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Book Review

Magic at Every Age

A review of Richard Dawkins, *The Magic of Reality: How We Know What's Really True*. Free Press: New York, 2011, 271 pp., US\$29.99, ISBN #978-1-4391-9281-8 (hardcover).

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What's Out There Now

There are nearly a dozen books published by Richard Dawkins on the shelves today, each built with passion, eloquence, and facts to expand your mind and instill a fresh respect for science and the world around us. What is different about his most recent book, *The Magic of Reality: How We Know What's Really True*, is that it is aimed for readers of a much younger age than his typical audience. The book is illustrated by Dave McKean, who created images so stunning and artful on their own that you almost don't realize how helpful and supportive they are of the written material. Along with the illustrations, there are website links that Dawkins includes, and even an iPad app for the book that help make the reading experience more interactive for the younger reader growing up in a newer technological generation.

One might wonder at what age Dawkins' current adult readers gained an interest in science, and what is the appropriate age to introduce science to children? Dawkins is taking a proactive stance with *The Magic of Reality*, and proving that a wonder for science can start at any age, given the right tools. The youth of today have an advantage relative to the youth of a generation ago in that ease of acquiring knowledge about our world is at their finger-tips. But our youth are also at a disadvantage for several reasons. For one, the recent economic problems have caused massive cuts in school funding which in turn often leads to a reduction in educational quality. In addition, some individuals and organizations misuse advancements in science and technology to spread non-science based information and entertainment. These problems have generated obstacles in successful and appropriate applications of our new and improved database of knowledge. Although these points may seem innocuous at first glance, the end result may be costly for everyone.

Why We Need This Kind of Book

On a typical day, the average person in America (young or old) has access to “reality” TV programming, web pages for miracle weight loss crystals, gossip about the most recent celebrity *faux pas*, books about vampire/werewolf love triangles, and games about angry birds... all with the click of a button. Finding access to quality science education is more difficult. In an environment in which the listed examples are so widely accepted and supported, it’s no wonder that children assume that the juicy entertainment must be the mindless kind. It’s not all harmless fun and games either; relentless exposure to science-free or anti-science entertainment has a darker side with serious ramifications. A culture without science can extinguish our natural yearning for a better understanding of the world around us. Science illiteracy at a young age can produce adults with little knowledge about the natural world and how it works; adults that may run for office and make laws that govern our lives, school principals that decide what is most important for our children to learn, or the voters who put such people into these positions. Many adults might find it intimidating to answer their child when they ask a question like why do the seasons change (a topic of one of Dawkins’ chapters), or other science-related questions. Dawkins reports that 19% of British people think it takes only a month for the Earth to orbit the sun, instead of the year it actually takes (p. 104). Statistics like these about our common lack of science know-how are plentiful and embarrassing. So how do we change things? How can we ensure future generations get a better start? Dawkins is paving a pathway for a more optimistic future for young and old alike. He aids and encourages his readers to build the critical thinking tools with which to navigate the mysteries of the world, most importantly by asking the question “why?”

We need the basic building blocks of knowledge and we need them to be accessible for every age. *The Magic of Reality* is beneficial to everyone, whether you are a current teacher or student of science, the parent of a curious child, or you’re just a person who has always wondered what a rainbow is (chapter 7). Dawkins covers some of the most important questions of life, and answers them in a way that can be easily shared with others. When children ask big, deep questions, one shouldn’t simply cop out with a “Don’t know, don’t care” or make up a story about how “God just made it that way, the end”. When children show curiosity, it is an opportunity to learn together, and a chance to get them thinking about the world in a better way: excited and in awe of its natural wonders. This book is a wonderful tool for doing just that because not only does it answer challenging questions, but also it does so with honesty and truth backed by scientific fact.

Each chapter sets out to answer a question about one particular facet of reality with “the best possible answer, the answer of science” (p. 32), and each chapter’s information leads into the next. Examples of chapters and questions include: “Who was the first person?”, “What are things made of?”, “When and how did everything begin?”, “Are we alone?”, and “Why do bad things happen?” Dawkins begins each chapter with several mythical answers “because they are colorful and interesting, and real people have believed them. Some people still do.”(p. 32). The myths (ranging from Tasmanian, Norse, Greek, and Egyptian, to Hebrew, Aztec, African, Indian and beyond) not only amuse, but they demonstrate how far we have come in what we know and how we came to know it. When these myths and folklore were created, the people of the time did not have telescopes and microscopes so they used the only tools they had at their disposal: their eyes and

imagination. But now we have amazing tools and technologies to aid us in discoveries, so we have no reason to keep believing these myths. Coupled with science, the tool of imagination can take us to a more fascinating world than any “reality” TV producer could ever cook up.

Future Possibilities

Within only 265 pages (large illustrations included), Dawkins covers the scientific method, evolution, DNA, atoms and molecules, the cosmos, light waves, the Big Bang, aliens, plate tectonics, luck and superstition, and even miracles. By the time you finish the book, you have *real* explanations for some of the most important questions about life and the makings of our world. Dawkins explains complicated events and processes in a way that is accessible to almost all readers. Some aspects are too complicated to go into, for he outright concedes details that he “won’t go into”, “doesn’t have the space for”, or because he himself doesn’t understand it (example: the quarks inside protons and neutrons). He notes that some explanations move into “a wonderland of the mysterious” (p. 91) and what we don’t currently understand now, we most likely will with the help of scientists currently working on it. He clarifies that “we have to know what we don’t understand, and admit it to ourselves, before we can begin to work on it” (p. 91). This honesty is an important lesson for the reader because it can give them hope and excitement to go out and learn more things that Dawkins only has the space to briefly touch on.

Dawkins explains in just enough depth to inspire the reader to learn more about the topics. Some explanations may be out of reach for younger readers if they cannot grasp concepts such as infrared, radio waves, distance, etc., but the foundation of information leaves room for later growth. Dawkins effectively communicates that there is so much out there to know that we are unlikely to run out of questions or information to learn. And most importantly, Dawkins communicates that one doesn’t need superstition. As the leading chapter describes, there are three kinds of magic: supernatural magic, stage magic, and poetic magic (the type to which his title refers). He says “what I hope to show you in this book is that reality – the facts of the real world as understood through the methods of science – are magical in this third sense, the poetic sense, the good-to-be-alive sense” (p. 22) and this kind is “all the more magical because it is real and because we can understand how it works... supernatural spells and stage tricks seem cheap and tawdry by comparison” (p. 31). We finished the book with a newfound awe and amazement at the universe; an admiration for how interconnected we are in the everyday “miraculous” processes that happen around us in order for the world to function as it does.

If more books like *The Magic of Reality* were available to young readers, society might have a brighter future, filled with individuals who have a greater respect for the real world and their life within it. This book and others to follow could inspire children and adults to ask questions and seek real answers. They could also motivate individuals to pursue careers in the sciences, to be the next Einstein, Galileo, or Sally Ride. Charles Darwin himself would have never achieved the great discoveries that affect so many facets of our lives without the initial spark of curiosity and passion for the sciences behind his theories. Evolution gradually produced the amazingly complex brains we have today, brains with the capacity to learn about our world, dissect and understand its wonders, and appreciate the beauty within it. We should use those capabilities to their fullest advantage

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and always challenge ourselves to seek “how?” and “why?” In order to produce advancements in any field (technology, medical, environmental, psychology, and beyond), we need to have science-driven individuals every step of the way.

Dawkins is taking a big step in the right direction of countering the nonsense we are exposed to on a daily basis by presenting a way we can approach each other to seek the reality that is available to us, and the marvels it contains. Science is a way of life; it is a way of thinking and seeing our environment, a way that bests any alternative. If more books like *The Magic of Reality* were available in schools, to parents, or anyone willing to learn, more people might realize how wonderful science and reality are. The appreciation could be expanded on to all forms of media to create a demand for better quality shows, websites, and games of the same kind of scientifically-literate contents. Imagine how different the world would be if more people were aware that they can get more satisfaction and value from science than from their current forms of entertainment. Dawkins is on a mission to make sure science gets the recognition and level of attention it deserves.