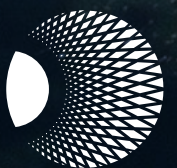


# Beneath the Surface

We May Learn More about UAP  
by Looking in the Ocean

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“The human mind enjoys impressive visions of unearthly creatures. Now then, the sea is precisely their best medium. . . . With its untold depths, couldn't the sea keep alive such huge specimens of life from another age, this sea that never changes while the land masses undergo almost continuous alteration? Couldn't the heart of the ocean hide the last-remaining varieties of . . . titanic species, for whom years are centuries and centuries millennia?” **Jules Verne**

# Executive Summary

**R**esearch and attention regarding Unidentified Aerial Phenomena are almost entirely focused on their aerial occurrences. Yet instances of UAP at sea, whether under the surface or traveling “transmedium”—between the atmosphere and the ocean—are also known to occur. Perhaps the most widely publicized example was the “Tic Tac” UAP, described by Navy F/A-18F Super Hornet pilots as hovering above roiling ocean whitewater during a training exercise in 2004. The whitewater may have indicated a larger UAP below or that the observed UAP had emerged from the sea, suggesting an unidentified submersible object (USO). More recently, a transmedium UAP was observed by US Navy personnel onboard the USS *Omaha* west of San Diego in 2019.

We have less research on transmedium UAP and USOs than is ideal, yet what data there is points to a few conclusions. First, these underwater anomalies jeopardize US maritime security, which is already weakened by our relative ignorance about the global ocean. Second, their presence in the oceans at the same time presents an unprecedented opportunity for maritime science. Third, to meet the security and scientific challenges, transmedium UAP and USOs should be elevated to national ocean research priorities.

Where national security is concerned, the current situation with maritime domain awareness is unsettling. Even though the ocean covers 71 percent of Earth’s surface, less than 25 percent of the seabed has been mapped to modern standards, and only 5 percent of the ocean volume explored—more is known about the surfaces of the moon and Mars than that of our own planet’s seafloor. The geophysical undersampling of the world’s ocean is a critical concern for maritime security, as obtaining and maintaining knowledge of threats on and under the sea remains a perpetually unfinished task. The fact that unidentified objects with unexplainable characteristics are entering US water space and the DOD is not raising a giant red flag is a sign that the government is not sharing all it knows about all-domain anomalous phenomena. An effective and complete approach to maritime security must seek to uncover the “unknown unknowns” associated with transmedium UAP and USOs.

Yet however concerning the security implications of UAP are, the scientific ramifications are nothing short of world changing. Pilots, credible observers, and calibrated military instrumentation have recorded objects accelerating at rates and crossing the air–sea interface in ways not possible for anything made by humans, and several pieces of congressional legislation support these observations by defining UAP as transmedium vehicles. The stunning implication is that engineering, materials science, and physics beyond the state of the art are needed to produce and operate these objects. This knowledge could transform such fields as air and maritime transportation, energy generation, agriculture, communications, computing, manufacturing, space travel—virtually every imaginable economic sector—not to mention defense. Further study of UAP may lead to discoveries that make those of the scientific revolution in the seventeenth and eighteenth centuries look like baby steps.

To this end and to meet the maritime security challenge, transmedium UAP and USOs should be elevated to national ocean research priorities. Action should be taken by the US government, academia, philanthropies, the private sector, and the international community. The White House should take the lead, through several actions: directing through executive order the gathering, re-examination, and eventual disclosure of any relevant knowledge held by ocean agencies and departments such as NOAA, NASA, the Office of Naval Intelligence, and the Naval Oceanographic Office; including all-domain anomalous phenomena as a topic in The White House Research and Development Priorities Memorandum for the 2026 fiscal year budget; and directing the Ocean Policy Committee to add transmedium UAP and USOs to the strategic priorities in the Implementation Plan for the National Strategy for Ocean Mapping, Exploring, and Characterizing the US Exclusive Economic Zone. Meanwhile, Congress should include this same action in the 2025 National Defense Authorization Act and corresponding language in the reauthorization of the National Oceanographic Partnerships Program, the primary federal program for facilitating collaboration between universities, industry, and organizations in the ocean advocacy nonprofit space.

Beyond strengthening national security, expanding research on UAP into the maritime domain can lead to a greater understanding of the ocean, with positive outcomes for marine conservation and the American blue economy. Most crucially, a complete understanding of anomalous phenomena will remain hidden absent dedicated research in our largely unknown oceans.

# Introduction: A New Reality

**W**hile the headlines today tend to be dominated by American political polarization, unstable geopolitics, and the accelerating technology revolution in artificial intelligence and space, a new epoch in human history may be unfolding that warrants more attention than all these stories combined.

In the past few years, the US government has made several acknowledgments to the public about the reality of unidentified anomalous phenomena, or UAP (formerly referred to as UFOs). This began in 2017 when the *New York Times* began publishing a series of pieces about a Department of Defense program to collect and analyze data on UAP as well as recovered materials.<sup>1</sup> In 2020, the Pentagon officially released and authenticated videos recorded by US Navy pilots of aerial objects whose flight characteristics were impossible to reproduce with modern military aircraft.<sup>2</sup> These pilots subsequently provided eyewitness accounts to the media, including a remarkable segment on *60 Minutes* in 2021. It featured aviators assigned to the USS Nimitz strike group describing their observation of a UAP resembling a Tic Tac mint that maneuvered in ways that defied the laws of known physics.<sup>3</sup>

Later that year, the US Congress directed<sup>4</sup> the DOD to investigate UAP by establishing an office now called the All-Domain Anomaly Resolution Office (AARO).<sup>5</sup> This new entity contributed to a congressional report published by the US Office of the Director of National Intelligence (ODNI) describing 274 observations of UAP by DOD personnel between August 2022 and April 2023.<sup>6</sup> The most astonishing development occurred in 2023 when the House Oversight Committee's national security subcommittee held a hearing in which a former intelligence officer with the National Reconnaissance Office testified that the US government was concealing from Congress and the public materials recovered from crashed UAP, including some of a biological nature.<sup>7</sup> Not only have these reports been supported by testimony from other former US intelligence officials,<sup>8</sup> but US Senate Majority Leader Chuck Schumer and Senator Mike Rounds went so far as to introduce bipartisan legislation to implement a plan for controlled public disclosure of information concerning UAP data and materials in the government's possession.<sup>9</sup> While the only part of this "Schumer Amendment" that was passed into law dealt with archived UAP reports, the full text of the draft was extraordinarily frank about its subject. Terms such as UAP, nonhuman intelligence (NHI), as well as technology of unknown origin (TUO) appear throughout the original bill, which resulted from multiple meetings between Senate staffers and former DOD and Intelligence Community personnel with knowledge of the executive branch's alleged, decades-old "legacy" UAP program.<sup>10</sup>

Acknowledged government efforts to address UAP are not confined to the DOD and Congress. NASA established a study team that released a report on UAP in 2023. The underwhelming document, which lacked any NASA data, appeared to be a perfunctory appeasement of congressional concerns regarding UAP. Nevertheless, the report concluded that NASA can contribute to UAP studies within a broader whole-of-government framework led by AARO.<sup>11</sup>

This groundswell of government activity has led more recently to the establishment of programs dedicated to scientific research on UAP. Harvard University's Galileo Project, for example, is developing a network of ground-based observatories to search for evidence of extraterrestrial civilizations.<sup>12</sup> On the international front, a project with the intriguing title Vanishing and Appearing Sources during a Century of Observations is conducting research with pre-*Sputnik*-era photographic plates captured by observatory telescopes around the world to detect evidence of UAP.<sup>13</sup> In multiple examples, sources of light on one plate disappear in the same field of view in plates photographed on later dates. A potential explanation for these "vanishing stars" is UAP.

The latest players on the scene are nongovernmental organizations founded to promote UAP research, public policy, and education. The most prominent is the Sol Foundation, whose inaugural symposium featured presentations about UAP from university academics in the fields of astronomy,<sup>14</sup> astrophysics,<sup>15</sup> materials science,<sup>16</sup> sociocultural anthropology, philosophy,<sup>17</sup> psychology, and religious studies<sup>18, 19, 20, 21</sup> as well as talks on policy by retired US government officials and a sitting Canadian member of parliament. The New Paradigm Institute has parallel theological and advocacy objectives, while Americans for Safe Aerospace, founded by a former Navy pilot whose squadron witnessed UAP first-hand, supports the reporting and investigation of UAP observed by commercial pilots to improve aerospace safety and awareness.<sup>22</sup>



# 1. Beneath the Surface

**R**esearch and attention regarding UAP are almost entirely focused on their aerial occurrences. After all, the origins of much of today’s public discussion on the phenomena lie in twentieth-century reports of flying discs and saucers. Yet instances of UAP at sea, whether under the surface or traveling transmedium (i.e., between the atmosphere and the ocean) are also known to occur.

Perhaps the most widely publicized example was the above mentioned “Tic Tac” UAP, described by Navy F/A-18F Super Hornet pilots to be hovering above roiling ocean whitewater during a training exercise in 2004.<sup>23</sup> The whitewater may have indicated a larger UAP below or that the observed UAP had emerged from the sea, suggesting an unidentified submersible object (USO). More recently, a transmedium UAP was observed by US Navy personnel on-board the USS *Omaha* west of San Diego in 2019.<sup>24</sup>

The most dramatic example of an apparent transmedium UAP is the video from Aguadilla, Puerto Rico, captured by the thermal imaging system on a US Customs and Border Protection DHC-8 aircraft in 2013. Detailed analysis of the data by the Scientific Coalition of UAP Studies (SCU) reveals several potentially unexplainable aspects of this object. It was initially detected moving at a low level over a runway at Rafael Hernández Airport, where its presence was so prominent that it delayed the departure of a commercial flight.<sup>25</sup> Over three minutes, the object appears to fly at speeds between 40 and 120 miles per hour, enter and exit the Atlantic Ocean without any significant deceleration, reach a maximum underwater velocity of 95 miles per hour, and at one point split into two parts before entering the water again. The SCU authors concluded that no known aircraft, naval vessel, projectile, or human-made technology possess these characteristics or capabilities.

Although there have been consistent reports of undersea UAP and legislative acknowledgment of them, the literature on this subject is sparse and unsystematic. There are only a handful of books and scattered accounts by largely nonprofessional researchers, in contrast with the hundreds, perhaps thousands, of books published about UAP sightings in the sky. The third chapter of early ufologist Coral and Jim Lorenzen’s *UFOs over the Americas*, titled “Underwater UFOs,” may have been the first modern text on the topic,<sup>26</sup> while Ivan Sander-son’s *Invisible Residents* appears to be the first book dedicated to USOs.<sup>27</sup> Four decades later, Carl Feindt provided a thorough compendium of cases involving UAP and water in his work *UFOs and Water*.<sup>28</sup> More specific studies of transmedium UAP and USOs include a chronicle of eyewitness accounts off the coast of Southern California in Preston Dennett’s sensationally titled yet compelling *Undersea UFO Base: An In-Depth Investigation of USOs in the Santa Catalina Channel*,<sup>29</sup> the extensive investigation by Chris Styles of a 1960 USO encounter in Shelburne Harbour, Nova Scotia,<sup>30</sup> and the recent research conducted by John and Gerald Tedesco and Donna L. Nardo off the southern coast of Long Island.<sup>31</sup> Rather than exploring a single event or region, Debbie Ziegelmeyer in a recent book provides a wide-ranging review of USOs and UAP near water.<sup>32</sup> A forthcoming book by popular UAP historian Richard Dolan presents the most exhaustive examination to date, documenting over six hundred

cases between 1711 to 2023. He draws from the Mutual UFO Network's Case Management System database, the National UFO Reporting Center, and other studies (including those mentioned above).<sup>33</sup>

The underwater and transmedium UAP reported in these sources are as diverse as their aerial counterparts, including luminous orbs, silver and gray discs, and triangular and cigar-shaped objects with various lighting configurations. Large lighted craft are often seen under the sea surface without ever emerging. They may appear solitary or as part of a group in formation; sometimes, as with the Agudilla case, their movement seems to defy known physical laws.

Two contrasting examples are useful in conveying the types of potentially unexplainable phenomena that have been encountered at sea. Styles details in his book the aforementioned US–Canadian joint mine-sweeping exercise off Shelburne Harbour, Nova Scotia, in 1960. The author interviewed several Royal Canadian Navy divers who participated in the exercise and claimed to have observed two disc-shaped craft on the seabed. Furthermore, the divers claimed they not only saw the occupants of the two craft trying to repair one of them but also recorded underwater footage of this extravehicular activity.<sup>34</sup> It is only after the recent US military UAP whistleblower testimony that this story seems credible.<sup>35</sup>

Less exotic but just as interesting is the first report in the “Underwater UFOs” chapter of the Lorenzens’ *UFOs over the Americas*.<sup>36</sup> Originally documented by US Merchant Marine officer J. R. Bodler in 1952, the case involves the crew of a US Navy ship exiting the Arabian Gulf through the Strait of Hormuz. While underway at night, they came upon a luminous area of the ocean 1,000 to 1,500 feet in width that simultaneously rotated and pulsated. The effect was, Bodler wrote, “weird and impressive in the extreme, with the vessel seeming to occupy the center of a huge pinwheel whose ‘spokes’ consisted of phosphorescent luminance revolving rapidly about the vessel as a hub.”<sup>37</sup> The Lorenzens include this account in the chapter on underwater UFOs because Bodler called it an “unexplained phenomenon.”

Subsequent research has shown that the phenomenon has a more down-to-earth explanation: bioluminescent organisms excited by near surface turbulence.<sup>38</sup> I have seen this occurrence firsthand in the exact same body of water at night. The geometric patterns of the luminous “pinwheels” take their form from turbulent vortices generated by tidal circulation in the strait.<sup>39</sup> This serves to remind us that prosaic explanations for phenomena should always be considered to avoid jumping to conclusions about alien craft.

## 2. The Unknown Ocean

**W**hat can be concluded from such research on transmedium UAP and USOs? The answer is made clear by understanding how little is known about the global ocean. Less than 25 percent of the seabed has been mapped to modern standards, while only 5 percent of the ocean volume has been explored.<sup>40</sup> Even though the ocean covers 71 percent of Earth's surface, more is known about the surfaces of the moon and Mars than that of our own planet's seafloor.<sup>41</sup>

The reasons for this dearth of data can be understood by examining the history of oceanography, which will also help to justify the final recommendations in this paper. For over half a millennium, the navies of various nations have been measuring and mapping the depth of the sea for the purpose of safe navigation.<sup>42</sup> It was not until the late nineteenth century that the first multidisciplinary marine research expedition was conducted. From 1872 to 1876, the HMS *Challenger* completed a circumnavigation of the globe. The crew discovered hundreds of new species and mapped large areas of the ocean that had never been surveyed, including the world's deepest ocean trench, Challenger Deep, named in honor of the ship.<sup>43</sup>

Over the next century, the scientific study of the sea expanded gradually. A rapid acceleration occurred during and after World War II as the US Navy invested heavily in both military and academic research.<sup>44</sup> While American leadership was established and has continued, one can appreciate how little progress has been made by considering that the United States did not develop a national program with a dedicated ship for ocean exploration until 2009.<sup>45</sup> It was over a decade later that America finally produced a national strategy<sup>46</sup> and plan<sup>47</sup> to map, explore, and characterize the nation's exclusive economic zone.

Through this national program, scientists have been making discoveries nearly every day, including uncharted seamounts, ancient archaeological relics, and never-before-seen marine life. Recent examples of the latter include an Alaskan seawater sponge made of chemical compounds that can treat pancreatic cancer,<sup>48</sup> a deep coral reef system spanning eighty miles in length off the US Southeast,<sup>49</sup> and an entirely new species of killer whale in the waters off Antarctica.<sup>50</sup> At the deepest depths, many of these previously unknown life forms are truly alien in appearance,<sup>51</sup> perhaps signifying that the ocean is a far more likely location for anomalous phenomena than previously thought.

Take the example of the benthic communities surrounding hydrothermal vents. The vents themselves are tectonically active regions of the seafloor that spew heated, mineral rich seawater. Discovered in 1977, these vents were observed to coexist with organisms that had never been seen before. Such extremophiles reside in environments of extreme temperature, depth, and chemical concentrations and include ghostlike mussels, tube worms, and crabs, devoid of color because they derive energy from chemosynthesis rather than photosynthesis.<sup>52</sup>

Even with this late twentieth-century discovery, the global ocean remains vastly unexplored. Thus, progress in UAP and USO research relative to the atmospheric and terrestrial domains

can only be described as scratching the surface. Additionally, two other factors compound the problem. First, much of the ocean data collected by military platforms is classified and therefore inaccessible to the scientific community. Second, most oceanographic research is targeted toward refining the knowledge of dynamic, biological, chemical, geological, and acoustic processes that are generally well understood. However, anomalous phenomena are often left outside the aperture and calibration level of the sensors employed for such experiments. Conversely, detection of anomalous activity using scientific instrumentation might be occurring, but the data are being categorized as noise and deleted according to experimental design.

Consider the example of a modern oceanographic research ship conducting seafloor mapping in an uncharted area of the deep ocean. How would the scientists onboard respond if they were to encounter a target like that detected by the USS *Maury*? During a voyage from San Francisco in 1946, the *Maury*'s sonar had mapped what the crew thought was an underwater seamount. Yet after making several passes, as Richard Dolan writes, “the object accelerated to a fast speed and disappeared into the depths. . . . They searched for some time and never located it again.”<sup>53</sup> Not believing that such a USO could exist, the scientists on the research ship almost certainly followed standard practice for noisy hydrographic data collected during high sea states—delete it.

Then there are situations where marine scientists may have detected evidence of UAP, but further examination is required to confirm or refute such an origin. In 2022, researchers on the NOAA ship *Okeanos Explorer* used a remotely operated vehicle (ROV) equipped with a high-resolution video recorder to observe several sublinear sets of centimeter-sized holes in the sediment on the seafloor at a depth of approximately 2,540 meters.<sup>54</sup> The holes appeared to be human made, and the little piles of sediment around them suggested they had been excavated. The ROV attempted but was unable to peer into the holes. It did manage to gather a few samples of the sediment, and the principal investigator published a peer-reviewed paper on the find with the conclusion that the holes pointed to significant knowledge gaps in the deep ocean.<sup>55</sup> The scientists were so uncertain as to the origin of these holes that they asked followers on social media what hypotheses members of the public might have. Surprisingly—or maybe not—the top answer was aliens.<sup>56</sup> Such a response may have only been the result of the appeal of UFOs in popular culture, but one must wonder what the NOAA scientists might have found if only they dug deeper.

The esteemed oceanographer Dr. Walter Munk best summarized the sparse state of ocean knowledge when he said, “The first 100 years of oceanography could well be called a century of under-sampling.”<sup>57</sup> Unfortunately, the same holds true in the twenty-first century. This implies that the few hundred eyewitness accounts of transmedium UAP and USOs described in the texts discussed above may be only the tip of the iceberg for the levels of anomalous activity occurring in the ocean—or it may not. There are not enough data to know one way or the other.

# 3. Rethinking Maritime Security

**Y**et the geophysical undersampling of the world's ocean is certainly a critical concern for maritime security.<sup>58</sup> A well-known axiom in warfare is that occupying elevated terrain, or high ground, provides a tactical advantage over an opposing force. There is a form of high ground in the maritime domain as well. Bathymetric and sedimentary features of the seafloor, as well as dynamical changes in the three-dimensional distribution of seawater properties over time, affect the performance of the undersea acoustic and optical sensors used to detect and target adversaries' assets. Depending on the impact of these variations on the propagation of sound and light, it may be more beneficial to operate in different regions of the ocean than others, much like the way cloud-free skies enable the collection of imagery with reconnaissance satellites.

The huge knowledge gap in the ocean caught the US Navy's attention twice during the past two decades. In 2005, the USS *San Francisco*, a nuclear-powered fast attack submarine, collided with an uncharted submarine mountain, or seamount, 420 miles southeast of Guam while traveling at a speed of thirty miles per hour at a depth of 525 feet.<sup>59</sup> The collision was so severe that the forward ballast tanks ruptured, which nearly prevented the vessel from maintaining positive buoyancy and reaching the surface. Fortunately, the inner hull was not breached, and more important, there was no damage to the boat's nuclear reactor. A total of ninety-eight crew members were injured with broken bones, lacerations, and back injuries, and one sailor perished from a severe head injury.

The US Navy submarine USS *Connecticut* repeated the costly mistake in 2021 when she, too, collided with an uncharted seamount, also in the vicinity of Guam.<sup>60</sup> Seamounts like those struck by USS *San Francisco* and USS *Connecticut* are remnants of extinct volcanoes. Satellite altimetry and bathymetric mapping with survey ships indicate that there are more than one hundred thousand seamounts with heights of one thousand meters or more. Despite their abundance, less than one-tenth of a percent of the seamounts in the world have been mapped and explored.<sup>61</sup>

Of course, the primary threats to global maritime security do not stem from gaps in environmental knowledge. "Hard" security threats appear to be proliferating, and an overwhelming majority affect the maritime domain. Russia is continuing its brutal conflict in Ukraine, where the Black Sea is the scene of a hot naval war.<sup>62</sup> Another war is raging between Israel and the terrorist group Hamas, which prompted the deployment of a US Navy aircraft carrier strike group to the region.<sup>63</sup> Those same US Navy assets are intercepting strike after strike by Iran's proxies on international shipping in the Red Sea.<sup>64</sup> Meanwhile in the Indo-Pacific, North Korea is ramping up its nuclear saber-rattling at the West,<sup>65</sup> and China is persisting in its military aircraft incursions in Taiwan's Air Defense Identification Zone.<sup>66</sup>

"Soft" security challenges are abundant as well.<sup>67</sup> China is the dominant actor in this arena, whether by economic coercion through state-owned enterprises<sup>68</sup> or environmental degradation of all kinds, such as marine pollution, coral reef destruction, illegal fishing, and unchecked greenhouse gas emissions.<sup>69</sup>

One threat that may be even greater than all these is largely unseen: the worldwide network of undersea cables that provide the backbone of global communication and information transfer. This vast complex of seabed infrastructure underpins global commerce, military readiness and logistics, and the internet itself. Most Americans mistakenly think that the internet is primarily supported by satellites in space. Approximately 95 percent of the world's communications are transmitted through this spider web of roughly five hundred fiber-optic lines laid across the seafloor. They come ashore in just a few remote, coastal locations and often have minimal protection. Russia has begun probing Atlantic undersea cables as the weak underbelly of US national security, and China has sabotaged some running to Taiwan as part of its wider campaign to become the dominant maritime power of the twenty-first century.<sup>70</sup>

To be sure, this threat and the others outlined above paint a problematic picture for maritime security. But now that the US government is openly addressing unidentified anomalous phenomena, how does that affect the discussion? Consider first the aerial domain, the security of which is made abundantly clear in the most recent report on UAP from AARO and ODNI. By documenting hundreds of intrusions into restricted airspace by unidentified aerial objects, the report directly acknowledges significant gaps in the US military's domain awareness.<sup>71</sup> That problem should be unacceptable to US taxpayers, who foot the bill for the nation's multibillion-dollar air defense system.<sup>72</sup> Equally appalling is the apparent apathy about these gaps and the unidentified phenomena outlined in the report. Rather than expressing urgency or alarm, the document dryly describes a "restricted airspace reporting bias" and assures readers that "the unidentified and purported anomalous nature of most UAP will likely resolve to ordinary phenomena and significantly reduce the amount of UAP case submissions."<sup>73</sup>

One more point about the 2023 AARO/ODNI report warrants mention. Its authors state that none of the UAP they analyzed posed a direct threat to the flight safety of the observing aircraft,<sup>74</sup> yet several expert analysts and observers have claimed otherwise.<sup>75,76</sup> For example, mitigating the safety of flight risks posed by UAP is a principal purpose for Americans for Safe Aerospace. This disconnect indicates that even though ODNI, AARO, and NASA have responded to congressional intent to act regarding UAP, the executive branch's willingness to reveal all it knows is likely limited.<sup>77</sup>

Compared to the nation's aerospace, the situation with maritime domain awareness is even more unsettling. Just by virtue of the volume of the ocean and area of its surface, it is a far more difficult problem set. Obtaining and maintaining knowledge of security threats on and under the sea remains a perpetually unfinished task.<sup>78</sup> When anomalous phenomena are included, the situation goes from bad to worse. A case in point is the transmedium UAP in the Aguadilla video. As noted above, the craft in this video was observed to reach a speed of ninety miles per hour underwater—a capability the US Navy has yet to acquire. When an object in US territorial seas exhibits flight and underwater performance characteristics far outside the envelopes of any platform in the global defense inventory, the National Command Authority should not only be alarmed but also demand answers. How is it constructed? What is its means of propulsion? How does it show no deceleration in traversing the air-sea interface? Who or what is controlling it? What are its intentions?

The fact that unidentified objects with unexplainable characteristics are entering US water space and the DOD is not raising a giant red flag is another sign that the government is not sharing all it knows about all-domain anomalous phenomena. The US submarine force is intensely meticulous and disciplined about avoiding underwater collisions by employing the use of rigorous protocols known as water space management (WSM) and prevention of mutual interference (PMI).<sup>79</sup> These mandatory procedures are intended to prevent potentially fatal interactions between submarines and other undersea assets such as oceanographic drones.<sup>80</sup> One can only conclude that the lack of government transparency regarding UAP holds equally true for USOs.

A recent examination of UAP disclosure<sup>81</sup> likened the US government's apparent UAP apathy to the 1941 surprise attack by Japan on Pearl Harbor (where vital warning information was not forwarded up the chain of command) and to 9/11 (when intelligence agencies failed to share critical data that could have saved the lives of thousands of civilians). Such a stark assessment may well be justified by the numerous instances where UAP have interfered with the DOD's nuclear deterrent capability.<sup>82</sup> Only one case of a nuclear ballistic missile submarine interacting with a potential USO has come to my attention.<sup>83</sup> However, due to the strict secrecy of this US Navy program, it is possible that the sea-based arm of the US nuclear triad is experiencing similar levels of interference.

In the final analysis, an effective and complete approach to maritime security must seek to uncover the "unknown unknowns" associated with transmedium UAP and USOs. To quote one of the foremost authorities on UAP and the DOD, "When has ignorance ever been a good national security strategy?"<sup>84</sup>

## 4. The New Scientific Revolution

**H**owever concerning the security implications of UAP are, the scientific ramifications are nothing short of world changing. Recall that pilots, credible observers, and calibrated military instrumentation have recorded objects accelerating at rates and crossing the air–sea interface in ways not possible for anything made by humans. Also bear in mind that there are multiple mentions of “technologies of unknown origin” in the Schumer Amendment, based on briefings to Congress by individuals alleging knowledge of the government’s UAP crash retrieval programs. The stunning implication of this legislation and the observational UAP data is that engineering, materials science, and physics beyond the state of the art are needed to produce and operate these objects. How might this knowledge transform such fields as air and maritime transportation, energy generation, agriculture, communications, computing, manufacturing, space travel—virtually every imaginable economic sector—not to mention defense?<sup>85</sup> Further study of UAP may lead to discoveries that make those of the scientific revolution in the seventeenth and eighteenth centuries look like baby steps.

Then there is the ontologically shocking subject of “nonhuman intelligence,” the term the Schumer Amendment uses for the designers of UAP. Unless we are entirely wrong about the phenomena, they are manufactured and controlled by something or someone with unknown intentions. Confirmation that this is the case would mark a turning point in a variety of disciplines in the sciences and humanities. The frame of reference for astronomy and astrobiology, for example, would transform overnight, and the social sciences would see entirely new areas of research on the possibility of human–NHI interaction emerge (something researchers in cultural anthropology, religious studies, and philosophy are already working toward).<sup>86</sup>

What do UAP and USOs mean for the future of ocean science? Unfortunately, the near-term effect will likely be nil. The stigma associated with UFOs, possibly fueled by decades of active denial and disinformation by the US government,<sup>87</sup> has caused mainstream scientists to avoid the topic altogether.<sup>88</sup> An enormous amount of institutional and cultural inertia would have to be overcome to make research into transmedium UAP and USOs a national ocean science priority. However, there are several reasons why this could be done over time. Initially, as public interest in UAP continues to grow, some in the marine research community might conclude that scientific study of USOs could lead to breakthroughs in the field.<sup>89</sup> Eventually, an innovative first mover could secure funding and begin a systematic search like the Galileo Project is doing for aerial UAP.<sup>90</sup> As data are collected and new knowledge is gained, public interest will grow, and more scientists may join the field.

Sometime in the future, the government may start openly researching UAP to a greater degree than the perfunctory categorization effort underway at AARO. When that occurs, subsequent exploration for UAP on and under the sea will have the benefit of making new ocean science discoveries as well. Any hunt for USOs or supporting undersea infrastructure will almost certainly identify new marine species, geologic features, and oceanic processes. As noted, this could serve as a catalyst for increasing participation by the ocean science community. The resulting expansion in ocean discovery would support marine conservation, national secu-



riety, and the ocean and Great Lakes–based “blue” economy<sup>91,92</sup> thereby drawing in even greater support for UAP research from the many maritime domain stakeholders in the United States.

Finally, as UAP interest within academia grows, more tenure and tenure-track faculty will believe scholarly research on the topic is important.<sup>93</sup> A recent study of fourteen disciplines at 144 major research universities concluded that this is already occurring; it also found that curiosity outweighed skepticism or indifference among the respondents.<sup>94</sup> This trend will lead to an increasing number of graduate students pursuing some form of UAP-related research, resulting in an erosion and eventual elimination of the stigma associated with the subject in universities and research institutions.

Such a generational shift occurred in the aviation industry during the last half of the twentieth century. Following World War II, professional aviators were hesitant to report human factor deficiencies in aircraft cockpit design out of fear that it would reflect negatively on their performance evaluations. As research revealed that pilot error was a causal factor in two-thirds of air carrier fatal accidents, the industry and the FAA recognized the importance of a better understanding and greater consideration of the human aspect of aviation.<sup>95</sup> Through a combination of policy, regulation, and best practices, pilot reluctance to report safety issues disappeared after twenty-five years.<sup>96</sup> The acceptability of maritime UAP research at ocean science institutions could very well follow a similar trajectory.

## 5. A Call for Action

**T**o this end, transmedium UAP and USOs should be elevated to national ocean research priorities. Such action by the US government, academia, philanthropies, the private sector, and the international community can benefit both maritime security and scientific discovery. Through executive order, the White House can demonstrate leadership by gathering, reexamining, and eventually disclosing the pertinent knowledge held by the government's ocean agencies and departments. NOAA, NASA, the Office of Naval Intelligence, and the Naval Oceanographic Office own the lion's share of the government's classified and unclassified ocean data, and a targeted survey of their archives and data repositories could lead to greater understanding of the physical characteristics and risks of these phenomena. Such a survey could be performed by the Naval Studies Board of the National Academies of Science, Engineering, and Medicine under the sponsorship of AARO. To date, AARO has focused exclusively on aerial phenomena, but a maritime study is mandated by the office's "all-domain" charter. The survey should also include state, private, and philanthropic ocean research institutions, as their data could be used to establish a baseline for transmedium UAP and USO occurrence. Releasing the results to the public could then provide stimulus for and inform a broader national research effort on these phenomena.

Further action by the executive branch should include adding all-domain anomalous phenomena as a topic in the White House Research and Development Priorities Memorandum for the 2026 fiscal year budget.<sup>97</sup> This annual document provides guidance to federal departments and agencies about the most important areas of research and development. Language on UAP, emphasizing transmedium and USO research and development for the US Navy, NOAA, and NASA, will result in those organizations providing dedicated funding for such activity.

Another White House action should be to direct the Ocean Policy Committee to add transmedium UAP and USOs to the strategic priorities in the Implementation Plan for the National Strategy for Ocean Mapping, Exploring, and Characterizing the US Exclusive Economic Zone.<sup>98</sup> For two years, this plan has been followed by NOAA, the US Navy, the US Geological Survey, the US Army Corps of Engineers, and several other agencies to explore and characterize areas of the ocean and Great Lakes for applications such as offshore energy development and aquaculture, critical minerals, biopharmaceutical resources, critical fish habitat, and areas in which natural hazards pose a risk to public safety. Including anomalous phenomena as a priority in this plan will enable both federal and university ships and scientists to open the aperture on marine research in ways that may lead to transformational discoveries.

Both the House and the Senate should also step up by including the above action, as well as the original provisions in the Schumer Amendment, in the 2025 National Defense Authorization Act. Additionally, members of the House and Senate ocean caucuses should meet with supporters of the Schumer Amendment to build the base of support among members for controlled disclosure. They should stress that expanding research on UAP into the maritime domain can lead to a greater understanding of the ocean, with positive outcomes for marine conservation and the American blue economy.<sup>99, 100</sup>

Finally, the White House and the Hill should support partnerships between the government and the many ocean stakeholders in academia, philanthropy, and the private sector for the purpose of maritime UAP research. Congress can include language for this in the reauthorization of the National Oceanographic Partnerships Program, the primary federal program for facilitating such collaboration.<sup>101</sup> Both the US Navy and NOAA lead the execution of this interagency effort, which brings together universities, industry, and organizations in the ocean advocacy nonprofit space.

The White House can be a powerful convener to kick-start these partnerships, as was done during the 2019 White House Summit on Partnerships in Ocean Science and Technology,<sup>102</sup> a successful event that produced innovative and enduring public–private partnerships for ocean mapping,<sup>103, 104</sup> exploration,<sup>105</sup> data,<sup>106</sup> science,<sup>107</sup> autonomous technology,<sup>108</sup> conservation,<sup>109, 110</sup> and education.<sup>111</sup> The Biden administration could save time by following a similar format and simply including anomalous ocean activity as an additional focus area.

## Conclusion: The Final Frontier

Open scientific study of aerial UAP has been progressing for decades. Now that the US Congress and a rising tide of new organizations are aiming to decipher the enigma of these anomalies, America may be better positioned than ever before to understand what exactly is in the sky.

Not so in Neptune’s realm. No matter how much is learned about UAP in the atmosphere, a complete understanding of anomalous phenomena will remain hidden absent dedicated research in our largely unknown oceans. Without gazing into the abyss, one will never know if the abyss does indeed return the gaze.

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