

# **Ocean Exploration In Film: Analyzing The Influence Of Well-Known Films On The American Audience's Perception Of Undersea Exploration**

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## **Abstract**

As of 2014, America has reached a point where film media is easily accessible and acts as both an entertainment device and a way to relay scientific ideas. Thus, scientists use films to highlight to the American audience the need to study and fund scientific research. However, the lack of pictorial depiction of a specific field of study, such as underwater exploration, may correlate with the level of interest and inclination of the exploration of the subject. Therefore, this study focuses on the analysis of the influence of film on the American audience and the depiction of undersea exploration in *The Abyss* (1989) as compared to the depiction of outer space exploration in film. Since the beginning of the space race in 1957, depiction of undersea exploration in well-known films is minimal in comparison to the depiction of outer space exploration. Often, outer space exploration is portrayed in a more positive manner by reflecting the premise of the American frontier in its film. Contradictory, undersea exploration is generally portrayed negatively, depicting the image of mankind going into the darkest part of the ocean, often to recover something that was lost. In essence, by using positive pictorial images to spark the American public's interest in undersea exploration, the level of exploration could increase and lead to further research into the deep and into a new era of American interest in oceanic exploration.

**Keywords: Film, Undersea Exploration, Outer Space Exploration**

## **1. Introduction**

The Arts and Sciences are often perceived as existing at odds, yet the integration of both has occurred for generations in film. Filmmakers have illustrated scientific practices and thoughts in film media, however the influence of these films on the American people is often overlooked. The acceptance of both inaccurate and accurate information shown in fictional well-known films and the perceived influence of these images by the American audience has led to the development of programs that are beneficial to the scientific community. Yet, if the representation in film can lead to the development of programs to benefit science, then a lack of representation may lead to the decrease of interest, as with Undersea Exploration.

According to research gathered from IMDB's "Road to the Oscar 2014: Event History," the number of Academy Award winning film nominees from 1957 to 2014 for undersea exploration is three, and for outer space exploration, thirty.<sup>1</sup> Similarly, this difference is seen in Michael Conathan's "Rockets Top Submarines: Space Exploration Dollars Dwarf Ocean Spending." Conathan states that since the Space Race began, 500 people have traveled to space, with twelve landing on the moon, however, only three people have reached the bottom of the Marianas Trench.<sup>2</sup> Hence, between exploration presented in both film and reality, there is a discrepancy. However, the minimal representation of undersea exploration in well-known fictional films may explain the perception held by the general public in regards to the importance of the field. Thus, by analyzing the influence of well-known films on the American audience and

the perceived limitations of undersea exploration as compared to outer space, reasons as to why there is a discrepancy may be found and altered in order to change negative perceptions and reinforce positives ones. Therefore, a film analysis is performed to study the portrayal of undersea and outer space exploration in film as seen with James's Cameron's *The Abyss: Special Edition* (1993)<sup>3</sup> and Stanley Kubrick's, *2001: A Space Odyssey* (1968)<sup>4</sup> in order to examine how these depictions may result in negative or positive correlations. By understanding the influence in film on the American audience, filmmakers can alter the depiction of undersea exploration to correlate with a more positive image. This change may lead to a greater perceived need by the American public to explore the depths of the ocean, shifting the focus of Americans to finding alternative solutions to economic and environmental problems in the ocean as opposed to outer space.

## 2. The Influence of Film on the American Audience

Film as a media reinforces and reflects specific thought processes of a timeframe through its contents. This depiction influences the viewer and leads him or her to experience the event without having to physically be present. When the content is scientifically based, the audience can perceive the information as truthful despite never seeing the information firsthand. For instance, most people have not seen the jungle or Antarctica, however the audience takes the pictorial depiction of these places as factual based on what he or she already knows. Similarly, most people do not have the ability to explore the depths of the ocean and thus rely on pictorial depiction to convey information. Thus, as stated by David Kirby in "Science Consultants, Fictional Films, and Scientific Practice," films act as "virtual witnessing technologies" that enable the public to "witness" these events.<sup>5</sup> When these depictions of experiences are associated with a negative connotation, the audience's experience is negative as well. Furthermore, Sigurjón Baldur Hafsteinsson argues in "The Agency of Eternal Darkness: An Approach to Scientific Images of Deep Sea Exploration" that deep-sea exploration is "dependent" on these "virtual witnessing" technologies.<sup>6</sup>

In the production of well-known fiction films, filmmakers often decide what information is to be relayed.<sup>7</sup> Regardless if the information presented is accurate or inaccurate, the American audience can perceive what is presented as factual or realistic due to filmmakers building upon well-known knowledge. Kirby explains that filmmakers create "cues" for the viewer that enable "the audience to perceive unreal images as realistic."<sup>8</sup> This is seen with the use of computer graphics in most 21<sup>st</sup> Century films where whole worlds are developed. However, similar instances occurred earlier, as with Arthur Conan Doyle's *The Lost World* (1925), in which the audience of the film believed that they had witnessed real live dinosaurs.<sup>9</sup> According to Kenneth Mulligan and Philip Habel in "The Implications of Fictional Media for Political Belief," film media often contains political or social statements towards relevant topics that influences the viewer by "accessing distant—but realistic—places, people; and situations."<sup>10</sup> In terms of undersea exploration, the depiction of the ocean acts as the "cue" while the content acts as the social statement. This is in James Cameron's *The Abyss: Special Edition* with the ocean as the "cue" and the social message as achieving peace without nuclear intervention. Furthermore, the influence of these social statements is seen in Orson Welles' radio broadcast of *War of the Worlds*. According to the History Channel in "Oct 30, 1938: Welles Scares Nation," the broadcast led listeners to believe that Martians had invaded earth.<sup>11</sup> The listeners, fearful for their safety, begged local officials for gas masks and, in New Jersey, fled town to escape the impending "invasion."<sup>12</sup> A similar incident occurred with the Purge scares that appeared in the months following the release of *The Purge: Anarchy* (2014). In "Chicago Purge Spreads Rumors Of Teens Murdering 112 People And Martial Law In Detroit, Jacksonville and Jefferson", Patrick Fyre claims that online scares and Purge threats appeared following the release of the film, causing social unrest in the threatened areas.<sup>13</sup> Therefore, films at times are able to introduce through its content social statements that can influence the American perception with or without the intention of the filmmaker.

On the other hand, according to Michael Katovich and Patrick Kinkade in "The Stories Told in Science Fiction and Social Science: Reading "The Thing" and Other Remakes from Two Eras," filmmakers take into account the American audience's consideration when creating a film.<sup>14</sup> Audiences, during specific time periods, are more likely to be drawn to a certain topic. For instance, during the 1950's filmmakers strove to solve "the problem of attracting viewers" by providing the public with "reasons to go to the movies."<sup>15</sup> This solution focused on the American fears of the Cold War. Therefore, the number of undersea exploration films may correlate with the level of the American public's interest, for Katovich and Kinkade observe that movies depict the "ethos of its era" and act as a way to analyze the thought process of the timeframe.<sup>16</sup> Thus, with the minimal representation of undersea exploration in film, the audiences' interest in undersea exploration is minimal as well. Through the depiction of certain characteristics of a time period, films enable the audience to see how the perception and the societal understanding of images changes over time.<sup>17</sup> This is seen with *The Fly* (1958, 1986). The content and meaning of the films changes due to the date of release, for both depict different perceptions of "medical reality" that people held in these two decades. Katovich and

Kinkade claim that when the first *The Fly* (1958) came out, America interpreted that medicinal problems either made an individual a “victim” or “not a victim.”<sup>18</sup> This mimicked the main medical concern of the 1950’s, cancer. In the 1980’s version, the illness that affects the scientist is not as obvious in the beginning and is slowly degenerative, mimicking how American’s perceived AIDS during that time.<sup>19</sup>

Although film depicts the different perceptions of a time period, film also impacts the audience’s interpretation of the information. By portraying specific people or occupations in a negative fashion, the attitude toward these topics changes. These portrayals can include those of corrupt politicians or of “mad” scientists, which creates distrust in the American people toward these topics. A negative portrayal can also be relayed through a realistic depiction of a subject. In terms of undersea exploration in film, the negative depictions are often times based upon those faced in reality, such as lack of oxygen and flooding. However, the repetition of these elements can disturb the American audience especially when they span across “eras”. Since the number of undersea exploration films is limited, the negative connotation of these films perhaps is greater for there are fewer films to compare the results to. This contrasts outer space exploration, with the contents of each film varying over multiple films.

However, films often portray both the positive and negative aspects of the content portrayed. For instance, *The Abyss: Special Edition* illustrates positive aspects of undersea exploration with the idea of finding new life. Conversely, negative correlations are made through the use of the liquid breathing technique, the darkness of the ocean’s depth, and the drowned corpses, which can disturb the audience. Similar images appear in other films as well, however the images as seen in *The Abyss: Special Edition* may correlate more to the American perception of undersea exploration due to the reinforcement of these negative images. Drowning, for example, occurs multiple times in the film. Kirby explores in “Scientists on the Set: Science Consultants and the Communication of Science in Visual Fiction,” the “impact” that images in film have on the perception of science in regards to the American audience.<sup>20</sup> The “conceptions of science”, and the portrayal of science and technology in fictional films either instills excitement or fear in the audience.<sup>21</sup> Kirby explains that this is the point of fictional films; that fictional films are not about depicting “accurate” facts about science but instead, images that are meant to “entertain” the viewer. This also correlates to Katovich and Kinkade’s original point on how filmmakers choose what is to be depicted in film. However, by focusing on the entertainment value of a film, this creates problems in the scientific community in regards to the acceptance by Americans of these negative depictions.

Although the American audience understands that the images presented in film are fictional, at times the line between fiction and reality is hard to distinguish. According to Michael Barnett, Heather Wagner, Anne Gatling, Janice Anderson, Meredith Houle, and Alan Kafka in “The Impact of Science Fiction Film on Student Understanding of Science,” when images are used to entertain rather than educate, films can lead the audience to presume that the ideas presented in the film are “scientifically reasonable.”<sup>22</sup> Therefore, this may also presents a problem with fiction based undersea exploration films. For example, in *The Abyss: Special Edition*, the liquid breathing technique used in the film includes pushing highly oxygenated liquid into the lungs. Although this is a real process, it is still in experimentation. Thus, the depiction of this scene may deter the audience and lead to speculation that to travel the deep, a person is required to endure this process and therefore the individual associates deep dives with liquid breathing, although this is not fully accurate. On the other hand, the American audience is generally self aware of these inaccuracies. When images are presented that build upon prior knowledge, the images seen are questioned as being reasonable. In 2003, Barnett et al. performed an experiment to see the influence of a science fiction film on a student’s understanding of Earth Science. Barnett et al. used the film, *The Core* (2003), and an eighth grade middle school class as the basis for their studies. During the study, Barnett et al. found that the students who had watched the film “had a larger tendency to think that the inner core of the Earth was a liquid rather than a solid” due to how the film presented the information.<sup>23</sup> By “building upon” the accurate information that the teacher had taught the children, the children accepted the fictionalized material in the film to be more plausible based on the way that the information in the film was relayed. Therefore, Barnet et al. states that the appearance of accurate scientific information in the film (which establishes credibility to the viewer) can lead to the acceptance of inaccurate information to follow.<sup>24</sup> Without fully knowing the topic that is explored, scientific inaccuracies can be accepted, such as in the liquid breathing scene. Although this is not always the case, Barnet et al found that the “plausibility” of the non-accurate information can still “influence students’ ideas about scientific concepts.”<sup>25</sup>

Lastly, film can influence the study of science by providing a place for scientists to expand their ideas. Howard McCurdy explains in *Space and the American Imagination Second Edition* how scientific studies often times appear in films, as seen with Stanley Kubrick’s, *2001: A Space Odyssey*. The film portrays one of the “more imaginative proposals” for establishing a lunar base on the moon, which had been debated during the time of the films release.<sup>26</sup> Likewise, Kirby explains that media “provides a space” for scientists to explore their ideas and by doing so “forces consensus on the public version of scientific debates” by depicting only one viewpoint.<sup>27</sup> This can be seen in *Jurassic Park* (1993)<sup>28</sup>, where the film and its sequels feature representations of dinosaur evolution and ecology that are highly

controversial. The film represents one set of perceived theories studied by Jack Horner, such as that dinosaurs are the ancestors of birds.<sup>29</sup> Throughout the movie, visual evidence of this theory is presented, as when Alan Grant references the Velociraptor fossil as being similar to a bird's, and how Grant describes the Gallimimus as flock-like as they run away from the T-Rex.<sup>30</sup> Through the depiction of only one theory of thought, the American perception of dinosaurs is based on that single theory throughout the film. Yet, due to the popularity of the film, this influence is perhaps stronger and leads to the national consensus of this illustration of a dinosaur. Although other films portraying dinosaurs have appeared, Steven Spielberg's films are widely accepted, to the point where *Jurassic Park* has its own section in the amusement park, Islands of Adventure. It is due to this popularity that research can be sparked, and where film is able to create and sponsor a scientific environment. Scientists will often work on a film to be able to "highlight" an issue that he or she deems to need "more attention" and "funding, from the American public."<sup>31</sup> Thus, the use of film media could influence the American interest in undersea exploration just by "highlighting" possible research.

An example of this process is seen with the film *Deep Impact* (1998). During the year of its release, scientists appeared before Congress and referenced the film to "bolster their claims for a NEO detection and deflection system."<sup>32</sup> The film release of *Deep Impact* (1998) and *Armageddon* (1998) caused people to become more aware of possible objects entering earth's atmosphere. Therefore, the Near-Earth Object Program developed in response to the growing concern that the two movies highlighted. For instance, Britain's Science Minister, Lord Sainsbury of Turville, "acknowledged" that the films had a "direct role" in their decision to create the British National Asteroid and Comet Information Centre (NACIC).<sup>33</sup> Although other factors had to be involved, the use of the two films to support their claim leads to how this can be applied to undersea exploration. With the use of films to bolster and reinforce the need for oceanic exploration, research could increase based on the perceived need. However, the problem that arises is that there is no perceived need. Undersea exploration is not seen as a pressing factor as compared to other areas of study, such as climate control or research associated with the National Aeronautics and Space Administration (NASA).

### 3. Comparison between Outer Space and Ocean Exploration in Reality and in Film:

Ever since the space race of the 1960's, outer space and the ocean have been compared to each other as extreme environments with freezing temperatures, lack of light, and are areas where humans cannot survive without importing oxygen and food supplies. McCurdy states that in its earlier phases, "space has turned out to be more like the seabed than the frontier," explaining that neither place presents "a great place to live."<sup>34</sup> Despite similarities, there is a gap between the exploration of outer space and the deep sea. Although the ocean is more readily available due to its proximity, the number of people that have explored the depths of the Marianas Trench is three as opposed to the five hundred that have ventured into space.<sup>35</sup> Perhaps the reasons for this discrepancy is the technological difficulties associated with undersea exploration. For instance, the oceanic pressure prevents undersea exploration by limiting contact outside of the submersible apparatus. In the deep, an individual cannot leave their submersible to explore as an astronaut would their spacecraft due to the water's high-pressure levels. This creates problems for the aquanaut, for work outside of the submersible is near impossible and may lead to death. This difference can lead to the loss of public appeal. Since outer space does not have this intense pressure, repair is plausible and leads to positive feedback by the American people.

This ability to repair is represented in Stanley Kubrick's *2001: A Space Odyssey* (1968), and James Cameron's *The Abyss: Special Edition* (1993). In *2001: A Space Odyssey*, Poole and Bowman are able to "repair" a malfunctioning device outside of their spacecraft. The retrieval process is shown to be crisp and clean, and without sufficient problems. Although Poole is killed by an EVA pod controlled by the Hal 9000 computer, the incident is caused by an error in programming as opposed to environmental factors. In *The Abyss: Special Edition*, when the workers of the oilrig descend to inspect the wreck of the *Montana*, their movements are portrayed as crisp, although weighed down due to the water. Later in the film, a hurricane causes sufficient damage to the underwater station. In response, the station floods, killing six of the crewmembers. The crew attempts to repair the station, but flooded areas and the disconnection from the parent ship causes little repair to be possible. Although there are outer space exploration films that present a similar inability to fix damages, such as *Marooned* (1969), *The Abyss: Special Edition* is one of the few well-known films to include undersea exploration. Thus, the audience is unable to compare the images depicted with more positive instances of repair due to minimal representation of undersea exploration in film. Yet, public opinion is essential in terms of planned missions and their continuation. For example, SEALAB III, an experimental underwater habitat, was permanently shut down in 1969 due to the death of Barry Cannon.<sup>36</sup> The loss of public faith caused SEALAB III to discontinue, unlike the Apollo program, which lost three of its astronauts two years prior to the SEALAB III incident.<sup>37</sup> In contrast, according to NASA in "NASA History: Milestones in Space Exploration and Science," when the restoration of the Hubble telescope's hardware occurred in 1993, this "greatly restored the public's confidence in

NASA” after prior failures caused the public to lose faith in NASA’s abilities.<sup>38</sup> The same is seen with the Skylab projects, where the crew manually fixed a broken meteoroid shield, which demonstrated that “humans could successfully work in space.”<sup>39</sup> Thus, the ability for astronauts and aquanauts to repair the outside of their vehicles is essential for their own survival but for the survival of the program that they represent. Likewise, as depictions of real events can deter the public opinion, then perhaps the portrayal of the incidents in film can cause the same deterrent.

Similarity, perhaps the risks and the inability to repair during deep-sea exploration may account for the minimal number of deep-sea dives of the Marianas Trench. The first successful endeavor to the bottom of the Marianas Trench, the deepest part of the known ocean, occurred roughly around the beginning of the space race in 1960 with Trieste. In “Arthur C. Clarke and the Limitations of the Ocean as a Frontier,” Helen Rozwadowski states that Trieste reached the bottom of the Marianas Trench two years before the first human orbited the earth and that thirty years passed before another submersible, unmanned, reached the bottom of the undersea floor.<sup>40</sup> William Firebrace in “Eyes Aquatic” states that James Cameron, the director of *The Abyss: Special Edition* visited the Marianas Trench in 2012 in order to prepare for the sequel of his film, *Avatar* (2009).<sup>41</sup> This provides an example as to how undersea research may benefit from film during pre-production, production and release. The pre-production required in all films could enable scientists to research and explore ideas that they could otherwise not pursue, which includes the exploration of the deep. Conathan claims that scientists estimate that “less than 5% of the ocean has been explored” and “91 percent of the species that live in our oceans” has yet to be discovered.<sup>42</sup> Furthermore, Conathan states that humankind has “better maps of the surface of Mars” than the undersea territory that reaches out “200 miles from our shores.”<sup>43</sup> Although it can be argued that very little of outer space has been explored, outer space also exists outside of Earth as opposed to the ocean, which makes up nearly seventy percent of the Earth’s surface.

Yet, the increase in focus and research toward outer space exploration could be attributed to the Space Race. Craig McClain in “We Need an Ocean NASA Now” states that outer space exploration was “recognized early on” as being a way for the US to reach “international space supremacy.”<sup>44</sup> During the Cold War, the American focus shifted from scientific fields such as oceanic research to those concerning the Space Race. Wesley Fenlon in “How Sci-Fi Propaganda Art Influenced The US and Soviet Space Race” claims that John. F Kennedy emphasized the need to appeal to “the world’s growing fascination with the space flight” by turning the fascination into a “race” against the Soviets.<sup>45</sup> Thus, Kennedy’s speeches and support toward the Space Race provided the catalyst needed for space exploration that ocean exploration did not have. Fenlon comments that before Sputnik “there was no great, unifying national effort in the United States” for space exploration.<sup>46</sup> Therefore, Sputnik “had a “Pearl Harbor” effect on the American opinion” to motivate America to develop aerospace endeavors and education programs in order to oppose the Soviets.<sup>47</sup> For undersea exploration to develop into a “race” equivalent to that of outer space exploration, a unifier as successful as that of the Space Race is needed. Thus, the expansion of representation of undersea exploration in film could provide that “catalyst”, in essence, the undersea “Sputnik” to launch undersea exploration into a new phase of research.

Yet, when the Space Race ended, the urgency of space exploration diminished. Although progress continues for outer space exploration, oceanic exploration progresses at a slower rate. Ryan Carlyle claims in “Why Don't We Spend More On Exploring The Oceans, Rather Than On Space Exploration?” that, in the last twenty years, there has been a push for ocean exploration, but mainly in the oil industry for laying pipelines.<sup>48</sup> This is seen in *The Abyss: Special Edition* with the crewmembers working on an oil-drilling platform. Furthermore, in “U.S. Ocean Policy Report card 2012,” the Joint Ocean Commission Initiative states that since 1982 the United States has yet to sign the U.N. Convention on the Law of the Sea, a plan which enables countries to explore the high seas for mineral resources outside of a country’s jurisdiction.<sup>49</sup> Despite the support from the Secretaries of Defense and State, along with nongovernmental organization leaders, the Senate has yet to approve the U.S. joining the convention. Thus, the inability of Americans to explore the high seas may explain the five percent estimate that scientist have provided in regards to exploration of the ocean.<sup>50</sup> Without the ability to explore the high seas, Americans are limited to researching local waters or receiving the permission from other countries to explore their waters, and therefore placing barriers that can dissuade undersea exploration.

In addition, the funding for undersea exploration is much less than the funding for NASA, providing a possible reason as to why ocean exploration is limited as well. McClain states that the funding of ocean exploration is at a “historical low.”<sup>51</sup> Although the total amount of the funds is higher, the increased funding for most oceanic organizations is due to the rising costs of equipment and personnel.<sup>52</sup> McClain states that in 2012, the Obama Administration proposed to cut a section of the NOAA (the National Oceanic and Atmospheric Administration) dedicated to undersea research.<sup>53</sup> The program, NURP, or National Undersea Research Program, is one of the main suppliers for funds and equipment for undersea exploration.<sup>54</sup> Hence, although other programs exist that deal with undersea exploration, the inability of the government to fund undersea exploration provides another reason as to the lack of deep-sea dives. The depiction of undersea exploration in film may draw attention to the need to explore and

fund the deep as scientists have previously done.<sup>55</sup> Yet, the American focus is not centered on ocean exploration but on other areas of study. The Joint Ocean Commission Initiative argues that over the past few years, the NOAA has put a greater focus on its environmental satellite program.<sup>56</sup> It is to note that the NOAA is not only dedicated to undersea research. However, the branch of Office of Ocean Exploration and Research (OER) in the NOAA is dedicated to ocean exploration and is the combination between NURP and the Office of Ocean Exploration (OE). Similarly, Dr. Amitai Etzioni in “Final Frontier vs. Fruitful Frontier: The Case for Increasing Ocean Exploration” found that for 2013, the *Consolidated and Further Continuing Appropriations Act for FY 2013* showed that NASA’s budget was 3.5 times higher as compared to the NOAA.<sup>57</sup> As of 2013, the fiscal budget for NOAA is five billion, with 23.7 million dollars directed toward the OER.<sup>58</sup> Conversely, NASA’s annual 2013 budget for outer space exploration is 3.8 billion dollars.<sup>59</sup> This amount is needed, for in “Kennedy Space Center: Frequently Asked Questions,” to launch a space shuttle costs roughly 450 million dollars per mission.<sup>60</sup> On the other hand, a dive into the ocean costs roughly about eight million dollars, as seen with James Cameron’s dive into the Marianas Trench.<sup>61</sup> In terms of launches, with no other expenses accounted for, NASA could launch eight space shuttles with its budget whereas OER, with James Cameron’s eight million dollar trip, could send two submersibles to the bottom of the Marianas Trench. Funding is required for further exploration to take place and film enables scientists to highlight issues for the public to focus on in order to increase funding and research.

#### 4. The American Perception of Undersea Exploration in Film and its Application

Although funding and the sense of political urgency for undersea exploration is limited compared to NASA or other scientific areas, this does not account fully for the extent of American interest in underwater exploration. Although the deep ocean has its limitations, film presents a plausible way for undersea exploration to engage the audience and bypass limitations. Without these images to trigger the American imagination, interest in undersea exploration is not as strong as it could be. Thus, a study of the Oscar Academy Award nominees gathered from the IMDB led to the analysis of the number of undersea and outer space films.<sup>62</sup> The study began from the year 1957 to correlate with the beginning of the Space Race, and before the launch of Trieste in 1960, to the present year, 2014. Excluded from the analysis are films from the “Best Short Films” Animated or Live Action and the “Best Documentary, Short Subjects” category. Furthermore, the films are sorted into two broad categories, oceanic and outer space films. In total, forty-five films dealt with ocean related topics while forty-seven dealt with outer space related topics.

From the forty-five oceanic films, three are animated while another five are documentary based. Although both categories featured some aspect of the deep sea, they fall into a gray area. This study focuses on the well-known fiction aspect of film as opposed to documentaries that portray solely accurate information. Animated films, such as *Finding Nemo* (2003), present a form of undersea exploration, which in this study is seen as another category and is not placed with the undersea exploration category. Conversely, twenty-seven films contain content regarding being out at sea, ten of which were noted to include shipwrecks or troubles at sea, while four other films are considered miscellaneous due to their content not fitting into the other categories. Despite the focus on undersea exploration, films from the other categories, specifically shipwrecks, can also influence the American perception of undersea exploration. However, since this study is focused on undersea exploration, these films are not referenced. Admittedly, the perception presented in these films may correspond to the American interest in undersea exploration, however this study sees that the exploration of the deep-sea is different from the exploration of the ocean due to problems associated with exploration of the deep. Likewise, seven films dealt with submarines, and although submarine films may overlap with undersea exploration, the films are placed in their own category due to the submarines being used for purposes other than undersea exploration. Lastly, three of the forty-five films included underwater exploration in the film’s description. This includes: *Boy on a Dolphin* (1957), *The Deep* (1977), and *The Abyss* (1989). Although *The Abyss* includes an alien species, the film features undersea exploration of the deep and therefore is placed in the oceanic category. This classification can call *The Deep* and *The Boy on a Dolphin* into question, however since they feature aspects of underwater exploration, although not of the immense deep, in their description they are included in the underwater exploration category.

In contrast, the forty-seven films related to outer space include two animated films and one documentary. Thirteen other films included an alien or object from space, and as with the ocean category, the animated films can also be placed in the outer space exploration category. The thirty remaining films are placed in the outer space exploration category for the inclusion of the exploration of space, of living on other planets, or dealing with any topic outside of Earth’s atmosphere. Therefore, due to the broad nature of this category, many of the films can be considered not space exploration films, however in terms of this study, the films pertain to topics that are essential in today’s exploration of space, such as the possibility of life and colonization on other planets.

The ratio of undersea exploration films compared to outer space exploration films depicts the perception held by filmmakers of what the public wishes to see.<sup>63</sup> Thus, filmmakers can alter films to adhere to a new perception for both the American public and for science. Kirby notes little research is being done to see how film influences scientific practices, therefore, the influence of the depiction of scientific information on Americans and the science community is debatable.<sup>64</sup> Most analysis is generally centered on the influence of documentaries and other nonfictional media on scientific practices rather than on the influence of fiction on science.<sup>65</sup> Thus, this study focuses on the analysis of fictional film as opposed to documentaries due to the acceptance of a documentary's content. Regardless, images provide a way for those working in the field of deep-sea exploration to "analyze" the deep sea, and to enable the researchers to share their findings.<sup>66</sup> Kirby references that by the use of "witnessing technologies," such as television and film, the public is able to view "scientific phenomena" on a larger scale.<sup>67</sup> This can be seen with the theories presented in *Jurassic Park* and the Near-Earth Objects Program with *Deep Impact*. Hence, film may lead to the development of undersea exploration programs as it has done with these studies.

Yet, images that are associated with undersea exploration build upon the audience's fears of the ocean. These fears are reinforced with the depictions of drowning, claustrophobic environments, and a dimly lit setting. Conversely outer space is often associated with positive images such as a more open environment, astronauts being able to fix damages while in outer space, and that people can survive for longer periods of time in outer space. Although both categories feature exceptions to this idea, the negative perception and representation of the ocean traces back to the European concept that the ocean is an "abyss," an "eternal darkness."<sup>68</sup> This eternal darkness is represented in both exploration and non-exploration films. For example, in the Disney film, *Finding Nemo* a black screen represents the deep, with the sound of Marlin and Dory speaking in the background.<sup>69</sup> The audience is unable to see them until a small light appears which is an anglerfish that tries to kill them. On the other hand, filmmakers can depict the deep brighter than it is, in order to have a submersible vessel be visible. Thus, a submarine is often portrayed as a "generic grey-blue form" with undersea mountains as a backdrop to the scene to "reassure" the audience that "there is still an exterior world."<sup>70</sup> Similarly, in *The Abyss: Special Edition*, without the lights of the divers and the submersibles, the depiction of the ocean is completely black. When the aliens cause the power to fail, the characters are left in a darkness that causes confusion, disorientation, and a sense of dread to the viewer. This is also seen when Bud descends to the bottom of the trench. Yet, the depiction of a dark landscape is evident in space exploration films as well. However, in both the films, *Gravity (2013)*<sup>71</sup> and *2001: A Space Odyssey*, outside crafts are illuminated by planetary light. Yet, in *2001: A Space Odyssey*, there are scenes in the film where the outside of the crafts are illuminated without the use of planetary light. Although both environments are portrayed as dark, the physical pressure that is associated with the water is seen more visibly in underwater films. This is attributed to the bluish tint that is associated with the depiction of water, and the use of sound of the water itself, whereas in space, there is no sound or texture for the audience to respond to. These elements act as the "cues" that Kirby mentions, and therefore enables the viewer to connect to the occurrences depicted in undersea exploration films as opposed to the unfamiliar outer space exploration films.<sup>72</sup>

On the other hand, the portrayal of the interior of a submersible is defined by a small claustrophobic interior, jammed with pipes, dials, and isolated compartments as seen in *The Abyss: Special Edition*.<sup>73</sup> This contrasts the depiction of the space station and shuttle in *2001: A Space Odyssey*, in which the areas are represented as a bright, tidy and open space. Furthermore, there are numerous depictions of drowning in the film *The Abyss: Special Edition*, which perhaps is considered more relatable to the viewer than the suffocation faced in space. To emphasize, Americans are able to relate to the exploration of the ocean more so than to the exploration of outer space. When one sees a person drowning on a screen, the empathy felt toward the character can be linked to one's own experience. With outer space, the viewer is less likely to relate to the form of suffocation. The interest in space exploration is heightened for Americans, for people do not know what to expect. With the ocean, Americans perhaps presume there is not as much of a pressing need to explore due to the familiarity. Instead, the perception today may correlate with the idea that the ocean has been explored to its fullest, and that aside from the reefs, the ocean disappears to a barren undersea wasteland. Thus, when the American people have this image in their mind, it is hard for filmmakers to change their perception. With outer space exploration, it is easier for it is distant and unfamiliar. Filmmakers provide Americans with cues in outer space films that enable the viewer to perceive something imaginary as real, and therefore creating a new connection to it. However, these same cues cannot work for ocean exploration due to the familiarity that Americans already have with a negative perception that is not only endorsed in film, but from history itself. Whether it is sinking ships or drowning, the undersea exploration of the deep is akin to diving deeper into oneself, the exploration of an inner space, and perhaps fearing what may exist beneath. Outer space exploration provides the opposite, for outer space is thought of as a way to branch out toward a never-ending frontier in search for other worlds. As Rozwadowski states, the ocean has a "crippling limitation" compared to space, for the ocean promises an end, and unlike space, does not have a "starting over" element.<sup>74</sup>

In order for film to influence the American perception of undersea exploration, and lead to a greater sense of need for exploration, filmmakers will have to change these cues. Instead of reinforcing the negative connotations that are perhaps associated with undersea exploration, filmmakers should attempt to highlight the positives. NASA is aware of the influence of films and thus provides science consultants for films in order to promote itself and to prevent the negative depiction of its agency's mission that could lead to loss of favor.<sup>75</sup> Thus, filmmakers should focus on the depiction of positive images, such as the finding of new undersea life or depicting the ocean as colorful in order to sponsor a renewed interest in undersea exploration. Although these perhaps are considered inaccurate depictions of the ocean, the idea once more goes back to what the audience wishes to see. This separation from reality is the ability of art to break away from the "rules" of science, yet still be intertwined in its methods. Hence, perhaps what undersea exploration needs is a new imaginative depiction. Regardless of whether the content is accurate or not, the presentation of a new imaginative idea is enough to sponsor interest, as seen with the development of dinosaurs in *Jurassic Park*. Although the resurrection of dinosaurs from amber is not plausible, the idea still fascinates the American people and leads them to disregard the inaccuracies and to enjoy the story. This same enjoyment may expand and lead to the development of agencies beneficial to undersea exploration. Similarly, McCurdy states that peoples' interests in television shows and films can lead to the development of scientific programs.<sup>76</sup> For example, after the end of the television series, *The Cosmos*, 120,000 fans of the show joined Carl Sagan and Bruce Murray in the formation of the Planetary Society, which gathered signatures to declare the need to explore Mars.<sup>77</sup> Film, therefore can influence and lead to a new result. Through the focus of positive aspects of undersea exploration, such as finding new life or new energy sources, a renewed interest can form with undersea exploration. Already, James Cameron plans on the setting of his *Avatar* sequel to include an oceanic element.<sup>78</sup> This appearance could provide a way to shine light on oceanic concerns or to bring interest to oceanic exploration as outer space exploration films have done with the interest of outer space.

Through the emphasis on a renewal of undersea exploration, studies can focus on the exploration of the ocean in order to solve present-day problems. Although space offers alternatives to issues such as finding new resources, mankind does not know what outer space holds. Funds can be used in order to search for the possibility that resources exist on other planets, however, in the event that these are not found, then mankind has used resources that cannot be easily renewed. In the event that space exploration discovers alternative resources, the ability to mine and then retrieve these provides another dilemma. To clarify, this study is not proposing to cut off all outer space exploration in favor of undersea exploration. Instead, the exploration of the deep sea is needed in order to find resources that provide not only energy but funds that benefit humankind and outer space exploration in turn.

## **5. Conclusion:**

The development of art and science can lead to new ideas, and the combination of the two in film can lead to change. The influence of film on the American audience proposes a possible renewed interest in undersea exploration and by doing so, may bridge the gap presented between undersea and outer space exploration. The lack of pictorial depiction of undersea exploration may correlate with the limited number of undersea exploration missions, and therefore by the increased depiction of undersea exploration, can sponsor a new age in exploration of the deep-sea. With this renewed interest, mankind can focus on the exploration of the ocean as opposed to outer space in order to find resources that are more readily accessible than those that may exist in outer space. In doing so, undersea exploration will provide the resources needed not only for humankind, but for the further investigation of outer space as well. With the use of alternative and perhaps more powerful resources that may exist in the ocean and its depths, space exploration may reach the farthest planets in order to find new life and resources. Therefore, in order to increase this interest in undersea exploration, alternatives in possible ways to raise American interest must be considered, whether that includes a more extensive research of the influence of scientific film, specifically undersea exploration films, on the American audience or by raising awareness by other means. Regardless, in order to achieve the exploration of one frontier, another must be pursued. In essence, space can be considered "The final frontier" but it will need the help of another frontier, the ocean, to be explored.



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## 7. Reference Cited

1. "Academy Awards, USA: Overview," *IMDB*, 2015, <http://www.imdb.com/event/ev0000003/overview>
2. Michael Conathan, "Rockets Top Submarines: Space Exploration Dollars Dwarf Ocean Spending," *Center for American Progress*, June 18, 2013, <https://www.americanprogress.org/issues/green/news/2013/06/18/66956/rockets-top-submarines-space-exploration-dollars-dwarf-ocean-spending/>.
3. *The Abyss: Special Edition*, directed by James Cameron (1989; Los Angeles, CA: 20<sup>th</sup> Century Fox, 1993), DVD.
4. *2001: A Space Odyssey*, directed by Stanley Kubrick (Los Angeles, CA: Metro-Goldwyn-Mayer, 1968), DVD.
5. David Kirby, "Science Consultants, Fictional Films, and Scientific Practice," *Social Studies of Science* 33, no 2, (2003): 235, [http://www.jstor.org.proxy.library.vcu.edu/stable/3183078?seq=1#page\\_scan\\_tab\\_contents](http://www.jstor.org.proxy.library.vcu.edu/stable/3183078?seq=1#page_scan_tab_contents).
6. Sigurjón Baldur Hafsteinnsson, "The Agency of Eternal Darkness: An Approach to Scientific Images of Deep Sea Exploration." *Critical Arts: A South-North Journal of Cultural & Media Studies* 21, no 2 (2007): 292, <http://web.a.ebscohost.com.proxy.library.vcu.edu/ehost/pdfviewer/pdfviewer?sid=a56789de-6fa9-4ddd-826e-ea2143a7f1de%40sessionmgr4002&vid=1&hid=4107>.
7. Kirby, "Science Consultants, Fictional Films, and Scientific Practice," 250.
8. *Ibid.*, 238.
9. *Ibid.*, 239.
10. Kenneth Mulligan and Philip Habel, "The Implications of Fictional Media for Political Beliefs," *American Politics Research* 41, no 1 (2013): 123, <http://apr.sagepub.com.proxy.library.vcu.edu/content/41/1/122>.
11. "Oct 30, 1938: Welles Scares Nation." *The History Channel*, October 30, 2014, <http://www.history.com/this-day-in-history/welles-scares-nation>.
12. *Ibid.*
13. Patrick Fyre, "Chicago Purge Spreads Rumors Of Teens Murdering 112 People And Martial Law In Detroit, Jacksonville and Jefferson," *Inquisitor*, August 16, 2014, <http://www.inquisitr.com/1415585/chicago-purge-spreads-rumors-of-teens-murdering-112-people-and-martial-law-in-detroit-jacksonville-and-jefferson/>.
14. Michael Katovich and Patrick Kinkade, "The Stories Told in Science Fiction and Social Science: Reading "The Thing" and Other Remakes from Two Eras," *The Sociological Quarterly* 34, no 4 (1993): 621, <http://www.jstor.org.proxy.library.vcu.edu/stable/4121371>.
15. *Ibid.*
16. *Ibid.*
17. *Ibid.*, 633.
18. *Ibid.*, 631.
19. *Ibid.*
20. David Kirby, "Scientists on the Set: Science Consultants and the Communication of Science in Visual Fiction," *Public Understanding of Science*, July 1, 2003: 263, <http://pus.sagepub.com.proxy.library.vcu.edu/content/12/3/261.full.pdf+html>.
21. *Ibid.*
22. Michael Barnett and others, "The Impact of Science Fiction Film on Student Understanding of Science," *Journal of Science Education and Technology* 15, no 2 (2006): 188, [http://www.jstor.org.proxy.library.vcu.edu/stable/40186682?seq=1#page\\_scan\\_tab\\_contents](http://www.jstor.org.proxy.library.vcu.edu/stable/40186682?seq=1#page_scan_tab_contents).
23. *Ibid.*, 183.
24. *Ibid.*, 188.
25. *Ibid.*
26. Howard McCurdy, "Chapter Six: The Extraterrestrial Frontier" and "Conclusion," in *Space and the American Imagination Second Edition* (Maryland, John Hopkins University Press, 2011), 165.
27. Kirby, "Science Consultants, Fictional Films, and Scientific Practice," 231.
28. *Jurassic Park*, directed by Steven Spielberg (Universal City, CA: Universal Pictures, 1993), DVD.
29. Kirby, "Science Consultants, Fictional Films, and Scientific Practice," 253.

30. Ibid.
31. Ibid., 242-243.
32. Ibid., 244.
33. Ibid.
34. McCurdy, *Space and the American Imagination Second Edition*, 157.
35. Conathan, "Rockets Top Submarines."
36. Helen Rozwadowski, "Arthur C. Clarke and the Limitations of the Ocean as a Frontier," *Environmental History* 17 (2012): 596. <http://envhis.oxfordjournals.org.proxy.library.vcu.edu/content/17/3/578.full.pdf+html>.
37. Ibid.
38. NASA, "NASA History: Milestones in Space Exploration and Science," *Congressional Digest* 90, no 7 (2011): 199, <http://web.a.ebscohost.com.proxy.library.vcu.edu/ehost/pdfviewer/pdfviewer?sid=070c3061-c599-4b60-b804-237a6b4c83fa%40sessionmgr4001&vid=6&hid=4107>.
39. Ibid., 198.
40. Rozwadowski, "Limitations of the Ocean," 596.
41. William Firebrace, "Eyes Aquatic," *AA Files* 62 (2011): 58, [http://www.jstor.org.proxy.library.vcu.edu/stable/41378385?seq=1#page\\_scan\\_tab\\_contents](http://www.jstor.org.proxy.library.vcu.edu/stable/41378385?seq=1#page_scan_tab_contents).
42. Conathan, "Rockets Top Submarines."
43. Ibid.
44. Craig McClain, "We Need an Ocean NASA Now," *Deep Sea News*, October 16, 2012, <http://deepseanews.com/2012/10/we-need-an-ocean-nasa-now-pt-1/>.
45. Wesley Fenlon, "How Sci-Fi Propaganda Art Influenced The US and Soviet Space Race," *Tested*, April 3, 2012, <http://www.tested.com/art/43726-sci-fi-art-propaganda-across-cultures/>.
46. Ibid.
47. Ibid.
48. Ryan Carlyle, "Why Don't We Spend More On Exploring The Oceans, Rather Than On Space Exploration?" *Forbes*, January 31, 2013, <http://www.forbes.com/sites/quora/2013/01/31/why-dont-we-spend-more-on-exploring-the-oceans-rather-than-on-space-exploration/>.
49. Joint Ocean Commission Initiative, "U.S. Ocean Policy Report card 2012," *Joint Ocean Commission Initiative*. Meridian Institute, n.d: 21, [http://www.jointoceancommission.org/~media/JOCI/PDFs/2012-06-06\\_2012\\_JOCI\\_report\\_card.pdf](http://www.jointoceancommission.org/~media/JOCI/PDFs/2012-06-06_2012_JOCI_report_card.pdf).
50. Conathan, "Rockets Top Submarines."
51. McClain "We Need an Ocean NASA Now."
52. Ibid.
53. Ibid.
54. Ibid.
55. Kirby, "Science Consultants, Fictional Films, and Scientific Practice," 242-43.
56. Joint Ocean Commission Initiative, "U.S. Ocean Policy Report," 19.
57. Amitai Etzioni, "Final Frontier vs. Fruitful Frontier: The Case for Increasing Ocean Exploration," *Issues in Science and Technology* 30, no 4 (2014): 65, <http://web.b.ebscohost.com.proxy.library.vcu.edu/ehost/pdfviewer?sid=0691b1de-9ed3-4a4e-b3f1-d0c9acbc3850%40sessionmgr111&vid=7&hid=110>.
58. Conathan, "Rockets Top Submarines."
59. Ibid.
60. "Kennedy Space Center: Frequently Asked Questions," *NASA*, May 21, 2013, <http://science.ksc.nasa.gov/pao/faq/faqsanswers.htm>.
61. Conathan, "Rockets Top Submarines."
62. IMDB, "Academy Awards, USA: Overview."
63. Katovich and Kinkade, "The Stories Told in Science Fiction," 621.
64. Kirby, "Science Consultants, Fictional Films, and Scientific Practice," 231-32.
65. Ibid.
66. Hafsteinsson, "The Agency of Eternal Darkness," 292.
67. Kirby, "Science Consultants, Fictional Films, and Scientific Practice," 235.
68. Hafsteinsson, "The Agency of Eternal Darkness," 292.
69. *Finding Nemo*, directed by Andrew Stanton and Lee Unkrich (Burbank, CA: Walt Disney Pictures, 2003), DVD.
70. Firebrace, "Eyes Aquatic," 51.
71. *Gravity*, directed by Alfonso Cuarón (Burbank, CA: Warner Bros. Entertainment, 2013), DVD.
72. Kirby, "Science Consultants, Fictional Films, and Scientific Practice," 250.

73. Firebrace, "Eyes Aquatic," 51.
74. Rozwadowski, "Limitations of the Ocean," 596.
75. Kirby, "Scientists on the Set," 267.
76. McCurdy, *Space and the American Imagination Second Edition*, 170.
77. Ibid.
78. Conathan, "Rockets Top Submarines."