

September 22, 2022

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The Importance of Exploration In Research

John M. Barry utilizes vivid imagery, deliberate metaphors, forceful repetition, and a pioneering attitude to characterize scientific research as an adventure that one must have courage to undergo.

First, Barry uses an extended metaphor to depict scientific research as uncharted territory. Barry portrays scientists as “exist[ing] on the frontier” (23). Scientists who perform research are explorers who have to conquer uncharted territories— similar to the ideas of the pioneers in American Westward expansion. Barry further believes that “even the least ambitious among [scientists] deal with the unknown” (23-24). This metaphor contrasts the least ambitious pioneering scientists with the unknown field of science. Barry believes that every scientist must be dedicated to exploring unknown areas. Readers may find his interpretation of science inspiring as he illustrates science as the process of exploring new horizons and making groundbreaking discoveries. In addition, Barry explains that scientific research is not a straightforward task; it requires overcoming difficulties on the “frontier” and becoming familiar with the “unknown.”

In another metaphor comparing scientists to wilderness explorers, Barry highlights the importance of courage and hope in the research process. To become pioneers in this field, one must “move deep into the wilderness region where they know almost nothing” (26-27). This metaphor compares the “wilderness” to scientific research, showing that Barry views science as an unknown region open to exploration. Barry insists that readers must possess a persevering and fortitudinous disposition to overcome challenges presented when becoming scientific

researchers. His initial use of the word “frontier” instead of “wilderness” creates a sense of hope, bringing attention to future possibilities. He is keen on innovation, suggesting that further advances must be made in the field to advance society. Furthermore, Barry illustrates the importance of moving “deep” into research and emphasizes that the research process should be detailed and deal with fundamental problems. Surface level ideas are not adequate, and must instead be replaced by open-ended questions that could yield a multitude of results.

Additionally, Barry uses imagery to show the various methods and outcomes of scientific research. He describes the risks and rewards of scientific research: “Would a pick be best, or would dynamite be better – or would dynamite be too indiscriminately destructive?” (40-42). This imagery emphasizes the different ways one can overcome an obstacle doing scientific research. Barry helps the reader understand that many variables must be considered while researching — science is not a straightforward process. A significant amount of courage, curiosity, and determination is required for one to have a breakthrough in their research. Barry also mentions the risks and rewards of exploration: “there a single step can take them through the looking glass into a world...A single step can also take one off a cliff” (30-31). Barry paints the image of a researcher taking a “single step” who may result in a novel discovery or a tragic failure. A researcher may risk a career-ending failure or a finding that will pave the way for future generations. The author portrays scientific research as a high-risk, high-reward journey for his audience to want to experience.

Barry also draws attention to the role that inquiry plays in the scientific method through his use of repetition. He highlights the significance of curiosity as a fuel for scientific innovation by repeating “uncertainty” throughout the passage. Barry insists that uncertainty is intertwined with scientific research by citing a French physiologist—Claude Bernard— “Science teaches us

to doubt” (12-13). He then further illustrates the need for discomfort in regard to scientific innovation. In the ever-changing world of science, Barry reiterates the need for continuous curiosity by reaffirming the belief that “...a scientist has nothing to believe in but the process of inquiry” (19-20). Further scientific advances would not be possible without the constant questioning of ideas, hypotheses, and experiments. A single breakthrough paves the way for a myriad of discoveries—bringing light to novel aspects of science.