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A Damaged Reputation: Nuclear Depictions in Entertainment Media

Introduction:

There is an intrinsic potential for danger when harnessing the awesome power of nuclear energy. However, despite this danger rarely coming to fruition, mass media depictions of nuclear energy often conflate serious yet rare disasters with the purposeful weaponization of such technology. Such depictions feed public fear, reinforcing an excessively cautious, pessimistic public perspective on nuclear technology in any form. While scholars have analyzed how some forms of media portray nuclear science, *entertainment* media, specifically, has been almost entirely overlooked. I argue that these portrayals significantly contribute to a widespread common sense that frames nuclear energy as something with catastrophically horrific potential.

This paper specifically explores such hyperbolic nuclear depictions found in the overlooked media of feature films (*Godzilla*), primetime television (*The Simpsons*) and video games (*Fallout* and *Call of Duty*). The horrors depicted in media such as the *Godzilla* films and *Fallout* games are so far beyond the realm of possibility that most could recognize these obvious fictitious exaggerations. However, when public exposure to these depictions is as potent and repeated as occurs for fans of these media products, a more significant suspension of disbelief may take hold, especially when such depictions are corroborated across decades and in a variety of popular media forms and genres. Additionally, entertainment media associations of nuclear energy with terrible danger are amplified by commentary that humanity is unfit to responsibly manage this awesome power, often illustrated by ineptness or greed.

Based on extensive primary source analyses of these media artifacts, this paper argues that there is a significant link in our society's collective understanding and subjective evaluation of the term "nuclear" and entertainment media depictions over the last half-century. The shared

societal common sense surrounding the term “nuclear” is closely aligned with how entertainment media has framed nuclear energy: as a catastrophically deadly power beyond humanity’s control that can result in terrifying and unnatural mutation. While *Godzilla*, *The Simpsons*, *Fallout* and *Call of Duty* are far from the only media artifacts that carry such depictions, they offer a diverse range of audience, medium and historical origin, reinforcing the shared common sense about nuclear power. The synergetic intertextuality of these various entertainment media is further corroborated by connections to real-world events audiences already know that demonstrate the dangers of nuclear energy such as the Chernobyl meltdown. Further, the depictions of nuclear plants, employees, waste disposal, and (often horrific) mutations grotesquely exaggerate the potential aftermath of such events, cultivating a potential influence on common sense much greater than the sum of its parts.

In this paper, I begin with a review of related scholarly literature and how my approach and analysis add to existing understanding. Following this, I dedicate a section to analyzing and interpreting nuclear depictions in each set of media artifacts (films, television and video games). I conclude with the social and cultural implications of my study and some directions for future research on nuclear depictions in entertainment media.

Review of Scholarly Literature:

The concept of common sense, as developed by Antonio Gramsci, refers to “the embedded, incoherent beliefs and assumptions... the ‘taken-for-granted’ aspects of cultural life” (Barker, 2004, page 30). Gramscian common sense, then, is that set of unspoken and unchallenged “givens” that a society generally accepts, such as the oversimplified notion that ‘nuclear is dangerous’ based on the past real-world incidents involving nuclear destruction which are reinforced in an exaggerated fashion by entertainment media.

There is very little research on how the portrayal of nuclear energy affects the public, as Ho and Kristainsen state when looking at mass media and social media coverage of the 2011 Fukushima meltdown, which “mix real information and misinformation about nuclear energy... that might shape people’s perception” (Shirley, 2019, page 437). Similarly, in entertainment media, references to real world incidents alongside the fantastical depictions create a greater aura of plausibility. For example, when Godzilla is directly compared to Hiroshima, the fantastical elements of the creature heighten the existing fear cultivated by the memory of Hiroshima. This parallel dynamic would reasonably have the same kind of effect on common sense which Ho and Kristainsen have identified with other media.

Chronologically, the first line of entertainment media I analyze is the *Godzilla* film series, which started in 1954 with the original Japanese *Gojira*. These films, particularly in Japan, are monumental releases with incredibly large cultural significance, much of which is owed to the creature’s established connection with real world nuclear disasters. These films simultaneously represent and intrinsically constitute major moments in the lives of its audience, showcasing fantastical destruction as a heightened metaphor for horrors that truly exist. Particularly with the monster’s debut in 1954 and recent major releases in the past decade, the prestige of these films constitute a particularly powerful vehicle for common sense.

Given the history of this character, there is quite a bit of academic discourse concerning the cultural icon, though very little concerns the nuclear depiction itself, especially in regard to what impact it may have on popular common sense. Godzilla, as many recognize, is a metaphor for nuclear destruction. While the bombings of Hiroshima and Nagasaki are often associated with Godzilla, the more accurate and often forgotten comparison to make is that of Godzilla to the Lucky Dragon incident at the Bikini Atoll (nuclear weapons testing by the US led to multiple

deaths and widespread nuclear contamination in Japan). As a scholar notes, “the Lucky Dragon incident – which both spurred the anti-nuclear movement in Japan and inspired the creation of the longest continuously running movie franchise in the world – has been pushed to the edge of public history and memory” (Cho, 2019, page 128). Furthermore, Cho claims that the erasure of the Bikini Atoll incident was “deliberately engineered to enable the seamless transition from ‘nuclear for war’ (weaponry) to ‘nuclear for peace’ (energy) during the period immediately after the Second World War.” This conflation between the two common applications of nuclear fission, and the idea that public memory was deliberately purged and manipulated to *forget* what happened at the Bikini Atoll, suggests that public perception of nuclear science has already been previously influenced, and perhaps that media artifacts like *Gojira* (released merely four months following what happened at the Atoll) are some of the only cultural remnants of this incident.

Most academic mention of Godzilla pertains to erased history, but there is virtually nothing apart from William M. Tsutsui’s work which acknowledges the creature’s modern nuclear iconicity and influence. Tsutsui asks for “people to take Godzilla more seriously”, citing “Rose Parade floats and Taco Bell ads...cartoons in the New Yorker...G-FEST, the nation’s largest Godzilla fan convention” and more as proof that Godzilla has saturated American pop culture, and established a reputation beyond what ticket sales suggest (Tsutsui, 2013, page 353). Much like Elvis, a name everyone knows despite perhaps most people not knowing many of his songs, everyone is able to identify Godzilla by his signature roar, atomic breath, and overall visual design. Alongside Tsutsui, fighting the reputation of Godzilla films as indulgent kitsch, I believe Godzilla should be taken seriously for his cultural impact. Furthermore, however, I argue that the social implications of Godzilla’s nuclear affiliations are worthy of critical analysis beyond what little research currently exists on the topic.

Scholarly discourse on *The Simpsons* is significantly more scarce overall. Despite the show's iconic characters and immense success, there is very little scholarly acknowledgement of the show's cultural influence. With regards to common sense, the importance of repeated primetime exposure cannot be overstated, as *The Simpsons* aired episodes routinely with repeated visuals, themes, characters, and overall depictions that likely became evermore commonplace in the mind of its audience with each additional exposure. Such depictions, as much as they may help to define the audience's common sense, are also products of the existing common sense regarding the way such things are expected to be depicted.

One article, from Scepanski, highlights how the show's Orwellian erasure of certain episodes and jokes can "indicate larger patterns about how culture remembers its own histories" (Scepanski, 2019, page 307). Scepanski is concerned with the show's self-censorship regarding content that might be misconstrued as relating to the 9/11 terrorist attacks, to which I respond in wonder why the same sensitivity and respect for the show's influence is not extended similarly to nuclear-related incidents such as Chernobyl. As I will soon demonstrate in my analysis and interpretations of the show, *The Simpsons* incessantly satirizes nuclear energy, yet it is possible such depictions are merely an unconscious reflection of common sense. This explanation pardons the lack of retroactive self-censorship, yet makes the apparent need for it even greater, as such distorted and problematic nuclear depictions are still not even identified as such, as they are so embedded in common sense that they go largely unquestioned.

The final media products that will be analyzed in this paper are the *Fallout* and *Call of Duty* video game series, and before getting into the specifics of these pop culture artifacts, it is important to establish not only the academic merit of studying video games, but also to suggest why their effects on common sense might be especially potent. The first pillar of what makes

video games such an influential media experience is their *interactive* nature, distinguishing this medium as something more than a passive observation. As McClancy notes, there is a kind of “programming” that happens when gamers interact with “a relatively complicated interface system that requires fairly rapid reaction time from the player, [and] rewards players who make those physical movements without conscious thought” (McClancy, 2018, page 11). Gamers are incentivized to internalize these controls to be effective in-game, consequently, their in-game experiences are subject to be similarly internalized. For example, a gamer who has faced dozens of nuclear threats may be similarly programmed to react instinctively, through the same process of habituation, as any driver does when a red light or sign is observed. For the driver, it is a given that red means stop. Similarly, for a gamer, it may be a given that “nuclear” is dangerous.

Schulzke builds on this, arguing for the relatively deeper immersion into a given setting which video games provide in comparison to literature or film, and citing how players “become active participants in creating or perpetuating those problems that make game worlds dystopian” (Schulzke, 2019, page 316). This point, that player choice and freedom seemingly allows for more personal agency within these worlds is imperative. As Schulzke continues: “Games can constrain players’ choices in ways that force players to take certain actions.... draw[ing] players into the underlying logic that governs the dystopian world” (Schulzke, 2019, page 324). While video games are often heralded for their ability to allow for player choice, the ironic converse effect is often observed, as the absence of a particular choice can leave the player feeling constrained, or worse, unconsciously *coerced* into acting within the underlying logic of the game. These limited choices are all technically made by the players, but are often suggested or made optimal by the rules of the game, thus manipulating the player’s experience, and creating a level of complacency with the world of the game through the illusion of choice. This

complacency may extend beyond the game's mechanics into its visual depictions and messages, implicating these aspects of the game deeper into the player's common sense.

The second pillar of video game importance with relevance to influence as a medium is the concept of *replayability*. Video games often provide a repeated experience, or at the very least, repeated visuals, providing a stronger reinforcement of ideas much like I discussed with *The Simpsons*. However, combined with the aforementioned pillar of programming complacency within digital worlds through restricted choices, replayability becomes a more important concept to address in reference to video games' potential influence on public perception. Matheson cites this concept in relation to a reviewer's praise of a game titled *First Strike*, promoting on the basis that "the replay value is through the roof, since every experience is different. Even without multiplayer, you will come back over and over again" (Matheson, 2015, page 473). This quote establishes both replayability and multiplayer as major attractions with any game, even suggesting in this case that the absence of the latter is made up for by the extent to which the former is present.

With these pillars of programmed complacency and replayability in mind, video games clearly present a significant potential influence on gamers when both pillars are incorporated into a game's design, making their omission from scholarly study pertaining to how media studies potentially influence popular common sense surprising. In a discussion of how *Call of Duty: Black Ops* presents falsified and embellished historical events as secret truths, Pötzsch and Šisler suggest that public memory of such events becomes polluted, noting that "no studies have investigated the interrelation between games and cultural memory" (Pötzsch, 2019, page 4). Similarly, I suggest that the following depictions leave an impression on the minds of the public's collective common sense that nuclear energy is dangerous.

As I will show in my analyses of these media artifacts, all of which hyperbolically depict nuclear *anything* with exaggerated potency and imaginatively greater consequences than their real world counterparts, there is a significant potential influence between such portrayals and the current common sense than the public, including media scholars, seems to be aware of.

'Godzilla' Analysis and Interpretation:

Including the original 1954 film, Godzilla stars in 35 major films, along with other comics, television shows, merchandise, and even a theme park in Seibuen, Japan. Godzilla, alone, holds a significant place in popular common sense, transcending the legacy of the films themselves, as evidenced by the presence of vernacular terms like “bridezilla.” Furthermore, the synonymous aspects of the character itself, such as his signature roar and atomic breath, are present in every iteration of the creature, including a plethora of cameos in other media and even direct references to events in the real world, meaning any reference or slight indication of the character brings to mind, as a part of the public’s common sense, a dangerous nuclear creature.

Following *Gojira*’s opening scene, which parallels the Bikini Atoll incident with a large nuclear blast at sea, the audience is presented with an inexplicably destroyed village. Scientists with Geiger counters tell the citizens it isn’t safe to use the wells due to the radiation, which describes one of the long-lasting effects the real world also had to face with this nuclear threat, further connecting this yet unseen nuclear terror to the Bikini Atoll incident. It becomes clear through the cinematography shortly following this exchange that the entire scene had been inside a giant footprint, showing it was some large creature that had this nuclear effect, connecting both incidents, and establishing this unknown threat as nuclear from the very beginning of the film. Once Godzilla openly attacks, dialogue establishes this more concretely, as scientists note that “high levels of radiation of the kind produced by H-bombs [are] in this sand from Godzilla’s

body.” Following this establishment that the creature is inherently radioactive, people react by yelling phrases such as: “atomic tuna, radioactive fallout, and now this Godzilla to top it off” and “I barely escaped the atomic bomb in Nagasaki -- and now this!” These sentiments define Godzilla as the paradigmatic exaggeration of nuclear dangers, placing the monster in direct comparison to the Hiroshima, Nagasaki, and Bikini Atoll incidents.

Godzilla’s first assault on a major city is shown and even televised with a commentator giving a play-by-play on the destruction, stating “Godzilla’s leaving a sea of flames in its wake! For those watching at home, this is no play or movie. This is real, the story of the century!” This meta quote is accompanied by destruction on an unimaginable scale, as Godzilla tears through and sets aflame an entire city. The visuals parallel a level of destruction only ever seen in the real world at Hiroshima and Nagasaki, and the commentator stating that this is “no play or movie” once more establishes the truth that destruction on this scale truly *isn’t* confined to fiction, as this amount of destruction can be caused by a similar nuclear menace in the real world.

Dr. Serizawa, a scientist studying the effects of oxygen, creates a device capable of destroying oxygen in water, immediately killing anything inside. His fish’s instantly revealed skeleton floats to the bottom of the tank during his demonstration while Serizawa explains that “just a ball of this substance...could lead humanity to extinction, just like the H-bomb.” This quote quite plainly equates this fictional technology of catastrophic potential with the nuclear weaponry humanity already possesses. Furthermore, Serizawa laments that “adding another terrifying weapon to humanity’s arsenal is something I can’t allow”, at first refusing to use this technology against Godzilla. Later in the film, given no other alternative, Serizawa uses this power to kill Godzilla, and stays in the water alongside the monster, sacrificing himself as well, hoping to prevent such powerful technology from ever again being weaponized.

The subtext of this scene, where the scientist dies by his own creation in an attempt to seal it away from ever again being used, to kill a creature that the film has already established as a metaphor for the real world equivalent of such a terrifyingly strong weapon, clearly asserts that such weapons of mass destruction shouldn't exist. Furthermore, by introducing an even more powerful fictional weapon, the oxygen destroyer, as the only thing capable of toppling a nuclear threat like Godzilla, this film issues two ominous warnings: first, that there is no *real* higher power than nuclear, as only something fictional is capable of defeating Godzilla; and second, that such an unimaginably more horrible device is inevitably on the horizon thanks to the Pandora's box of nuclear destruction humanity has opened.

The final words of the film further reinforce this sentiment of growing danger on the horizon, while simultaneously bringing the focus of the film back from the speculatively more dangerous and fictitious example to the present day message in 1954: where an onlooker warns that "if nuclear testing continues...then someday, somewhere in the world... another Godzilla may appear." This statement, especially the part regarding somewhere in the world, is Japan warning that this is not only a horror they have endured, but something that can and likely eventually *will* happen to others, once again instilling fear of the prospective destructive future of "nuclear testing." The nuance of this phrasing, omitting any implication of weaponry or war at all in this context, suggests simply that "nuclear testing", in general, is destructive, dangerous, and unnatural, even when not purposefully weaponized, leading to catastrophic repercussions.

In 1995, Toho released *Godzilla vs. Destroyah*, which modified Godzilla's representation of nuclear dangers to act as a metaphor for the Chernobyl disaster that had occurred less than a decade earlier. Dialogue in the film reveals that "Godzilla's power source, which is equal to the heart in a man, is nothing but a power reactor", and that "nuclear fission is Godzilla's source of

energy”, signifying the monster as a kind of walking nuclear reactor. As scientists explain, Godzilla is experiencing an increased rate of fission (much like what caused the meltdown at Chernobyl), which will result in an explosion more devastating than “all nuclear weapons put together. A burst of energy unseen since time began...vaporizing everything we know.” This is constantly reinforced by Godzilla’s visual design in this film, where cracks in his skin glow bright red and pulse, like a volcano on the verge of eruption. Despite his titular opponent, with the powers of an oxygen destroyer, and a freezing agent made by the humans, Godzilla’s meltdown still arrives.

During this meltdown, Godzilla emits a large cloud of smoke along with changing colors and brilliant pink and white powder, to which an onlooker gazes in awe saying “what radioactivity!” After Godzilla has melted away into nothing more than a cloud of radioactive dust and lava, more bystanders note that “it looks like we paid for it in the end. All of it. All that stupid use of nuclear energy.” These comments reinforce the visuals, clearly indicating all the destruction resulting from both the epic battle and Godzilla’s meltdown; and attributing it all to “that stupid use of nuclear energy.” However, in the final shot of the film, through a clearing smoke cloud, Godzilla is seen standing tall and roaring once more. This is Godzilla’s son, Junior, who had been killed by Destroyah, revitalized, taller and stronger than ever in the wake of Godzilla’s meltdown. Immediately following this, the credits roll accompanied by footage from *Gojira*, where the monster destroys Tokyo. The message in the climax and denouement of this film are clear, that no matter what new technology humanity employs to mitigate nuclear threats, whether a freezing agent or a fictional oxygen destroyer, meltdowns are inevitable, and that in the wake of every nuclear disaster there will always be another Godzilla. While this film does

position Godzilla as humanity's ally against the cruel Destroyah, the collateral damage is immense, and whether this nuclear titan is friend or foe, its power is beyond humanity's control.

In 2014, an American Godzilla film was released that furthered this sentiment in the wake of the 2011 Fukushima meltdown, once again depicting Godzilla as a force of nature beyond humanity's capability to control, and framing any attempts to do so as hubris. The film establishes Godzilla, along with the MUTOs (Massive Unidentified Terrestrial Organism), as hailing from an age "millions of years older than mankind", from "when the Earth was ten times more radioactive than it is today... consum[ing] this radiation as a food source." While this has been a scientifically incoherent explanation for Godzilla's size in films for decades, by extending this logic to the MUTOs, this film perpetuates such a myth about radiation sustaining titanic creatures on a more general scale, beyond the already established character of Godzilla.

Later in the film, after a successful push against intervening with nuclear weapons to stop the monsters, Dr. Serizawa stands stoically and states that "the arrogance of man is thinking nature is in our control, and not the other way around. Let them fight." This scene, presented as a summation of the film before its indulgent climax, pointedly suggests that nature (in this instance, three titanic nuclear monsters) are better left to their own devices without humanity's meddling. To interfere here with the nuclear titans will be similar to the arms race in the Cold War, where humanity will only continue to escalate the danger to an excessive extent. Dr. Serizawa is proven right in the film's climax, when Godzilla defeats the final MUTO via decapitation while firing his atomic breath directly into its mouth alongside a swell of music, cementing himself as the alpha predator Serizawa hypothesized him to be. The imagery suggests that a nuclear menace (whether warhead or titanic beast) is only able to be defeated by a parallel or greater nuclear menace, both of which are beyond what humanity is capable of controlling.

In 2016 *Shin Godzilla* was released, Japan's first Godzilla film since the Fukushima meltdown in 2011, which featured heavy commentary on the bureaucratic government's inability to effectively respond to the multi-staged disaster at hand. Godzilla, who is seen constantly mutating before the horrified onlooker's eyes, is nightmarish in this iteration, constantly adapting to the threats at hand and escalating in destruction just like the earthquake, flood, and subsequent meltdown in Fukushima. This horrifying visual depiction is attributed to "dumping of radioactive materials", which also explains why it can mutate into "an entirely new lifeform." Godzilla is also described as having "something akin to a nuclear reactor in its body", clearly establishing this creature from the very beginning as a product of humanity's mishandling of nuclear materials, and a personification of the consequences.

Godzilla's atomic breath, like every aspect of the creature, is significantly more horrific in this film. Godzilla concentrates the flames into a bright purple beam that cuts through the skyline, firing from each of his dorsal fins into the sky to stop an aerial attack. These beams are depicted as unstoppable, extending far beyond the reach of the frame, and accompanied by music suggesting a deep sense of dread and epic, perhaps Biblical importance. An onlooker notes this monster is "truly a god incarnate", as Godzilla stands amongst a sea of fire. This scene, unlike most depictions of the character outside of the original 1954 film, establishes Godzilla once more as a threat of infinite destructive potential, something terrifying and unstoppable. As one newscaster notes the next day, "to describe what I'm looking at right now is apocalyptic. It's almost like looking at the historic photos of Hiroshima and Nagasaki after the bombs were dropped." This scene effectively reproduces for a whole new generation born decades after World War II the intrinsic horrors of nuclear devastation which Godzilla was originally meant to portray. In this context, a subsequent quote from a Japanese politician in response to a request

from the U.S. to nuke the creature, saying “man is more frightening to me than Godzilla” is made all the more impactful, suggesting once more that humanity is unfit to wield this power, and that it becomes more frightening when irresponsibly handled.

This sentiment is built upon in the final shot of the film, after freezing the creature, where a grotesque web of tangled human-like corporeal figures in agony reach out of Godzilla’s tail ^(See Figure 1), suggesting humanity is the root cause of this nuclear destruction personified by Godzilla. Furthermore, this image suggests that our attempts to halt nuclear devastation are futile, as even in Godzilla’s final moments, it was attempting to spawn more of itself to carry on its legacy and reproduce. The ominous potential for further danger is corroborated through this imagery and the prior dialogue from an American contact that “the countdown was only suspended, but it’ll restart if Godzilla begins moving again. Nuclear weapons will be used if that happens”, to which her Japanese counterpart replies that “all mankind must coexist with Godzilla.”

This suggestion at the inevitability of nuclear disasters, especially in the wake of the recent tragedy at Fukushima, is especially unsettling. Additionally, by personifying nuclear destruction on a nightmarish scale far beyond any other film in the series since the original, it also suggests that the *real* nightmare of dealing with such intrinsic potential dangers is that people are unfit to harness said power. These sentiments are further reinforced into common sense in a very different media artifact: *The Simpsons*.

‘The Simpsons’ Analysis and Interpretation:

The Simpsons is the longest running scripted show on TV, and thanks to this history and unique visual style, it has carved a name for itself as a cultural phenomenon. In addition to their primetime timeslot, the Simpsons family have been featured in televised parades, theme park attractions, and other highly publicized crossover episodes, most of which relate to one of the

show's defining characteristics: its copious commentary on nuclear energy. Especially during the first seasons of the show only two years after the Chernobyl meltdown, where ratings were at almost 30 million viewers, this repeated routine exposure to distorted nuclear imagery becomes a powerful mechanism for influencing common sense (McCarthy, 2017). While the show's treatment of serious topics such as nuclear power plants, the intelligence of the employees involved, and the effects of their waste on the environment is satirical, the *repetition* of themes, imagery and characters relating to nuclear energy potentially plants a fertile seed in the minds of viewers that such depictions are more commonplace.

While there is a myriad of repeated imagery throughout the more than 30 seasons of the show, such as Homer asleep on the job as a nuclear safety inspector at the plant, or radioactive waste dumping resulting in Blinky the three-eyed fish, there is one particular joke that is repeated so often that it is present in almost every single episode, since it is made in any episode that features the show's standard intro. During the show's title sequence, there is a scene where Homer is first shown at his job, carelessly throwing a bright green radioactive rod haphazardly away at the end of his shift, which falls into his shirt. Later in the sequence, while driving home, Homer takes the rod out of his shirt and tosses it out of the car window with no regard for where it lands or what it might affect ^(See Figure 2). This two part gag is present at the start of almost every episode, even after the major revision of the title sequence in 2009 at the start of season 20, where the intro was significantly changed.

Furthermore, many episodes build on this scene presented in the title sequence, showing hyperbolic effects of nuclear radiation, particularly when it is mishandled and dumped haphazardly as described above, but none more infamously than the fourth episode of the show's second season 'Two Cars in Every Garage and Three Eyes on Every Fish.' In the episode, Bart

Simpson catches a three-eyed fish, and the camera pans to show the nearby nuclear power plant, clearly suggesting that irresponsible dumping of radioactive waste has caused this mutation. A government inspection team visits the plant, and their Geiger counters are immediately engaged, to which Mr. Burns, the laughably evil and greedy owner of the plant and ‘Scrooge’ of *The Simpsons*, suggests that this is simply “normal background radiation.” A montage then ensues of Burns leading the team around the plant and offering similarly weak excuses for large cracks in the cooling towers fixed with chewing gum, a plutonium rod being used as a paperweight, and a leak of bright green goo from an overhead pipe which burns through a clipboard, that Burns explains has “always been like that.” His willful negligence and poor excuses during this inspection indicate a complete and utter disregard for safety, and highlight his sole concern for monetary consequences. This is confirmed after, as Burns fails to bribe the inspection leader to turn a blind eye to the “342 violations I have observed at your plant today.”

In an attempt to save face on the charges brought against the plant’s dumping of radioactive waste, Burns runs for local office, and campaigns on TV by stating Blinky (the three-eyed fish) is a product of “natural selection”, and certainly not evidence of nuclear mutations. This quote is so important because it comes *from* Burns, a character who obviously lacks credibility, and to hear him saying this thing is “natural” highlights just how *unnatural* it truly is. In the climax, in front of the media, Marge Simpson serves Mr. Burns a Blinky fillet, and he spits out the first bite he struggles to take, showing plainly the meat *is* tainted by the radioactive waste dumping (similarly to the well in *Gojira*, and the Atoll incident it references). This early episode, near the apex of the show’s popularity, frames nuclear plants as (1) having irresponsible waste dumping practices resulting in horrendous mutations like Blinky, (2) being compromised of bungling idiots such as Homer who is shown asleep on the job on two separate occasions in this

episode alone, and (3) being run by greedy men who don't care about either of the two previous points so long as his wallet isn't inconvenienced.

This episode aired months after executive producer, Sam Simon, had been invited to a nuclear plant in San Onofre, CA, after similar content in previous episodes had “offended a lot of people in the energy industry...confusing and frightening viewers by portraying nuclear power plant personnel as bungling idiots”, after which Simon had responded by saying the show would phase out “cheap shots” at nuclear energy, along with the character of Blinky altogether (L.A. Archives, 1990). Despite this statement, many *other* three-eyed fish almost identical to Blinky would appear in future episodes, along with a variety of jokes at the expense of nuclear energy, especially with regards to Homer being a bungling idiot on the job.

Homer's inability to responsibly operate a nuclear power plant is a central part of his character, present in every episode's opening sequence and used as a joke as far back as the very first episode that aired December 17th, 1989 ('Simpsons Roasting on an Open Fire') where Homer fails to notice a dial move to “danger” right in front of his face. While these aspects of Homer's character were well established by 1991, 'Homer Defined', which aired on October 17th of that year, features a very deliberate titular gag which hammers the point home. After resorting to “eenie meenie miny moe” as the method for guessing which button will stop a nuclear meltdown at the plant, Homer's face appears next to the word “lucky” in the dictionary. At the end of the episode, his face appears next to his own name in the same dictionary, defined as “American bonehead”, citing the phrase “to pull a Homer” to mean “to succeed despite idiocy.” This titular gag defines Homer's character not only in this one episode but throughout the entire series, extrapolating in clear language what can be visually observed in a myriad of other examples: that Homer is only capable of avoiding crises (*he* likely caused) by miraculous

interventions. In consistently and frequently depicting dumb luck as the only arbiter preventing catastrophic chaos, the show offers an uneasy suggestion that similar unseen ‘almost-disasters’ may constantly be happening behind the scenes in real life nuclear plants.

The repetition of such ideas as presented in the show, especially those that are tied to important plot points that audiences are more likely to remember, creates a potentially significant influence. Repeated exposure to the idea that Homer is an idiot, or that Burns is greedy, even outside of the direct commentary on what respective negative traits mean for contending with nuclear plant safety, reinforce said ideas that those in charge of nuclear power shouldn’t be trusted with such responsibility. This idea, that humanity is unfit to harness power as great as nuclear fission, is a common theme through both *Godzilla* and *The Simpsons*, as well as the idea that unnatural mutations and horrific creatures can result from radiation, often via irresponsible dumping. Both mediums explored thus far, films and television, have their respective strengths in epic scale and repetition respectively, but it is with video games, which exemplify both strengths in spades, where perhaps the most damaging depictions of nuclear threats are found, which would logically stand to have the greatest potential influence.

‘Fallout’ and ‘Call of Duty’ Analysis and Interpretation:

Building upon the aforementioned idea that interactivity provides an especially potent experiential vehicle for reinforcing common sense, this section turns the analysis to some specific nuclear depictions from the *Fallout* and *Call of Duty* video game series. Beginning with *Fallout*, described as a combination of “a retrofuturist aesthetic with a post-apocalyptic one... [featuring] two imaginary histories: one in which the future of the Fifties came to pass, and one in which that future was destroyed” (McClancy, 2018, page 3). Each *Fallout* title takes place well after a nuclear holocaust destroyed the world in 2077, leaving the player to explore a

desolate world blistered beyond recognition and infested with nuclear dangers of all kinds. Within my first 10 minutes of playing *Fallout 76*, I was confronted by a “radroach”, a cockroach exposed to nuclear radiation which resulted in it growing to the size of a large housecat. This monster forced me and my ally to defend ourselves with machetes. While this first encounter with a fantastical mutation was frightening, not to mention violent, it is incredibly tame as compared to most mutations depicted throughout this series. One such example that is particularly horrifying would be the centaurs found in *Fallout 3*, enemies that are victims of artificially galvanized evolution that spit radioactive projectiles ^(See Figure 3). As with the oxygen destroyer in the *Godzilla* series, here we see a conflation between nuclear dangers and even more horrifying inventions of humankind, personifying and demonstrating the inherent nuclear dangers, and amplifying them by association with an even more unnatural and fatal force.

However, *Fallout*'s most imperative quality lies in the way its title is reflected in virtually every aspect of the world, as even aside from these monstrous mutations there is always a reminder that *nuclear* war and *nuclear* energy are what led to this destroyed future. As noted before, this post-apocalyptic aesthetic permeates the landscape, where remnants of a bygone optimism provide a sarcastic criticism of the past. For example, by contrasting the bright idealistic posters with their torn and scorched edges, faded colors, and destroyed adjacent buildings, the developers highlight a dichotomy in American optimism with our own self-destructive nature, the aftermath of which is inescapable in this world. To juxtapose these elements and highlight how wrong that optimism was about the future is not only chilling but inherently thought provoking, as it invites the player to wonder what present day optimism we collectively hold in the 2020's which might be looked back on similarly in another hundred

years. Specifically, it suggests we might want to be less naively optimistic about nuclear technology.

Unlike the worlds found in *Godzilla* and *The Simpsons*, which are terrorized by a nuclear disaster and the ever present threat of one respectively, *Fallout* operates entirely within the aftermath of a terrible nuclear disaster which has already come to pass, completely permeating every aspect of the world. Once again, within my first 10 minutes of playing *Fallout 76*, I found myself crossing a stream contaminated with nuclear waste, and as soon as I stepped foot in it, I heard a Geiger counter go off, and my health bar began to deplete as a red trefoil (the radioactivity warning symbol) appeared alongside it. These nuclear interactions are omnipresent in the world of *Fallout*, and despite not being as imposing as a fight with a centaur, these interactions speak to the much more realistic long-term effects of radiation.

The way the game depicts taking damage from exposure to radioactive agents, such as this water, is more realistic in comparison to some of the other nightmares in this world. However, as with non-human characters in *Godzilla* and *The Simpsons*, in these games humans don't die of radiation; they often transform into some kind of abomination. In fact, some ghouls (the in-game name for mutated humans that can still function despite their cadaverous appearance), live longer because of their exposure to nuclear radiation and are even *healed* by it. This scientifically ludicrous effect, contrasted with the fatal effects radiation is observed to cause in real cases of human exposure, is made perhaps less jarringly false by its association with the more realistic portrayal of gradual damage sustained when players themselves are exposed to radiation. If these portrayals are subject to make more of an impression due to the medium's interactive nature, accentuated by the repeated exposure and reinforcement of said depictions every time the player encounters an enemy, ally, or even the general environment, there is a

significant potential that players will internalize at least some of these negative experiences. Intertextuality with previously addressed nuclear depictions furthers this likelihood.

For example, in *Call of Duty: Infinite Warfare*, there is a direct reference to *Godzilla*'s genre of films with the meta 'Attack of the Radioactive Thing', where the player is transported into the world of a film infested with zombies that features a titular monster of colossal size, an already-established image that makes sense *because* of *Godzilla*'s influence over common sense. This 'radioactive thing', is a giant crab beast clearly insinuated through the abundance of green ooze and Geiger counter noises to be dripping with radioactivity. This same green ooze is used to block the player from straying outside the confines of the playable area, as they will rapidly take damage and eventually die if they are exposed to too much. This experience, in particular, directly echoes those depictions found with *Godzilla* and *Fallout* with similar visuals and gameplay, further reinforcing the idea that nuclear waste can result in giant monsters *and* that said waste is incredibly dangerous. (See Figure 4) While the latter of these is true, the speed at which one dies if exposed to said radiation (less than 2 seconds unless special upgrades have been acquired), provides an intense fear of accidentally exposing oneself to these substances.

In *Call of Duty: Black Ops Cold War*, in addition to normal zombies, there are megaton zombies, clad in hazmat suits, which glow bright green and throw projectiles that have a similar damaging effect when near the player. When first introduced, there is a high chance a side character will warn the player that "a radioactive specimen is moving towards you. Its radiation levels are through the roof! That thing's practically a walking atom bomb", echoing the descriptions found of *Godzilla* in films discussed above, personifying established nuclear dangers through these creatures. These radioactive zombies deal significantly more damage than normal zombies, and require more firepower to defeat, even splitting in half to produce two more

of itself once defeated. (See Figure 5) For each of these monsters killed, a player will earn a “radioactive waste” medal at the end of the game, further reinforcing in context with these monsters that their increased power is a result of their nuclear attributes. Another medal, which is awarded for the astounding feat of killing 30 enemy players without dying in the game’s main multiplayer mode, is simply titled “nuclear.”

Multiple *Call of Duty* titles feature this medal, which has no direct connection to any in-game nuclear power up. Thus, its acknowledgement of such a level of lethality as “nuclear” is alienated from any direct link to nuclear energy or weaponry. This medal serves as a culmination of all the media discussed up to this point, conflating nuclear science of any kind with the powerful destructive capability observed in instances like Hiroshima and Chernobyl, and invoking such incidents with the mere mention of the single word “nuclear.” The simple fact that in this context a “nuclear” medal makes *sense* to players, proves that “nuclear” has been conflated in the collective common sense to mean “deadly.” While giant radioactive beasts and hyperbolic satirical jabs at bungling plant workers first communicated this message, it now stands on its own without further explanation as evidenced by this simple medal.

Conclusion:

After analyzing a variety of media artifacts, I suggest there is potential for a significant influence on our society’s collective understanding and subjective evaluation of the term “nuclear” as a result of said media. As shown in my analyses of *Godzilla*, *The Simpsons*, *Fallout* and *Call of Duty*, such entertainment media frames anything and everything “nuclear” as a catastrophically deadly power beyond humanity’s control that can result in terrifying and unnatural mutations. While taken individually it is obvious these portrayals in such pop culture artifacts are exaggerations, their collective reinforcement of these sentiments about nuclear

dangers over the past six and a half decades has arguably created a synergy much more influential than the sum of its parts. Despite these depictions spanning history and mediums, there is a consistent warning to humanity not to meddle with dangers beyond our comprehension, preaching an imperative caution in dealing with this open Pandora's box. Furthermore, most of these media even suggest that any kind of peaceful coexistence with such a destructive and unnatural force is impossible, as seen in the seeming inevitability of another attack in *Gojira* and *Shin Godzilla*, or the inescapable failed utopia destroyed by nuclear weapons in *Fallout*.

Through repeated exposure to common sets of associations, these consistencies in fictional media depictions ease public acceptance of key myths (e.g., that all radioactive materials glow bright green). If much of the public accepts that it makes sense for radiation to lead to horrifying mutations or that humans are self-evidently unfit to control nuclear power, there is a significant possibility that these beliefs are either due to or perpetuated by such media.

One key limitation of this study was my focus on these particular media artifacts. Other examples of prominent characters in popular culture like Spider-Man, who is often associated with radioactive spider bites, were neglected in this paper in favor of other examples, although I suspect there are many similar entertainment media artifacts which echo similar themes and depictions to what has been discussed here.

Still, my analysis supports the idea that these media products have added to and reinforced the common sense that defines nuclear energy for large swaths of media consumers, and that this potential influence might significantly color public opinion of nuclear energy. In response, my analysis calls for greater public awareness that such depictions may distort our perceptions of nuclear energy. My analysis also suggests that entertainment media depictions of nuclear science and technology may be proper subjects for media literacy education.

Appendix:

Figure 1 - *Shin Godzilla* final shot

Figure 2 - *The Simpsons* intro

Figure 3 - *Fallout 3* Centaur

Figure 4 - *Call of Duty: Infinite Warfare*

‘Attack of the Radioactive Thing’

Figure 5 - *Call of Duty: Black Ops Cold*

War Megaton Zombies



Annotated Bibliography for *A Damaged Reputation: Nuclear*

Depictions in Entertainment Media

1. Anno, Hideaki and Shinji Higuchi, directors. *Shin Godzilla*. YouTube, Toho Pictures, 2016, <https://www.youtube.com/watch?v=1ujbZQitfmg>.
 - a. The 2016 film *Shin Godzilla* was the first Japanese Godzilla film since the 2011 Fukushima disaster, and this film directly correlates with the events using Godzilla as a direct metaphor for the nuclear meltdown, suggesting humanity's inability to control such immeasurable and awesome power. The film ends with an ominous warning that the danger is merely frozen not conquered, and that further nuclear violence will continue if Godzilla ever thaws. The messages of this film warning of humanity's inability to control this nuclear destruction would be inescapable for its audience, whose common sense regarding nuclear science would likely be affected.
2. Barker, Chris. *The Sage Dictionary of Cultural Studies*. SAGE, 2004.
 - a. This source provided a concrete academic definition of 'common sense' as coined by Antonio Gramsci, and how it is used in modern media studies discourse. Providing this context in my paper was essential as a basis for how these entertainment media could potentially affect a semi-conscious negative public understanding of nuclear science.
3. Bethesda Game Studios. *Fallout 3*. Bethesda Softworks, 2008. Xbox 360.
 - a. The world of *Fallout* takes place after a worldwide nuclear holocaust, and pins the player against a litany of nuclear threats, including horrifically mutated animals and other humans, most of which have enhanced strength and other scientifically ludicrous, evolutionarily impossible features. A specific enemy mentioned in this

paper and shown in my appendix as Figure 3 is the centaur: a disgusting amalgamation of human flesh that spits radioactive projectiles. Such depictions are commonplace in this universe, and to suggest something like this is possible not only slanders the effects of nuclear science, but also creates a stigma around humanity harnessing such powers. All of the omnipresent quotidian destruction the player is surrounded by is thanks to the titular nuclear fallout after humanity started a full on nuclear war.

4. Bethesda Game Studios. *Fallout 76*. Bethesda Softworks, 2018. Xbox One.
 - a. Another window into the *Fallout* universe, my experience with this game was similarly horrific and slanderous towards any nuclear forces in this apocalypse. From the very first 10 minutes of gameplay, as I state in my paper, the player will realize that anything in this wasteland is out to kill them with radiation, including even the passive environment. I describe a ‘Radroach’ in my paper as an enlarged cockroach the size of a house cat, which was not only the first enemy I encountered in the game, but set the scene for future encounters with other ‘Rad’ (radiation-filled) creatures in the game. What this game solidified for me was that every facet of these games, even those passive details that I couldn’t directly interact with, supported the idea that nuclear fallout taints the world beyond salvation.
5. Cho, Yu-Fang. “Remembering Lucky Dragon, Re-Membering Bikini: Worlding the Anthropocene through Transpacific Nuclear Modernity.” *Cultural Studies*, vol. 33, no. 1, Jan. 2019, pp. 122-146. *EBSCOhost*, doi:10.1080/09502386.2018.1428643.
 - a. Cho talks about the American bastardization of the Godzilla franchise, particularly with the 1956 localization of the first film, where Godzilla is presented as a consequence of the “necessary evil” of the bombings, whereas Japan sees it as simply “evil.” Cho continues to expose a comparison most Americans didn’t understand and still don’t, forgetting the tragic *Lucky Dragon* incident in 1954 when a Japanese fishing vessel was subjected to nuclear testing by the United States that resulted in everyone on board dying from acute radiation poisoning, and further tainting the fish and water upon which the Japanese people depended. Cho’s article is one of very few which talk about this real-world source

of information which highly influenced the filmmakers, and proves that people attribute what they see on the screen to real events (even if most think of the wrong nuclear disaster when watching the first Godzilla film).

6. Edwards, Gareth, director. *Godzilla*. *YouTube*, 31 Mar. 2021, <https://www.youtube.com/watch?v=ncOpKfB1N7A>.
 - a. This American Godzilla film was the first film after the Fukushima meltdown in 2011, and features similar depictions of incredibly dangerous giant monsters created by nuclear radiation. Furthermore, there is a moral stance this film takes against mankind interfering with the matters of these giant nuclear monsters, suggesting that humans not interfere or meddle with general nuclear experimentations.
7. Gewirtz, Howard. "Homer Defined." *The Simpsons*, season 3, episode 5, Fox, 17 Oct. 1991.
 - a. This episode, more concretely than most, solidifies Homer as a complete idiot who only manages to escape catastrophe thanks to his dumb luck.
8. Honda, Isihiro, director. *Gojira*. Toho Co., Ltd, 1954.
 - a. The first Godzilla film, released in 1954, that creates the monster as a metaphor for the Nagasaki and Hiroshima bombings, as well as an opening scene which parallels the events of the *Lucky Dragon* incident. Godzilla is presented as a hyperbolic imagining of the future consequences for meddling with nuclear science, and imagines this nuclear creature as impossible to defeat, except through an even more spectacularly destructive weapon of humanity's design.
9. Infinity Ward. *Call of Duty: Infinite Warfare*. Activision, 2016. Xbox One.
 - a. This game features a game mode called 'Attack of the Radioactive Thing' where players survive against endless waves of zombies and human-like crustacean monstrosities all dripping with radioactive green goo. One giant titular creature is meant to be a reference to Godzilla, and this intertextuality shows a corroboration of common sense throughout the decades. The more radioactive an enemy is, the more dangerous and hard to defeat they are. Furthermore, radioactive waste barrels block players from leaving the designated playing area, and kills them within seconds of leaving the playing area.

10. L.A. Archives, Associated Press. “Pro-Nuke 'Simpsons'? Wait, Don't Have a Cow! : Television: After Touring a Real Plant, Producers Say They'll Avoid Past 'Cheap Shots.'” *Los Angeles Times*, Los Angeles Times, 6 Dec. 1990, www.latimes.com/archives/la-xpm-1990-12-06-ca-8451-story.html.
- a. This article from the *Los Angeles Times* archives a visit *Simpsons* creator and executive producer Sam Simon took to a real Nuclear Power Plant following concerns about the show’s depiction of nuclear plant employees. The issue employees took with their cartoon counterparts (Homer) are addressed by Simon saying the show would phase out these “cheap shots” at the industry. However, the show maintained the same rhetoric regarding nuclear dangers, in every capacity it had already been doing with their depictions of nuclear plant dumping practices, greedy CEOs, bungling employees, and overall negative impact on the local wildlife (three-eyed fish).
11. Matheson, Calum. “Procedural Rhetoric Beyond Persuasion: First Strike and the Compulsion to Repeat.” *Games and Culture*, vol. 10, no. 5, Sept. 2015, pp. 463–480, doi:10.1177/1555412014565642.
- a. Matheson cites multiple game critics and investigates game theory to solidify the appeal of replayability and multiplayer in video games. In my paper, this is used to further explain why repeated exposure to the same video game experiences would have a greater chance at a lasting and potent impression on the players.
12. McCarthy, Niall. “30 Years on, 'the Simpsons' Isn't Aging Well [Infographic].” *Forbes*, Forbes Magazine, 20 Apr. 2017, www.forbes.com/sites/niallmccarthy/2017/04/20/30-years-on-and-the-simpsons-isnt-aging-well-infographic/?sh=73058e9c2696.
- a. McCarthy’s article presents the numbers on the official TV Ratings for *The Simpsons* as of 2017, which includes the most popular initial seasons of the show, when all of the controversy and most potent nuclear-related depictions were found. This focused my research on the first 4 seasons of the show, as after the first season’s height of almost 30 million viewers, the show has seen a steady decline in ratings.

13. McClancy, Kathleen. "The Wasteland of the Real: Nostalgia and Simulacra in Fallout." *Game Studies - The Wasteland of the Real: Nostalgia and Simulacra in Fallout*, Sept. 2018, gamestudies.org/1802/articles/mcclancy.
- a. McClancy introduces an incredibly interesting and powerful turn of phrase with regards to video games in this article exploring the worlds of *Fallout*. Finding and articulating a kind of 'programming' that takes place within the player as they progress through the game, internalizing the complicated controller interface and optimizing decisions in the game in order to reach a level of proficiency required to beat the game. This effect that McClancy describes, I argue, could extend to other repeated aspects of the game, including visuals and themes of the game (particularly those that plague the entire experience equally as much as the controls, such as the overall story told by the scorched and radiated world the player inhabits).
14. Okawara, Takao, director. *Godzilla vs. Destroyah*. *YouTube*, 20 Sept. 2012, <https://www.youtube.com/watch?v=0oXagd7Jp5A>.
- a. Okawara's film is positioned as a direct continuation of the original *Gojira* film from 1954 that furthers its themes of mankind interfering and creating horrific weapons in order to subdue our own existing meddling with nuclear destruction, including a giant monster featuring the same powers as the only technology able to defeat Godzilla in the original film: an oxygen destroyer. Godzilla's titular opponent harnesses this ability, but it fails against an internal nuclear meltdown in Godzilla's body, similar to the recent Chernobyl disaster this film follows. The final shot of this film suggests the inevitability of yet another Godzilla standing in the wake of a meltdown, depicting a never ending nuclear menace which once unleashed can never be defeated, like a Pandora's Box.
15. Pond, Mimi. "Simpsons Roasting on an Open Fire." *The Simpsons*, season 1, episode 1, Fox, 17 Dec. 1989.
- a. This was the very first full episode of *The Simpsons*, which establishes Homer as an idiot at his job at the nuclear power plant, failing to notice a danger indicator right in front of his face.

16. Pötzsch, Holger, and Vít Šisler. "Playing Cultural Memory: Framing History in Call of Duty: Black Ops and Czechoslovakia 38-89: Assassination." *Games and Culture*, vol. 14, no. 1, Jan. 2019, pp. 3–25, doi:10.1177/1555412016638603.
- a. While comparing the depictions of story missions in *Call of Duty: Black Ops* to real world counterparts, Pötzsch and Šisler note that their investigation of video games relating to cultural memory is unprecedented. This revelation that such studies simply haven't been conducted, as recently as 2019, stands up in my own research, as this was one of very few academic articles that even slightly relate to my own topic. There seems to be a lack of scholarly awareness surrounding how entertainment media (video games in particular) might affect the larger public.
17. Scepanski, Philip. "Retroactive Edits: 9/11, Television's Popular Archive, and Shifting Popular Memory." *Television & New Media*, vol. 20, no. 3, Mar. 2019, pp. 294-310, doi:10.1177/1527476417751215.
- a. Scepanski sheds light on an Orwellian attempt to erase evidence of past material aired on television that no longer falls in line with current societal values, such as jokes involving the twin towers in light of the 2001 terrorist attacks, which have since been removed from episodes of *The Simpsons* like they were never there. This sensitivity is not extended to the problematic depictions of nuclear science, which I argue proves they are so deeply embedded within the public's common sense, that they are not even questioned or recognized as such.
18. Schulzke, Marcus. "The Critical Power of Virtual Dystopias." *Games and Culture*, vol. 9, no. 5, Sept. 2014, pp. 315–334, doi:10.1177/1555412014541694.
- a. Schulzke's paper reinforces ideas presented by McClancy, articulating the interaction as a paramount reason why game worlds set as dystopias are so potent an environment. The player's interactions with the game world, and the limitation of certain choices, paint a rigid picture of this world that players become similarly 'programmed' or accustomed to, actively perpetuating the dystopian status-quo through the suggested violent actions the game incentivizes.
19. Shirley S. Ho & Silje Kristiansen (2019) Environmental Debates over Nuclear Energy: Media, Communication, and the Public, *Environmental Communication*, 13:4, 431-439, DOI: [10.1080/17524032.2019.1603018](https://doi.org/10.1080/17524032.2019.1603018)

- a. This article by Ho and Kristainsen discusses the way nuclear energy is portrayed in general news media, and how the depictions there might shape people's perception. This source was the closest academia has come to my topic of research, although I would claim an unquantifiably larger influence is had over the greater public with these entertainment media that hyperbolically depict nuclear science as an imaginatively greater threat than it already is, simultaneously associating these depictions with real-world events. By putting Godzilla in conversation with nuclear incidents such as Nagasaki, Chernobyl and Fukushima, the public associates these real disasters with the imaginatively more horrifying fictional depictions.
20. Simon, Sam, and John Swartzwelder. "Two Cars In Every Garage and Three Eyes on Every Fish." *The Simpsons*, season 2, episode 4, Fox, 1 Nov. 1990.
- a. This episode features a three-eyed-fish nicknamed 'Blinky', who causes a major issue for the nuclear power plant's owner, Mr. Burns. Burns is portrayed as incredibly corrupt, placing his reputation and wealth above the safety of the rest of the town, as he denies the obvious relation between his plant and the fish which was caught in the bodies of water the plant dumps waste into. The show portrays him as blatantly untrustworthy, and by having Burns fail to argue for a natural explanation for Blinky's deformity, in addition to the very premise of a three-eyed-fish, it portrays many potential dangers of nuclear power plants as a central plot point of this episode.
21. Treyarch, Raven Software, Beenox. *Call of Duty: Black Ops Cold War*. Activision, 2020. Xbox One.
- a. *Call of Duty: Black Ops Cold War* is a game which features a fan-favorite zombies game mode, now plagued with glowing nuclear corpses, much stronger than their normal counterparts. This depiction of a zombie exposed to nuclear radiation, described by other characters as a "walking atom bomb", clearly once again depicts nuclear threats as imaginatively more dangerous, and furthermore likens this fictional beast to another real world nuclear danger. This game also features a 'nuclear' medal awarded for a truly impressive amount of lethality towards enemy players in the game's multiplayer mode. As I describe in my

paper, this nomenclature, in order to make cohesive sense, bespeaks an imbedded amount of common sense that concretely equates the term ‘nuclear’ with words such as ‘lethal’, ‘dangerous’ and more.

22. Tsutsui, William M. “Godzilla vs. the Egghead: Negotiating the Cultures of Fandom and Academe.” *Journal of American-East Asian Relations*, vol, 20, no. 4, Dec. 2013, pp. 349-363. *EBSCOhost*, doi:10.1163/18765610-02004002.

- a. Tsutsui, a self-proclaimed “fan-scholar”, writes about his experiences advocating for academic merit in an entertainment icon with immeasurable influence. His long and pained pursuit to get other academics to take Godzilla more seriously has only just started to bare fruit, as the history and international appeal of the creature has started to attract some scholarly attention. However, not even Tsutsui acknowledges the potential damage Godzilla’s influence has on nuclear science. This was yet another source that solidified my own research as largely breaking new ground in an as-of-yet vastly underexplored genre of research.