;

http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1759562&rec=1&srcabs=2046375&alg=1&pos=1

²⁸ https://www.nclc.org/images/pdf/credit_reports/credit_reports_automated_injustice_report.pdf

issue, Scherer asked her a series of questions, which she promptly failed. Such as, "What vegetable is found in tomato soup?" To which she responded by saying she didn't understand the question. When asked what day of the week it was yesterday, she complained of a bad connection (ah, the oldest trick in the book).²⁹

Robots are not yet capable of passing themselves off as humans effectively, and even when they routinely pass the Turing test,³⁰ will not replace humans in emotion driven roles.

In the United States, 65.7 million caregivers make up 29% of the U.S. adult population providing care to someone who is ill, disabled or aged; 52 million caregivers provide care to adults (aged 18+) with a disability or illness; 43.5 million of adult family caregivers care for someone 50+ years of age and 14.9 million care for someone who has Alzheimer's disease or other dementia. Research suggests an estimated 66% of caregivers are female. One-third (34%) take care of two or more people, and the average age of a female caregiver is 48.0.³¹ The caregiving is not monetarily remunerative. According to a Canadian study, "Across countries in the Organization for Economic Cooperation and Development, more than one in ten adults does unpaid care work and this is the case for one in three adults over age 50. Two thirds of the care workers over age 50 are women."³²

Even where robotic assistance is financially possible, robots that function as adult caregivers are unable to replace human equivalents, instead changing the nature of the tasks the humans in roles ranging from, for example, surgeon to nurse to home health aide will have to perform. Robots may be able to literally perform the heavy lifting, but they are unable to provide the warm and empathetic human touch that people in need of care giving desire and need. Care givers working alongside robots

²⁹ http://newsfeed.time.com/2013/12/10/meet-the-robot-telemarketer-who-denies-shes-a-robot/http://io9.com/freakishly-realistic-telemarketing-robots-are-denying-t-1481050295?utm_campaign=socialflow_io9_facebook&utm_source=io9_facebook&utm_medium=socialflow but see <http://io9.com/robot-denying-telemarketing-robot-may-not-actually-be-a-1485617146>

³⁰ <http://plato.stanford.edu/entries/turing-test/>

³¹ https://www.caregiver.org/caregiver/jsp/content_node.jsp?nodeid=439

³² http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCYQFjAA&url=http%3A%2F%2Fwww.paho.org%2Fhq%2Findex.php%3Foption%3Dcom_docman%26task%3Ddoc_download%26gid%3D19968%26Itemid%3D270&ei=b2QfU6uyGlfNkQfl7YHABg&usq=AFQjCNE8hoDeXGst8bU3yOn2yU7nAiZ39w&bvm=bv.62788935.d.eW0&cad=rja

need to generate and sustain greater amounts of emotional energy, as they are required to compress the expenditure of their human qualities into smaller time frames, and meet for these briefer intervals with greater numbers of clients per capita. This makes those jobs considerably more stressful, and the burden falls disproportionately on older women.

Child care presents another particular context in which there is a significant labor gap between women and men. According to one study: “Mothers spend much more time than fathers doing physical care — feeding the baby, giving baths. They do more managerial and educational care, all of which requires a lot of energy. Only when it comes to playing with kids do fathers do almost the same amount as mothers.”³³ Though robots can assist with all of these tasks, few parents are likely to relinquish the supervisory function.

Robots that function as sexual surrogates set expectations for compliance and performance that real people cannot (or will not) replicate. Robots engineered for sex may be treated roughly, and then ignored until their owners desire sex again. The robots may have unrealistic body proportions and of course they never express needs of their own, unless their owner wants them to. Even robots devised to seem more human may be engineered to reflect idealized beings rather than actual ones. After the movie “Her” was initially completed, the actor playing the emotional operating system was unceremoniously replaced by Scarlett Johansson, because she brought more sultry desirability to the role of disembodied robot girlfriend.³⁴ A review of a robot that was designed for sex relayed the following:

³³ http://www.washingtonpost.com/national/mothers-more-fatigued-than-dads-but-find-jobs-and-child-care-meaningful-report-finds/2013/10/08/37284b2c-2fc4-11e3-9ccc-2252bdb14df5_story.html

³⁴ The movie “Her” and backstory, actor replaced by scarlet johansson”
<http://www.break.com/video/what-if-a-man-replaced-scarlett-johansson-in-the-her-movie-2555193>
<http://www.refinery29.com/2013/12/59572/her-scarlett-johansson>
<http://www.vulture.com/2013/06/spike-jonze-replaced-samantha-morton-with-scarjo.html>
<http://www.hitfix.com/in-contention/her-qa-spike-jonze-on-why-he-replaced-samantha-morton-with-scarlett-johansson>
<http://www.dailymail.co.uk/tvshowbiz/article-2346295/Scarlett-Johansson-replaces-Samantha-Morton-new-Spike-Jonze-film-despite-scenes-having-shot.html>

Roxxy's speech recognition and advanced AI is what separates her from other fuckable household appliances. When you speak to her, your speech is converted to text, which her internal computers analyze using her unique pattern-recognition software. She then comes up with an appropriate response from her database of hundreds of prerecorded responses, and her answer is played through a loudspeaker hidden under her wig. You can actually carry on full conversations with Roxxy in what her creator believes is a near-perfect simulation of emotional companionship.

This is by far the most interesting development in the field of machines you can put your wiener in. I'd always imagined that the popularity of Real Dolls and other competing titles in the doll-pork market was due to lonely guys who enjoyed the act of having sex with a woman but either didn't have time for or couldn't navigate around the tricky aspects like "emotional connection" and "human interaction." As someone whose study of sex dolls was purely academic, I assumed that the inhumanness of these sex dolls was part of the hook: There's no shame for a poor performance, there's no guilt for infidelity and there's no struggle with commitment or communication, because she is a silicone-covered robot that you legally own.

But Roxxy means we've entered a new world that I don't quite understand; one where the goal is to make these things as close to human as possible. If Roxxy outsells Real Dolls, it means consumers prefer lifelike dolls, which means a doll even more lifelike than Roxxy will be even more successful, until we get sex robots that seem to have total autonomy.³⁵

Presumably the final clause is dripping with sarcasm, because the appeal of the robot to those choosing then over human partners is surely the ability to control. The reviewer further noted: "Roxxy's AI even comes with different personalities, where "Wild" is on one end of the spectrum and "Frigid" is on the other. Frigid, as in, cold, as in a sex robot that doesn't want you to have sex with it."³⁶ A robot designed for sex that has a "frigid" personality setting is a robot designed for rape role playing.³⁷ Another commenter opined:

So what are the advantages to having a prosthetic lover? You can be completely selfish and not worry about anyone else's fun. Of course, none of us — myself included — are strangers to being self-centered in the sack, but it's quite liberating to know there's absolutely no chance your partner du jour will resent you.³⁸

³⁵ <http://www.cracked.com/blog/my-review-of-the-roxxy-sex-robot/>

³⁶ <http://www.cracked.com/blog/my-review-of-the-roxxy-sex-robot/>

³⁷ See generally http://robots.law.miami.edu/wp-content/uploads/2012/01/Gutiu-Roboticization_of_Consent.pdf

³⁸ <http://www.nerve.com/love-sex/i-did-it-for-science/i-did-it-for-science-sex-doll?page=3> ; see also <http://www.thefrisky.com/2009-08-20/robot-prostitutes-may-be-on-the-horizon/>

The existence of realistic sex robots might give one a false sense of optimism that sex trafficking and coerced prostitution could be eliminated. The problem of course is that trafficked human beings are much cheaper than high quality robots.³⁹ Women's work, in terms of supplying sex under coercive conditions, has not been lessened by robots to date.



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At some point robots may be able to gestate babies. According to one report:

Scientists in the USA and Japan working on synthetic uteri are motivated by different factors. Some are keen to help mothers unable to carry to have babies without resorting to the help of surrogates; or couples having difficulty conceiving to have an embryo develop before being placed in woman's body. Others would like to increase the survival chances of pre-maturely born or miscarried foetus. All believe, according to interviews with the Guardian, that artificial wombs capable of sustaining a child for nine months will become reality.⁴¹

When this happens, we may see the end of conflicts over abortion, and perhaps someday the end of the burdens that "natural" pregnancies place almost exclusively on women's bodies.⁴² But if the aspiring

³⁹ <http://feministphilosophers.wordpress.com/2009/09/17/sex-robots/>

⁴⁰ <http://ctheory.concordia.ca/hacking/pregnant.html>

⁴¹ <http://secondshiftharem.blogspot.com/2013/11/artificial-womb-and-future-of-sexual.html>

⁴² See generally <http://www.egs.edu/faculty/donna-haraway/articles/donna-haraway-a-cyborg-manifesto/>

mother is the human who will likely monitor a synthetic uterus, making sure the developing fetus is warm and clean and fed and spoken to in gentle voices or exposed to the music of Mozart, her work load will have simply changed rather than abated.

The solution to the second shift that women work is not more labor creating robots.⁴³ Instead what is needed are legal reforms that make workplaces more supportive of caregiving, such as improvements in paid family and medical leave, subsidization of childcare, and government incentives for flex-time and job sharing.⁴⁴

⁴³ <http://consumerist.com/2013/05/24/samsung-thinks-women-would-upgrade-husbands-into-creepy-housework-robots/>

⁴⁴ http://www.nyparenting.com/stories/2012/3/fp_womensmovement_2012_03.html