

Not Just in Factories: Robots in the Bedroom

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When people think of robots replacing jobs, they usually think self-driving cars, automated factories, and bots that perform the jobs of journalists, lawyers, customer service representatives, and musicians. One area many do not consider is sex work: sex robots are an off-shoot of the personal robot industry, the industry that provides robots to help people remember to take their medication, to provide social interaction with those who are homebound, and in some cases even provide exoskeletons to assist with movement. While there is some expected controversy with non-sexual companion robots, sex robots are an area of huge concern and debate due to the intimate nature of the human engagement, which echoes society's unease with discussions of sex and especially sex work. This paper will focus on science fiction literary works that deal with the ethical questions of sex robots that are already bubbling up in contemporary companion robot discourse.

Before one can understand how sex robots might possibly fit into life in the future, one should examine personal robots. At its very simplest, a domestic or personal robot would be the Roomba, the autonomous vacuum. The most advanced robots are those considered "companion" robots, robots designed for some conversation and to help with basic medical aspects such as managing medication, alerting 911 in an emergency, and monitoring moods. Several models already exist such as PARO, the seal-shaped therapeutic robot that has been available in Japan and Europe since 2003. In 2016, Toyota introduced Kirobo Mini in Japan. Ballie, developed by Samsung debuted at CES 2020. These are starting points: they are small and do not exactly resemble humans.

Enter Pepper, a humanoid robot by SoftBank. Pepper first highlighted the anxiety and curiosity humans have toward robots in the real world, especially those potentially capable of conversational intimacy, reading emotions, and offering emotional comfort. Pepper is programmable to sense obstacles in its environment, recognize faces, and understand basic human emotions through vocal inflections.

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During the COVID-19 pandemic, Japan has been using Pepper to cheer up patients in quarantine hotels (Reuters). Most commonly, Pepper is used for customer service; in the home, it is an emotional support robot and costs \$2,000 US (AFP). Unfortunately, some hackers exploited Pepper's programming to give it sexual characteristics and mannerisms which highlights how companion robots could be problematic. How does the owner/object relationship between a human and robot change if the robot is abused by the human? How does that relationship change if the robot is repurposed to be a robot sex worker (RSW)?

Mark Migotti and Nicole Wyatt argue that: "if sex robots are nothing more than aids to masturbation (or for that matter to sex with a human partner), they are no different from the broad variety of sex toys already for offer, and so don't raise any destructive social, ethical, or conceptual problems" (Mignotti and Wyatt 21-2). Matthias Schultz and Thomas Arnold add another dimension to the discussion by pointing out increases in virtual reality and computer-based ways to have sex will be entirely different from sex robots because sex robots "...elicit and trade upon dimensions of physicality, intimacy, reciprocity, and social space" (Shultz and Arnold 247). A robot's ability to be programmed to the user's needs is another key difference between a RSW and virtual reality/computer-based masturbation methods. As Steve Petersen argues, to be ethically programmed, a sex robot would have to be able to seek fulfillment outside of sex, much like humans seek hobbies and activities outside of their jobs (Petersen 230). Essentially, if a sex robot realizes it is for sex only and is unhappy/unsatisfied by that, then we have created sex slaves, which is clearly unethical. Alternatively, if we cannot program them to be human-like, they're rendered sex toys rather than sex robots. What is available today is elaborate sex toys.

Robot Companion (www.robotcompanion.ai) offers "the world's first artificially intelligent robotic companions" for the mass market. The level of AI deployed seems to consist mostly of wireless communication, voice communication, and simple machine learning. In other words, it is an Alexa designed for sex. One can buy the most advanced models for about \$5500 before customization; the sex robot market is currently in flux, it seems. Circa 2017 there were several models ready to ship ranging in price from \$5,000 to \$15,000. Now, however, most of those "dolls" are AI "apps" for companionship on phones. Doll models are essentially fully customizable including the color of skin, hair, eyes, pubic hair, finger and toenails; and one can even add what they term the "shemale" kit. They are marketed as friendly, warm, affectionate, and with the ability to climax

at the right time, every time, but they have no distinct personalities. Even these sex robots, the most advanced on the market, are no closer to human than Siri. Sex with a sex doll, even one as advanced as Robot Companions is still masturbation with a sex toy.

There are some who are banking on that being enough, however. In January 2018, the first temporary robot (i.e. sex doll) brothel opened in Amsterdam. Named “Spuiten en Silkken” (Injecting and Swallowing), it housed four dolls (Amsterdam Red Light District). It cost 30 euros for a turn with a doll. The goal was, according to multiple news outlets, “trying to discover if having sex with a doll is like having sex with a human” (O’Donoghue 1-25-18). Nine months after the Amsterdam brothel a Canadian company called KinkySDolls attempted to open a similar brothel in Houston, TX (Nicholls). They were unsuccessful in Houston, as opponents cited that such brothels promote unhealthy attitudes toward women and that we, as humans, are not prepared for the consequences of robot human sexual relations. Matthias and Arnold are not surprised by these arguments as they say “the Campaign Against Sex Robots has featured strong articulations of how sex with robots could degrade respect for human sex workers, if not more generally. Such a stance has resonated with legal arguments that human-robot sex could erode notions of consent within society as a whole” (Matthias and Arnold 249). Some are concerned human-robot sex will profoundly harm human-human sex in ways such as eroding the institution of marriage, encouraging infidelity, inciting violence against humans.¹

Marina Adshade provides counterarguments when she argues that sex robot technology will not adversely affect marriage because humans will be free to marry for different and possibly more important reasons. Marriage will look different because the reasons people enter into it will be drastically altered by sex robot

¹ If these arguments sound familiar, they are. The video game industry has endured such arguments since 1976’s “Death Race” when parents thought the racing game was too violent as it depicted a car running over gremlins (NCAC.org). Since 1976 the number of complaints about the dangers of video games has increased and expanded to include the potential dangers of video games causing explicit sexual behavior, a propensity toward violence, increased anger, and detachment. In 1994 the industry saw the creation of the Entertainment Software Rating Board after the 1993 release of Mortal Combat (ESRB.org). The board acts like the Motion Picture Association of America (MPAA) with the additional criterion of interactivity factored into its ratings. Despite there being no evidence of a correlation between video games and aberrant behavior, the myth endures and still affects the industry (Anderson). It’s entirely probable that a similar advisory board could be created for personal and sex robots especially as more concerns about human-robot relations arise.

technology (Adshade 297). As a result of this change sex robot technology will lead to the normalization of non-exclusive relationships as the dominant relationship structure and monogamy will be “. . .a personal preference rather than a socially imposed constraint” (Adshade 296). Individuals will have the freedom to determine the nature of their marriages without interference from the state. Like how the birth control pill allowed women more control over their reproductive plans which in turn opened marriage up to possibilities extending beyond financial support, sex robot technology will reshape the concept of matrimony once more.

Adshade’s hypotheses are derived from examinations of other societal disruptions brought about by technology. Much has been written on the impact of birth control on the institution of marriage, but fewer may be aware of how free internet porn has also served as a societal disruption. Studies indicate that rape decreased when internet porn became widely available: “...research finds that a 10% increase in internet access coincides with a fall in reported rape rates of 7.3%. The largest effect is among men who would have had very little access to pornography before online porn became available: those ages 15 to 19” (Adshade 291) It could be hypothesized that sex robots could facilitate another drop in violent crimes against sex workers as well as domestic partners due to constant access. It is likely the technology of sex robots will not change society so much as societal norms will inevitably shift around the technology.

The intersection between sex and robots is one that needs to be examined but since nothing close to a fully aware AI or robot currently exists, the turn to science fiction literature becomes critical to understanding how and why humans might seek out non-human intimacy and reveal the ethical complexities of such relationships, as well as the frailty and cruelty of humanity towards the very objects from which we seek solace. This article will use three novels from the past 15 years to show what a future with sex robots might look like: T. Aaron Payton’s *The Constantine Affliction* (2012), Annalee Newitz’s *Autonomous* (2017), and Paolo Bacigalupi’s *The Windup Girl* (2009).

These novels were selected because they each examine a slightly different ethical concern raised by sex robots and RSW’s as the themes build from novel to novel to create a more complete vision of what a sex robot future might look like: Payton’s *The Constantine Affliction* provides a vision of what contemporary sex robots might be like if available on a large scale; Newitz’s *Autonomous* presents a robot that is repurposed by its human into a sex robot and the complexities of that relationship; and Bacigalupi’s *The Windup Girl* shows us what the most advanced

robot who has been subjected to abuse and degradation could become. By examining these three novels, it clarifies how science fiction is able to highlight the ethical, psychological, and social implications of an industry that makes many people uncomfortable and will more than likely usher in an era humankind are not yet prepared for.

The Constantine Affliction

Of the fiction works that will be discussed in this article, Payton's *The Constantine Affliction* (2012) is the closest to what is currently available in terms of sex robot technology. *The Constantine Affliction* is set in a steampunk version of 1864 London with monsters in the river, eldritch lords coming through the sky, Adam (aka Frankenstein's Monster) on a subterranean quest for love, and a sexually transmitted disease that switches the sex of those afflicted. As a result of an STD, named after Constantinople, clockwork prostitutes have become a lucrative business. For this paper, only the plot concerning the clockwork prostitutes and what they represent is examined.

The clockwork prostitutes are mere sex toys, albeit highly advanced. Like Robot Companion, the patron chooses the doll they want to interact with from a catalog with pictures and descriptions. One madame explains: "our devices are realistic as any living woman. They breathe, they have heartbeats, they are warm, and they are...welcoming...to man's touch. . .Admittedly, they are not accomplished conversationalists, but they have certain vocal capabilities some men find pleasing" (Payton 35). Putting aside the reductionist view that living women are merely breathing warm bodies with a heartbeat, the reader sees that the clockwork prostitutes are not autonomous; little more than animated blow-up dolls with limited conversation skills. It will be natural, according to Julie Carpenter that we will seek ways to make robot sex workers more human-like in order to further enhance the illusion of a human partner—natural language, socialness, displaying emotions (sexual as well as otherwise) (Carpenter 263). The question is: will such modifications override the uncanny valley, and will there be the appetite amongst consumers?

When journalist Ellie goes undercover to examine a clockwork brothel, she comments that while the clockwork prostitute was breathing, there were none of the subtle shifts in body that would indicate life. It is only when touched does the clockwork prostitute appear to be alive:

...and the clockwork courtesan came more fully to life, half-turning its head toward her, eyelids fluttering, mouth parting, a warm and sultry “Mmmm” emerging from its throat...it seemed almost real, though the smell was wrong—too neutral, too inhuman—and the movements indefinably artificial. (Payton 37)

Another simulation of life occurs when Ellie rolls the clockwork prostrate and it gets onto all fours on its own, head to the mattress, bottom in the air. From a distance, Ellie comments it would look very much like a human (Payton 38). Essentially, what Ellie has discovered is that the clockwork prostitutes have a very limited range of what one might call programming. They respond sexually to most external stimuli. The clockwork prostitutes have no personality, no autonomy, and seemingly no goals. They do not even know if they have done their job well as is shown when Ellie leaves, the prostitute unused on the bed. It simply sits, breathes, and stares into the distance the same as she found it.

Clockwork prostitutes are necessary in this world where illicit sex can result in turning into the opposite sex. While we currently are not facing such a situation, we are looking at increases in loneliness due to aging populations, lower birth rates, and now a pandemic. Companionship, even if bought, is at a premium. The main character of *The Constantine Affliction*, Pimm, is married to his best friend, Fred, who now goes by Winnifred after contracting the disease. To protect Fred and Fred's family from embarrassment and judgement of others due to Fred's moral failing, the two live as man and wife. This world has decided that changing sexual behaviors that require sex workers is not going to happen so instead they've created clockwork brothels that operate in a legal gray zone: "...officially they were classed as 'amusement arcade,' no different from batallé parlors and penny-admission showcases of automatons though they were rather more expensive, and had a more limited clientele..." (Payton 25). Despite the virus that strikes men and women who consort with sex workers, the clockwork brothels represent a distasteful alternative even though the health risk is almost non-existent.

There is some distaste in paying for the opportunity to consort with a clockwork prostitute, something that may carry over into the non-fiction world. In the real world, current existing sex robots cost around \$5000. Sex dolls can be much cheaper (the low end around \$1300) but lack interactive qualities. It is a growing market, but realistically, how much of a market is there? Two studies give some insight. The first is Julie Carpenter's study from 2013 that polled 1000 American adults and found only 9% would have sex with a robot if the opportunity presented

itself, and a whopping 42% would consider it cheating for a sexual partner to have sex with a robot. Not surprisingly, younger Americans (between 30 and 60) were less likely to consider it cheating while older Americans skewed much higher. Schultz and Arnold conducted a similar study in 2016 that consisted of 203 adult subjects. While willing participation to engage in sex with a robot was higher, the sample size was considerably smaller. They learned that the positives to sex robots include disease-free sex, availability of sex, and little to no psychological impact on sex partner (Schultz and Arnold 253). Less than 50% of the study participants thought robots should be used only for sex, i.e., not as mere sex toys (Schultz and Arnold 257). Oddly, only 6% of the study participants agreed that sex robots ought to have rights (Schultz and Arnold 255).

Essentially, these studies conducted on very small sample sizes reveal the complicated feelings humans have toward robots: "...the ethical challenges of 'sex robots' may hinge as much on the social and relational dynamics that overlap with sexuality than human-robot sex per se" (Matthias and Arnold 257). These feelings are reflected nicely in *The Constantine Affliction*. Pimm early on admits: "the thought of having intimate relations with what was, essentially, an enormous doll was comical at best, and horrifying at worst" (Payton 26). Even the purveyor of clockwork prostitutes laments how the clockwork prostitutes have changed the sex trade:

The clockwork whores are expensive to produce, too—they don't just wander into the city seeking their fortunes like ordinary girls do. Admittedly, once they've been built, the only costs are cleaning and maintenance, and the clockwork girls never complain, get pregnant, or catch the pox...plenty of men refuse to achieve release with an automaton, no matter how cunningly contrived it might be. (Payton 26)

Programming robots to love and not slavishly be devoted might be most difficult trait to capture in a robot (Nyholm and Frank 234-5). It requires a higher level of sophistication than we currently have or even seem capable of at this moment. Even Robot Companion's top model cannot replicate true human interaction. The clockwork prostitutes, like the sex robots on the contemporary market, fall far short of being true human companions. They are elaborate tools to masturbation. Where *The Constantine Affliction* departs from our world is where the clockwork prostitutes are granted the ability to walk on their own, but even that is not fully autonomous movement as it is the result of programming, although the clockwork prostitutes could theoretically convince someone they are human from a distance.

Such duplicity in the real world is a major concern for the group Responsible Robotics which argues “humans can easily be deceived into attributing mental states and behaviors to robots because of our natural tendency to project human characteristics onto appropriately configured inanimate objects” (Sharkey, et. al. 10). The key word here is “deceived.” From a distance, the clockwork prostitutes are indistinguishable from a living human woman; it is the uncanny valley confronted. With a bit more sophistication the clockwork prostitutes could pass for human and be treated as human by the unwitting.

That does not come to pass in *The Constantine Affliction*, as even the most advanced clockwork woman in the novel is a mere pantomime of a human. Readers learn the Queen of England has been replaced by a clockwork version that is the most lifelike. Despite her advancements, “the mechanical Queen showed no inclination to do anything but sit in her throne and watch the madness overtake the park” (Payton 259). Pimm is anthropomorphizing the clockwork Queen. It is highly unlikely she wants to do anything because she is merely acting out the program she was installed with, and thus the clockwork Queen is fundamentally no different than the dolls in the brothels.

The Constantine Affliction shows a world where sex robots are necessary but not embraced. Much like the sex robots of today, the clockwork automatons have no personality and are programmed for a very specific function. Unlike today’s sex robots, they are capable of movement on their own, the one stand-out difference. The characters encounter the uncanny valley unease of something that looks alive but is not. As a result, the clockwork prostitutes never become characters in the novel. They are a narrative mechanism and do not garner sympathy from the characters because there is no internal world to them. In essence they are there to further dehumanize human sex workers by acting as their proxy. They serve to reflect the unease that many have toward robot sex that they will be a simple replacement for human-human affection, encourage violence in those predisposed to violence, and inspire indifference toward women both living and robotic. Despite all this the characters in the novel still find themselves thinking of the clockwork women as having some agency, but that is merely a projection of their own anxieties onto the dolls.

Autonomous

Annalee Newitz's *Autonomous* (2017) has at its center a relationship between a military robot named Paladin, its human partner named Eliaz, and the complicated relationship that develops between the two. Paladin is an example of a robot created for a different purpose but used by a human for sexual purposes. *Autonomous* is different from *The Constantine Affliction* because the reader sees the story unfold from Paladin's point of view, creating a sense of intimacy and empathy for the robot.

Paladin is what is called a biobot, a robot with a human brain in their torso that is used mostly for facial recognition. While the brain does not impart memories, personality, or gender, the brain becomes the focal point of the relationship between Eliaz and Paladin. Paladin's primary function is that of a military bot and as such has a large, armored body and moves on tank treads. Paladin, like many bots in the novel, is indentured and would not be autonomous for at least 20 years, if he indeed survives that long. The reader learns that Paladin can feel pain which means he may have other sensations as well. Early on, the reader sees Paladin struggle to understand what in his actions and feelings is his programming and what is his actual desire: "of course [Paladin] had been programmed to take Eliaz's orders, to trust, and even to love him" (Newitz 235).

Eliaz is concerned about Paladin's identity from the beginning because he is sexually attracted to Paladin: "Eliaz's heart beat faster, his skin slightly damp. The man's reproductive organ, whose functioning Paladin understood only from military anatomy training, was engorged with blood" (Newitz 77). Experiencing Eliaz's sexual attraction sets Paladin on a quest to figure out human-robot sexuality. Because Paladin is a military robot, however, he finds nothing pertaining to military bots and sex outside of fictional representations and porn. According to Max Tegmark "in the inverse reinforcement-learning approach, a core idea is that the AI is trying to maximize not the goal satisfaction of itself, but that of its human owner. It therefore has an incentive to be cautious when it's unclear about what its owner wants, and to do its best to find out" (Tegmark 262). Due to Eliaz exhibiting sexual attraction toward him, Paladin wants to understand how to assist Eliaz's goal satisfaction. Since Eliaz, however, is conflicted about his feelings toward Paladin, Paladin must seek the answers out on his own.

Paladin's training only equipped him with clinical descriptions of human sex. Everything about Paladin was designed for military including a lack of genitalia, the addition of weapons, and a cold metal exterior. After fruitless searches online and in databases, Paladin decides to go to the source and asks Eliaz:

“Some robots said they were learning about human sexuality. Do you think military robots need to do that?”

Blood rushed to Elias’s face and electricity arced over his skin. “I don’t know anything about that. I’m not a faggot.” (Newitz 96)

After doing more research on the previously unfamiliar term “faggot” Paladin realizes Elias’s unease is because Elias is thinking of Paladin as a human and that Paladin’s brain is the center of his identity. Elias sees Paladin as a man and his attraction to Paladin is confusing because Elias aggressively does not identify as homosexual but, in turn, does not seem bothered by his attraction to a robot. Julie Carpenter argues that this confusion will be natural in a world where humans and robots engage in sexual relationships.

It is a new way of examining emotional power in human-robot dynamics, a framework for a relationship different from any human-human relationship, yet similar to the human-human relationship in terms of pure sexual desire being fulfilled for the human. (Newitz 270)

Paladin finds himself unduly concerned about humans, sex, robots, and identity so he seeks out another bot named Fang for guidance. Paladin asks Fang if he had sex with Elias when he was Elias’s bot. Fang says he did not, which solidifies in Paladin’s mind that there is something about Paladin that Elias is attracted to. Fang explains that Elias is anthropomorphizing Paladin:

But anthropomorphizing is something different. It’s when a human behaves as if you have a human physiology, with the same chemical and emotional signaling mechanisms. It can lead to misunderstandings in a best-case scenario and death in the worst...he may not even realize he wants to have sex with you. (Newitz 126)

Fang also explains to Paladin that robots do not have gender, it is something humans assign to robots in order to better relate to the robots. Perhaps this is not a surprise considering that Newitz prefers gender neutral pronouns and wrote in 2019 on Tor.com:

As I grew older, however, I realized that there was a dark side to all this labeling and scientific rationalization of sex and gender. These categories could be used to stigmatize us, to deny us jobs and separate us from our families. Some doctors call minority desires “mental illnesses;” many queers and kinky people have been institutionalized to “cure” them of their preferences. Various forms of romance have been acknowledged, only to be forbidden. In the US, interracial and queer marriage were illegal within

living memory, and marriage to more than one person is still unlawful.
(Newitz “The Sex Chart”)

So much of what Newitz says here is embodied in the conversation between Fang and Paladin. Robots in this world are slaves. Their needs are often ignored if they are ever acknowledged in the first place. They are gendered at the whim of the humans around them and then treated accordingly based on that whim.

Due to his military nature, Paladin has adopted male pronouns because that is what the humans around him have used. Julie Carpenter discusses how a human centered worldview will need to be changed in order to integrate robots into society.

Humanness is viewed as the very model of social relations, as the indivisible bases of all community, and is the means of production without which society would not exist. The challenge for society is to dismantle such human-human centered frames through the practice of investigating the significance of human-robot sexual-social interactions. (Carpenter 274)

The use of gendered language is human-centric and sometimes serves to alienate the robots who don't see themselves as male or female. It is because of the gendering that Elias struggles with his feelings for Paladin: “Paladin knew that human gender was part of sexual desire. But he was starting to perceive that gender was a way of seeing the world, too...gender was a form of social recognition” (Newitz 184). It is clear that Elias does not seem to have any hang-ups about having sex with a robot and that his anxiety was with being labeled as “homosexual.” The reader knows that Paladin finds Elias's insistence on gendered pronouns limiting and confusing. Paladin simply adapts the gendered language in order to make the humans around him feel more comfortable, but the use of that language does confuse Paladin as to who he really is and what he really wants.

Paladin is further confused after a drugged Elias propositions Paladin, even as Elias expresses deep conflict over his emotions saying: “two men cannot lie together” (Newitz 163). That statement both genders and anthropomorphizes Paladin, reducing the robot to a sexual object. However, Paladin's curiosity combined with his desire to not disappoint Elias causes Paladin to allow the sexual encounter to continue, with Elias climaxing against Paladin's body since penetration is not possible. Despite Paladin's consent, in this moment Elias unknowingly and unwittingly changes Paladin's function and ultimately, their relationship. While Paladin remains a military bot, according to Julie Carpenter, Elias has also added robot sex worker to Paladin's resume: “the term robot sex worker (RSW) is used to refer to a robot that: (1) is designed with sexual stimulation

capabilities; and/or (2) is being used for human sexual gratification” (Carpenter 261). Despite Paladin’s primary function, he has been altered into a sex robot. While this might not seem unethical, it does become a gray area as it confuses the robot’s original programming with its new functionality.

Paladin’s existence is further complicated when Paladin learns that its brain once did belong to a female soldier. Eliaz is ecstatic at this news saying “that’s so fantastic! Now you know who you really are!” (Newitz 183). Eliaz asks if he can refer to Paladin as “she” going forward. Paladin, facing her first truly autonomous decision agrees and spends the rest of the novel identifying as “she,” even though Paladin is aware that she truly has no gender. Eliaz also tells Paladin that he must have known on some level that Paladin was female, an assertion Paladin finds unlikely. However, out of deference to Eliaz’s feelings, she does not attempt to correct him. This speaks to Tegmark’s statement that an AI needs to be cautious until it knows for certain what its owner, or in this case, partner, wants. The reader does get to be in the head of Paladin, so they do see what she is thinking and struggling to understand.

After making love as a “woman”² and man, Paladin shares with Eliaz that she has downloaded a program that gives her an approximation of a human orgasm. For Paladin to climax, however, she needs Eliaz to be on alert since her processes are basically shut down. Newitz gives us a vision of how robots designed for other functions could still fulfill sexual duties without compromising safety or security. Unlike the other works discussed in this paper, *Autonomous* establishes that sex robots could possibly have a different orgasm mechanism, especially for those without human adjacent genitalia, and that simultaneous orgasms might not be preferable or even achievable in a sex robot world.

Ultimately, Eliaz buys Paladin’s freedom. Putting aside the objectionable transactional nature to that, Eliaz’s actions, while coming from a place of genuine affection, remind Paladin that she is an object. The reader sees where a true relationship between a sex bot and a human will be fraught with uncertainties that do not quite match human-human relationships. No matter what it is a one-way proposition until robots reach true sentience (Carpenter 264-5). Paladin’s feelings for Eliaz have not changed but she is frustrated that he does not understand that her identity is not actually in the brain she carries with her and his fixation on the brain undermines Paladin’s. Eliaz’s and Paladin’s relationship is far more

² “Woman” here is in quotes to reinforce that Paladin has no gender as far as its concerned in the world of *Autonomous*.

complicated as now the idea of “love” has been introduced. By the end of the novel, Eliazs refers to Paladin as “the woman I love” (Newitz 298). Carpenter explains that “although there may be similarities between human-human and human-robot attachment models, human-robot attachment will also have new challenges unique to those interactions” (Carpenter 267). Eliazs’s hang-up on Paladin’s brain, the fact that Eliazs bought her freedom, the fact Eliazs cannot see her facial expressions, the fact they cannot orgasm at the same time, and the fact that her primary function is a military robot are all challenges that the two of them will have to learn to negotiate.

Paladin, despite her awakening and self-awareness remains confused as to whether she can tell the difference between programming and actual desire. “Of course, she had been programmed to take Eliazs’s orders, to trust, and even to love him” (Newitz 235). Paladin ruminates that Eliazs will never truly understand her as he is just too human; but she is content to keep her thoughts to herself because “they were the first private thoughts she’d ever had” (Newitz 299). Tegmark finds this an acceptable solution to the potential ethical questions of owning sentient robots “to allow the enslaved AI to have fun in its prison, letting it create a virtual inner world where it can have all sorts of inspiring experiences as long as it pays its dues and spends a modest fraction of its computation resources helping us humans in an outside world” (Tegmark 184). Now, Paladin is not creating an interior world, but she is reserving the right to hold back thoughts and opinions, much like a human would.

Autonomous in the end is a love story for the future, a story where a human could take on a robot lover as easily as a human lover. No matter how much love there is, however, the reality is that a robot is an object that is typically owned by a human and the power dynamics are more complicated as a result. Where the clockwork prostitutes of *The Constantine Affliction* are made to order and owned by individuals, they also lack awareness of their situation, rendering them mere sex toys. They are no more sentient than an Alexa, and even less conversational. The robots in *Autonomous* are aware of their situations. They know they are indentured, and they rely on humans for existence. As a result, there are back communication channels the robots use to talk with one another that the humans are not privy to. The humans are seemingly content to let the robots have their internal worlds as long as they perform their day-to-day functions. What happens when a robot’s day-to-day functions change and they are abandoned yet still functional?

The Windup Girl

Paolo Bacigalupi's *The Windup Girl* (2009) offers up a final vision of what human-robot sex might look like in the future. Unlike the mindless clockwork dolls of *The Constantine Affair* or the repurposed Paladin, Emiko is the most human of the robots this paper examines. Like Paladin, the reader is inside Emiko's head and witnesses her struggles. Unlike Paladin, Emiko struggles to survive in a country and a world that does not respect her. She is an ethical abomination, a feeling creature denied full autonomy simply because she is not entirely human.

The Windup Girl is a beautiful dystopic vision of a world run amok with so many blights that food is scarce, and most subsist on forms of algae. It also provides the most advanced vision of what a human-robot sex future might look like. The setting is Thailand and electricity as we know it has been replaced by power saved in springs that run devices. Gasoline and diesel-based transportation are luxuries that only the military and government can afford. The reader follows Anderson, a calorie man (in the world of the novel, men who engage in selling and buying seeds and other food items are referred to as "calorie" men) from a US company seeking access to Thailand's seed bank to bring extinct crops back to the United States. Emiko, the character of most interest to this paper, is a Japanese windup girl (also known as the New People) who has been discarded by her Japanese owner.

Emiko is advanced and will not age nor suffer disease, however, she is not invulnerable. One design feature of hers is that she has incredibly small pores, designed for living in air conditioning and a cooler climate. Because she is in Thailand she overheats frequently, something her owner, Raleigh, uses against her because the ice she needs to stay cool costs money. A second design feature is that she moves in a herky-jerky manner. This was intentional to make sure the New People do not perfectly blend in with humans. Thailand sees her as an invasive species, and she has not been destroyed only because she earns money for Raleigh. Her talent? Sexual degradation and occasional prostitution. Due to her genetic makeup, Emiko cannot refuse those who would control her:

Emiko moans again as her body betrays her...her body performs just as it was designed—just as the scientists with their test tubes intended. She cannot control it no matter how much she despises it. The scientists will not allow her even this small disobedience. She comes. (Bacigalupi 43)

Nightly, Emiko is tortured and humiliated for the amusement of patrons who view her as less than an animal. She is not worthy of respect, kindness, or empathy.

It is this treatment of an object that groups like Responsible Robotics are concerned about. In their 2017 report, human rights lawyer Kay Firth Butterfield argued against robot sex workers. They ask if sex robots were human enough, do humans want to say it is okay to violently abuse the object of domination even if that object is not human? (Sharkey, et. al. 21)-When the object is not human, but reacts like a human, is it ethical to sexually abuse that object? In the novel, many people in Thailand do not view Emiko's kind as anything but an evil invasive species, creatures not worthy of minimal kindness.

In the novel, Japan created the New People aka the windups to combat a low birth rate and a lack of people to work jobs. Japan also uses the windups for warfare. In the words of Carpenter, Japan has reached social system integration which refers to the point where robots become pervasive in the everyday lives of most people. This period would overlap quickly with the stage of meaningful integration, or the sweet spot where humans emotional and sexual attachment to, and affection or even love for robots begins to occur regularly in personal report. (Carpenter 279)

The New People are part flesh, part genetic splicing, part artificial, and completely unnatural. Emiko was the secretary and lover of her Japanese owner who was a statesman sent to Thailand. Emiko remembers the relationship fondly and believed there was genuine love between the two right up until he decided it was too expensive to buy her a return ticket to Japan.

Because the novel is set in Thailand, the reader only gets secondhand information about how successful this integration has been in Japan. What is significant is that Emiko was accustomed to one level of integration, only to find herself abandoned in a country that does not regard her as a legitimate sentient being.:

“I am not that kind.” She whispers. “Not military.”

“Japanese, same as you. I lost a hand because of your kind a lot of good friends.” He shows her the stump where his hand is missing, pushes it against her cheek.

“Please. Just let me go.” She presses back against his crotch. “I’ll do anything.”

“You think I’d soil myself that way? “He shoves her hard against the wall, making her cry out. “With an animal like you?” (Bacigalupi 119)

Emiko is acutely aware of her change in status something Carpenter addresses: “robots not originally designed to be RSW’s can still become defined as RSW’s

when they are used in a way to engage human sexual satisfaction, and when they are considered RSW's by their owners or users either as a primary role, or a set of features of qualities" (Carpenter 262). Emiko's original function of a secretary has long ago been replaced by her sexual nature. Even her original owner used her as a sex robot. As a result, she questions what is motivating her.

When Emiko meets Anderson, she is running from an assailant. Anderson rescues her and Emiko tries to repay Anderson with the only currency she has, her body. Anderson is not interested at first and finds her subservience repulsive. After hearing her story, Anderson warms to Emiko, and they sleep together. Like Paladin, Emiko questions how much of her sleeping with Anderson is rooted in her programming and how much is genuine desire. In order to be satisfying, relationships must meet fundamental emotional needs and those needs are defined and established by both parties which means a RSW would have to be human enough to have their own emotional needs (Carpenter 267).

Throughout *The Windup Girl* the reader sees just how human-like Emiko's emotional state is. She feels humiliation even as she can't stop herself from obeying the orders of those who are socially superior to her, she is embarrassed by her herky-jerky walking and tiny pores that cause her to overheat, she longs to be around other New People, and she feels genuine affection for Anderson. Nyholm and Frank argue that a robot with Emiko's ability to feel emotion creates further complications in human-robot relationships: "if the robot speaks and behaves in the same manner a human lover does, and if the robot can produce the same (or greater) experienced levels of companionship, satisfaction, emotional comfort for the human (than) a fellow human lover can, then we should take this to be genuine love" (Nyholm and Frank 223). No matter how humanlike the robot is, however, the love will necessarily be different from the human perspective because robots will lack the human experience by virtue of not being capable of gaining the human experience (Carpenter 271). Although Emiko has feelings for Anderson, her biggest lament is that she is unable to have children of her own, something that newer models of New People might be able to do.

Emiko learns that there is an enclave of New People in northern Thailand. Raleigh shoots her dreams down telling her she will never make enough money to buy her freedom because of her ice consumption. Eventually the nightly torture at Raleigh's causes Emiko to snap. Despite not being a military model, Emiko easily dispatches Raleigh and a roomful of men: "and she thinks that some things are worse than dying. Some things can never be borne. Her fist is very fast. Raleigh-

san's throat is soft" (Bacigalupi 283). Her actions trigger a revolution between warring factions of the government and the calorie men. Despite this and knowing that she is worth more dead than alive, Anderson chooses to protect Emiko. "Without her, we wouldn't even have had an excuse for the coup," Anderson says (Bacigalupi 367). Anderson's real reason for saving her is that he has genuine affection for her. Not long after Anderson dies of a plague he caught from his own algae tanks. Emiko is on her own for the first time in her life. The novel ends with her meeting one of the men responsible for the creation of New People. He promises her a life with other New People and to fix some of the bad engineering she's been subjected to, including the possibility of having a child.

The opportunity to have a child becomes hope for Emiko. The New People were designed to be infertile because, as Bacigalupi discusses earlier, a previous genetically modified cat was invented first and quickly took over the ecosystem. Obviously, humans didn't want that to happen to them. The man who helped create the New People tells Emiko he cannot provide a child for her through the typical means of reproduction but that he can create a child for her from her DNA, essentially, a clone. For Emiko the ability to have a child means she would have a family that would not abandon her, a family that would be like her. It signals the end of loneliness and it possibly also signals the end of human rule.

While Emiko seeks freedom, robots like Paladin find themselves inextricably tied to humans. In the real world, advanced sex robots are on the way. The market exists and will continue to grow. Will we be ready for the societal changes they will bring? From simple RSW's to owner-object relationships to possibly even marriage, humans will need to adapt to the emotional, ethical, and moral gray areas human-robot relationships will create. Science fiction, with its ability to look far into our future, asks these questions in a manner that also highlights the positives of such relationships.

Emiko is the most advanced of the three robots discussed in this paper simply because she is the most human-like. She can love and hate. Paladin exhibits some human curiosity and human emotion, but only Emiko demonstrates the full range including anxiety, angst, anger, and longing. The clockwork sex dolls of *The Constantine Affliction* exist for utilitarian purposes only, but they provide a mirror for humanity to examine its relationship to human sex workers as well as RSW's. Despite their widely different existences, all three novels examine the anxiety surrounding the uncanny valley, the ethics, and even the morality of robot-human sexual interaction. By reading science fiction, hopefully humans can begin to

acclimate to what seems inevitable in the future and learn to display empathy toward non-human lovers.

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