CHAPTER 8

Robo-Rage Against the Machine: Abuse, Sabotage, and Bullying of Robots and Autonomous Vehicles

Organizations and communities in modern societies have often dealt with forms of human-to-human aggression and abuse and are recently confronting situations involving human confrontations with AI-enhanced entities. Expressions of anti-robot aggression and related security breaches have apparently increased, despite extensive anthropomorphic research on how to make robots more palatable and attractive in particular contexts (Bankins & Formosa, 2020; Bartneck & Keijsers, 2020; Whitby, 2008). As humans are forced to work with and be monitored by robots, such incidents may expand in number and variety; as the compulsory utilization of autonomous vehicles becomes a factor, aggression against these entities could also multiply. The notion of humans "being treated like a robot" has itself been associated with images and narratives of abuse for decades, sometimes linked with human slavery (Hampton, 2015).

This chapter analyzes emerging varieties of robot and autonomous entity sabotage, bullying, manipulation, and destruction by humans, placing them in context of security concerns as well as other kinds of aggression and abusive conduct. Why would anyone attack a robot or self-driving vehicle? An increasing amount of this behavior can be considered in terms of "self-defense," given the specific intrusions of robots and drones in personal spaces (Froomkin & Colangelo, 2015). However, other instances are more specifically aggressive expressive movements, in dramaturgical terms being "frontstage" actions either with human or

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robotic entities as audiences. Taking into account the intelligent functioning of robots (as discussed later in this chapter), some of the abuse could be characterized as in keeping with robot-as-personage and others more directed toward robot-as-property themes. The chapter also puts robot-related violence into perspective with various kinds of social rebellions and protests, exploring how attacks against autonomous entities (or disseminated narratives and images of the attacks) apparently often relate to externalizations of the economic and symbolic violence endured by individuals. A dramaturgical perspective can also be useful here: people who lose their livelihoods often act out on a public stage against what they may feel is the proximate cause of their losses, even if it is unclear as to what were the causes of their job loss or other personal distress.

There is plenty to act out against for humans. The previous chapter outlined how the deaths and injuries inflicted by robots and other AI-enhanced entities are unsettling many individuals. The presence of robots and other autonomous entities in workplaces, community settings, and households is creating new and often-foreboding types of environments and expanding the range of behaviors of humans in those spheres. Some of these human responses can indeed be healthy and useful, given particular circumstances, such as complaining to city councils about the use of robots to patrol city streets (While et al., 2021); others are clearly in the realm of "acting out" and involve dysfunction, human injury, and robotic destruction. With social media recordings and narratives, new spectators for these activities are often involved; as many of these activities are recorded for managerial or police intervention, other kinds of audiences also emerge. The confined quarters of the workplace can be the scene of violence, whether directed toward personages or property. Workplace violence of many varieties has had serious consequences for organizations and communities in the past decades (Neuman & Baron, 1998; Turpin et al., 2019), from spectacular mass shootings to surreptitious machine sabotage. The roles that attacks of robots and autonomous entities may play in the cumulative impacts of workplace violence are as yet emerging, but merit close attention given the growing societal importance and extensive permeation of automation. As robots and other AI-enhanced entities enter the home, the abuse of these technologies as a facet of household disruption and even domestic violence can also become an issue (PenzeyMoog & Slakoff, 2021).

With social media and other forms of online attention, even a few video or narrative portrayals of anti-robot attacks can have enlarged influences as

they engender discourse about the place of AI and automation in society (Küster et al., 2021; Zeller et al., 2020). For example, parody videos of a Boston Dynamics robot being kicked (presumably in a display of its stability) became viral on several social media platforms, stimulating discourse on whether such expressions of violence should be allowed online (Moses & Ford, 2021). Mattoni and Teune (2014) present from an historical perspective how images disseminated through social media have played influential roles in social disruptions, sometimes in ways not directly intended or foreseen by those whose actions are portrayed in the images. Will violence against robots and autonomous vehicles become commonplace, and varieties of specially-targeted "hate crimes" against these entities emerge? Although attacks of robots and autonomous vehicles are currently not as frequent as many other kinds of aggression (such as domestic violence and worker-to-worker violence), the overall societal impacts of the attacks may be considerable, as well as the future instances of violence potentially linked to them.

As outlined in this book, automation-related changes in workplaces and communities have engendered an assortment of social anxieties, with different impacts in various regions worldwide, so cultural and national differences can complicate analyses of robot abuse (Gorgan, 2019; Xu & Yu, 2019). For example, from a UK setting, Payne provides a characterization of robot abuse as distracting but not overly aggressive: "We heard stories of workers standing in the way of robots, and minor acts of sabotage – and not playing along with them" (quoted in Bernal, 2019, para. 4). In contrast, from a South African context, Rodell (2020) asserts "We burn our robots in Africa; they keep trying to steal our jobs" (para. 1). In Moscow, an attack of a robot on the street was identified as a kind of "road rage" incident; the robot Alantim was "hit with a baseball bat by a thug, who eventually kicks the robot down to the ground…[it] is heard saying 'Pomogite', Russian for 'Help me'" (Chapman, 2017, para.1). Age differences can also be a factor in analyses, with numerous widely-publicized robot bullying cases involving children triggering concerns in Japan (Nomura et al., 2016) as well as in the US (Pearson & Borenstein, 2021). The potential for vicarious and voyeuristic appreciation of attacks upon robots and autonomous entities may expand as coverage of robot or autonomous vehicle abuse in popular and social media increases worldwide and possible "copycat" incidents or incident clusters occur (such as those described in the next section). Survey research compiled by Gnambs and Appel (2019) shows growing unpopularity of robots in many settings.

Efforts to analyze anti-robot activity are also complicated by time factors; technologies in the autonomous system arena advance quickly along with shifts in robot capabilities and subsequent human responses. The robot that is despised today may not be around tomorrow in a fast-paced automation environment. For example, the humanoid robot Pepper had a significant presence in social robots development and usage since 2014 (Aaltonen et al., 2017). However, production of the robots was halted in 2021 by SoftBank (Hyuga & Alpeyev, 2021). Individuals who might not have liked this robot because of experiences with it or some of its surface characteristics may have to find new targets for their anti-robot activities.

Mistreatment of Technologies in Everyday Workplace and Community Settings

Various forms of abuses of technological entities by humans are developing as pervasive features of many modern workplaces and community settings, with drones and autonomous vehicles joining robots in this regard (Lloyd & Payne, 2019; Mars, 2019). For this chapter, "abuse" constitutes non-intended and dysfunctional uses of an entity or artifact in a particular system context, with an emphasis on its destruction, debilitation, or desecration; a taxonomy of robot and autonomous vehicle abuses is provided in a section to follow. The intensity of the abuse can indeed vary dramatically, from nonchalant "impoliteness" (as described in robotic interactions by Rehm & Krogsager, 2013), to desecration, and to full-scale destruction.

Targeted and intentional destruction of workplace machinery has a long legacy. The "machine wrecking" and "machine smashing" in workplaces in previous decades provide some insights about automation-related abuses (Pearson, 1979; Tierney, 2019). In a past century (approximately 1815–1848), the Luddites' aggressive activities drew the attention of political and social leaders to particular issues. The Luddites were skilled machinery workers who chose to counter certain technological shifts (Linton, 1992). These followers of Ned Ludd were subsequently associated in historical contexts with anti-automation themes, with the term "luddite" often used in reference to such perspectives (Dorson, 1965; Jones, 2013; Manuel, 1938). Machine wrecking notions often stop short, however, in characterizing the damage occurring to the current set of autonomous entities. The destruction, manipulation, or sabotage of

a thinking entity can have different dimensions than comparable efforts on a machine that is merely performing a routine and predictable set of functions. For example, autonomous machines can be manipulated and reprogrammed in their decision-making efforts (creating a "rogue" entity), complex maneuvers that are generally not applicable to non-intelligent machines. The type of abuse involved in any particular incident can differ depending on the perspectives of those viewing and interpreting the abuse, with external audiences' analyses and disseminations of the recorded or narrated event providing even more complications.

As analyzed in this chapter, activities that negatively affect robots and autonomous vehicles can have significant parallels with human-to-human abuse, bullying, or gaming in part because of the intelligent aspects of the artifacts involved. For instance, the bullying (repeated and targeted abuse) of robots or chatbots may have comparable features with human-to-human bullying as the autonomous entities are designed to interact in a humanlike fashion (Bartneck & Keijsers, 2020; D'Cruz & Noronha, 2021; Salvini et al., 2010). The larger social implications of the publicity of attacks against robots and autonomous entities are often comparable to those of human-to-human aggression as the incidents stimulate public discourse, focus organizational attention on human–robot interactions, and even stimulate copycat actions. Consider the following account of robot abuse:

> Every day for 10 months, Knightscope K5 patrolled the parking garage across the street from the city hall in Hayward, California. An autonomous security robot, it rolled around by itself, taking video and reading license plates. Locals had complained the garage was dangerous, but K5 seemed to be doing a good job restoring safety. Until the night of August 3, when a stranger came up to K5, knocked it down, and kicked it repeatedly, inflicting serious damage. (Harrison, 2019, para. 1)

Such abuse of the Knightscope security robots has reportedly continued in many communities, with "few tangible results" in countering crime (Farivar, 2021). The travels of hitchBOT provide another example of possible anti-robot fervor (Fraser et al., 2019). The autonomous, mobile robot hitchBOT successfully navigated lengthy ventures in Canada without a human escort, but was destroyed by individuals it encountered in the US after only a short time in transit. The widely-publicized stories of K5 and hitchBOT are coupled with many

other accounts of the manipulation and sabotage of advanced technologies, with anthropomorphism often adding the dimensions of human vengeance or antipathy to the narratives (Harrison, 2019; Kolodny, 2018).

Many other instances of robot-related abuse and destruction are emerging in industrial, security, and service environments, often endangering nearby individuals as well as the robot in question (Black, 2019; Krumins, 2017; Luria et al., 2020b; Sherman, 2018; Torrez, 2019; Winfield et al., 2020), despite managerial and developer efforts to make the robots involved more appealing to humans. For example, mobile food service robots are often physically "kicked" by passers-by, sometimes with an attempt to "rip the flag" from the robots' antennas (Hamilton, 2018); some individuals are arguing against implementing them in certain contexts in part because of such destructive occurrences (Cox, 2020; Lynn, 2020). Security breaches involving the manipulation of programming are another form of attack (such as reprogramming a mobile food robot to engage in dangerous traffic maneuvers), which can be less immediately visible to outsiders but have dramatic consequences for the robots' operations as well as for the safety of human bystanders (Perales Gómez et al., 2021). Public attention to robot abuse issues also increased with reports that a sex robot was heavily damaged at an electronics show where it was on display (Nichols, 2017).

Along with robots, various forms of human attacks of autonomous vehicles (such as self-driving cars and trucks) have also been recently documented (Eliot, 2019; Liu et al., 2020; Moore et al., 2020); such incidents can produce collateral human damages as the vehicles hit bystanders or jeopardize their passengers' wellbeing. Serious questions are emerging of whether this abuse will present challenges in everyday driving contexts as human-controlled vehicles begin to share the road with self-driving cars. For example, Sabur (2018) reports that "according to the California Department of Motor Vehicles (DMV), the robotic car's mere presence prompted a man to run across the street against the do not walk symbol, shouting, and [strike] the left side of the Cruise AV's rear bumper and hatch with his entire body …." (para. 4). Numerous reports about Arizona residents attacking self-driving vehicles while "wielding rocks and knives" and related incidents have attracted both popular attention and the concern of manufacturers (Hamilton, 2019; Lee, 2020; Liu et al., 2020; Randazzo, 2018). In May 2021, the manipulation of autonomous vehicles to simulate that human co-drivers were monitoring

them while on the road was a major topic of popular discourse in the US and UK, with this strategy reportedly resulting in accidents (Levin, 2021; Tangermann, 2021). Drones have comparably been destroyed in the air by individuals firing weapons or sent off course in dysfunctional ways (Cauchard et al., 2016; Matyszczyk, 2015).

Many incidents in which individuals express their anger or aggression with their control of vehicles (whether or not they have AI-enhanced features) have been documented (DiFruscia, 2012). "Road rage" occurrences of various sorts can indeed have negative outcomes on the individuals directly involved or on bystanders (Condliffe, 2016; Culver, 2018; Stephens et al., 2016); incidents on bicycles (or "cycle rage") can also have negative consequences as individuals' attacks are enhanced with the force of their vehicles (Lloyd, 2017). However, many of the emerging forms of abuse and sabotage of autonomous vehicles are apparently of a variety that impedes or disrupts the autonomous entities' decision-making functioning, based on some prior knowledge or assumptions about their operations (for instance, frustrating the entity in completion of its objectives). Strategies for engaging in such gaming and manipulation are already being actively crowdsourced online (Moore et al., 2020). Many recent attacks on autonomous entities also despoil or attack the dignity of the vehicle in some way, for example, by defacing it or engaging with it in a mocking or manipulative manner (Terbrack, 2021). These autonomous entities can be fragile in some respects (with delicate sensors, for instance) and apparently minor tampering can have substantial impacts on the entities' operational capacities, outcomes that might not immediately be seen but can emerge later in further operations. As new varieties of attacks of entities that have intelligent components emerge, new ways of responding or retaliating to aggression are also developing (as characterized in an upcoming section), including strategically-organized bystander activities by humans as well as other robots (Connolly et al., 2020). The potentials for "hate crime" or "hate incident" characterizations for some anti-robot activities are growing. In hate crimes and incidents, "the perpetrator is motivated by hostility or prejudice toward protected characteristics of the victim" (Bacon, May, & Charlesford, 2021), with the term "incident" used when the attack does not meet the standards for specific crimes. Hate crime approaches can foster discourse on the motivations of attackers (anti-robot abhorrence, for example) as well as on the societal contexts of the attacks.

Aggressive Anti-Robot Activity as Response to Symbolic Violence

Activities that involve physical damage (such as smashing a window) can often be seen as part of protest or social expression initiatives; damages of this sort are generally not excused in ethical terms by their association with political or social protests, but their meanings can be better deciphered if the attacks are placed in context of such expression (Joosse, 2020; Oravec, 2017a). Technological developments are often a theme in such protests, including genetically-modified foods and nuclear power (LeVasseur, 2017; Sale, 1996; Walsh, 1986). Other kinds of technologically-themed confrontations are emerging: for instance, Smith (2020) describes how more than fifty 5G cell towers were vandalized in the UK, with the destruction reportedly related to the proliferation of Coronavirus-related theories. Labor protests involving the implementation of robots have erupted at Rotterdam and Los Angeles ports (Morris, 2015; Roosevelt, 2019) as well as Las Vegas hotels (Oppenheimer, 2018). Nevett (2018) describes how the robot sex brothel Lumidolls had to be moved because of the protests of sex workers. Concerns about the relative places of humans and machines in the workplace and the economy at large have been disseminated for decades, with themes ranging from economic displacement to public safety (Hong, 2004; Pankewitz, 2017; Westerlund, 2020). According to Czarniawska and Joerges (2020), "'Robots could take half of the jobs in Germany' is a typical newspaper's title nowadays" (p. 2). Some organizations have reportedly attempted to expand anxieties concerning robots in order to gain opportunistic edges against workers in labor negotiations (Ramirez, 2020; Waytz & Norton, 2014). In such contentious contexts, violent and aggressive behaviors toward particular objects are often forms of disruption that can have wider implications as their theatrical and symbolic impacts are manifested (Graver, 1995; Tavory & Fine, 2020).

Kinds of economic perils as well as "symbolic violence" (Bourdieu, 1991) relating to recent employment losses have expanded in the advent of autonomous entities (Bernhardtz, 2019; Bharadwaj & Dvorkin, 2019), along with expressions of anxiety and disorientation by industrial and transportation workers (Kracher, 2005; MacKinnon, 2019; Sainato, 2020). Crowley (2014) describes the "relational indignity" that can result when new functional relationships and social standings are imposed on a particular setting. Many workplace incivilities are apparently

rooted in conflicts of interest and group-level affronts, including physical damage as well as human-to-human conflicts (Roscigno et al., 2009). Keijsers and Bartneck (2018) contend that "dehumanisation occurs in human–robot interaction and like that in human–human interaction, it is linked to aggressive behavior" (p. 205). Current and potential robot-related symbolic violence involves the overall impacts of changes on individuals faced with technological shifts in workplaces and communities (Weininger, 2002). In turn, the notions of "destruction" and "disruption" in relation to the kinds of changes associated with automation are often met with positive responses in the managerial and economic literatures (e.g., Bergek et al., 2013), but with less welcoming responses on the part of some other organizational participants (Grint & Case, 1998).

Many of today's robots and autonomous vehicles have fragile and brittle dimensions that can be exploited or damaged in some way, although efforts are underway to "harden" them to be more resilient against attacks (Alexis, 2020). Destructive activities involving such entities are found within wider contexts of deviant behaviors in workplaces that are costing employers billions of dollars and often jeopardizing the lives of employees (Singh, 2020; Yeşiltaş & Gürlek, 2020). Images of intentionally-arranged robot destruction are readily found (Black, 2019), with many robot-to-robot battles placed on YouTube (and sometimes deleted by YouTube administrators, reportedly because of resemblance to animal battles). Lewnard (2020) describes such a setting in an educational context: "The Prospect High School Fieldhouse looked like a scaled-down scene out of a "Mad Max" movie, with marauding robots designed for one task – destruction" (para. 1). Numerous science fiction accounts involve robotic demise, often in activities with medieval themes of jousting and direct confrontation as well as more modern configurations (Luria et al., 2020a).

Consider this description of student "robot club" activities:

> These days, robots are used for everything from manufacturing cars, to exploring space… This April, a team of Rochester Institute of Technology undergrads will attempt to use a robot in a different way — specifically, to bash, batter, cut, puncture or burn a variety of other, similarly hostile machines into oblivion… *BattleBots* tasks participants with designing, building and piloting remotely controlled robotic gladiators that face-off in a hazard-filled arena. The rules are simple: The robots battle it out until one is disabled or destroyed. Each robot is equipped with its own weapon

> system, which can range from spinning saws, to whirling bludgeons, to mechanical jaws, to flamethrowers. Losers are eliminated from the tournament. Winners move on to the next round. In essence; two robots enter, one robot leaves. (Walter, 2016, para. 5)

The possibility that the young adults described above would engage in dog or cock fighting is minimal. However, the battles in which they are engaging with robots can apparently elicit comparable levels of aggressive sentiment as well as vicarious aggression in onlookers.

Some of the issues involved in robot and autonomous vehicle abuse have close parallels with other "cyber-dehumanization" concerns such as violent video game utilization (Bastian et al., 2012), but also have increasingly complex and serious material dimensions. For example, many of the robots involved in abusive episodes play critical roles in everyday life, rather than narrative roles in video games. Robots along with other autonomous entities such as cars and trucks are being integrated into sensitive and essential transportation and manufacturing processes of organizations and communities. Many societies are entrusting their participants' health and wellbeing to them in critical settings (such as with autonomous vehicles on public roadways), and are often collaborating with them on various organizational initiatives, often without much consideration of security issues (Booth et al., 2017; Bragança et al., 2019; Oravec, 2017b; Rolenc, 2020; Winkelman et al., 2019). In contrast with some of the "machine wrecking" of the past, the autonomous entities that are being attacked are often delicate and intricate and the forms of damage inflicted can have comparable nuances; the robots can be reprogrammed or retrained to operate in dangerous ways that only emerge later, for example. The kinds of aggression described in this chapter often have a strong symbolic element and are somehow geared to destroy the robot's "dignity" (Hamilton & Mitchell, 2017) as well as functionality, reflecting the symbolic dimensions of human–robot encounters (Richardson, 2015). The destructibility (as subsequent reparability) of robots is indeed a benefit in many circumstances, as the robot's demise may provide an emotional outlet for individuals (as in the case of some sexbot usage). However, the consequences for such aggressive activities in terms of overall mental health are just beginning to surface (Danaher, 2017; Heath, 2016; Mackenzie, 2020). Various counter-trends are also evident that show the positive functions of displays of respect for robots: some robots that are considered "deceased" have been given funerals by

their human workplace colleagues (Purtill, 2020), and robot deaths have often been characterized in serious and somber terms in social media (Carter et al., 2020).

Evolving Characterizations of Robots and Thinking Machines

The kinds of violence conducted against robots and autonomous entities can often be differentiated on the basis of their perceived levels of intelligence, with the intelligence being characterized in terms of science fiction stereotypes as well as engineering design. Robotics has evolved as a field as AI advances in machine learning have increased the autonomy with which robots can learn about their environments and make decisions. The International Federation of Robotics (IFR, 2019) defined a manufacturing robot as "an automatically controlled, reprogrammable and multipurpose manipulator for use in industrial automation applications, with "automation" concepts stemming from the work of Diebold (1952). The word "robot" is rooted in the 1920 Czech play (*Rossum's Universal Robots*) by Karel Čapek; the play became popular when performed in the US in the 1920s (Abnet, 2020). The term stems from the Slavic term "robota," for forced-labor worker, a name that signals the important role that robots play in workplace settings. Answers to the question of what is considered a robot have shifted as automation has become more sophisticated; as related by Burdick (1992), "Once a certain level of automation becomes widespread, we no longer call it robotic. For example, 200 years ago a dishwasher would have been considered a robot" (p. 2).

As robots take roles that are more tightly intertwined with human activities, characterizations of robots that are more socially-focused have emerged (Vanman & Kappas, 2019). Human mortality and vulnerability have often been factors in how robotics and AI applications have been construed in public policy and legal venues, with Isaac Asimov's (1950) "Three Laws of Robotics" an early attempt to provide some direction (Clarke, 1993; Dennett, 1997). Forms of "robophobia" and related "technophobia" have reportedly emerged (McClure, 2018; Paerregaard, 2019; Vanman & Kappas, 2019), some of which are linked to the "uncanny valley" phenomenon and its psychological associations with terror. Uncanny valley notions stem from empirical research showing that many individuals begin to recoil from robots as they become more similar, yet not quite duplicating, humans in appearance and behavior

(MacDorman, 2005; Mori, 2012). As described often in this book, the robot as an "other" has been a common theme of science fiction and various other creative works (Mayor, 2020). Coeckelbergh (2011) describes how the linguistic construction of artificial others (such as addressing them by name) affects the way individuals construe them as entities. The anthropomorphic dimensions of robots (such as a human-like face) are sometimes an explicit aspect of design and in other contexts are added features provided by users for entertainment (Corkery, 2020). The perceived levels and kinds of robot intelligence are also factors in the kinds of human–robot interactions that emerge (Banks, 2019).

The notion of autonomous "thinking machines" that can engage in functional and useful practices for workplaces as well as dysfunctional ones has permeated many robotics initiatives and AI approaches along with public consciousness concerning their applications for decades, framing some of the ethical considerations involving human-inflicted abuse issues. Such machines were generally construed as autonomous intelligent entities independently operating on the world with various degrees of autonomy and self-awareness (Abnet, 2020; Hurlburt, 2017; Oravec, 2019). Thinking machines have played roles in science fiction novels and other entertainment genres, often in the form of intelligent and mobile robots that can function either in positive or dysfunctional ways in various scenarios. Some scenarios of the future project that humans themselves will be displaced in their basic functions by intelligent systems (Heylighen & Lenartowicz, 2017), or become conjoined with robots in a "cyborg" configuration; other scenarios project that human beings will someday be able to upload their selves to these entities, in a form often construed as "artificial immortality" (Cave, 2020; DiCarlo, 2016; Ferrando, 2019). Humans have been frightened by such fictional robotic characters as *2001: A Space Odyssey's* HAL since the 1960s, and Mary Shelley's monster in *Frankenstein* played a comparable role in the 1800s (Shelley, 2012/1818). Research on how robots can express dominance in human–robot interaction has shown that various robot signals and positionings can increase human compliance (Peters et al., 2019). As discussed in this book, apparent superiority and control of humans by robots can be expressed in symbolic fashion as these autonomous entities are involved in judicial decision making (Sourdin, 2018), ostensibly to eliminate bias and reduce court expenditures.

Thinking machine notions can complicate the issue of workplace attacks on robots, introducing ethical issues beyond those of mere property destruction (Elhabashya et al., 2019; Whitby, 2008). For humans to attack an entity that is widely framed as "intelligent" presents complex factors of personal and social identity as well as of social and personal trust that go beyond attacks on mere "property." Trust in robots apparently also has some linkage to their levels of intelligence (Kim et al., 2020). Attempts to devalue robotic intelligence or desecrate robots can be attempts to transform the robotic entity being attacked to one that is less comparable to a human being and thus less deserving of non-aggressive, non-harassing treatment.

Varieties of Aggressive Behavior Involving Autonomous Entities

The machine wreckers in previous centuries had limited options for their attacks; however, many of those individuals were quite strategic in their activities, planning and timing their attacks for maximum impact (Linton, 1992). In the case of robot, AI, and autonomous vehicle abuse, the kinds of damage can include complex schemes to exploit the known weaknesses of the entities as well as more primitive attacks (Meryem & Mazri, 2019); often, narratives or images of the attacks are disseminated on social media (Taylor, 2022). The cleverness of the attacks, as well as the surprise with which they were planned, are often factors in attempts to place the humans involved in dominant positions over the robots or autonomous entities (Küster et al., 2021; Luria et al., 2020a).

Below are recent examples of aggressions toward robots and other AI-enhanced entities. They can differ in whether the entity attacked is considered in some ways as having human-style intelligence (robot as personage) or whether it is construed as primarily an object owned by a particular individual, organization, or community (robot as property):

Destruction of physical and decision-making capabilities: The kinds of autonomous entity destruction can vary if the damage is focused on the aspects of the entity that are seen as "intelligent"; attacks upon the robot's decision-making features can potentially cause less visible damage but can be as devastating in terms of eventual resource losses (Bartneck & Keijsers, 2020). For example, Halfacree (2021) describes emerging "poltergeist attacks" that could "leave autonomous vehicles blind to obstacles or haunt them with new ones." PenzeyMoog and

Slakoff (2021) relate "gaslighting" incidents in homes in which AI-enhanced "Internet of Things" technologies were surreptitiously manipulated in order to unsettle home residents. As robots and AI control structures are manipulated without attribution or apparent linkage to specific individuals and motives, some gaslighting patterns are emerging (Sweet, 2019). Robotic and autonomous entity destruction at the physical level can be rooted in the deficiencies or shortcomings of specific materials and structures used in automation (Ranabhat et al., 2019). Whether these complex factors are being considered in full by someone who is angry and strikes out at a specific robot is uncertain, however.

Image-related indignities: Some robots have been abused in ways that would signal to other humans visibly that some sort of desecration or humiliation of the entity has been conducted (as in Fraser et al., 2019; Harrison, 2019); sexually-themed indignities may be included here. If the robot is considered in terms of its own intelligence and personage the quality of this aggression can vary from that of an attack on the property of humans to an attack on an autonomous entity. The distribution of these images via social media (and related publicity) is often involved: for example, dogs have been placed in the "co-pilot" seats of moving Tesla self-driving vehicles as social media stunts, which has alarmed some animal welfare activists (Lambert, 2021).

Strategic or intentional neglect: Robots in dangerous or sensitive settings that are not monitored with prescribed levels of attention could cause significant damage to humans, themselves, and their environments. Intentional abuse of this kind is difficult to detect and those responsible identified until it produces major damage.

Verbal abuse: For humans to act out aggression in the form of verbal abuse and harassment toward robots and chatbots has become common (Neff & Nagy, 2016), with some of the harassment falling into the "bullying" category (D'Cruz & Noronha, 2021). Many chatbot developers are integrating ways to deal with sustained verbal abuse into their protocols (Chin & Yi, 2019). Much of this abuse has specific gender-related overtones (Strait et al., 2018; Taylor, 2022), raising issues involving the anthropomorphization of robots. Winkle et al. (2021) have proposed that robots that face such gender-themed abuse respond aggressively with comebacks that reflect a "feminist" perspective. They claim that through their proactive efforts "we were able to increase girls' perceptions of robot credibility and reduce gender bias in boys" (p. 29).

Manipulation and gaming, and the crowdsourcing of gaming strategies: For example, the "griefing" and bullying of autonomous vehicles in ways that attempt to confuse them or thwart their efforts has become a matter of concern for developers (Kiss, 2019; Liu et al., 2020; Moore et al., 2020); many griefing and manipulation strategies are being shared online.

Security breaches: The "hacking" of autonomous entities provides a general set of concerns for developers (Greenberg, 2017; Willison & Warkentin, 2013), with successful exploits being shared online and thus an escalation of hacking efforts and expertise. Such hacking can have as a by-product the loss of trust in robotics as well as increased resource investments. These robot hacking strategies can include ransomware and malware (Mayoral-Vilches et al., 2020).

Abuse rooted in subservient themes and positions: Slave- and subjugation-related notions have long roots in high technology and modern organizational life (Hampton, 2015; Ras & Gregoriou, 2019). Slavery has wrought centuries of pain in societies throughout the world. The notion that robots are often construed as workplace "slaves" may have increasingly problematic implications for ethical conduct in organizational life besides the occasional abusive events and related images that have already emerged.

As organizations and communities find that the introduction of autonomous entities into various settings is economically desirable, basic understandings about their utilization are being wrought that involve power considerations as well as ethical perspectives (Curchod et al., 2019). What kind of dignity is to be afforded these entities (and how their appropriate treatment is to be enforced) is among these agreements. Robots have strong symbolic meanings in workplace and community contexts, whether or not they are successfully integrated into various organizational service, industrial, or entertainment functions (Beane, 2020). The very presence of robots can apparently have an effect on some individuals who are engaging in various tasks, with apparent improvements in human performance (Spatola et al., 2018). Some insights as to how understandings may develop concerning robots could come from how dombots and sexbots are reportedly being treated. "Dombots," or domestic robots, are designed to relieve individuals of various routine household chores (McKnight, 2014), and sexually-themed robots ("sexbots") have been integrated into some practices

(Heath, 2016; Mackenzie, 2020). An assortment of unsettling physical and programming-related abuses of dombots and sexbots have been emerging that signal that aggression toward autonomous entities should be monitored for potential exacerbations of mental illness and criminal sexual offenses, especially involving children (Brown & Shelling, 2019).

Mitigation Efforts for Anti-Robot and Autonomous Entity Abuse

Many workplaces are being redesigned so that robots can function more efficiently, with the human being often construed as the alien in the robotic environment rather than the reverse (Miller, 1983). Manipulation and shaping of humans so that they fit in more adequately with the perceived requirements of workplace operations has had psychological as well as physical dimensions. Robots and automation as a whole are often promoted in workplaces as symbols of security and advancement (Beane, 2020) and even superiority to human workers, despite various technical deficiencies. However, forms of aggression toward robots are continuing, which can influence the character or human-to-human interactions as well (Carlson et al., 2019; Ringler & Reckter, 2012). Investigations into the matter of robot destruction have practical implications as organizational investments in robotics increase. Research on how to diminish the tendencies toward robot abuse has expanded considerably in the past few years. Monitoring levels of abuse of robots, chatbots, and other AI-enhanced entities can have apparent value for organizations in signaling disquiet and in otherwise observing employees and community members, which could be seen as an important source of surveillance in the near future (Schrage, 2016). Governmental and community regulations concerning the scope of activities of delivery, service, manufacturing, and related robots are often lacking (Trombola, 2021).

In many circumstances, the abuse of robots and other autonomous entities by humans has an emotional or expressive component, and countering this abuse can involve an emotional response from the attacked entity; first impressions of robots may affect these emotion-rooted interactions (Spence et al., 2014) as well as the emotional quality of the robot's responses to abuse (Connolly, 2020). Questions such as "Do a robot's social skills and its objection discourage interactants from switching the robot off?" (Horstmann et al., 2018, p. 1) are being asked and related research conducted in attempts to mitigate potential abuse. Murrer

(2020) describes how mobile delivery robots often have warning buzzers to ward off potentially abusive human contact. Lucas et al. (2016) show that robot size may be a factor in the kind and quality of abuse, and some robots may be perceived to be "too big to abuse." Encouraging human bystanders to intervene when there is robotic abuse is another mitigation approach (Tan et al., 2018), just as in human-to-human bullying where bystanders can be an ameliorating factor. Protecting individuals from robots with particular protective clothing and shielding may alter their characterizations of the robots they work with, potentially making the humans feel more impervious and less threatened. For example, Palmer (2019) describes how Amazon Corporation's "anti-robot vest" is designed to "protect workers from giant machines smashing into them" with the strategic placement of various sensors. Anti-robot warnings and precautions may be warranted if the robots have potentially been manipulated or tampered; some robots may indeed be "rogue," with operations hacked in ways that benefit external competitors or saboteurs (Maggi et al., 2017; Reynolds & Ishikawa, 2006; Wolfert et al., 2020).

Some organizations may take activist approaches to the phenomena associated with robot abuse, providing settings in which employees can openly express their antagonism to autonomous entities with little overall damage to the organization. Such expressions of aggression toward robots could indeed identify and expose individuals who have overall problems with aggression in organizational contexts (Sparrow, 2020), or who have specific grievances. Approaches for designing robots that are relatively imperious to abuse or easily reconstructable have been proposed (Cohen, 2019; Luria et al., 2020a). Strategies in which autonomous entities can be programmed to "feel" and express a kind of "pain" or "punishment" can be part of such approaches (Keijsers et al., 2019; Richardson et al., 2020; Rossmy et al., 2020; Sandberg, 2015), providing some means for individuals to express their aggression toward robots without physically damaging them or human bystanders. Strategies for programming pleasure and related motivating factors have also been proposed (Lewis & Canamero, 2016), giving individuals means of applying forms of behavioral modification rather than punishment in their interactions with robots.

Many anthropomorphism initiatives intended to ameliorate robots to workers and community participants could be misplaced, with anti-robot antagonism being intensified with the presence of an "uncanny valley" entity, as previously discussed (Mori, 2012). Solutions to robot abuse

problems that are rooted in making robots seem "nicer" are proliferating (Cappuccio et al., 2019), but need to be reconsidered in light of the complex social and economic factors involved. Individuals use aggression to express their anxieties and fears pertaining to their economic or social statuses, whether they characterize the proximate object of their aggression as pleasant or disagreeable. Research by Küster et al. (2021) using short videos of robots being abused shows how some humans can "be responsive to harm done to robots—while simultaneously feeling discomforted and concerned" (p. 3327), potentially showing the way for individuals to become less openly aggressive toward robots in workplace and community contexts.

Dystopian Futures for Robots and AI Entities: Demonizing and Weaponizing

Scenarios in which individuals will ultimately need to engage in battles with AI-enhanced robot "overlords" have been discussed by such luminaries as Elon Musk and Stephen Hawking (Leitao, 2019; Thompson, 2018), with a coming "robot war" often projected (Singer, 2009). Many acts of destruction by humans are apparently driven by anxieties and fears related to technological changes, so the continuance and even expansion of attacks on robots have been projected by some researchers (Bartneck & Keijsers, 2020; Bigliardi, 2019). Robots are being utilized strategically in many aggressive criminal operations, including their weaponization by using them in physical or virtual security breaches (de Ágreda, 2020), so defensive approaches toward robots and other AI-related entities are expanding on a number of dimensions. Sexually-themed robots can provide some insights as to how robots can be used for dysfunctional and abusive purposes as well as more moderate and even life-enhancing functions (Heath, 2016; Mackenzie, 2020; McKnight, 2014). The dimensions of the human imagination that support violence, anger, and aggression apparently have a great potential for realization in robots and autonomous entities (Lewnard, 2020; Reyes et al., 2019). Such phenomena as the organized hunting of robots by humans could indeed follow; robots are already being taught to hunt other robots using pack hunting strategies (Grossman, 2016).

Robots that are specially designed to elicit certain human emotions may be used to mitigate some trends toward anti-robot aggression (as in Shao et al., 2020; Vinanzi et al., 2019). For instance, Briggs and Scheutz

(2014) explored the effects of various robotic displays of protest and distress on the humans with whom the robots are situated, and Reyes, Meza, and Pineda analyzed assorted displays of anger. Robotic exterior appearances have been shown in some cases to "solicit compassion and attachment in humans, and [their] cognitive resources may be powerful enough to establish enduring and relatively rich relationships with their users" (Cappuccio et al., 2019, p. 10). However, if these strategies fail to mitigate anti-robot aggression, managers may choose to accept and even capitalize on a certain level of robot abuse, with robot designers building in the capacity to endure focused human abuse. Attracting some amount of abuse to robots may keep individuals from engaging in attacks that could directly hurt human beings, deflecting particular aggressions. The strategic use of anti-robot violence for cathartic and expressive purposes in workplace contexts projects some potentials, just as video game interactions with humans fighting robotic figures can apparently provide catharsis for some individuals (Bastian et al., 2012), though with some possible side effects in terms of their perceptions of the acceptability of violence.

How robots are treated in particular contexts may soon help to shape how mental activity and intelligent control functions are construed, themes of special interest and concern with the proliferation of cyborgs. For example, human–machine hybrids are emerging as the availability of cybernetic implants expands (Egan, 2020); some of the antagonism toward robots described in this chapter may unfortunately extend to these cyborgs. The extent to which organizations allow for the open destruction of robots may eventually affect how humans (considered as a related form of intelligent entity) perceive and interact with each other (Coghlan et al., 2019). Such rituals as the previously-described robot "funerals" may make robots appear to have increased value within the organization. Even though the entities involved are indeed machinery, the approaches organizations take toward their treatment can affect the character of the organization as a whole.

Decades ago, Stern (1937) characterized various "resistances to the adoption of technological innovations," with "machine wreckers" (Hodson, 1995) expressing dissatisfaction with automation. Destructions or sabotages of robots by organizational participants (whether or not they are related to such deaths) could also produce substantial economic losses, and perhaps even precipitate collateral injury on the part of workers. Currently, the potentials that many individuals will smash robots and

destroy autonomous entities are relatively small; however, as the use of robots in workplaces continues, and economic and social anxieties compound the situation, the possibility for series of acts of sabotage and possibly more substantial damages could increase. Legal solutions are often limited for individuals who are injured by robots because of the diffuse responsibility for these occurrences; multiple levels of designers, developers, and testers as well as human operators are potentially at legal fault for the operations of an autonomous entity (Prianto, et al., 2020).

Some Conclusions and Reflections

Why would someone attack a robot or autonomous vehicle? Such abuses have indeed become sport in some arenas, as expressed about the US television show *BattleBots* on a sports-themed website: "Who the hell even thought of constructing not only crazy robots with different types of weapons on them but also an arena with insane destructive capabilities. This is the same type of attitude that got us the coliseum with the human sacrifices" (Football, 2021). The abuse of robots and other autonomous entities can indeed reflect little more than momentary, situational anger, aggression, and anxieties. However, more serious social and psychological phenomena are often involved. Forms of cognitive and psychological overload concerning robots and AI can affect individuals negatively, from the mental demands of monitoring these entities' movements to the economic stresses involved with one's own possible replacement. For example, expressive dimensions of intelligent entity abuse can involve linkages to larger concerns about automation as well as various economic struggles (Joosse, 2020), aspects that are important to recognize as organizations and communities endeavor to prevent anti-robot attacks and mitigate the related damages.

As outlined throughout this book, "robot versus human" narratives are pervasive in many societies (manifest in science fiction as well as news and economic reports), so connections in everyday life with anti-robot themes are readily made; the contests and demonstrations that supposedly establish that robots "outclass" humans provide a major example here (as discussed in previous chapters). Even without more formalized varieties of human resistance, such as formations and proliferations of organized protest or insurrection, an anti-robot perspective can permeate societal discourse. Young people are presented with streams of negative images of robot activities through movies, comics, anime, and other genres.

Disseminating images and accounts of robot abuse through broadcast or social media can amplify the impacts of any particular anti-robot incident perpetrated by humans (Mrug et al., 2008), often expanding the related anti-automation social connections and discourse. Fictionalized narratives portraying employees who act out against the frustrations of technology by enacting violent behaviors against computer technology also proliferate (Alexander & Kochheiser, 2017). Autonomous vehicles are increasingly becoming the objects of abuse, with vehicles that violate individuals' expectations especially targeted (Smith et al., 2020). Robots, autonomous vehicles, and other autonomous entities can certainly be "gamed" in ways that may not seem to be overly abusive to those involved, with the hacking and manipulation of these devices construed as pleasurable by their perpetrators. As discussed in the chapter on sex robots, having certain forms of intimate interaction with robots may continue this theme of aggressive and even abusive anti-robot activity.

Supporting classes of physically-fragile robotic and vehicular entities that can be abused and manipulated by humans, often without detection, can be resource intensive for organizations; various legal consequences may be involved as well as specific physical damages (Lemley & Casey, 2019). Humans may try to attack robots by altering the robots' environments as well, making them less able to function as designed. Various metaverse environments and connections may also be altered in ways that jeopardize the functioning of the robots. For the past decades, humans have been working in environments that are increasingly arranged for the needs of robots rather than humans (Kisska-Schulze & Davis-Nozemack, 2020; Lafontaine, 2020; Miller, 1983). In some of those settings, autonomous entities are placed in positions that are seemingly superior than those assigned to human individuals (Haenlein & Kaplan, 2019; Leitao, 2019), possibly setting up conditions in which humans would want to respond and express themselves in some aggressive or otherwise negative manner. Robot and autonomous entity abuse and sabotage as social practices have expanded individuals' ranges of expression of their attitudes toward automation and other societal changes, although they have also had unfortunate consequences for human safety and organizational resources. For example, humans attacking robots can do so in ways that are aimed to injure the robot directly and "personally" (in ways comparable to delivering an attack upon another human), or that are primarily aimed to do damage to the organization as a whole (e.g., by requiring it to make repairs to the robot or replace it). Robots are

often fragile and brittle in some aspects, and considerable robot abuse can indeed be "casual" breakage; a robot or autonomous vehicle can simply be in the way of the person or persons perpetrating a particular act of violence. However, the potentials for more intentional or planned attacks (such as the malicious reprogramming or systematic diversion of robots, or significant alterations of their environments) present unsettling prospects for human safety, especially in an era when the use of autonomous vehicles is expanding. Many workplaces and community centers present confined settings in which individuals' expressions of violence and bullying can have significance for more individuals than just the perpetrator and target, and the audiences for the violence can be affected by fearing or by applauding the perpetrators (Graver, 1995).

Although many narratives of robot abuse have widespread dissemination through social media, much of what happens in workplaces and community centers in terms of sabotage is still not readily accessible outside of the organization, with few employers and administrators wanting to publicize such occurrences (Singh, 2020). When accounts of abuse do surface, however, there is often widespread discourse in social media and other popular forums on the social and ethical dimensions of the relationships between humans and robots (e.g., Cha et al., 2020; Corkery, 2020; Fraser et al., 2019; Harrison, 2019; Romero, 2018). Workplaces and community settings provide various artifacts and contexts for rituals and routines that can impart social and cultural information about superiority, subservience, and other aspects of the interaction order (Goffman, 1983), an order that increasingly involves robots and other AI-enhanced entities. The intense involvement of autonomous entities in the construction of this social realm has widened the scope of what organizational participants can manifest in terms of their positive sentiment and appreciation and also of aggression and abuse.

Individuals are facing an unsettling amalgam of problematic working and community concerns, rooted in perceived economic competition and related tensions. The strategy of many designers to make robots and self-driving vehicles more humanlike in order to ameliorate potential tensions about automation may not mitigate aggression against autonomous entities, given these circumstances. Robots that are anthropomorphized provide opportunities for abusive conduct that has close parallels to human abuse and bullying rituals and can unfortunately extend and enhance the patterns involved, as well as potentially create new ones. The dehumanization and devaluation of robots can serve as a mechanism for

moral disengagement, in comparable manners to human-to-human workplace bullying (Smokowski & Evans, 2019). Such abuse can consume resources and distract from larger organizational undertakings, as well as potentially result in the injuries or deaths of human bystanders (Maggi et al., 2017; Sanderson et al., 1986). In some limited settings, the strategy for dealing with the abuse of autonomous entities may be to consider it as basically harmless activity (except for physical damage), and as potentially useful in siphoning the energies that would otherwise be directed toward human bullying or other attacks (Carlson et al., 2017). In many contexts, robots could become the kinds of "punching bags" that can indeed deflect and lessen open expressions of aggression toward other humans in certain settings (McLinton et al., 2018) as well as have a cathartic effect (Luria et al., 2020a). Robot anthropomorphism may be usefully extended to include the potentials for attracting and receiving abuse in ways that provide workers with catharsis or other social expressions, or of repelling and dissipating aggression (Cohen, 2019).

The construction of a robotic "other" in workplace or community contexts does not start from scratch; most individuals have gleaned from an early age substantial cultural insights about robotics through popular writings, film, and news (Higbie, 2013; Paerregaard, 2019; Teo, 2020). The overall influence on workplaces of all of these social reflections about and images of robots is still uncertain, especially given the changes in robotics (which include cyborg-style implantations of robotic parts in human prostheses). Despite the growing uncertainties involved with robot operations and security (as described in Ionescu, Schlund, & Schmidbauer, 2019), robots are increasingly portrayed by administrators and developers as non-problematic companions and collaborators (Abnet, 2020; Melson et al., 2009). The objective of framing robots so as to be friendly colleagues in the confined settings of the workplace may backfire as they become unstable and untrustworthy targets of sabotage and abuse (Kinzler et al., 2019). Construing robots as supervisors and educators (and as somehow superior to humans) can indeed unsettle the situation even further (Sahota & Ashley, 2019); such forms of symbolic violence against individuals may be countered with human-generated abuse and manipulation.

The potentially positive dimensions of the robots-versus-humans formulation should certainly not be overlooked. Discourse on robotic "others" could indeed draw humans together by emphasizing their common humanity in contrast to their robotic colleagues (Coghlan et al.,

2019; Jackson et al., 2020); Spatola (2020) explores how the comparison of robots with humans on essential dimensions such as mortality can unite humans. However, in this position of "otherness," robots and other autonomous entities could also be more vulnerable to attack, which can ultimately present dangers to human beings. Science fiction pioneer Ray Bradbury's proactive approach may be useful here in inspiring mitigation efforts: "I don't try to describe the future. I try to prevent it" (quoted by Arthur C. Clarke, 1992). Organizational and community participants can work with technology developers to understand the kinds of economic and symbolic violence that are linked (however inappropriately) with autonomous entities and help to counter their abuse by humans with these insights.

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