Science Communication
33(4) 533–555

DOI: 10.1177/1075547011417893
http://scx.sagepub.com
SAGE

Doomsday Ecology and Empathy for Nature: Women Scientists in "B" Horror Movies

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Abstract

This article's purpose is to examine representations of women scientists in "B" horror movies. Portrayals of female scientists appearing in these films differ significantly from those in blockbuster films. This is because of three factors: (a) a greater freedom for controversial subject matter in low-budget movies, (b) filmmakers' use of high media attention science and environmental issues to attract an audience, and (c) the influence of Western images that feminize nature and position science as a tool to control both women and nature. The analysis describes three resultant themes in the relationship between filmic women scientists and nature.

Keywords

feminist science studies, gender and science, women scientists, ecodoom, environmentalism

> How many eyes does horror have? How many times will terror strike? They were born in that tragic time that Science made its great mistake . . . now from behind the shroud of night they come, a scuttling, shambling horde of creatures destroying all in their path.

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Or so the poster for *Night of the Lepus* (1972) warns. Ironically, "science's great mistake" was born not out of an insane desire for power and knowledge but rather from the attempts of married scientists Roy (Stuart Whitman) and Gerry Bennett (Janet Leigh) to control "a plague of rabbits" without employing environmentally destructive poisons. They inject hormones, which are intended to sterilize the rabbits, but instead enhance their growth and alter their dietary preferences to human flesh. In the opening scenes a newscaster advises that "science is doing all it can to control this population explosion, but when this effort fails nature's balance gets out of hand." Although the scientists in this "ecodoom" film are sensitive to environmental dangers, their reparative efforts make things worse. The script for *Lepus* also addresses how money and politics influence science. Against Gerry Bennett's protests, university scientists and administrators do not inform the authorities because they wish to avoid losing funding. Their decision to try to eliminate the rabbits without assistance results in many deaths. The presence of a woman scientist in *Lepus* is somewhat unusual. However, when they appear, women scientists tend to argue that science should protect children and human communities, prevent harm to the environment, or serve some other beneficial purpose. It is the purpose of this article to further explore this role of the woman scientist character type and to examine counterexamples where she privileges science or nature over humanity. This topic is relevant to larger discourses about whether science can be, or should be, free from political, economic, and other societal influences.

The woman scientist is an outsider both in science, where her "feminine" empathy is not objective, and in society, where scientific rationality conflicts with assumed "feminine" traits. Thus, she critiques two means by which science can worsen environmental crises: (a) corruption of science by political, military, or economic interests or (b) lack of concern for social justice issues. This article addresses this using the representations of women scientists in "B" horror movies with themes of environmental catastrophe. There are two major areas of emphasis: (a) the role of women scientist characters in causing or preventing this damage and (b) the woman scientist character's view of the impact of political, economic, or ethical concerns on scientific research. Thus, the article adds an analysis of filmic imagery to feminist critiques of science practice that is detached from societal concerns.

In addition, this analysis is significant because most work on female scientists has focused on blockbuster Hollywood films (Flicker, 2003, 2008; Steinke, 2005). In contrast, "B" movies target smaller audiences interested in horror or science fiction, have less funding, and, therefore, need to earn less to be profitable. Thus, they can present material that might alienate a broader audience.

Furthermore, female mad scientists are relatively common. This differs from the pattern in blockbuster films, where female mad scientists are described as nonexistent (Flicker, 2003, 2008) or rare (Steinke, 2005). I argue that this is because filmmakers can use female mad scientists to heighten dramatic tension in horror films by making them emblematic of science's potential both to solve and to contribute to environmental crises. Will the woman scientist protect humanity from natural catastrophe or from harm caused by science? Or will she protect nature from humanity, or even punish humanity for harming nature, instead?

Literature Review

Political Messages and Attracting Audiences in "B" Movies

Andrew Tudor (1989) argues that in ecodoom films, science is not a protective resource for humanity. Instead, it is used by corporate interests, the military, and government to maintain control and domination over the public (Frayling, 2005; Tudor, 1989). In spite of having few resources, low-budget filmmakers can have considerable latitude to incorporate political critique. For example, Adam Simon, director of *Carnosaur* (1993), explains when comparing his film with *Jurassic Park* (1993):

> We could be smarter, in some ways, because when you make a $100 million movie, you're making a corporate product that has to please millions of people, so no matter how beautifully you do it, it has to be somewhat debased on the level of ideas. We could be more political than they could be. And we could be grosser. (Biodrowski, 1993, p. 23).

And describing how politics informed his script for *Alligator*, acclaimed independent filmmaker John Sayles opines, "Most social problems don't get dealt with until they affect the upper classes, so that's what you see with the alligator, it starts in the ghetto and then attacks the middle class and then the upper class" (interview on *Alligator* DVD extras).

Matteo Merzagora (2010) argues that filmmakers employ existing imagery and stereotypes to market their productions, attract an audience, and make money. Science-related films are concentrated in horror and present scientists as "eccentric" (Weingart, 2008). Similar stereotypes appear in venues such as children's drawings of scientists (reviewed in Frayling, 2005; Jones & Bangert, 2006; Steinke et al., 2007). The most common feature of classification schemes for both positive and negative representations of scientists in film is "an unstable

equilibrium between knowledge and power" (Merzagora, 2010, p. 45). Mad science images also appear in public debates about research programs, their ethics, and regulation (e.g., in vitro fertilization; Mulkay, 1996). These images have been interpreted to represent generalized, widespread anxieties about the impacts of science and technology (Skal, 1998) or suspicion about scientists' obsession with learning at any cost (Hark, 2004; Haynes, 1994; Panesgrau, 2008; Wexelblatt, 1981). Instead of shaping these perceptions, movies reflect them and are "thus a rich reservoir of the main fears and hopes that science has generated" (Merzagora, 2010, p. 41). And these threats can be exaggerated to attract an audience (Toumey, 1992). "B" films are a particularly rich "reservoir" of "fears and hopes" because given their limited releases and small budgets, filmmakers can generate interest by linking to contemporary public controversies.

Feminist Science Studies: Approaches to Film Analysis

Feminist scholars critique the gendered and anthropocentric assumptions that support oppressive practices. For example, some feminists argue that a focus on using science to control nature underlies environmental damage (e.g., Merchant, 1996, chap. 4). Furthermore, many argue that in Western culture, science has been associated with presumed "masculine" traits such as rationality, objectivity, and the lack of emotion that are defined against essentialized "feminine" traits (emotion, empathy, intuition; e.g., Keller, 1982). Furthermore, these gendered relationships contributed to the image of masculine science dominating a feminized nature by language that linked "domination of nature with the insistent image of nature as female" (Keller, 1982, p. 36). To achieve this, the male mad scientist uses technology to seize female reproductive power, perhaps the ultimate example of nature's power, for himself (Hark, 2004).

In contrast to dominating nature, some women have used their presumed connection to nature to argue for its preservation. For example, in 17th-century Britain, since a woman was "both 'nature' and 'man,' she could critique the modern project of mastery, even as she reached toward a distinctive knowledge of nature" (Bowerbank, 2004, pp. 4-5). The goals of feminist and environmental justice movements include access for all peoples to a clean, safe environment; respectful treatment of nonhuman nature; and equitable distribution of the risks and benefits of technological projects (Merchant, 1996). To achieve these goals, feminist scholars such as Karen Barad (2001) challenge models of science based on domination and control of nature and promote new "entanglements" with more socially just and ethically engaged outcomes.

"B" movies are part of a larger cultural narrative in which this gendered imagery is embedded. Thus, I draw on approaches from within feminist science studies that examine science and films about science as part of one narrative structure (e.g., Haraway, 1986, 1989). In this methodological approach, science fiction and science fact are not disentangled for separate analyses. Instead, examinations of the relationships, similarities, and shared visions of fact and fiction provide a mechanism by which to elucidate the ethics involved in science and technology. Next, I provide an overview of the following threads in this narrative: (a) feminist critiques of scientific objectivity, (b) a review of the extant literature on the representations of women scientists in fiction film, and (c) gendered themes from the history of women, nature, and the environmental justice movement. My own analysis expands on scholarship in this area by integrating the representation of women scientists in low-budget film.

Feminist Critiques of Scientific Objectivity

Feminists critique the historical association of women with nature and the related separation of essentialized "feminine" traits (empathy, emotion, and intuition) from "masculine" traits (reason, culture, and science; e.g., Keller, 1982). Many feminists argue that acknowledging the impact of values on scientific knowledge production enhances rather than decreases objectivity, though the specific means to this end differ among various theoretical positions (reviewed in Intemann, 2010; Longino, 2010). Feminist empiricist and standpoint theories focus on how the values and social positions, including race, gender, sexuality, socioeconomic status, and so on, of researchers determine the nature of the work undertaken, the research questions that are proposed, the methodologies used to address those, and the application of the results (Intemann, 2010). However, the extent of the relationship between social position, power, and knowledge produced can be a source of disagreement between feminist science studies scholars from the humanities and the social sciences and feminist scientists working within the physical and life sciences (Schiebinger, 2003). Feminists working in the natural sciences have sometimes been more amenable to a limited version of feminist empiricism that identifies androcentric and sexist assumptions and uses feminist insights to generate new hypotheses (e.g., Gowaty, 2003; Zuk, 2002). Recently, these areas have converged in feminist "new materialism," which aims to integrate scientific models with feminist theories and replace reductionist models with complex entanglements among the cultural and the natural (Hird, 2004).

Representations of Women Scientists in Film

Filmic women scientist characters often introduce issues relevant to the feminist critique of objectivity into movies. Ironically, female scientists can also be used to stress the detached nature of scientists when women are not empathetic and intuitive as expected. In these cases, often the male partner must teach the woman scientist "the ways of humanity and intuition," or else she becomes "emotionally overwrought" and "unsuited for empirical, masculine pursuits" (Hassel, 2008, pp. 195,198). These feminized stereotypes thus contribute to the notion that scientists are inherently untrustworthy (Ribalow, 1998). Alternatively, women scientists do exhibit intuition, emotion, and concern for the potentially negative impacts of science on people. In these instances, the association of scientific detachment with masculinity can give women an oppositional role as the moral voice vis-à-vis science (Jones, 2001). And women characters express societal anxieties about the technological issues of the time period (Flicker, 2008). These images point to the problematic parts of essentialism, whereby women are expected to assume moral responsibility and defend humanity from scientific excesses. Men's assumed affinity to technology frees them from this responsibility; ultimately, "women must again serve men by 'humanizing them'" (Freeland, 2000, pp. 76, 82).

In addition to providing visual examples of the tensions identified by feminist scholars of science around objectivity, these representations reflect real-life issues facing women in science. Most women scientists in British science fiction films of the 1950s and 1960s are not mothers, reflecting women's difficulties balancing motherhood with a scientific career and freeing the women to be love interests (Jones, 2005). More recent filmic women scientists are better able to balance family and career (Flicker, 2003). And in other cases, female scientists protect children (as in *Them!* [1954] and *Mimic* [1997]), but their role as nurturers emphasizes "a strict biological conception of female nature" (Freeland, 2000, p. 82). In other films (e.g., *Eve of Destruction* [1991]), danger arises from female scientists who are not proper mothers (Anthony, 2002; Bould, 2002). These conflicts may arise because the detachment seen as necessary for scientific objectivity conflicts with motherly empathy.

In addition to negotiating between detachment and empathy, the female scientist must balance professionalism with femininity. Traditional relationships with men for women in the 1950s science fiction films reassured the audience that although the woman scientist was a professional, she would not dominate men (Noonan, 2005). Women of recent films seem less

dependent on male mentors yet still occupy subordinate positions (Flicker, 2003) because they are blocked by a patriarchal system (Flicker, 2008) and individual men who still question their expertise (Steinke, 2005). However, relationships with powerful male figures, especially fathers, can also be positive: for example, *Contact* (1997) (Steinke, 1997, 1999). In general, women scientists are attractive and are frequently sexualized (Flicker, 2003, 2008). In fact, many women characters are scientists in name only and have not been presented as serious scientific professionals (Perkowitz, 2007).

Although the mad scientist is one of the most recognizable filmic stereotypes, Flicker (2003) argues that the mad scientist stereotype does not apply to women scientists. Although Steinke (2005) agrees that most film female scientists are professional, rather than nerdy or obsessed, she provides two counterexamples: *Sphere* (1998) and *Batman and Robin* (1997). In addition, Stacy Alaimo (1997) posits that Dr. Jane Tiptree (Dianne Ladd) from *Carnosaur* represents societal anxiety when women control scientific power.

Gender, Nature, and Environmentalism

Gendered access to scientific power provides the ability to define what "counts" as scientific knowledge. Women's exclusion from the construction of scientific knowledge manifests as both the underrepresentation of women in science and as the marginalization of topics defined to be "feminine" in nature. Historically, women worked in science on the margins, as assistants, supporting male scientist family members, or by writing about scientific findings for a broader public (Schiebinger, 1991). In the mid-20th century they gained more access to formal scientific training and positions but were concentrated in marginal areas of science "so far outside the usual categories that they constitute the mere afterthoughts of statisticians" (Rossiter, 1998, p. 103). Areas such as home economics, midwifery, and nursing, which were established by women, were eventually excluded from disciplines defined as science and, in the case of home economics, struggled with administrators (almost all men) who held "skeptical and hostile attitudes about home economics while at the same time admitting unabashed ignorance about what the field was" (Rossiter, 1998, p. 165). The case of home economics is particularly instructive, in that Ellen Swallow Richards, credited as one of its founders, wrote Ernst Haeckel asking for permission to use his term *oekologie* (the study of organisms in their environment) for a science that promoted health for both humans and their environment. Her peers criticized her efforts as applied work rather than pure research (Breton, 1998). Her work provides an early example of what a feminist science might have looked like in that

she aimed to develop an integrative approach to the study of human and nonhuman nature and to apply the knowledge gained toward solutions for social issues and the betterment of the human condition.

In line with Richard's original aims, women and especially women of color, as leaders of the environmental justice movement, identified as significant areas that have been traditionally identified as female concerns, such as provision of clean food and water, opposition to war, reproductive technologies, protection of children, and racism in placement of toxic industries and waste dumps (reviewed in Stein, 2004). Although these women might not identify as feminist, feminist methods in moving risk assessments away from White male norms, expanding the definition of the environment to include human communities, and exploring the intersections among systems of inequality structure their movements (Verchick, 2004). In spite of these significant gendered aspects, overall, theorizing about how gender functions to structure environmental injustice lags behind consideration of other factors such as race and socioeconomic status (Unger, 2004).

I argue that this history, specifically the work of women to bring attention to "feminized" issues, connects to images of women scientists in the selected films because the representations of women scientists are often structured around questions about what constitutes scientific objectivity, how science maintains injustice and inequity, and whether this can be changed. In my analysis, many of these filmic women scientists champion issues neglected by both the larger scientific establishment and by the authorities. Thus, research on these images is important from a feminist perspective because it provides one means to examine how the history of women in science and in the environmental movement enters the public consciousness. This shows how a strict separation between science and areas of societal concern leads to a mistrust of science, thus informing the feminist conversation around how to develop science that promotes environmental justice.

Method

Seventeen films are included in the analysis. Fifteen of the films are U.S. productions, while two were from outside the United States (*Black Sheep* [New Zealand] and *Shark Attack in the Mediterranean* [Germany]). I sought to find all films meeting my criteria; thus, only two non-U.S. films are included because they were the only ones identified. Films were identified using the following compendia: Jason Colavito (2008), Mark Glassy (1997), John Muir (2002), as well as the Pretty Mad Scientists website (http://www.b-masters.com/roundtables/05-pretty-mad-scientists/). I also relied on filmographies from

the cited articles and books, as well as Internet searches on these topics, using search engines such as Google and Clusty, as well as the Internet Movie Database (IMDB.com). The following criteria determined film selection:

1. The films had environmental or ecological disaster themes. The films are from the 1970s onward since that was the period that Tudor (1989) identified as the beginning of ecodoom films that focused on ecological/environmental issues. Ecodoom films, as defined by Tudor, are those in which environmental catastrophe arises from inadvertent effects of human activity rather than from direct experiments by a mad scientist.
2. The films were low budget, "B" movies with limited theatrical releases or straight to DVD, video, or cable releases.
3. The female scientist made a substantial contribution toward the advancement of the plot. She must be seen onscreen engaging in scientific activities such as conducting laboratory or field research, writing up or analyzing results, discussing or sharing scientific theories, problem solving and hypothesizing, serving as a scientific expert on expeditions or tours, and teaching or lecturing. The women scientists did not always have PhDs. This approach is validated by the history of women in science, where, in many cases women were not able to get professional degrees but still functioned as scientists (reviewed in Sheffield, 2004).

Given the small sample size, the analysis is qualitative. I was less interested in coding the presence or absence of a trait and more interested in describing the patterns relevant to feminist theorizing about science and society. The first step was deductive, based on patterns identified from the literature that were used to establish general themes. However, this article does not focus on the presentation of the results of these themes. Instead, these observations informed an investigation of the *new themes* that emerged from viewings of the selected films. These primarily clustered around the female scientist's relationship to nature and include the three identified categories (protects nature, reformed by romance or maternity, privileges science, and/or disconnected from nature). This approach is appropriate because the relationship of the filmic female scientist to nature has been less well studied than the previous areas (with Alaimo, 1997, as a notable exception). This analysis had four areas of emphasis: (a) dialogue about nature, the environment, and the relationship among these and science; (b) whether or not the female scientist sought to protect nature as well as how she viewed the relationship between

humans and nature (antagonistic, harmful, dangerous, etc.); (c) how she defined science's role in preventing environmental crises or in protecting human communities; and (d) nonverbal interactions, particularly how she interacted with the nonhuman creatures or monsters in the films. Was she affectionate or empathetic toward them? Or did she show signs of squeamishness or fear? Or did she avoid displaying emotion? Did she readily touch or handle them?

Findings and Analysis

Three types of female scientists emerged in the analysis: the vengeful Mother Nature figure who uses science to punish mankind for his environmental transgressions, the scientist who is initially ambivalent because she seems too sympathetic toward nature but who is "redeemed" by a maternal or romantic relationship, and the scientist who is motivated primarily by professional success and, therefore, lacks a connection to nature and/or to children or men. Overall, the films reflect the environmental issues prevalent at the time of their release. The 14 films released between 1978 and 2007 focus on negative impacts of genetic engineering (mutations, gene splicing, cloning), sometimes in combination with pesticide application (*Swarmed*, 2005), pollutants (*Project Viper*, 2002), or behavioral modifications (*Piranha*, 1995; *Ice Spiders,* 2007). Causes in the earlier films were more variable, including hormone research (*Night of the Lepus*, 1972), injections of an unspecified nature (*Sssssss*, 1973), and pesticide use (*Kingdom of the Spiders*, 1977). This reflects the increasing amount of media attention and concern for the impact of genetic engineering, as well as the increasing presence of women in science in the latter decades as opposed to the early 1970s—the woman scientist character type might not have been as prevalent in early 1970s ecodoom films, given that there were fewer women in science at that time. Four of the films featured female mad scientists. Two other films featured women scientists with potential for future madness. Flicker's (2003, 2008) work with over 200 blockbusters found no examples of female mad scientists, while Steinke (2005) provides just two examples out of 74 films.

Carnosaur's *Bad Mother*

Carnosaur's Dr. Jane Tiptree exemplifies the female mad scientist who uses science to protect rather than to dominate nature—Man's environmental destruction will be paid for by the replacement of humans with genetically engineered dinosaurs. Dr. Jane Tiptree, "the fairy godmother of military biotech," has been designing a virus that will cause human women to birth dinosaurs,

leading to humanity's extinction; thus, she is "'exceedingly unfaithful' to those who trained her, allying herself with the nature she is supposed to control" (Alaimo, 1997, p. 229). *Carnosaur* links the threats of nature and human technology by placing the technology in the hands of a female scientist, whose madness derives from her close connection to nature. Dr. Tiptree is explicitly feminized with soft makeup, perfect hair, and long, French-manicured nails. She sips tea, and her lab is filled with flowers. In contrast to the feminine, perfectly coiffed Dr. Tiptree, the other female characters are androgynous or even masculine in appearance—none of them wear make-up or are even well-groomed.

Though Tiptree bears the markers of a mother in her dress, her demeanor and her words, the type of femininity that she represents, and the nature that she wants to preserve are not protective and nurturing; instead, Tiptree exemplifies the violent and destructive side of Mother Nature. Tiptree identifies Dr. Moreau as her mentor and quotes him thusly: " . . . in order to understand nature, one must become as remorseless as nature herself." Thus, Tiptree's fatal flaw is not the "masculine" goal to dominate nature; rather, it is her inability to distance herself from it—for example, to remain objective and detached. Yet to protect nature, she uses tools developed in the project of domination. She acknowledges her own guilt when she muses, "Just imagine an ugly, cancerous grey planet littered with the dying remnants of biological life as we know it. I actively worked on that in industry and in government. The earth isn't ours to destroy." Ultimately, she sacrifices herself to atone—dying as she helps her infant Carnosaur rip its way out of her body.

The film follows the ecodoom emphasis on powerful government, scientific, and military interests using science to make money in spite of the potential for environmental catastrophe; the government, represented by Fallon, head of the Federal Emergency Management Authority, is not only trying to promote genetically engineered foods at the expense of public health, it is perfectly willing to sacrifice human lives to avert public panic over a possible biotech catastrophe. In the film's apocalyptic ending, yellow-suited men shoot and kill the infected townspeople. Their bullet-riddled bodies are photographed and then torched. The yellow-suited men move in precise, mindless fashion. One shoots, steps away, the second takes the picture and steps aside, and then the third torches everything. The fire bursts the bottle of serum that is a potential cure for the virus. The figures' repetitive actions provide an apt metaphor for the destructive power of mindless bureaucracy.

In contrast to those ineffectual scientists identified by Frayling (2005), whose collusion with military, industrial, or political interests renders them powerless, female mad scientists such as Tiptree seek power to protect nature.

Yet her attempt is doomed because she employs the same scientific methods (and their inherent dominance of nature) that she is trying to destroy. However, instead of being motivated by greed, she identifies humans as a problem species, which must be removed in order for the rest of the planet to survive. In contrast to women's usual role in the environmental justice movement, Tiptree is not trying to protect humanity, rather she seeks to destroy humans and remove them from the planet.

This character type also appears in *Shark Attack in the Mediterranean* (2004). Dr. Varina Brandauer (Katy Karrenbauer) says, "The ocean's my life and from the ocean comes life." She has an intimate connection to Hannibal, the shark that she augmented, hand feeding him at one point. However, this relationship does not stop him from eating her in the end. Although she is ostensibly trying to cure cancer, she actually seems more fascinated by the shark. Thus, curing cancer seems an excuse to develop the shark that she regards so fondly.

Overall, the mad female scientist who seeks to protect nature is not in alignment with feminist environmental justice goals to protect human communities and ensure that all people live in a safe and healthy environment. She is positioned as an extremist champion of nature, thus serving to castigate humanity for its poor environmental record. The development of this character as a woman connects to images of dangerous Mother Nature, who will take her revenge if she is not treated with the proper respect. Her refusal of the expected feminine role to protect human communities serves to heighten the impact of her madness and reinforce the unnatural (unfeminine) nature of the woman scientist.

Kingdom of the Spiders *and the Woman Scientist Reformed*

In the second case, the female scientist is initially suspect because of her affinity for nature, but she escapes madness either by redirecting maternal impulses toward human children or by engaging in a romance. In *Kingdom of the Spiders* (1977), entomologist Dianne Ashley (Tiffany Bolling) and veterinarian Robert "Rack" Hansen (William Shatner) fight tarantulas. They find that DDT has killed the spider's natural prey and, as a result, the spiders are forming cooperative groups to kill larger animals—first cattle but eventually humans.

Early on it seems that, like Tiptree, Ashley is allied with nature. She does not see the spiders themselves as bad, disgusting, or icky. When Ashley, clad in a towel, finds a spider in her drawer, instead of screaming, she picks it up, strokes it gently, and tells it: "Well, hello there. . . . You're not supposed to

live in people's houses. You're supposed to live in the ground." Then she gently deposits it outside. Thus, her view of nature seems to be that as long as the proper order is maintained and everything is in its proper place, man and nature should coexist. She identifies human pesticide use (not the spiders) as the problem. Therefore, she opposes using pesticides to kill the spiders and argues their natural predators should control them. However, although sympathetic to the spiders' plight and aware of human responsibility, she is clearly on the side of controlling or getting rid of the spiders if they threaten humans—she ultimately suggests burning the spider nest before the threat can get out of hand.

Ashley's rejection of Hansen's romantic advances might also contribute to her potential for madness—a 1970s audience would presumably identify Shatner with *Star Trek'*s Captain Kirk, irresistible to any galactic female. Predictably, Hansen takes her rejection as a challenge. When she asks if he has a problem with her being a woman scientist, he responds that she is the only one with a problem with it. Ashley resists his pursuit and plays it cool until Hansen (literally) sweeps her off her feet and drives her car (over her protests). Ultimately, she abandons both her alliance with nature and her scientific role. She bonds with Hansen's young niece Linda (Natasha Ryan). Although her attraction to Hansen grows throughout the film, the girl seems to be the catalyst for her surrender of her scientific practice for a more typical feminine role. By the film's end she is not a potential threat because she is in a heterosexual relationship, she is nurturing a human child, and she is no longer practicing her science. This is perhaps unfortunate because ultimately the spiders "win" and the last scenes are of a web-covered landscape.

Other examples of this kind of reformed woman scientist appear in *Sssssss* (1973); *Alligator* (1980); the 1995 remake of *Piranha*, *Piranha II: The Spawning* (1981); *Bats* (1999); *Project Viper* (2002); *Swarmed* (2005); *Ice Spiders* (2007); and *Shark Attack in the Mediterranean* (2004). The woman scientist's potential alliance with nature appears in several films. In *Swarmed* Cristina Brown's (Carol Alt) first appearance is at the taping of her nature program for children during which she dotes over insects. Dr. April Summers (the only African American woman scientist) also shows an affinity for her subjects; she calls one of the genetically engineered spiders Dorian and identifies him as highly intelligent. Both these women have potential romantic partners in men who fight these threats. And although bat biologist Dr. Shelia Casper (Dina Meyer) initially hesitates at killing the bats, she shifts her allegiances after a man sacrifices his life to save her. Other female scientists are reformed by threats to children or by other familial relationships. Dr. Baines in *Piranha* (1995) appears unrepentant for creating the monster fish, blaming

others for releasing the fish. However, her attitude changes when a boy's life is threatened. She sacrifices herself to save him. Some female scientists, such as Gerry Bennett from *Lepus*, are safely in maternal and wifely roles from the beginning, thus never exhibiting a potentially dangerous connection to nature. However, problems in romantic relationships, specifically regarding family and research conflicts for female scientists, can be used to contribute to dramatic tension. *Piranha II: The Spawning* presents a love triangle in which the tensions in Anne Kimbrough's (Tricia O'Neal) marriage inhibit her attempts to stop the fish.

Overall, these women scientists are not mad because they place the proper emphasis on relationships with humans rather than with nonhuman nature. They are generally presented as wanting to use science to solve social problems, although they argue that this should be best accomplished in environmentally sustainable and respectful ways. There are two paths for the woman scientist in "B" films, both of which are structured by essentialized feminine roles. First, women are expected to be the nurturers and the caregivers, who will correct scientific excesses and protect human communities. Second, women have an affinity for nature and will seek to use science to understand and protect, instead of to dominate, nature. The first type of mad female scientist goes too far, in that she rejects humanity for protecting nature. This second character type has that potential as well but ultimately chooses humanity. However, given the primacy of relationships with men or children for women characters, her choice is generally motivated by a personal relationship rather than an overall moral commitment to the betterment of humanity—if not for the romantic or maternal relationship, she might have easily chosen nature and gone down the path of madness.

Humanoids From the Deep, Piranha, *and Ambivalence*

In the final case—a second example of mad scientists—the female scientist does not empathize with nature. Nor does she develop relationships with men or children. Instead, she concentrates on her scientific goals or uses science for personal gain. She often displays the detachment associated with "masculine" science. The potential for madness exists but is generally never fully expressed over the course of the movie. However, the films' endings sometimes position her as a danger—often because she persists in her scientific explorations. Her threat has not been neutralized—whether by death, maternity, or marriage.

In *Humanoids From the Deep* (1980), Dr. Susan Drake (Ann Turkel), a scientist employed by the cannery company Canco, genetically engineers

fast-growing salmon to replenish a fishery. However, coelacanths (an ancient fish) eat the salmon and mutate into the humanoids. In *Humanoids*, rather than being consumed, "man" is merged into a new creature through sexual reproduction between women and monsters. The species mixing threat originates in the actions of a woman scientist—though, unlike Tiptree, who deliberately placed "a pinch" of human DNA "in the mix" to create her Carnosaurs, Drake did not set out to create monsters. Thus, as in *Carnosaur*, *Night of the Lepus*, and *Kingdom of the Spiders*, evolutionary processes, aided by the intentional or unintentional consequences of science, produce creatures that will personify "angry" nature.

Drake's motivations are unclear throughout much of the film. Like Dianne Ashley, she is initially ambivalent. But, unlike Ashley, developing proper relationships does not reform her; instead, she remains a practicing scientist. Although she caused the mutation that created the humanoids, she helps the townspeople defeat them. And she is clearly on the side of using science to control and manipulate nature for human benefit—her research will restore salmon stocks for fishermen (and the profits of Canco) rather than fulfill environmental goals. However, Drake is dishonest to both her employer and the townspeople—she seems to play them off each other. When she is confronted by angry townspeople, she claims that she wanted to warn them of the danger by revealing that the salmon escaped but that Canco prevented her. But she really does not seem to have fought too hard to tell the town. Earlier, she had accompanied the investigators on a fishing trip to investigate the problem, providing ample opportunity for a confession. Instead, she put them off with "You've seen what I've seen." This could be an example of her scientific detachment—refusing to speculate until she has all the facts—but later actions indicate it was more likely an act of self-preservation.

Like many mad scientists she values attaining knowledge above helping humanity. Drake seems to be primarily interested in the evolutionary potential of the humanoids. Her character is detached and logical; she is frequently shown taking pictures and looking through the lens of a camera instead of directly at the world—a visual metaphor for her tunnel vision and emotional separation from those around her. After the climactic battle with the humanoids, Drake disappears and one of the townspeople remarks, "She did what she could, and now she's gone back to her lab." This remark provides a succinct summation of Drake's motivations and of her inherent ambivalence. She returns to her lab to deliver a humanoid baby (a product of rape) that kills its mother during its birth. Drake chooses to deliver the monster instead of saving the mother and displays no sympathy for the mother's pain. We do not know what happens to Drake—the film ends at this moment—but there is the clear

potential for further madness since her scientific curiosity has released another humanoid.

Other films with this character type include *Piranha* (1978) and *Black Sheep* (2006). A subtheme is that lack of empathy for nature impedes the woman's scientific ability—thus leading her to discount the threat. For example, Dr. Mengers (Barbara Steele) in *Piranha* (1978) consistently underestimates the modified fish. Her team plans to poison a lake the fish are expected to cross. When asked if the piranha will anticipate the trap and avoid the area, Mengers asserts, "We're talking about fish, Mr. Grogan, fish. They don't realize much of anything." The fish do avoid the trap but Mengers does not learn from this error. At the end of the film, she is asked about the danger of the fish reaching the ocean. She replies that they could not survive there and that "there's nothing left to fear." However, ominous music and red tinted waves cast doubt on her words. Dr. Astrid Rush (Tandi Wright) in *Black Sheep* is similarly disconnected. Rush displays no connection to nature and, like Mengers, her ability to correctly predict the threat of the monster is impeded. Ironically, her detachment from nature results in her death—when she flees into the woods her high heels prevent her from escaping.

This woman scientist fulfills the danger implied by the second category of reformed woman scientist—she remains unreformed and thus remains a danger. However, she does not regard science as a tool to use in the protection of nature. She is intrigued by the promise of scientific knowledge or by its potential to provide wealth. In that aspect, she rejects both the appropriately feminine roles of empathy with nature or investment in a maternal or romantic partnership. In this case, she displays the type of character associated with male mad scientists and is used to emphasize the dangers of disconnected, morally detached science for both human communities and for nature.

Discussion of Findings

In general, my findings on low-budget film add a specific consideration of the representations of the relationship between women scientists and nature to work on female scientists in film. I argue that these patterns are particularly important in ecodoom and other environmentally themed films because of a presumed connection between women and nature and the outsider status of the woman scientist.

This presumed connection between woman and nature in Western culture predisposes filmic female scientists toward empathy for nature. In many cases, this empathy enables the scientist to provide a "voice" for nature, in which she speaks out against human-caused environmental destruction. However, this

empathy can tip over into madness if she uses science to protect nature and punish mankind. To be redeemed, she often gives up the detachment of the scientist, discards her advocacy for nature, and adopts the proper feminine roles of mother or heterosexual love interest. Yet if the scientist does not adopt a properly maternal or sexual role, for example, if she retains her scientific objectivity and prioritizes her research above maternity or romance, then she becomes a much more ambivalent figure and the audience will be left with the possibility of future madness.

One of the primary concerns of many of these films is the role of science in causing or solving the ecological catastrophe. Since the woman scientist could potentially be more sympathetic either to nature or to using science for so-called applied problems (e.g., solving environmental issues), she plays a pivotal role in these plots. Filmmakers can use female scientific characters to emphasize how collusion among science, government, industry, and/or military interests instigates environmental crises. First, they can be set up as the direct protectors of nature, to the detriment of humanity. Second, they can critique this collusion, thus providing the counterexample of using science to achieve environmental and feminist goals. Or they can be used to exaggerate the negative impacts of this collusion—it becomes even more noticeable when conducted by a woman since this could violate audience assumptions about the more socially responsible nature of women.

Limitations of Research and Directions for Future Study

Although it is beyond the scope of this article to develop a full analysis of the impact of race on these films, I would like to mention some examples. First, an indigenous character may champion nature. Noël Sturgeon (2009) problematizes this convention because "ecological plots become a way to transplant the critique of white society into a supposedly authentic indigenous perspective," thus "reifying the divide between (white) culture and (Indian) nature and implying that 'real' Indians are already extinct or at least endangered species" (pp. 63-64). Examples demonstrating Sturgeon's critique include *Humanoids*' Johnny Eagle (Anthony Pena). Interestingly, *Black Sheep*, *Frankenfish*, and *Alligator* critique some of these stereotypes. *Alligator* spoofs "the great white hunter" who hires "native guides" from the ghetto to take him into the sewers. In his machismo, he underestimates the gator; it attacks and promptly eats him while his "guides" escape. A similar character is responsible for the release of the genetically engineered fish in *Frankenfish*. Jeff (Tomas Arana) frequently ignores the commonsensical advice provided by his Asian employees. And

Black Sheep's Tucker (Tammy Davis) makes fun of hippie Experience (Danielle Mason) for her naïve stereotypes about his people's affinity for nature.

Furthermore, this article does not attempt to compare male and female scientists in ecodoom films. What about the portrayals of male scientists in "B" movies—would we see similar patterns regarding their relationship to nature? Based on preliminary work with some films featuring male scientists, I would argue that a "Man versus Nature" theme is more prevalent in the structuring of the male scientists' relationship to nature. This relationship is often mediated by the loss of a spouse or lover—the man is seeking revenge for her death. However, this requires further analysis. An additional area for research is the positioning of male and female scientist characters in opposition in terms of their goals. *Bats*, *Swarmed*, and *Ice Spiders* counter male scientists' attempts to control nature or pursue knowledge at all costs with female characters' empathy either for nature or for humans. *Project Viper* has a similar opposition between a woman scientist and an undercover military agent who aims to cover up the potential dangers associated with her research.

Finally, there are similar character types in some mainstream films. I contend that "B" movies are employing female scientists in different ways and support this with the greater prevalence of the mad scientist. However, the relationship between women scientists and nature in environmental or ecological catastrophe blockbusters requires further investigation. I would expect that the second category, women reformed by maternal or romantic relationships, would be even more prevalent among blockbusters, because of the use of romantic or parental themes to appeal to a broad audience. However, the greater prevalence of mad female scientists in "B" movies could be partially explained by an overall higher percentage of mad scientists among scientist characters in low-budget film. Comparisons of the number of male mad and nonmad scientists in blockbusters and "B" movies could be helpful in addressing this and in determining whether some mainstream filmmakers employ female scientist characters to similar ends as low-budget filmmakers.

Author's Note

Portions of this article were presented to the 2008 Film & History Conference: Film and Science—Fictions, Documentaries and Beyond, Chicago, Illinois, 2008; to the 93rd ESA Annual Meeting in Milwaukee, Wisconsin, 2008; to the 4th European meeting of the Society for the Study of Literature, Science, and the Arts, Close Encounters: Science Literature Arts Conference, Amsterdam, The Netherlands, 2006; and to the annual meeting of the Popular Culture/American Culture Associations,

Toronto, Ontario, Canada, 2002. A brief summary appeared online in *The Scientist*, September 1, 2006, http://www.the-scientist.com/news/display/24578/. Feedback from the organizers and attendees of these events and from Kayla Kreitzer, Geoff Weiss, Melissa Latimer, three anonymous reviewers, and my students enormously improved the final work.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author received no financial support for the research, authorship, and/or publication of this article.

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