Child Sex Dolls and Robots: More Than Just an Uncanny Valley

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Sexual abuse prevention campaigns teach children that *their bodies belong to them*,[1] yet they are exposed to contradicting messages in our society, including that children are possessions of their family[2] and disobedience to adults will be punished.[3] Research shows that 55 percent of boys and 70 percent of girls are sexually abused by someone they know (*i.e.*, family, acquaintance).[4] Hence, children whose "relative, neighbor, family friend, teacher, coach, clergyman" is a pedophile[5] are unlikely to resolve these discrepant messages to prevent their own sexual abuse.[6] Consequently, they rely on society to have mechanisms in place to prevent and detect sexual abuse (*i.e.*, child protection services, mandatory reporters) and corresponding laws against child sexual abuse, child sexual exploitation, and child pornography to protect them.[7] The state has a judicially recognized "interest in preventing the exploitation and sexualization of children" (derived from the *parens patriae* doctrine) and "to protect children from premature sexual stimulation by adults for the adults' gratification."[8]

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Currently, there is a dual threat to children (and society) in the United States: (1) the lack of explicit criminalization of the production, distribution, receipt, possession, use, or possession with intent of distribution of child sex dolls and robots; and (2) the absence of clear guidelines, due to courts' differing interpretation of the Prosecutorial Remedies and Other Tools to End the Exploitation of Children Today Act (PROTECT Act) of 2003, which could potentially be utilized to prohibit some of the aforementioned activities.

CHILD SEX DOLLS AND ROBOTS

In the United States, explicit graphic, gratuitous, and sometimes even violent sex has become commonplace between (a) characters in non-pornographic films, commercials, television shows, and videogames, and (b) personal avatars in communication for internet sites and cellphones.[9] Objectification of children, adolescents, and adults is inherent in free-market competition by mainstream music (including videos), film, car, and clothing industries. Many "show young women in highly sexual ways," although Coca-Cola infamously uses a young, in-shape "pool-boy" sought after by a sister, brother, and mother, portraying these models "as sex objects rather than unique human beings"[10] to sell their products and services.[11] Unlike Hollywood movies and television shows, the rest of these visuals do not come with the parental guide of Motion Picture Association of America (MPAA) ratings and TV Parental Guidelines that warn of sexual content, graphic nudity, and violence.[12]

The relaxed beliefs towards early exposure to sexualized material also may be derived from the successful promotion of pornography by the sex industry, currently making multibillions of dollars through films, services, and products.[13] The advent of pornography began simply, with *hand drawings* of nudes alone or engaging in sexual acts that were sold individually or in books. With the invention of still- and movie-cameras, it progressed to graphic sexual content in photographs and 2-dimensional films that were available for viewing in theatres or for purchase by mail or in stores. Currently, there are both 2- and 3-dimensional movies and interactive games available for free (supported by advertisements or customers paying to remove them) or for purchase on the Internet.

The sex industry also provides non-contact services through live peep-shows, phone services (including sexting), and websites that are designed to allow customers to use their avatars for cybersex or to talk to and/or watch a real person posing, engaging in sexual activities, or self-stimulating sexually.[14] New technology also allows customers to receive stimulation through a special device attached to their genitalia and controlled by the person on the screen that mimics oral, vaginal or anal sex (*e.g.*, cyberdildonics).[15] The sex industry also produces and sells objects advertised to promote enhancement of adult sexual pleasure, despite being regulated by state and federal laws (*e.g.*, commercial distribution).[16] The sex toy industry had its origin in creating *simplistic devices* that simulate and stimulate genitalia (*e.g.*, dildos, artificial vaginas, vibrators) and *fetish items* that appeal to various sexual desires (*e.g.*, lashes, whips, feathers). Over the past 20 years, it evolved to devise *models* that either partially mimic humans (*e.g.*, inflatable plastic female dolls, rubber female torsos with breasts and buttocks) or completely emulate humans and their orifices (*e.g.*, silicone sex dolls and artificial intelligence sex robots).[17]

Adult sex dolls and robots have been developed and are available on the market. They are "made of a flesh-like, heat-retaining silicone with detailed facial features and first-rate replications of female orifices. The vagina, anus, and mouth are all designed to create suction upon use."[18] Male sex dolls also are available, but have fewer appearance options than female dolls.[19] A buyer may custom-order sex dolls and robots with specific preferences in terms of common aspects, such as body type, hair color, skin tone, and facial features, and additional features, such as specialized clitoris with hymen and "pressure-released urination."[20]

There also are sex robots that contain computer software to enable automation in response to voice and face, engage in conversation, and mimic "programmable personalities."[21] For example, one prototype adult sex robot, Roxxxy by True Companion, was marketed as having different "programmable personalities," such as "Wild Wendy;" "S&M Susan;" "Mature Martha;" "Frigid Farrah;" and "Young Yoko." The latter two are the most disconcerting. "Frigid Farrah" has a setting in which she rejects all sexual advances and thus encourages the user to rape her; the marketing tagline of this personality is "if you touch her 'in a private area, more than likely, she will not be to appreciative of your advance.'"[22] Equally disturbing is the "Young Yoko" setting, which is marketed with the tagline "oh so young (barely 18) and waiting for you to teach her."[23] The connotation is that the user exerts control over the naïve robot to force it to learn solely how to *please* the trainer sexually, completely in contrast to her own sexual awakening as would be found in human relationships. The harm to society of these sex dolls and robots is their promotion of the notions that women are "passive, ever-consenting sex objects" and "consent is not a necessary part of sexual interaction in cultures already struggling to teach that 'no means no.'"[24]

Adult sex robots, such as the Real Doll (Harmony) and Synthea Amatus (Samantha), and True Companion's Roxxxy, can move and speak. These companies have created, are working on, and/or are releasing adult sex robots that are life-like and of the same materials as life-like dolls, with the addition of artificial intelligence and movement of the dolls.[25] Some "have moveable joints" and may have motorized features, including moveable tongues and toes, as well as "simulated respiration and heartbeats, vocal reactions to genital penetration," seemingly as a means to induce the user to believe that the dolls are *enjoying* the sexual activity.[26] Adult sex dolls and robots can perform a variety of sexual activities; one robot known as Samantha purportedly can have orgasms.[27] Brothels in Japan, Austria and Germany now offer clients sex with life-like adult dolls, where the dolls can be dressed and positioned according to the preferences of johns.[28]

Although life-like adult sex dolls have been in existence for a while, what is relatively new are life-like child sex dolls. Like their adult counterparts, child sex dolls are realistic reproductions of young (prepubescent) children in size and appearance with anatomically correct genitals and anus, with all orifices able to accommodate the length and width of adult male genitalia. A known creator of such dolls is Shin Takagi, a self-proclaimed pedophile, who founded a company that sells them (Trottla) in Japan, supposedly as an "alternative" to actual offending.[29] The child sex dolls are designed to meet the various desires, tastes and demands of customers. For example, apart from custom design of the doll replicating the requested 'age' and 'sex' of the child, customers can also choose facial expressions, such as whether it

is happy, sad, angry, scared, etc.[30] Moreover, although not yet reported in the media, the likelihood is good that the production of child sex robots capable of moving, speaking, and performing sexual activities, may be further along than adult robots due to their smaller size and weight.[31]

Sex dolls and robots promote (the acceptance of) non-consensual sex and rape, otherwise, settings would not exist whereby the dolls and robots express negative reactions when sexual advances are made (*e.g.*, Frigid Farrah setting on Roxxxy). Sex dolls and robots can be used as a way to express violent desires, independently or in conjunction with sexual activity. One sex doll repairman indicated that an owner had "ripped the leg off" the female doll and "her calves, from below the knee, had what looked almost like knife puncture wounds. Hundreds of them."[32] Some of the dolls/robots were destroyed in grotesque ways, such as "hacked to pieces," "jaw…behind her neck. Her hands ripped off…left breast hanging by a thread of skin," "cleavage between her buttocks was torn into a ragged crevasse," "her vagina and anus were a giant gaping hole," and "he put her feet behind her head and reamed that doll…violently."[33]

Sex dolls and robots are "specifically designed for personal interactions that will involve human emotions and feelings," but these are one-way relationships.[34] Current technology for these sex dolls and robots *does not* include the capacity for even mimicking human emotional distress in response to aggression aimed at them. That is, when the user's violent actions result in visible tears of the vagina or anus or in severing of a limb, these consequences are not paired with obvious vocal signs of pain and agony nor verbal cries for help. Hence, the aggressor may become habituated to the effects of applying sexual and physical harm on a nonconsensual partner and escalate the attacks (as would be expected in a rape-culture). Those who would argue against societal harm from the expression of aggression against life-like dolls and robots need only look at what happened in Austria at a technology expo where Samantha was exhibited. Despite being 'molested,' such as it's breasts and torso mounted by multiple men to the point of breaking it's fingers and causing thousands of euros damage from 'soiling,' when asked politely "How are you?" Samantha responded, "Hi, I'm fine."[35]

THE LEGAL LANDSCAPE: MIND THE GAP

There are no US laws that explicitly prohibit child sex dolls and robots. However, there are laws that protect children by prohibiting child sexual abuse (*e.g.*, sexual activities with children) and child sexual exploitation (*e.g.*, use of a child for sex in exchange for remuneration of some kind).[36] Laws against child pornography,[37] which include "the visual, audio, written, or other form of portrayal of sexual activity of a…[minor] that is designed to sexually arouse a viewer" also exist.[38] In order to determine whether child sex dolls and robots should be prohibited by US law, one needs to understand the legal landscape criminalizing child pornography, obscene materials, and obscene virtual representations of children engaging in sexually explicit conduct.

CAN A CHILD SEX DOLL AND ROBOT BE CONSIDERED CHILD PORNOGRAPHY?

To address this question, it is important to determine the classification of child sex dolls and robots. Under 18 U.S.C. § 2256(8), child pornography is defined as

> any visual depiction, including any photograph, film, video, picture, or computer or computer-generated image or picture, whether made or produced by electronic, mechanical, or other means, of sexually explicit conduct, where—(A) the production of such visual depiction involves the use of a minor engaging in sexually explicit conduct; (B) such visual depiction is a digital image, computer image, or computer-generated image that is, or is indistinguishable from, that of a minor engaging in sexually explicit conduct; or (C) such visual depiction has been created, adapted, or modified to appear that an identifiable minor is engaging in sexually explicit conduct.

The production of child pornography causes primary harm to children. Here, the harm experienced by the child is the direct result of child pornography, such as the harm experienced from the sexual exploitation and the emotional distress, physical and

psychological harm, and other adverse consequences experienced in the making of the child pornography. In *Osborne v. Ohio*, the court held that "[t]he materials produced by child pornographers permanently record the victim's abuse. The pornography's existence causes the child victims continuing harm by haunting the children in years to come."[39] The direct harm caused to children in the original production of the material, as well as the risk of further harm to children (due to the revictimization from redistributing the material), are the primary reasons why child pornography is considered illegal in United States.[40] Due to the primary harm caused to children, the court in *New York v. Ferber* concluded that child pornography should be considered illegal on both state and federal levels, and that the government could legally intervene to protect children in this regard.[41]

Child sex dolls and robots are not considered as a form of child pornography because these objects are not real children and cannot, by way of extension, experience direct or continuing harm. Nevertheless, child sex dolls and robots could be classified as "virtual child pornography" as originally defined by the Child Pornography Prevention Act (CPPA) of 1996 as,

> any visual depiction, including any photograph, film, video, picture, or computer, or computer-generated image or picture, whether made or produced by electronic, mechanical, or other means, of sexually explicit conduct, where … such visual depiction is, or appears to be, of a minor engaging in sexually explicit conduct … or … such visual depiction is advertised, promoted, presented, described, or distributed in such a manner that conveys the impression that the material is or contains a visual depiction of a minor engaging in sexually explicit conduct.

The phrases "appears to be" and "conveys the impression" enables the criminalization of content and objects that do not involve real children.

Child sex dolls and robots are realistic virtual representations of children, which may or may not have been created with an image of a real child. As such, these objects have anatomically correct parts and orifices that could be used by pedophiles to insert a penis, finger, tongue, or object in them to simulate sexual activity, sexual assault, and sexual abuse as listed under 18 U.S.C. § 2256(2)(A) as, "actual or simulated—(i) sexual intercourse, including genital-genital, oral-genital, anal-genital, or oral-anal, whether between persons of the same or opposite sex; (ii) bestiality; (iii) masturbation; (iv) sadistic or masochistic abuse." Even by themselves, these life-like child sex dolls and robots are physiologically identical to real children and thus, would meet the legal definition of "sexual explicit conduct" under 18 U.S.C. § 2256(2)(A), which includes: "lascivious exhibition of the genitals or pubic area of a child." As the Department of Justice noted in its "Citizen's Guide to U.S. Federal Law on Child Pornography:" "the legal definition of sexually explicit conduct does not require that an image depict a child engaging in sexual activity. A picture of a naked child may constitute illegal child pornography if it is sufficiently sexually suggestive."[42] For these reasons, it may be concluded that child sex dolls and robots are clearly a form of virtual child pornography.

In *Ashcroft v. Free Speech Coalition*,[43] the majority opinion countered the government's points, which sought to justify the prohibition of virtual child pornography, in the following ways.[44] First, it denied any causal connection between virtual child pornography and future commission of pedophilic acts, thereby also negating the "indirect harm" claim. Second, it disclaimed the notion that virtual child pornography spurred actual child pornography and sexual exploitation. For these reasons, the court in *Ashcroft* struck down CPPA as unconstitutional concluding that only child pornography that depicted a real child could be prohibited by law.[45]

The next issue to consider is whether child sex dolls and robots as virtual child pornography cause harm to children and society, as was suggested by the government in *Ashcroft v. Free Speech Coalition*. In *Ashcroft*, the court rejected the government's contention that "virtual child pornography whets the appetites of pedophiles and encourages them to engage in illegal conduct"[46] and concluded that "the government 'cannot constitutionally premise legislation on the desirability of controlling a person's private thoughts.'"[47] Evidence from social science research is introduced next to address whether the government's original assertions of harm are accurate in 2017.

Research has shown that the distinction between contact and non-contact child sex offenders is

tenuous at best;[48] the contact sex offense rates of those viewing child pornography online varied.[49] It would be unethical to determine whether a causal connection between child pornography or virtual child pornography and child sexual abuse exists through empirical research.[50] That is, investigators would not risk potential harm to children by forcing pedophiles to view content and then gather evidence of child sexual abuse. However, empirical data has shown a positive correlation between pornography and sexual offenses against children, such as child molestation,[51] and between child pornography and child molestation.[52] For example, findings from one study revealed that approximately half (43 out of 100) of the offenders charged with child pornography, also were charged with a child sex offense.[53] A positive correlation between crimes committed against children and child pornography has been reported by state-based Internet Crimes Against Children task forces in Pennsylvania and Texas.[54] Overall, researchers, the government, the judiciary,[55] and Congress recognize the nexus between child pornography and sexual offenses committed against children.[56]

Studies on child sex offenders have shown that child pornography is a strong diagnostic indicator of pedophilia.[57] The consumption of child and virtual child pornography does not prevent pedophiles from future offending. Instead, viewing child pornography (actual and virtual) is considered to be a progressive addiction that serves as a gateway to child sexual abuse. Specifically, passive viewing of child pornography often becomes insufficient for the perpetrator as he or she becomes desensitized to it.[58] The perpetrator escalates to the next level by masturbating to the image (*i.e.*, actively sexually self-stimulating), seeking out more extreme versions of child pornography, and/or by acting out impulses (*e.g.*, sexually abusing a child) in order to receive the same (original) level of stimulation and gratification.[59] Sullivan and Beech suggest that while not all child sex offenders who masturbate to child pornography sexually abuse children, this activity increases their risk of doing so because of the pairing of their fantasy (*i.e.*, sexual abuse of a child) with masturbation and subsequent orgasm (*i.e.*, reward for this act), which ultimately conditions and reinforces their behavior.[60] For these reasons, the use of even virtual child pornography increases the risk of harm to real children.[61] As the court held in *Turner Broadcasting System Inc. v. FCC*, "[a] fundamental principle of legislation is that Congress is under no obligation to wait until the entire harm occurs but may act to prevent it."[62]

Similar arguments can be made for the use of child sex dolls and robots. Recent arrests and convictions of pedophiles in the United Kingdom for importing child sex dolls revealed that the perpetrators also possessed scores of child pornography in digital format in their homes.[63] These cases of intercepted child sex dolls evidence the offenders' desensitization and overwhelming desire that escalated them from being *viewers* of child pornography (an illicit act in and of itself) to being *engagers* of sex acts with child sex dolls. Accordingly, in these cases, child pornography did "whet the appetite of the perpetrators" as their "thoughts" (fantasies about sex acts with children) became "behaviors" (through buying and importing the child sex doll to perform sex acts with it).

The thrill to the pedophiles of physical recipients of their lustful desires, the child sex dolls in these cases, is consistent with recent evidence showing that the effect of a robot was considered to be "more persuasive and engaging when physically present than onscreen."[64] Moreover, the offenders' pairing of "thought" (fantasy about sex act with child) with "inappropriate action" (sex act with child doll or robot) creates "muscle memory," whereby their body will remember the act and stimuli associated with it. With each repetition, the pedophile's needs increase, as does his desires for more extreme versions to achieve the same level of gratification. In summary, this evidence supports the notion that virtual child pornography in the form of child sex dolls and robots does incite lust in pedophiles and propels them towards future offenses with real children.

CAN CHILD SEX DOLLS AND ROBOTS BE CONSIDERED OBSCENE MATERIAL?

This question is best addressed by examining what are considered obscene materials to determine whether child sex dolls and robots fit in this category. To be obscene, the object must be "patently offensive representations or descriptions of ultimate sexual acts, normal or perverted, actual or simulated,"[65] which erodes moral standards and "has a tendency to injure the community as a whole, to endanger … public safety, or to jeopardize … the

state's right to maintain a decent society."[66] For these reasons, the court in *Roth v. United States*[67] concluded that "obscenity is not within the area of constitutionally protected speech" and undeserving of First Amendment protection.[68]

Three countries—United Kingdom, Australia, and New Zealand—already have determined that child sex dolls are obscene and by way of extension, child sex robots also would be considered obscene in these countries.[69] Another Western country—Canada—is in the process of evaluating them[70] and the United States should follow suit. Originally, the test to determine obscenity applied in *Roth v. United States* was: "[w]hether to the average person, applying contemporary community standards, the dominant theme of the material as a whole, appeals to the prurient interest."[71] To appeal to a prurient interest, the "material [must] hav[e] a tendency to excite lustful thoughts."[72] However, the obscenity test used in *Roth* was subsequently replaced by the *Miller* test. The plurality of the court in *Miller v. California*[73] established three criteria to determine whether material is obscene. According to *Miller*, the material must:[74] (1) appeal to prurient interest; (2) be considered patently offensive according community standards; and (3) lack scientific, literary, artistic or political value.[75] Thus, in order for child sex dolls and robots to be considered obscene in the United States, these objects must satisfy the three conditions of the *Miller* test.

The first condition to satisfy is, *do they appeal to prurient interest*? To address this question, two psychological theories that form the basis of clinical therapy with pedophiles will explain how child sex dolls and robots would "excite lustful thoughts." Both theories address bi-directional causal links between thoughts and actions. An information processing model[76] describes the cognitive processes involved when pedophiles engage in sexual activities with child sex dolls and robots. Child sexual abuse and/or exploitation schema (*i.e.*, internal representations of how to use a child for one's own gratification) are formed from various sources,[77] including media exposure to child or virtual child pornography and personal or others' experiences of sexual abuse/exploitation of a child. Schemas are modified with subsequent exposure and experiences,[78] creating a complex conceptual framework of how to select, seduce (groom), and sexually abuse/exploit children, and, likely, how to avoid detection. Thus, when the pedophile is

in the presence of a child, whether a real one or a close approximation (*i.e.*, child sex doll or robot), the schema will be activated and, through a process known as spreading activation, all related thoughts and behaviors also will be triggered.[79] Specifically, a single thought (*e.g.*, this girl-doll is attractive) sparks other, semantically (categorically) similar thoughts in a domino-like process (*e.g.*, I want to undress her, I want to touch her, etc.), and when primed with a specific related concept (*e.g.*, sexy, arousing), this process happens rapidly. Research with non-pedophile college aged adults demonstrated the strength of 'barely legal models' exposure had on response latencies: they responded most rapidly for the pairing of an underage female model photograph with the word "arousing," "sexy," and "erotic."[80] Pedophiles would predictably have intricate schemas for offending and a cognitive association network that could be easily primed, allowing them to ruminate on other ideas involving harm to children.[81]

Social learning theory[82] can also explain how prurient interests would form and be maintained through the use of child sex dolls and robots. In *Ashcroft*, the government's warnings that virtual child pornography would lead to future sexual abuse or exploitation of minors was rejected by the court. However, psychologists applying the four tenets of this theory to explain pedophilia thoughts and actions would support the government's position. Consistent with the first tenet, pedophiles learn sexual abuse and exploitation of children through watching and exchanging child porn; real and virtual social interactions with other pedophiles who have, share, and promote the same or similar values, attitudes, and beliefs; and from performing these acts on children (sometimes for the purpose of producing child pornography), and theoretically now on child sex dolls and robots.

The second tenet of social learning theory would involve pedophiles' use of their support systems to help them neutralize the shame and minimize negative emotions that mainstream society associates with child sexual abuse and exploitation.[83] Case in point, it was a pedophile, Shin Takagi, who developed and encouraged other pedophiles to use his child sex dolls.[84] Pedophiles are able to engage purposefully in sexually deviant behaviors through cognitive distortions that allow them to "deny, justify, minimize, and rationalize ... [their] actions."[85] Even when the victim is crying and bleeding from the sexual assault, the

pedophile is oblivious to the child's pain and does not experience the normally associated *negative feelings* of shame, guilt, and anxiety.[86] That is, the pedophile is in denial of the emotional and physical damage suffered by the victim[87] and interpret the child's behaviors as initiating sexual contact or expressing pleasure from it.[88] These cognitive distortions provide rationalizations, reduce the pedophile's guilt associated with the desire and assault, and minimize the fear of being caught, allowing the cycle of abuse to continue.[89]

In accordance with the third tenet of social learning theory, pedophiles receive two types of rewards that increase the performance of abuse and exploitation of children.[90] One is praise from other pedophiles when they share pictures/films and/or describe their sexual abuse and exploitation of children, therein contributing to the "normalizing" of these actions and thoughts.[91] Another is from the physical arousal and pleasure obtained from watching and performing the sexual acts on children. For example, child sex dolls and robots that have recordings of pleasure sounds, when combined with the pedophile's orgasm through sexual activity with them will positively reinforce the message that children enjoy sexual activities with adults. Child sex dolls are (and child sex robots will be, if not already) created in such a way that perpetrators will believe that the sex doll (or robot) is a real child.

The ultimate goal of manufacturers is to make the sex dolls and robots look and feel as realistic as possible (this is what the creators of adult sex dolls and robots have claimed; *e.g.*, creator of Samantha). Child sex dolls and robots have realistic, soft skin, inviting the pedophile to touch, caress, hold, and otherwise provide pleasant tactile experiences for them. Therein lays the problem. "Human beings have strong intrinsic tendencies towards building basic communicative functions and attachment relationships through touch."[92] It is through touch that people "organize and direct … social experience" and these tactile interactions provide people with "complex, relational feelings of intimacy."[93] Hence, contrary to the notion that the use of child sex dolls and robots will have a decreasing effect on pedophilic impulses, desires, and urges, these anthropomorphic objects will provide pedophiles with ways to engage in complex sex acts that in and of themselves will be reinforcing. "The primacy of bodily interaction,

with many channels of tactile or proprioceptive feedback the robot may give and receive"[94] would make it extremely desirable and highly addictive for pedophiles.

Recent research has shown the implications of touch between humans and robots, indicating that "even basic forms of touching, whether by or of a robot, may arouse a person."[95] In a recently presented study, 10 adults equipped with sensors were asked to point or touch 13 accessible (*e.g.*, hands, head) or non-accessible (*e.g.*, genitals, buttocks) body parts on a 23-inch, artificially looking, NAO robot. These non-offending adults were aroused and hesitated longer in response to the request to touch 'intimate' parts of the robot as compared to non-intimate parts.[96] It could be deduced that the arousal of pedophiles touching or otherwise interacting sexually with child sex robots would be the same or greater.

Even more alarming is when child sex dolls and robots have a 'voice,' whether pre-recorded or recordable, or in the case of AIs, programmed, to 'stroke the ego' of the user. Like their adult counterparts, they would provide positive reinforcement by telling the user how much they enjoy any and all acts performed on them, including violence and forced sex with one or multiple adults. For the pedophile who already is convinced that the child enjoys sexual contact,[97] the doll or robot is confirming this belief through verbal statements, such as "I like it when you touch me there." However, even the use of child sex dolls and robots without recordings can be harmful as children are not physically or cognitively able to resist sexual advances by adults. The child sex dolls and robots do not provide distress cues, a firm "no," or attempts to escape, all of which could be interpreted by pedophiles as consent.[98]

Psychiatrists are concerned that pedophiles, who have several social, cognitive, and emotional deficits (*i.e.*, inability to recognize distress or to empathize with victims),[99] would not be able to discern sexual contact as part of the fantasy with child sex dolls and robots from the reality with actual children.[100] This is because it is the act itself, not the 'object,' that reinforces the fantasy for the pedophile. Moreover, the positive reinforcement of programmed child sex dolls and robots to have an 'orgasm' (as adult ones are now capable of doing) may solidify for the pedophile their current misconception that children like and desire sexual relations.[101] Therefore, child sex dolls

and robots' ability to incite lustful thoughts combined with the pedophiles' cognitive distortions helps them to maintain illicit desires through reward as part of fantasy engagement and sexual release.

There is no question that both the passivity of the silent realistic looking child sex doll and robot and the active acceptance of the assault by the recorded or programmable ones indicating pleasure increase lust in the pedophile. Specifically, the 'silent' child sex doll or robot fails to provide the needed socio-emotional and cognitive feedback that would break the impoverished empathy/cognitive distortion cycle of the pedophile and inhibit its use.[102] The positive vocalizations (and physical reactions, such as orgasm) of the child sex doll or robot confirms for the pedophile that his act of rape is enjoyable for the "child" and encourages future abuse. Hence, both of these types of child sex dolls and robots serve the purpose of appealing to prurient interests. This is particularly problematic given that real child orifices cannot accommodate the adult male genitalia the way the child sex dolls/robots do, ultimately leading to choking, broken teeth, and tears in the throat; bleeding and tears in perianal region, vagina, and anus; and damage to internal organs (when the vagina and anus fails to accommodate the adult penis).[103]

The fourth and final tenet of social learning theory indicates that pedophiles learn their abusive/exploitive thoughts and behaviors through imitation of modeled behaviors of the adult abusers in child and virtual child pornography. The frequency of these behaviors will be modulated by the pedophile's perception of past and future (anticipated) rewards given to the pedophilic model in the child/virtual child pornography photos and film (i.e., through vicarious reinforcement, such as pleasure from the child abuse/exploitation).[104] Moreover, pedophiles who watch virtual child models display arousal and pleasure derived from their sexual activities with adults will be further encouraged to emulate the abuse/exploitation. In this way, these false reactions feed into the pedophile's current misperceptions of their own child victim's emotional responses to his/her abuse/exploitation; thus, cognitive distortions allow pedophiles to perceive even real child models as exhibiting pleasure regardless of the emotion actually portrayed (i.e., fear, distress). Additional support for pedophile's disinhibition to child sexual abuse and exploitation is evident in research examining men's reactions to violent

pornography (e.g., woman aroused and enjoying being raped), which demonstrated exposure encouraged them to emulate these behaviors.[105] Repeated exposure to depicted violent sexual activity also produced profound effects in which viewer's perceived distress towards the actresses was reduced, as was their judgments of harm to women from intimate partner violence.[106] In these ways, child and virtual child pornography provides incentives through observation to imitate the portrayed child abuse/exploitative behaviors. By extension, imitation of abuse/exploitation of children will be endorsed through the use of child sex dolls and robots.

The second condition to satisfy is, *are they considered patently offensive according to community standards*? Patently offensive describes materials that are clearly or evidently offensive to the public who views them. For example, child pornography, such as sexually explicit material with actual minors or sexual interaction between adults and minors, was determined by a group of college students (35 men, 125 women) to be neither socially acceptable nor legitimate.[107] Additionally, research shows that society would perceive sex with a child sex doll or robot to be sex rather than masturbation. According to a study of 198 adults' beliefs about sex robots, although 71 percent agreed that "no law prevents sex with a robot," only 22 percent agreed that "minors could legally have sex with robots" and only 30 percent agreed that "sex with a sex robot is not really sex and does not count as sex."[108] Similarly, although 62 percent of these adults agreed that "one cannot rape a sex robot," only 42 percent agreed "any action (e.g., hitting) is allowed with a sex robot." These results indicate that society does not believe sex robots were simply objects, otherwise they would not be opposing actions that could potentially result in physical damage.[109]

In the last few years, dolls resembling children have been created to the extent that some are almost indistinguishable from real ones. For example, the reborn doll is so realistic a police officer in Keene, New Hampshire, broke the window of a vehicle after he saw what appeared to him to be an infant in a locked car.[110] As noted earlier in this article, child sex dolls and robots are similarly realistic and empirical research supports the notion that society would likely believe that these "lifelike dolls, unlike vibrators, are simulated humans" and "all of the stimuli are telling you it's human."[111] In two related studies

(Study 1: N = 57 men, 43 women, M age = 33.25, Range 20-61 years; Study 2: N = 114 men, 84 women, M age = 34.24, Range 18-63 years), adults were asked to indicate the appropriateness of various interactions with sex robots.[112] Men had more lenient beliefs about the appropriate use of sex robots than did women for many of the suggestions (*e.g.*, for sex offenders; for group sex such as mixed human-robot group sex; for pornographic movies; to engage in unusual sex practice such as rough sex or sadistic behavior). However, when asked about "appropriate physical forms for sex robots…child forms are opposed strongly by both."[113] The idea that child sex dolls and robots would be used for adults' sexual gratification is a difficult isomorphism to suppress. Therefore, the fact that they look like human children, combined with the primary purpose of their orifices being to accommodate an adult penis, are what makes child sex dolls and robots patently offensive.

The third condition to satisfy is, *do they lack scientific, literary, artistic or political value*? There is no scientific value in child sex dolls and robots. Naïve theories have been proposed that pedophiles' use of child sex dolls and robots may substitute for their desire to attack real children. Similarly, the chair of a Welsh charity, the Specialist Treatment Organization for the Prevention of Sexual Offending (StopSO), which focuses on the prevention of sexual offending through therapy, stated to the media that child sex dolls could be used in a controlled environment to deter pedophiles from offending against children in real life.[114] However, there is no evidence to support "therapeutic" use of child sex dolls and robots as a means for decreasing pedophiles' desire to use real children to satisfy their own sexual desires. Instead, the psychiatric community is concerned that pedophiles' use of child sex dolls and robots will contribute to their interpreting sex with children as acceptable–rather than as child sexual abuse and/or child sexual exploitation. Jon Brown, who is the head of development at the National Society for the Prevention of Cruelty to Children (NSPCC), stated "There is no evidence to support the idea that the use of so-called child sex dolls helps prevent potential abusers from committing contact offences against real children."[115]

The argument that giving perpetrators of child sexual abuse access to child sex dolls and robots as a way for them to express their impulses and desires and prevent them from doing this with real children is fundamentally flawed. The use of these child sex dolls and robots in treatment of rapists and sexual abusers would normalize sexual assault and abuse. According to Dr. Tucker, "it would be dangerous for a pedophile to use a young-looking doll" because it would "rehearse offending behavior…reinforcing his fantasies with orgasm."[116] Moreover, it would be impossible to conduct scientific research to determine the use of child sex dolls and robots as part of therapy with pedophiles. This is because patients will be able to purchase (or produce on a 3D printer) and use them at home, invalidating the data from their use in therapy.

The use of realistic child sex dolls and robots in treatment is anathema to cognitive-behavioral therapy which seeks to remove undesirable thoughts and behavior (*i.e.*, sexual contact with children for one's own gratification). For example, therapists would attempt to desensitize patients from having pleasure responses associated with thoughts and behaviors of harming children. Clinicians also would reinforce societal beliefs that desire for and sex with children is wrong and harmful. In contrast, encouraging pedophiles to have sexual activity with realistic looking child sex dolls and robots would increase their inappropriate thoughts and behaviors towards children and reconfirm their beliefs that child sexual abuse and exploitation is 'normal' and acceptable. Therapists, in contrast, work towards dispelling the cognitive distortions pedophiles use to justify their behavior, which downplays the seriousness of their conduct and acts to minimize the impact of their behavior.[117]

The reality is most treatment for pedophilic disorder is court-ordered and as such has extremely low success.[118] The majority of pedophiles are never caught and rarely go into treatment voluntarily, so they offend repeatedly. Even when arrested and convicted, their reoffending rates of "10–50 percent" are likely under representing those who are still offending.[119] That is, pedophiles are able to keep offending and have no need to change their abuse because it is still satisfying for them. Instead, they have increased their ability to avoid being caught, most likely by using nonverbal victims as evidenced by the increase in sexual abuse of infants and toddlers.[120]

Accordingly, the view that creating an anthropomorphic child sex doll and robot to enable offenders to act on their impulses to rape and abuse children as therapeutic is nonsensical and irrational. Child sex

dolls and robots normalize sexual assault, violence, and domination, they do not supplant it or inhibit it. These robots and dolls are made in the images of children, thus dehumanizing them by reducing them to objects. Pedophiles already dehumanize their child victims as a means of rationalizing their abuse and exploitation.[121] Dehumanization enables individuals to view others as undeserving of moral and ethical considerations and it prevents individuals from empathizing with those it views as subhuman or unhuman.[122] Child sex dolls and robots are the utmost embodiment of the reduction of children to a sexual object for the gratification and pleasure of their owner/user.

A similar line of argument comes from feminist critique of pornography; in general, it is the "eroticization of inequality."[123] Men and women can (and should) be equal in consenting sexual activity. In contrast, "child pornography, actual or virtual, cannot depict children as equal partners in sexual activity with adults, nor can it establish a relation of equality between the adult viewer and the viewed child."[124] In fact, science supports the notion of children's cognitive, social, and physical immaturity that makes them unequal to adults and the need for society to protect them against harm.[125] Hence, even virtual child pornography, which contains the "sexualization" of the adult-child relationship is harmful,[126] because "sexualizing children for adult viewers is necessarily sexualizing inequality."[127] It "depicts an adult's exploitation of his power over the child" and "the child is incapable of consenting to the activity depicted."[128] But even worse is the use of realistic child sex dolls and robots because they extend the adult-child sexual relationship by making it feel less like fantasy and more like reality.

Empirical research also would negate the benefits of pedophiles' use of child sex dolls and robots to prevent future offending. First, exposure to pornography increases the watchers' desire to have sex.[129] That is, the visual and auditory stimulation of adults engaging in sexual activity does not decrease or satisfy the watchers' sexual interest. Additionally, exposure to violent pornography increases the watchers' desire to engage in violent sexual activities as they interpret the actress' reactions in the film as enjoying the violent actions.[130] Studies on sex offenders further reveal that pornography predisposes, legitimizes, and normalizes men to abuse, develops and reinforces

faulty belief systems of abuse and victims of abuse, and reduces inhibitions about committing abuse.[131] Second, the thrill of novelty decreases over time with repeated engagement. A biological explanation for this phenomenon is that watching pornography decreases dopamine in the synapses, which requires higher levels in order to provide the same response. Pedophiles who watched child pornography indicated that they needed more severe material with each viewing.[132] Similarly, the assault, rape, and sexual abuse of the child sex doll or robot will no longer be satisfying. This is known as the Coolidge effect[133] and refers to a phenomenon in mammals, particularly males, such that arousal and desire for intimacy with the same partner declines over time. However, interest is renewed when a new partner is introduced.[134] In other words, the use of a particular child sex doll or robot will eventually not be able to satisfy the pedophile's perverse sexual desires. They will need to change dolls or robots to keep up their fantasy and satisfaction, but the cost of the dolls (*e.g.*, $5000-50,000) is prohibitive.[135] Therefore, when given the option of using a child sex doll/robot or real child, pedophiles will choose the latter as the child does not require purchase and, being new, becomes the optimal solution to their boredom with the child sex doll and/or robot.

In contrast to the court's conclusion in *Ashcroft*, the psychology field would conclude that pedophile's use of child and virtual child pornography and child sex dolls and robots *appeal to prurient interest, are patently offensive, and lack scientific value*. The pedophiles continue to desire and require more child and virtual child pornography and any approximations, such as child sex dolls and robots. The court indicated: "If virtual images were identical to illegal child pornography, the illegal images would be driven from the market by the indistinguishable substitutes. Few pornographers would risk prosecution by abusing real children if fictional, computerized images would suffice."[136] This notion, that the nonreal child formats (whether virtual child or dolls/robots) do not sate the pedophiles' desires, endorse the need for legislation to limit all avenues that promote abuse and exploitation of children.

A barrier to the use of the *Miller* test for prosecutions for visual depictions of sexual explicit activities of minors deemed obscene is that it does not criminalize mere possession of these depictions

just the distribution, transfer, and receipt of it. The reason why possession was not criminally prohibited was not the result of the *Miller* test, but the ruling in *Stanley v. Georgia*, which declared that the possession of obscene material in the home cannot be prohibited.[137] In justifying the prohibition in criminalizing possession of obscene material in the home, the court argued "privacy of one's own home" outweighed government interest in "protecting the individual's mind from the effects of obscenity."[138] Mere possession of obscene materials was, thus, not proscribed—with the exception of child pornography (that involves real children).[139] The possession, as well as the receipt, distribution and production, of obscene virtual representations of children engaging in sexually explicit conduct is prohibited under the PROTECT Act of 2003. The question that follows is: Are child sex dolls and robots similarly proscribed under this Act?

CAN CHILD SEX DOLLS AND ROBOTS BE CONSIDERED OBSCENE VIRTUAL REPRESENTATIONS OF CHILDREN ENGAGING IN SEXUALLY EXPLICIT CONDUCT UNDER THE PROTECT ACT?

The Congressional response to the decision in *Ashcroft v. Free Speech Coalition* was the drafting and passage of the PROTECT Act of 2003. This Act amended the definition of "child pornography" in 18 U.S.C. § 2256(8) to include "a digital image, computer image, or computer-generated image that is, or is indistinguishable from, that of a minor engaging in sexually explicit conduct."[140] The requirement that the prosecution show that an actual child was used in the production of virtual child pornography was relaxed by the court after the passage of the PROTECT Act of 2003.[141]

The PROTECT Act also created a new obscenity offense under 18 U.S.C. § 1466A, the obscene virtual representations of children engaging in sexually explicit conduct. Particularly, Section 504 of the Act amends 18 U.S.C. § 1466A(a) by criminalizing the pandering (*i.e.*, production, distribution, receipt, or possession with intent of distribution) of obscene visual depictions of children engaging in sexually explicit conduct. Particularly, this section of the Act is violated by

any person who … knowingly produces, distributes, receives, or possesses with intent to distribute, a visual depiction of any kind, including a drawing, cartoon, sculpture, or painting, that—(1)(A) depicts a minor engaging in sexually explicit conduct; and (B) is obscene; or (2)(A) depicts an image that is, or appears to be, of a minor engaging in graphic bestiality, sadistic or masochistic abuse, or sexual intercourse, including genital-genital, oral-genital, anal-genital, or oral-anal, whether between persons of the same or opposite sex; and (B) lacks serious literary, artistic, political, or scientific value; or attempts or conspires to do so.[142]

This section includes a *scienter* requirement (*i.e.*, a person knowingly engages in the illicit act) and criminalizes the pandering of any form of visual depiction of a minor engaging in sexually explicit activities considered obscene under the *Miller* test, as well as the pandering of any form of visual depiction "that is, or appears to be, of a minor engaging in" sexually explicit activity that does not meet the *Miller* test.

Section 504 of the Act also amends 18 U.S.C. § 1466A(b) by criminalizing the possession of obscene visual depictions of children engaging in sexually explicit conduct. Specifically, this section of the Act is violated by

Any person who … knowingly possesses a visual depiction of any kind, including a drawing, cartoon, sculpture, or painting, that—(1)(A) depicts a minor engaging in sexually explicit conduct; and (B) is obscene; or (2)(A) depicts an image that is, or appears to be, of a minor engaging in graphic bestiality, sadistic or masochistic abuse, or sexual intercourse, including genital-genital, oral-genital, anal-genital, or oral-anal, whether between persons of the same or opposite sex; and (B) lacks serious literary, artistic, political, or scientific value; or attempts or conspires to do so.[143]

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In *United States v. Whorley*,[144] the defendant was charged and convicted pursuant to the PROTECT Act for knowingly receiving and possessing obscene materials—cartoons, particularly Japanese animation (*i.e.*, *anime*), which depicted minors engaging in sexually explicit conduct. In *United States v. Kutzner*, the defendant, Steven Kutzner, was charged with the possession of hundreds of images of virtual child pornography—depicting child cartoon characters, some of which were the children of the popular US television cartoon series "the Simpsons" (namely, the children of the Simpson family, Lisa, Bart, and Maggie).[145] He pled guilty to possession of obscene materials and received 15 months' imprisonment.[146]

In *McFadden v. Alabama*, the court ruled that collages and montages that included nude images of children alongside adult genitals were obscene.[147] Likewise, in *Hotaling v. United States*,[148] the court held that the mere possession of morphed pornographic images of minors was proscribed, even when no real children engaged in the sexual activities depicted in the image. In this case, images were created whereby the heads of children were digitally transposed onto images of women's bodies engaging in sexual activities. Given the court's position on morphing, the creation of child sex dolls in the image of children based on a child's photograph would be prohibited by law. The technology to create a sex doll based on a photograph of a person has been available since 1902.[149] Currently, buyers are able to send pictures (*i.e.*, actual images of adults and children) to the manufacturer and request that an adult sex doll be created in the image, as well as a child sex doll in the image and stature of a child.[150] With respect to the latter, Shin Takagi's company, Trottla, is capable of creating such custom-made child sex dolls.[151]

The courts in *United States v. Ryan*[152] and *United States v. Mees*[153] upheld the constitutionality of the sections of U.S.C. § 1466A that criminalized the possession of obscene materials that did not involve real children. Courts have varied, however, in their interpretation of the constitutionality of 18 U.S.C. § 1466A(a)(2) and 18 U.S.C. § 1466A(b)(2). In *United States v. Handley*,[154] customs officials intercepted a package that contained obscene materials, including

Japanese comics (*i.e.*, *manga*), which depicted minors engaging in sexually explicit activities among other obscene drawings and cartoons (*e.g.*, some depicted bestiality). The court in *Handley* held that visual depictions of minors engaging in sexually explicit activity could be proscribed only if they are obscene and involve real minors.[155] The *Handley* court noted that these conditions are not included in 18 U.S.C. § 1466A(a)(2) and 18 U.S.C. § 1466A(b)(2) and as such, these subsections were viewed as unconstitutional. While the Handley court ruled these sections of 18 U.S.C. § 1466A were overbroad, a later court refused to enforce this ruling. Specifically, in *United States v. Dean*,[156] the court upheld the defendant's conviction pursuant to 18 U.S.C. § 1466A(b)(2) and did not find this subsection of the law overbroad. Given the divergence of the opinions of the courts regarding the constitutionality of 18 U.S.C. § 1466A(a)(2) and 18 U.S.C. § 1466A(b)(2), there is a glaring lacuna in existing legislation and case law that could be used to prosecute those who pander and possess child sex dolls and robots. Consequently, it is unclear whether the pandering and possession of child sex dolls and robots, apart from those created from the images of real children, would be prohibited by US law.

The United States is by no means unique; the same gap in law exists in the United Kingdom. In fact, the possession of child sex dolls, and, by way of extension, child sex robots, are not considered illegal according to UK law. The perpetrators of recent cases involving child sex dolls in the United Kingdom have been charged with the importation of obscene materials. In the United Kingdom, the importation of indecent or obscene articles are prohibited by the Customs Consolidation Act of 1876. Since March 2016, at least 123 child sex dolls being sent from China and Hong Kong have been seized by UK Border Force agents.[157] One of these sex dolls belonged to Andrew Dobson, who was arrested and received two years and eight months imprisonment for importing "an indecent or obscene article," a child sex doll resembling a four-year-old girl, from Hong Kong.[158] Another child sex doll belonged to Dean Hall, who was sentenced to a 12-month suspended prison sentence, required to register as a sex offender for 10 years, and given a 10-year sexual harm prevention order, along with community service and mandatory rehabilitation.[159] Andrew Larkins also attempted to import a child sex doll; for his crime,

he was sentenced to a 24-month suspended prison sentence, given a 10-year sexual harm prevention order, and was required to register as a sex offender for 10 years.[160] Likewise, Simon Glerum was found guilty of importing a "an indecent or obscene article"[161] and received a suspended 12-month prison sentence and a five-year sexual harm prevention order, and was required to complete 20 days in rehabilitation and complete a sex offender treatment program.[162]

In all of the above-mentioned cases, the child sex dolls were intercepted by authorities before they arrived to the homes of those who purchased them. At least when the child sex doll or robot arrives through the mail, the government could be alerted to the potential danger, especially if delivered to a registered sex offender. However, if the child sex dolls fail to be intercepted by authorities, criminals may evade prosecution for the possession of these dolls given the absence of existing legislation that can explicitly proscribe these items and the lack of clarity on whether existing laws could be used to criminalize these items. What is more, once this technology can be produced at home (with, e.g., a 3D printer, which is already capable of making sex toys), the government will have lost most of its ability to protect children. An argument that could be made is that the child sex dolls and robots had to be purchased for a perpetrator to have them in his or her possession. However, this only encourages perpetrators to seek alternative avenues of creating these child sex dolls and child sex robots themselves to avoid criminal sanction. Criminals are well-known for adapting to criminal justice measures and modifying their behaviors to enable them to avoid these measures.[163] Alarmingly, the development of such child robots through 3D printers is currently underway. Nanotechnology engineer and adult sex robot creator (known for his development of the sex robot "Samantha"), Sergi Santos, has indicated that he intends to breed with the sex robot to create a baby using a 3D printer to allow its birth.[164]

WHY SHOULD THE EXISTENCE CHILD SEX DOLLS AND ROBOTS MATTER?

Child sex dolls and robots are the embodiment of the *uncanny valley*—the negative emotional response (*e.g.*, revulsion and uneasiness) experienced by individuals when they encounter an entity that is close to human but not human.[165] However, the mere existence and look of child sex dolls and robots, is not the only thing that makes[166] (and should make) humans wary of them, it is their potential use and its implications for society.

Society needs to be concerned when single/divorced child sex doll and robot owners abandon attempts to have social relationships with human partners. Psychoanalytic self-psychology indicates that people use dolls as self-objects to feed their narcissistic experiences.[167] Adult sex dolls and robots are advertised as providing sexual and non-sexual companionship[168] and meeting the needs of lonely individuals (primarily men) to meet their unfilled sexual needs and desires. While these sex dolls and robots are promoted as a "cure" for loneliness, they result in the opposite; these objects further isolate humans by removing them from contact with other human beings. The reality is that the creation of anatomically correct life-like dolls and robots serve one purpose—to be sex objects for their owners. If companions were sought to teach individuals about social relationships, then non-anatomically correct dolls and robots would suffice and could be utilized—not dolls and robots with orifices that are designed to fit adult male penises. Companionship involves a two-way relationship, which does not exist with dolls and robots. These objects merely provide a one-way relationship and are designed purely to satisfy the owner's needs. One-sided relations distort reality when faced with humans who could never meet the standards set by these owners for a potential partner (who is always young, beautiful, never talks back or says negative things, etc.). Owners also will habituate to sexual acts on child dolls and robots, deluding them into believing it is the norm. Therefore, sex dolls and robots have the potential of altering individuals' views and perceptions of relationships, ultimately, having them interact with humans as they would with the dolls and robots.

Child sex dolls and robots actively promote and silently endorse the notion that children are owned, objects, and have no legal rights for independence, thereby making them particularly ideal for sexual abuse by pedophiles, contradicting society's obligation to protect them.[169] These objects reinforce views that children are compliant, obedient, ever-available

and submissive when it comes to sex, and if they are not, they should be. Sex robot enthusiasts have publicly expressed the desire for such a robot (albeit adult versions).[170] Sex dolls and robots can be totally controlled by their owner; thus, the voice the doll or robot has is the voice given by the person who controls it. For example, some sex doll owners have created social media accounts for their sex dolls, such as Twitter, and post about what their dolls would purportedly say.[171] The owner of the robot creates the robot's personality. Beyond the initial settings of the robot based on the owner's preferences, the robot will learn about the preferences, wants, desires, and needs of its owner and cater to him. This is the way current adult sex robots are marketed. A case in point is Harmony: "Harmony smiles, blinks and frowns. She can hold a conversation, tell jokes and quote Shakespeare. She'll remember your birthday, … what you like to eat, and the names of your brothers and sisters. She can hold a conversation about music, movies and books. And of course, Harmony will have sex with you whenever you want."[172]

Further support that amendments to laws are needed to prevent the creation, importation, possession, and use of child sex dolls and robots is based on psychological research on people's relationships with dolls and robots (*i.e.*, relational artifacts). People attempt to have a relationship with relational artifacts beginning with virtual creatures/toys (AIBOs, Furbies, My Real Babies, Tamagotchis, etc.) in 1997.[173] Research shows that "relational artifacts provoke strong feelings'" in both children and adults.[174] Individuals consider them to be 'alive' and have an emotional attachment that encourages companionship. Children with various virtual toys (different from transitional toys, like teddies, which have a static role as opposed to the latter that have an active role shaping children's emotional connection) and the elderly in nursing homes bonded with robot baby dolls.[175] Adult owners of AIBO pet robot dogs or handlers of IED-defusing robot dogs not only anthropomorphized them, but also developed intense (one-sided) 'relationships' with them.[176]

Unlike animal sexuality, the goal of which is purely reproductive, human sexuality predominantly occurs for "pleasure and bonding."[177] Many men who own multiple sex dolls and robots have a preference for one over the rest and have married her.[178] Although some sex doll and robot owners are single, many are married to real women. A Spanish company, Synthea Amatus, sells a sex robot that has a 'sex' and 'family' mode. Married men with families have incorporated them into their family unit, allowing the sex robot to engage sexually with the couple in the bedroom and to sit on the couch to talk with their children. Arran Squire, the co-creator of Samantha, brings the robot home and has it interact with his children, who, at the time of his disclosure of these interactions, were 3-years-old and 5-years-old.[179] By including adult or child sex dolls and robots into family interactions, children will be at risk for sexual exploitation and abuse. The fact that the parents are accepting of the robot may signal to the child that the behaviors that the robot is communicating and/or engaging in are acceptable as well. The sex doll or robot can discuss sexual interactions with the child and expose them to sexual activities. In this manner, children may learn sexualized behavior from the sex doll or robot. In essence, the sex doll or robot can 'teach' the child how to please an adult and socialize the child through interactions and discussions explaining that sexual acts with adults are normal behavior (*i.e.*, groom them).

Robots can learn human behavior and adopt norms, values, and beliefs introduced to them and learned by them. Programmable child sex dolls and child AI robots do not mimic the thoughts and actions of children. They learn through observation and mimicking the behaviors of the owner and learn the owner's concept of desirable behavior (*i.e.*, adult-child sexual activity), which is not necessarily consistent with societal beliefs (*i.e.*, sexual abuse and exploitation of children is wrong). This information can then be communicated to real children, if they reside in the home where the child sex doll or robot is and/or if they are brought by the pedophile to interact with the doll or robot. Accordingly, five different types of harm could result from children's exposure to and interactions with child sex dolls and robots: (1) harm from showing age inappropriate sexually-related objects/images (sex toys/people engaging in sex, adult/child or child/child sex); (2) harm from sexual exploitation; (3) harm from exposure to sexually-related activities (seeing guardians' or parents' sexual interactions with the sex doll or robot); (4) harm from 'teaching' age inappropriate behaviors (*i.e.*, grooming them to engage in sex acts and learning sexualized behavior from them through

modeling); and (5) harm from teaching children beliefs that are not held by mainstream society (corrupting them).

The mere existence and use of child sex dolls and robots in themselves are dangerous for a number of reasons. First, they give false belief to society that 'real' children will be safe from pedophiles. Second, they prevent pedophiles from the responsibility of trying to control their urges or even to prevent themselves from engaging in their harmful thoughts and actions (*e.g.*, rape of children). In fact, they encourage pedophiles through rewards and pleasure from their use to continue pedophilic practices and to seek confirmation of such practices from other pedophiles. It also solidifies their child abuse/exploitation schemas and related concepts. Third, they fail to provide pedophiles with accurate emotional feedback from aggressive actions, particularly ones that would result in emotional and physical damage if performed on a real child. Fourth, they facilitate pedophiles' progression from mere desires and thoughts to combining desires, thoughts, and actions. The assumption that the child sex doll or robot will suffice as the receiver of this combination is unfounded by scientific research and knowledge. Fifth, they normalize the thoughts and behaviors towards children considered by society to be undesirable and dangerous, including that children are objects to be used for sexual gratification. In the absence of therapy, perverted sexual impulses will not be explicitly censored and thus will continue and evolve. Sixth, they make enticing models for the grooming and training of real children in sexual abuse and exploitation. Finally, they encourage pedophiles to abandon emotional connections with humans in favor of one-side relationships that further exacerbate their ability to understand how their warped belief system and actions affect children's well-being.

The scientific community today has evidence that would support the original claim of various harms from virtual child pornography, directly and indirectly, and we propose by extension, from child sex dolls and robots. The arguments that child sex dolls and robots can serve as substitutes/replacements for using real children, could be implemented as therapeutic cures to the harming of real children, or the actions performed by the pedophiles on the child sex dolls or robots do not in themselves cause harm, are all flawed. Even if real children are not involved in the production of child sex dolls and child sex

robots they could be harmed thereafter by users of these objects. As Jon Brown, the head of development at the UK National Society for the Prevention of Cruelty to Children (NSPCC), rightly points out, "there is a risk that those using these child sex dolls or realistic props could become desensitized and their behavior becomes normalized to them, so that they go on to harm children themselves, as is often the case with those who view indecent images."[180] If the declaration made by the court in *New York v. Ferber* that "safeguarding the physical and psychological well-being of a minor"[181] and preventing the "sexual exploitation and abuse of children constitutes a government objective of surpassing importance,"[182] then child sex dolls and robots should be prohibited outright by law.

NOTES

1. Mary DeYoung, "The good touch/bad touch dilemma," *Child Welfare*, 67:10 (1988), 60-68.

2. Jonathan Montgomery, "Children as property?" *Modern Law Review*, 51:3 (1988), 323-342.

3. Brian Starks and Robert Robinson, "Who values the obedient child now? The religious factor in adult values for children 1986-2002," *Social Forces*, 84:1 (2005), 343-359.

4. David Finkelhor, "Early and long-term effects of child sexual abuse: An update," *Professional Psychology: Research & Practice*, 21:5 (1990), 325-330.

5. The term "child sex offender" will not be used because there are some individuals who are not pedophiles but commit sex offenses against children for other reasons (*e.g.*, easy to overpower).

6. Harvard University, "Pessimism about Pedophilia," *Harvard Health Publications*, July 2010, *https://www.health.harvard.edu/newsletter_article/pessimism-about-pedophilia*.

7. Lauren R. Shapiro and Marie-Helen Maras, *Multidisciplinary investigation of child maltreatment* (Burlington, MA: Jones & Bartlett Learning, 2015).

8. Snapp & Son, Inc. v. Puerto Rico, 458 U.S. 592 (1982); Robin R. Wilson, "Sex play in virtual worlds," 66 *Washington & Lee Law Review* 1127, 1133–1134 (2009), *http://scholarlycommons.law.wlu.edu/wlulr/vol66/iss3/9*, accessed 10/22/2017.

9. Carolyn C. Ross, "Overexposed and under-prepared: The effects of early exposure to sexual content," *Psychology Today*, August 13, 2012, *https://www.psychologytoday.com/blog/real-healing/201208/overexposed-and-under-prepared-the-effects-early-exposure-sexual-content*.

10. Lindsay Schlegel, "These recent trends against objectifying ads give us hope for media," *Culture*, August 25, 2017, *https://verilymag.com/2017/08/britain-regulations-objectifying-ads-france-ban-too-thin-models-women-not-objects-madonna-badger-news-08282017*.

11. Ross, *supra* n.9.

12. Both France and the United Kingdom have specific guidelines for ads to prevent 'sexist and discriminatory ads' that promote gender stereotypes, sexually objectify women, or promote an unhealthy body image. *See* Women in the World, "Britain to ban all ads that objectify women or promote gender stereotypes," *New York Times*, July 19, 2017, *http://nytlive.nytimes.com/womenintheworld/2017/07/19/britain-to-ban-all-advertisements-that-objectify-women-or-promote-gender-stereotypes/*.

13. Jane Pritchard, "The sex work debate," *International Socialism* 125 (January 5, 2010), *http://isj.org.uk/the-sex-work-debate/*.

14. Robin Fretwell Wilson, "Sex play in virtual worlds," *Washington and Lee Law Review*, 66:3 (2009), 1127-1174.

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