

Opinion Article

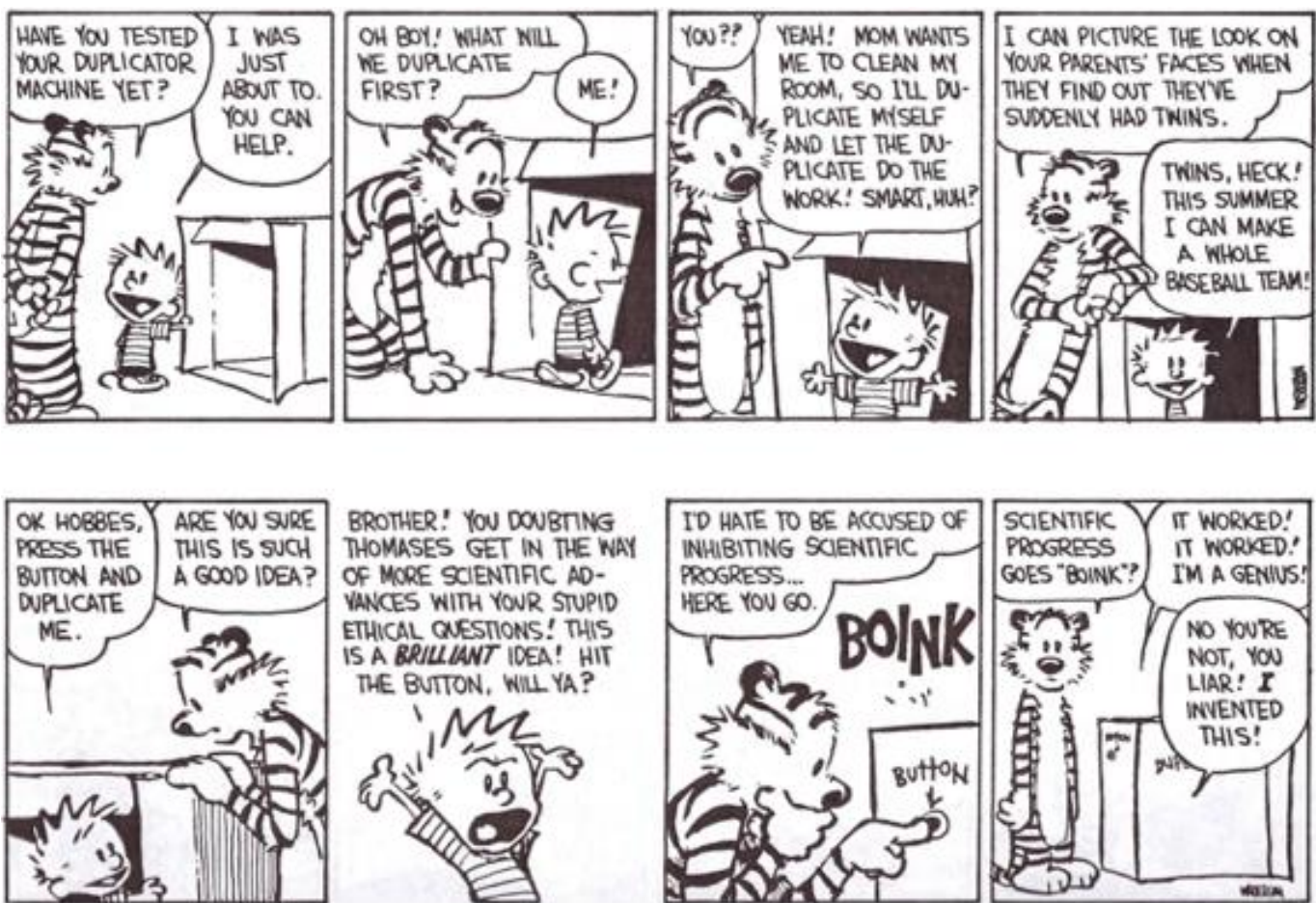
Scientific Progress

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In *Scientific Progress Goes "Boink"*, Bill Watterson personifies the nature of scientific research through Calvin and Hobbes. Research is exciting and daunting; it is necessary and inspiring; it is surprising and awesome [1].

Figure 1. *Scientific Progress Goes "Boink"* Calvin and Hobbes comic strip [1]



“Knowledge is limited, whereas imagination embraces the entire world, stimulating progress, giving birth to evolution. It is, strictly speaking, a real factor in scientific research” [2].

The vastness of the universe is amazing and overwhelming. The universe is a dark room and science is a source of illumination. Through scientific research we gather data to help explain, understand, and adapt to our amazing and overwhelming universe. Science is not a destination. It is a continuous journey in the pursuit of expanding knowledge and uncovering truth to better our understanding and ourselves. In a sense, science proves nothing, but rather confirms, denies, and refines theories through the scientific method. And as the accuracy of observation grows, so too does understanding and ignorance. In other words, the more we learn, the more we discover there is even more to learn. Scientific research is perpetual learning.

Science and research can be misunderstood and misused. Confirmation biases have detrimental impacts on scientific advancements and discourse. "It is a capital mistake to theorize before one has data. Insensibly one begins to twist facts to suit theories, instead of theories to suit facts" [3]. A scientist must be bold and diligent. "Science is all particle accelerators and hydrogen bombs. Science is giving yourself the plague and gambling on the cure. It's punk rock" [4]. A scientist must also be humble and noble. Condescension towards research and researchers regarding subject matter, results and outcomes, hierarchy of evidence, etc. is rooted in arrogance and pomposity and has no place in academia. The scientific community must be unattached to results and outcomes. "[Edison] had made over nine thousand experiments in trying to devise this new type of storage battery, but had not produced a single thing that promised to solve the question...and with a smile [Edison] replied: 'Results! Why, man, I have gotten lots of results! I know several thousand things that won't work!'" [5].

Truth and knowledge are always valuable. Scientific publications and databases provide opportunities for the dissemination of truth and knowledge through wider audiences over time. The peer review process is not an obstacle to publication but rather an essential tool utilized to enhance the quality of research for better understanding. It is with the greatest desires and commitments of the editorial board of the *Journal of Spinal Health and Performance* that this journal contributes to the scientific community to educate patients and help researchers, clinicians, educators, students, inventors, and policymakers provide a higher level of healthcare to maximize patient health outcomes. "To raise new questions, new possibilities, to regard old problems from a new angle requires creative imagination and marks real advances in science" [6].

References

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