In 1923 the London literary scene saw the appearance of two innovative works. In April the play R.U.R. or Rossum’s Universal Robots by the Czech dramatist Karel Čapek was presented at St. Martin’s Theatre; in May Heinemann brought out E. V. Odle’s comic novel The Clockwork Man. Odle’s entertaining book is now all but forgotten whereas Čapek’s three act drama is still in print. Thanks to it, the term “robot” entered the English language and such humanoids immediately hailed as icons of modernity. When in 1930 the centenary of the railway was celebrated, Liverpool’s Lime Street station was surmounted, not by a locomotive engine but by "a robot figure symbolizing the Age of Machinery." The centerpiece of the 1932 Radio Exhibition at Olympia was a robot of chromium-plated steel called “Alpha” which, it was claimed, could read a newspaper and tell the time. In the inter-war period a host of commentators wrestled with the challenges posed by such “mechanical slaves.” Why such a fascination? The most obvious answer is that the robot represented the displacement of humans by machines. In what follows a sense will be given of the extent to which those worried about the coming of a mechanized society batten on the robot. But the main thrust of this paper is that fears of mechanized men were driven by more than concerns about technology. In looking closely at the cultural context of the inter-war years, one finds that such discussions were heavily colored by eugenic worries about sex, gender and reproduction. It took little imagination for those alarmed by reports of the fertility
decline of the middle classes, to see the robot as representing both the docile worker on
which modern industry increasingly depended and the unthinking drone whose
uncontrolled reproduction posed a serious threat to social stability.

Let’s begin with the play. R. U. R. takes place in a factory on an island
sometime in the future. We are told that old Rossum discovered a way to create living
matter, something like protoplasm in a test tube, and vainly tried to make actual men.
His nephew young Rossum, an engineer, restricts himself to producing simple working
machines—which boast no ornaments and have no needs—the Robots. Put together like
motor-cars, their livers and brains made up of paste, their nerves and veins spun, these
beings are produced bio-chemically. They are not electrically or mechanically driven.
The handful of men who oversee their production is joined in Act One by a naïve young
woman, Helena Glory who expresses her horror at the cruel exploitation of the robots.
The men scoff at her notion of liberating them and explain to her that robots feel no pain,
have no soul or desires. Moreover, being produced by the thousands, they will soon do all
the world’s work. In the resulting utopian leisure society, humans will finally be able to
perfect themselves. Hovering in the background, however, are both the specters of over-
production and the robots’ inexplicable restlessness, manifested by the gnashing of teeth
and their cramping up.

Act Two takes place five years later. Helena, who has married the factory
manager Domaine, hears that in Europe robots, used for destructive military purposes,
have suddenly revolted against their human masters. In France the insurgents issue a
"manifesto" calling for all the robots of the world to rise. A world revolution ensues,
which the robots, enjoying a numerical advantage over humans, easily win and then turn
their murderous attentions to Rossum’s factory. But as the robots are sterile, have a life span of only twenty years, and do not possess the secret of their manufacture, the managers believe that they still have a vital bargaining chip. They are accordingly horrified to hear that Helena has destroyed the formula. They also learn too late that the cause of the revolt is that Dr. Gall, the factory physiologist, gave the latest generation of robots the ability to feel pain. In making them more like people, he gave them the rudiments of a soul.

In the last act thousands of robots lay siege to the factory. All the humans are killed save for a craftsman whom the robots almost consider one of them, as he works with his hands. They desperately ask him how they might reproduce. Though he cannot help them, he is surprised to discover a male and female robot who demonstrate their love for each other. The play ends with him sending this new Adam and Eve out into the world.

Though critics judged the play to be uneven, it enjoyed an enormous success in London. Toy robots were soon on sale. Robots figured in various skits and jests. The tabloid press ran cartoons of them subjected to pointless pursuits such as playing golf and making beds. Advertisers exploited the craze. "A Robot is the only type of man who doesn't enjoy Schweppes," declared the soda water manufacturer. The moral of R. U. R. was debated by G. K. Chesterton who took the play to be a salutary warning against over-industrialization and George Bernard Shaw who held that, on the contrary, if one wanted more leisure, as he did, it was necessary to “Robotize” the world.

The word “robot” suddenly crystallized concerns about the relationship of humans and machines. Overnight robots were discovered to be everywhere. Such was the
newspapers’ fascination with the subject that they now dubbed almost every labor saving device a “robot.” Sir Leo Chiozza Money, who shared Shaw's enthusiasm for the machine, was reported as praising "tea robots" that did the boring work of filling packages at the Lyons factory. According to the *Daily Mirror* the Westinghouse Electrical Company used “mechanical men” to turn on lights. The slot machines that dispensed food, radios that offered five minutes of wireless service for a penny, money changing machines, telephone message recorders, automatic gearshifts, and the changing traffic lights on Oxford Street were all now called “robots.” The public learnt that there were robot bookmakers, robot self-massaging suction Rubber Roller devices used to lose weight, robot wireless operators on ships, and robot pilots (or gyroscopes) for long distance flights. Robot mechanical harvesters replaced laborers and robot accountancy machines displaced clerks. In 1930 the *Daily Mirror* chided the Royal Academy that if were to be up to date in an age of speed and invention it should have put on display a portrait of a robot. And if foreign sports stars like René Lacoste were not robots, the British press gave them the back-handed compliment that they played with the same cold, mechanical efficiency.

The inter-war fascination with robots is in some ways perplexing inasmuch as automatons were not new; they had been constructed and discussed for centuries past. Playing with the notion that the state sought to instill passivity in its subjects, the radical poet Shelley wrote in the early 1800s: “The man / Of virtuous soul commands not, nor obeys: / Power, like a desolating pestilence, / Pollutes whate'er it touches, and obedience, / Bane of all genius, virtue, freedom, truth, / Makes slaves of men, and, of the human frame, / A mechanised automaton.”
In the short story “The Sandman” (1815) E. T. A. Hoffman presented a Professor Spalanzani creating an automaton called Olympia whom he successfully passes off as his daughter. Mary Shelley, whose Frankenstein (1817) was the most famous portrayal of a cyborg, similarly drew on eighteenth-century interests in the concept of the man-machine. Peter Wollen makes the point, however, that Victor Frankenstein’s monster, the Golem, and the Homunculus--individual, almost magical beings—were qualitatively different from the assembly line products such as the robot and reflected another society’s cultural concerns. Early automata performed, terrified or amused; the robot does not seduce or entertain, it labors. Whereas fears once focused on the powers of witches or mad professors, modern worries were raised by technologies that allowed machines ever more successfully to impersonate humans.

“Robot” was originally a Slavic term for forced labor. In so naming his automaton, Čapek underscored its chief function. In the play Rossum’s nephew focuses simply on producing an intelligent machine--"a worker with the minimum amount of requirements." Unsurprisingly, the threat of the robot was seized upon in the inter-war period by those hostile to the mechanisation of society. The Times’ reviewer of R. U. R. informed his readers that the robots, like Frankenstein's monster, inevitably turned on their makers. The play’s tragic ending, he suggested, was the inevitable result of a community falling under the sway of industrial psychology as currently preached and practiced in the United States.

Would British workers be reduced to such a level? Some declared that it was not only inevitable, but necessary. Defenders of machines argued that those who tended them would naturally have to work with a machine-like efficiency. Following the dictates
of scientific management, as popularized by Frederick Taylor's 1911 study, the task of
the overseer was to train and select the worker for the task best suited for him or her--not
allow the workers to think for themselves.\textsuperscript{16} It might be remembered that with so many
men having been mutilated in the 1914-18 war and requiring prosthetic limbs, new hybrid
beings of flesh and aluminum were created and entered the British labor market.
Amputees were shifted to appropriate tasks and their functions, if not their limbs, were
restored. They demonstrated the truth of a central tenet of Taylorism that industry
required, not entire employees but only "hands."\textsuperscript{17}

Industrial psychologists like Bernard Muscio actually argued that the less thinking
the worker did the better. "We may say, generally, that methods of work which substitute
order and habit for judgments and decisions decrease fatigue, and in this respect alone,
influence output beneficially." The manager’s goal was to reduce both the workers’
physical and mental energy thus embracing "the principle of substituting automatisms for
frequent acts of decision." Opponents might say the worker was thereby reduced to a
mere "automaton." Muscio replied that such training did not necessarily lead to the
"mechanising” of a man, but even if it did in some slight way, it was a fantasy to believe
that any worker was ever free.\textsuperscript{18}

A few months after the premier of \textit{R.U.R}, \textit{The Times} ran a story titled “Fatigue In
The Factory. The ‘Fordising’ Of Industry. Welfare Workers' Views.” It reported that a
conference on industrial welfare at Balliol had heard some oppose “Fordism” as soul-
destroying while others supported such modernization. "What we want is a Robot, and
not a man," Miss Matthias, of the English Electric Company, was quoted as saying. "We
do not want men of intelligence if we are going to Fordise industry."\textsuperscript{19} Henry Ford’s
assembly line means of production had by the 1920s become a byword for mindless, repetitive labor. An observer of the American automobile industry noted skilled workers were declining in number while the semi-skilled, who tended machines, increased. "The task of the worker requires simply speed, dexterity, alertness and nervous endurance to carry the 'robot' through dull, monotonous, fatiguing, relentlessly automatic operations." Ford responded by insisting that machines did not destroy creativity; they provided the leisure time to allow it. He devoted a chapter to "Machinery: The New Messiah" in My Philosophy of Industry. Far from being embarrassed by the notion of treating humans like machines, he suggested in the section, "Repairing Men like Boilers," that just as rust-proofing prolonged engine life, so too could humans benefit from clean living.

H. Stafford Hatfield, who contributed to Kegan Paul, Trench and Trubner's popular "To-day and To-morrow" futurist series, noted that the popularity of fictions like Frankenstein and films like Metropolis showed the public's fear of robots. The truth, however, was that unskilled laborers doomed to boring repetitive tasks were in effect already "semi-automata." Advanced industry was experimenting with devices employing light sensitive cells, thermostats, and sound recognition components. It did not seek humanoid robots but dependable workers and efficient machines. Instead of trying to improve the working conditions of semi-skilled laborers, Hatfield argued—as did Ford—that humanitarians should support technologies that would replace them.

Factory hands were not the only workers who might be displaced. It says something of the class position of many of those in Britain involved in the discussion of machine culture that they repeatedly returned to the notion of replacing servants with appliances. In Antic Hay (1923), Aldous Huxley presents a character who hates dealing
with the lower classes. "Ah, if only they'd invent servants with internal combustion engines," said Bruin, almost pathetically. "However well trained they are, they always betray their humanity occasionally." For some this was not a joke. In a chapter titled "The Robot Age," A. M. Low promised his readers that the future world would be serviced, not by androids, but by machines devoted to the repetitive work such as that now carried out by nursemaids, chauffeurs, and gardeners. He felt obliged to reassure his readers, however, that, as such machines could not think, they would never rebel.

The British attributed attempts to subject workers to behaviorist training and conditioning to make them mere adjuncts of the machine to "excessive Americanism," but in Bolshevik Russia there were similar enthusiasts. René Fülöp-Miller reported in 1927 that such was the adulation of machinery in the Soviet Union that an historian seriously referred to Lenin as a "special appliance" while "a Bolshevist poet attempted to describe him as a 'greater screw' within the collectivist machine." The factory poet Alexey Gastev insisted, "We must not only love the machine." He oversaw an Institute for the Scientific Organisation of Work and the Mechanisation of Man. Like Taylor, Gastev sought to establish laws of movement and stimuli to determine optimum work and rest periods. With their superfluous movements eliminated, workers were to be trained to be "labour machines" or "management regulators" or part of the "directive apparatus."

"This principle of organization is extended to all physiological elements, and thus a 'rhythmic rotation of work' is produced, which not only completely does away with all disturbing caprices and eccentricities of the nerves and soul, but removes all constitutional mental obstacles. The machine man is produced--and guaranteed to
function properly.” The hope was that some day “instruments” (meaning workers) would, like electrical appliances, be artificially constructed.

In Britain many public commentators were stridently opposed to Fordism and Taylorism. The problem, as they saw it was not that machines were becoming more like humans, but that humans were being treated increasingly like machines. Such concerns spanned the political spectrum. Reactionaries like R. Austin Freeman (an anti-Semitic physician and popular detective story writer) complained that mechanisation now gave everyone access to “power.” As a result of machinery Britain was lumbered with the over-production of shoddy goods and a homogenized, restless, unionized working class. With craftsmanship destroyed, the masses became no more than passive consumers. Racial deterioration and national decline necessarily ensued. Progressives like C. E. M. Joad, the popular Birkbeck professor of philosophy and BBC broadcaster, similarly warned that mass education, film, radio, and tabloid newspapers were homogenizing the population and destroying individualism. And now came the machine. "There is real danger that modern industry will substitute the robot for the craftsman." The skilled laborer was disappearing. "Today his type is too often that of the worker ant endlessly performing the same operation in the ant heap factory.”

What would be the inevitable result of the production of so many unskilled drones? Experts on the history of science fiction have noted that the “‘submerged-nation’ theme, coupled with the idea of retribution, is essentially a British obsession.” Such preoccupations were quite apparent in the discussions of the subjection of laborers to mechanization. The central fear of its opponents was not simply that factory work was reducing workers to the level of robots, but that some day these robot-workers would
revolt. \textsuperscript{30} What form would the revolt take? In \textit{R.U.R.}, the robots ultimately take up arms against their human masters, but what makes the story so chilling is that they have already won the reproductive wars. Commentators have missed this crucial linkage of the technological and the biological. When talking about robots, contemporaries did not simply discuss machines; they almost inevitably broached the topics of gender, sexuality and reproduction and they generally followed the eugenicists in their thinking. On the one hand the advocates of eugenics were all in favor of machine-like efficiency and sought to shape the race and streamline the population according to the dictates of medical science. (Indeed some accused the eugenicists of welcoming a society of robots.) On the other hand they were the very ones who raised the alarm that their increasingly urbanized and industrialized society was being swamped by the biologically unfit. The fear of swarming robot hordes can, indeed, be best read as the middle-classes’ fear, not of machines, but of the proletarians who tended them in the Fordist factory.

Though warmly reviewing \textit{R. U. R.}, James Agate, London’s leading theater critic, made the curious complaint that the author unnecessarily dragged in "the irrelevant ornament of sex." \textsuperscript{31} Stating that he would have preferred it if there had been no women at all in the play, Agate revealed that he missed its central point. It was the very thought that the automaton might succeed in reproducing which raised the truly frightening prospect of it freeing itself from dependence on humans. Mary Shelley had Victor Frankenstein realize in time that if he succeeded in producing a mate for his creature the consequences would be horrific. \textit{R.U.R.} ends on a more hesitantly positive note but throughout the play the vital importance of reproduction is underscored. The central argument in \textit{R. U. R.} is that the creation of the robot had led to a crisis in human reproduction. With machine
men doing all the work, real people have stopped reproducing. Dr. Gall explains that ever since surpluses in production occurred, the birth rate has dropped. Despite knowing the disastrous demographic consequences, politicians in search of power and industrialists in search of profits stupidly persist in ordering more and more automatons. In the week before the revolt breaks out the newspapers report that not a single human birth has been recorded. In explaining why she finally destroyed the formula for the production of robots, Helena protests: "If the manufacture of the Robots had been continued, there would have been no more children. . . . Everybody said that human beings could not be born because so many Robots were being made."

This was exactly the sort of demographic crisis that eugenicists were constantly harping on—the fact that the fit were having small families and the unfit large broods. When the statistics documenting such patterns were published, cries went up that something had to be done. George Bernard Shaw complained, “Being cowards we defeat natural selection under cover of philanthropy; being sluggards, we neglect artificial selection under cover of delicacy and morality.” This argument was being made decades before the appearance of R. U. R. The first volume of the Eugenics Review (1909-10) carried an article by Dean Inge arguing that race improvement depended on deciding who breeds. "Rational selection" was now needed since nature no longer curbed the threatening fertility of the urban proletariat. Degenerates needed to sacrifice themselves, while it was the duty of good stock to breed. According to the Whethams birth control was limiting fertility but the issue was one of quality rather than of quantity. If middle-class women shunned maternity they posed a "direct menace to the future welfare of the race."
In the 1920s the idea of a crisis in reproduction was very much in the air. Modern, mechanized society was held responsible for producing both shoddy products and unfit families. This idea that the worse sorts of people were reproducing while the best were not, that the excessive fertility of the unfit was in effect sterilizing the fit was repeated endlessly, especially by those hostile to birth control. Aldous Huxley had a character in his novel Antic Hay (1923) express the common sentiment: "It is regrettable that birth control should have begun at the wrong end of the scale. There seems to be a level of poverty below which it doesn't seem worth while practising birth control and a level of education below which birth control is regarded as morally wrong." Science fiction writers sketched out the likely catastrophic consequences. In “Automata” (1929), Sydney Fowler Wright portrayed a late twentieth century world in which machines are everywhere, human procreation has almost ended, and children are scarce. "If a machine proves to be sufficiently useful,” the American Edward J. O’Brien noted sardonically, “it is not allowed to practise birth control. It reproduces itself as rapidly as possible until a better machine of its own type consigns it and its likes to the scrap heap.”

Birth controllers themselves worried about differential fertility. Marie Stopes argued that in the past weaklings died off. The effect of modern state welfare had, in her words “been to work havoc with the quality of the nation." The fit were taxed by the state to support "the unhappily over-breeding, feeble-minded slum dwellers" and the middle class were in effect "sterilized" by the poor. From a eugenic point of view such movements were disastrous. "Soon the only class callously and carelessly allowing themselves to hand on bodily defect will be the morons of the various grades, sometimes
called the 'social problem group.' " Stopes’ answer was to take birth control information to the poor. "What stands out as new and therefore as essentially characteristic of the time is the rational application of scientific thought to the problems of marriage."

The eugenically-minded continually stressed that men and women had distinct biological roles and any blurring of the boundaries could be demographically dangerous. Given the British preoccupation with the crisis in reproduction, it is understandable that they would respond to R.U.R., a heavily gendered play. All the managers are men and Helena Glory is the only woman on the island. The Spectator’s reviewer made the good point that Helena is a curious character. She is in no sense the assertive 1920s flapper yet in remaining childless after five years of marriage she also fails to fulfill the natural female role. Curiously enough some of the female robots are more traditionally feminine than she. Helena’s first act upon arriving on the island is to mistake Sulla, a “Robotess” secretary for a human. When she asks Domaine why female robots are produced she is told that customers expect domestic services to be provided by females and the firm simply responds to a demand.

Gender stereotyping was common in such literature. Mrs. M. L. Campbell’s ”The Automatic Maid-of-All-Work” (1893) tried to wring some humor out of the idea of a clock-faced, electric-powered servant girl stupidly washing dinner, making the bed with the man of the house still in it, and finally setting about herself with an axe. Nevertheless the assumption was that domestic chores would necessarily be done by a “female” robot. The Canadian comic writer Stephen Leacock played up the old line about women’s loquaciousness in envisaging female robots being equipped with a vocabulary twice the size of that of their male counterparts.
In Leacock’s story robots are used as go-betweens when shy human couples engage in marriage negotiations. The robots, of course, cannot marry. In *R. U. R.*, male and female robots exist, but they have no love or sexual feelings for each other. Ultimately a special female robot is made by Dr. Gall who resembles Helena in beauty but is lacking in intelligence. This second Helena asks what purpose can she have, not being fit for any work. The answer (which any eugenicists would tell her) is that she will inspire love in her mate and eventually succeed in reproducing.44

But to pursue Helena’s question. Why are there female robots, or as Allison Muri has put it, why do some cyborgs have boobs?45 The answer is that, whereas male automatons can be portrayed as simply working, the western world always culturally links females to sex and reproduction. Female robots, in blurring the boundary between the biological and the mechanical, are necessarily regarded as either fetishistically appealing or repellently perverse.46 The sexualized automatons that predate Čapek’s work were envisaged as servicing humans. The female robot provided the ultimate male fantasy of the compliant woman. In E. T. A. Hoffman’s "The Sandman" (1815) Nathanael calls his human fiancée Klara a "lifeless damned automaton" and ironically falls in love with a mechanical woman, Olympia.47 Similar sex dolls were described by later French writers such as Rachilde, Villiers de l'Isle Adam, and the anonymous author of *La femme endormie* (1899). It appears that no early twentieth-century British author wrote explicitly about sexed female robots.

Could a British woman be attracted to a mechanical man? Alongside a story entitled "Are There Robots in Real Life?" written in response to *R. U. R.*, the Daily Mirror ran a cartoon showing a woman who buys a robot because, unlike real men, he
loves to dance and never complains about her tardiness. But male robots—especially British male robots—were not presented as sexualized. In E. V. Odle’s *The Clockwork Man* (1923), a cyborg from the fifty-ninth century with a clock mechanism in his head, finds himself in an English village. He explains how, in the future, mechanical aids increasingly provide "some means of supplementing the normal functions of the body."

He has something like a heart but the author categorically states: "The Clockwork man had no apparent sex." And so cannot reproduce. In the future new beings are produced by “the makers” who have taken away all the women. When the robot sees human lovers he wistfully muses, "All that old business--before we became fixed, you know. But they had to leave it out. It would have made the clock too complicated. Besides, it wasn't necessary, you see. The clock kept going forever. The splitting up process went out of fashion, the splitting up of yourself into little bits that grew up like you--offspring, they used to call them."  

“Robert” the robot, the chief character in Joseph Storer Clouston’s *Button Brains* (1933), has a disastrous career as waiter and department store server. Though he has no sexual appetites, young women find him attractive and the maid Fanny is discovered wooing him. The comic novel advances the elitist, middle-class view that a deprived servant might well be charmed by the programmed attentions of a machine. Robot courtship could be the basis for comedy; robot reproduction could not.

To counter the perceived crisis in reproduction, eugenicists proposed selective breeding by both positive and negative means. Positive eugenic programs aimed at encouraging the reproduction of the fit. Such views were echoed in *R.U.R.* Helena remains childless while on the island, but believes that if she and Domaine escape they
will have a home and "children will come to us at last." For the eugenicists it was vital that such middle-class women reproduce. Reminders to fit women of their duty to “breed well” were repeated endlessly.

Countless commentators stressed the need for selective breeding. Shaw believed birth control, in allowing people to weed themselves out, was leading to “intelligently controlled, conscious fertility.” His hope was that soon “the great central purpose of breeding the race, ay, breeding it to heights now deemed superhuman” would be recognized, and no longer just a personal fancy. Bertrand Russell foresaw a society of Edisons with the strength of prize-fighters. A similar portrayal of breeding a desired type occurred in the work of the eugenicist Reginald Ruggles Gates, first husband of birth controller Marie Stopes. Though opposed in general to miscegenation he enthusiastically reported that White/Indian crosses resulted in “greater initiative and enterprise than the pure Indian would ever show.”

A eugenic-minded commentator like Sybil Neville-Rolfe insisted that medical exams before marriage were necessary if one was to know "the hereditary qualities of the stocks that are to contribute to the new individual." In Vitality: A Book on the Health of Women and Children (1935) Elizabeth Sloan Chesser, a medical doctor, agreed that natural selection was no longer operating. Soon marriages would be regulated, medical examinations required to wed, and the feeble-minded segregated. The state had to encourage the families of "worthy parents" as a high birth rate of the fit was essential for future prosperity. Women were the target of most of these injunctions. Norah March presented eugenics warring against "incompetent motherhood" and the "racial poisons" of alcohol, tuberculosis, and venereal disease. The science fiction writer H. G. Wells
foresaw women having careers of “wholesome motherhood.” The best mothers required the best sorts of social supports. Chesser discussed the necessity of state hospitals, pregnancy insurance, (to allow home stays after birth), and mothers pensions. A number of feminist supported such eugenic views. Perhaps the most radical were contained in the futuristic novel _Man's World_ (1926), in which Charlotte Haldane envisaged a society dominated by women in which mothers, serviced by mechanical slaves, would devote themselves to childbearing while sterilized "entertainers" dealt with men's lust.

Descriptions of state-supported women, happily dedicating themselves to childbearing remind one of the sort of cyborgs later made famous by the 1975 film “The Stepford Wives.” Even in the 1920s commentators concluded that it was likely not possible to force middle-class women to be prolific child bearers. The left-wing scientist J. B. S. Haldane famously satirized such ambitions. “The eugenic official, a compound, it would appear, of the policeman, the priest, and the procureur, is to hale us off at suitable intervals to the local temple of Venus Genetrix with a partner chosen, one gathers, by something of the nature of a glorified medical board.” Reactionaries like R. Austin Freeman agreed. "The idea of compulsory mating of human beings is merely fantastic; and it may be added that any individuals who would permit themselves to be 'bred' like pedigree bulls would not be worth breeding." Since such positive eugenic programs were doomed, how then did Freemen propose dealing with the “sub-men” who, composing about one fifth of the population, acted as a drag on society? The answer lay in controlling their reproduction by segregation, marriage restriction, and sterilization.

_R.U.R_ ends with Radius, the robot leader, seeking the secret of reproduction. "The human beings did not let us breed,” he cries. “We are sterile--we cannot beget
The robots’ complaint would have reminded many that the eugenicists argued that sterilization of the unfit was a necessary means by which to purify the race. Radius’ lament would thus have warmed the heart of the biological determinist. If only “sub-men” were also sterile there would have been no reproductive crisis. In fact the eugenicist claimed that due to their lesser intelligence, lack of moral restraints, and untrammeled sexuality, the unfit were dangerously prolific. Many leading lights of the Eugenic Society entered the discussion. Its General Secretary C. P. Blacker and its Honorary President Leonard Darwin called for the voluntary sterilization of the feeble-minded. Although not all eugenicists supported passage of sterilization legislation, the movement and the policy were always inextricably entwined in the public mind. In a radio broadcast Sir James Jeans, the Cambridge astronomer, agreed that science had to prevail over humanitarianism. "If we are to make the earth a paradise again, it seems to me that our first duty is, at all costs, to prevent the moral, mental and physical wreckage of today from reproducing itself and starting a new sequence of unhappy lives trailing down through endless generations. To encourage this stream of misery becomes a vice; to check it a virtue.” Socialism was, according Jeans, a disease. Breeders knew that qualities were inherited and no environment could improve a weakling. Fortunately there was now a reaction against the old sentimentalism by "the rising generation" but the real attack against the incubus of the defective was still to come.

Women writers entered the fray. In a chapter titled "Motherhood and Eugenics", Elizabeth Sloan Chesser argued that the feeble-minded had to be either segregated or sterilized. To do nothing would be tantamount to demographic “suicide.” Writing in the 1930s Sybil Neville-Rolfe, a social hygienist, argued that marriage was not a right but
a "privilege." Sterilization in Britain for eugenic reasons, she insured, was not to be compared to its employment in Nazi Germany where it was turned to political purposes.\textsuperscript{68}

Some progressives supported such a culling. The prominent Labour Party activist Frida Laski was a member of the Workers Committee to Legalize Voluntary Sterilization. The iconoclastic scientist Lancelot Hogben was not opposed to the sterilization of criminals.\textsuperscript{69} John Desmond Bernal, Cambridge researcher and one time member of the Communist Party, presented sterilization as a form of social self-defense.\textsuperscript{70} The philosopher Bertrand Russell predicted that eventually the state would determine the sorts of minds and bodies it wanted. Under the tyranny of science few would be needed as breeders; most would be sterilized.\textsuperscript{71} Claud Mullins, a magistrate who saw many unhappy marriages and over-large families, argued, "Surely the time has come for at least an earnest consideration of the whole question of the right of the unfit to marry and propagate." Sterilization had to be carefully considered and the poor mother with a brood of children "ought to be brought to realize the moral crime of having more babies."\textsuperscript{72}

Aldous Huxley’s "A Note on Eugenics" held that a majority of humans were born "dull-witted" so would inevitably be ruled by the intelligent and strong. Unfortunately the inferior sort were increasing in number while better types were not. His modest proposal was for the sterilization of the feeble-minded and bonuses for the bright. Though he claimed not to be arguing for eugenic reform, he painted a nightmare scenario of deterioration into an era of "sub-men and super-men." He cited Leonard Darwin as noting wage earning and fitness were correlated so it was easy to see whose fertility to support and whose to curb. Yet Huxley believed an underclass of automatons would always be needed. "States function as smoothly as they do, because the greater part of the
population is not very intelligent, dreads responsibility, and desires nothing better than to be told what to do. . . If the eugenists are in too much of an enthusiastic hurry to improve the race, they will only succeed in destroying it.”  Like so many of his contemporaries, Aldous Huxley was of two minds about eugenics, condemning its social conservatism while defending the sterilization of “nitwits” who were “at large.”

R.U.R. could not only be read as a eugenic text, reviewing positive and negative eugenic strategies, it also echoed a current interest in the most radical form of medical intervention associated with the advent of a secular, scientific society—euthanasia. In the play the robots usually live for about twenty years, but if they prove defective, cramp up, or go off their heads, they are sent to the stamping-mill to be destroyed. Čapek thereby reminds us that the discussion of eliminating useless humans was also being broached in the early twentieth century. Following Dr. Benjamin Ward Richardson's patented "Lethal Chamber for the Painless Extinction of Lower Animal Life," the Battersea Dogs Home began in 1884 to employ carbonic acid gas to painlessly terminate the lives of animals. As a result the term “lethal chamber” was soon in popular use and suggestions made it be used on humans. Huxley included joking references to the “lethal chamber” in Crome Yellow. When Scogans, the scientist, is asked by Denis, the poet, if he will have any place in the future rational society, he is told "No, I can see no place for you; only the lethal chamber." Conservatives suggested that only in the Soviet Union could people seriously entertain such ideas. A correspondent of The Times asserted that, "one fails to see how they [Bolsheviks] can regard themselves or other men as anything better than 'robots,' machines without a soul, or a God, or a hereafter, without gratitude or love or
pity, pieces of mechanism that should, if incurably inefficient, be sent to the stamping-mill or the lethal chamber.”

Nevertheless in Britain the most eugenically-minded were interested in any method that could be used to purge the race of the defective. In *A Modern Utopia* (1905), H. G. Wells argued that in time the citizenry would come to accept the death of the diseased or helpless as “an act of love.” In the future society, he predicted “There would be no killing, no lethal chambers. No doubt Utopia will kill all deformed and monstrous and evilly diseased births, but for the rest, the State will hold itself accountable for their being.” Carveth Read, Grote Professor of Philosophy at the University of London, declared himself “consoled” that the lower classes had a high death rate. He concluded, however, that nature had to be assisted in the selection process. “Whether anything can be done to weed the population by permanently segregating criminals and quasi-lunatics and imbeciles, by preventing marriage amongst certain classes of invalids and hereditary suspects, by euthanasia of certain idiots and incurable sufferers, time will show.”

George Bernard Shaw shocked the London Eugenics Education Society by a 1910 lecture in which he crudely suggested that members of the society were exploiting the taxpayers’ grubby desire to spare themselves the cost of caring for the unfortunate. "A part of eugenic politics would finally land us in an extensive use of the lethal chambers. A great many people would have to be put out of existence simply because it wasted other people's time to look after them." Shaw was being his usual provocative self and attempting to satirize such views, but the public took it as further evidence of the eugenicists’ desire to eliminate the unfit. Such associations were strengthened by books such *The Survival of the Unfittest* (1927) in which Charles Wickstead Armstrong included
the lethal chamber along with sterilization and segregation as ways to limit the fertility of
the “scum.” The same author envisaged a future utopia called “Eugenia” where the unfit
would happily avail themselves of the services offered by “Euthanasian Gardens.”
The Eugenics Society shunned such enthusiasts but when the British Voluntary Euthanasia
Society was founded in 1935 it did include such well-known eugenicists as C. Killick
Millard, George Bernard Shaw, H. G. Wells and Havelock Ellis.

In R. U. R. no matter what Domaine says about the robots having no attachment
to life, Helena continues to be horrified at the thought of their being consigned to the
stamping-mill. Does knowing that the eugenically-minded were in the first decades of
the twentieth century broaching the issue of euthanasia, help in appreciating the response
to the play? It does on a number of levels. It first suggests that in sketching out his
drama, Čapek drew on a topical issue. Second, it alerts us to the likelihood that the play’s
audience was divided on the issue. Although the vast majority probably identified, as
they were expected to do, with Helena’s point of view, there were no doubt some who
would have necessarily shared Domaine’s argument—echoed by the eugenicists--that the
rational had the right to eliminate beings that lacked both reason and social worth.

Up to this point we have mainly traced the ways in which eugenics, by warning
the nation of dangers of the fertility differential and in proposing such remedies as
sterilization of the unfit and the elimination of the defective, positioned itself as a
bulwark against hordes of robot-like workers. But the opponents of eugenics turned the
robot analogy to exactly the opposite purpose, arguing that it was the eugenicists, with
their mania for calculating the quantitative and qualitative value of human life, who were
clearly most enamored by the automaton.
Early on, those speaking for the working class recognized the ambition of some scientists to produce man-machines. An editorial entitled “Life as per recipe,” in the *Daily Herald* of September 6, 1912 warned of a world where workers would be produced in laboratories,

... it is easy to see what may happen. The life creators will join with the eugensists. A section, and probably a large section of the working class will be forbidden to have children... The necessary population, calculated in Whitehall, will be supplied with all their virtues and vices—or shall we say virtues, and leave it at that?—ready made. The slave foredoomed will always be a slave; the scientists will have seen to that.  

Some feminists countered the eugenicist vision of women dedicating themselves in robot-like fashion to child-bearing. Helena M. Swanwick noted that eugenists might say who would make the best mothers, but the woman of the future would have her own ambitions. Reactionaries talked of the girl needing to store up energy for motherhood "as if a human creature were nothing but a chemical factory and warehouse rolled into one." Such training of woman "as breeders only" following the "theory of the cow-woman, who shall do nothing but bear and suckle babies" led to subjection. For Swanick such ideas grew out of the industrial world’s mania for an unhealthy division of labor.  

Scientists objected that the eugenicists’ desire to purge the nation of the abnormal and impose new standards of conformity, could also have the unexpected consequence of racial stultification. Sir Humphrey Rolleston, Regius Professor of Physic at Cambridge
and President of the Royal College of Physicians, warned his colleagues: "Without being reactionary we may wisely hesitate before advocating strict eugenic measures of breeding, which, if carried to their logical conclusions, might seriously impair the future progress of the race; for if the inborn tendency to variation, which is responsible both for mental weakness and for intellectual ability, were thus removed, a dead level of standardized men, like 'Robots,' might conceivably result." A similar line was taken by Aldous Huxley, when he chose to be critical of eugenics. "According to Major Leonard Darwin, the fittest to survive are those who can earn the most money. The deserving rich must be encouraged to propagate their kind; the poor, whatever the cause of their poverty, whether it be illness, eccentricity, too much or too little intelligence, must be discouraged and if necessary sterilized. If Major Darwin gets his way, the world in a few generations will be peopled exclusively by Podsnaps and Babbits."  

Eugenicists were held responsible for seeking the homogenization of society. There would be, many agreed, no place for erratic geniuses if the eugenics succeeded in establishing a "race of standardized types." When Anthony Ludovici argued that the unfit should be prevented from marrying he was attacked in the press. According to Stanley L. Baker, only if human nature changed could such zealots "by a careful selection of species, produce a nation of robots." In an article titled "Shall We Get a Race of Human Machines?" John Malcolm reprimanded medical experts for seeking to predict children's abilities. The more science intervened in child-rearing, he believed, the more likely one would have a generation of robot children who never thought for themselves.
When the 1932 National Radio Exhibition ended, the Daily Mirror reminded its readers that the most popular item on display had been “Alpha” the robot. A journalist captured the public’s ambivalent view of the automaton by honoring it with a poem.

When the future comes to birth, Ruthless Robot,
Will your brothers rule the earth?
Will the Robot
Hold mechanical control
Of the world from pole to pole?
What of man’s immortal soul?
Ask the Robot.92

Many of the reasons for such interest in the robot are fairly obvious. For many in Britain, uncertain of the benefits of mechanization, the mechanical man posed the possible threat of displacing the human worker. What is less obvious is that the robot story enjoyed a special resonance because it could also be read as eugenicist parable. It is no exaggeration to say that when the British were taking about automatons they were consciously or not talking about the lower classes and how they might best be controlled. Robot stories and eugenic accounts told much the same tale. They both highlighted the promises and threats posed by modernity. The harnessing of science and industry, they argued, could lead to unparalleled progress but if not directed by an enlightened elite with the interests of the race at heart, the unleashed forces of rationalization would result in disastrous consequences. Contemporaries had good reasons for regarding eugenics as
either the best hope of countering the population problems modernity had created or the worse example of the modernity's penchant for a technological fix.
NOTES

1 The Times, Sep 12, 1930, 15

2 The Times, Aug 18, 1932, 14; Illustrated London News, August 27, 1932, 301.


4 The Times, Apr 25, 1923, 12; Daily Mirror, May 2, 1923, 9.

5 Daily Mirror, May 11, 1923, 7; Daily Mirror, 14 May 1923, 7.

6 The Times, Sep 10, 1928, 4.


8 The Times, Jul 12, 1923, 17.


15 The Times, Apr 25, 1923, 12.


19 The Times, Sep 17, 1923, 19.


23 On robots displacing domestic servants see Daily Mirror, Mar 30, 1928. 9; Nov 23, 1930, 9; Feb 7, 1930, 7.


38 Sydney Fowler Wright, “Automata,” Weird Tales (September 1929).


43 Stephen Leacock, The Iron Man and the Tin Woman with Other Such Futurities (London: John Lane The Bodley Head, 1929).

44 Čapek, R.U.R., 48-49, 100.


46 Wollen, "Cinema/Americanism/The Robot."


63 Freeman, Social Decay and Regeneration, 303.

64 Čapek, R.U.R., 95.


68 Neville-Rolfe, Why Marry?, 139.


75 Čapek, R.U.R., 23.


The Times, Jun 14, 1923, 15


Aldous Huxley, *Do What You Will* (London: Chatto and Windus, 1929), 266-267


92 Daily Mirror, Aug 22, 1932, 7.