Reviews and Resources

BOOKS

The Amoeba in the Room (Lives of the Microbes)

Although most introductory biology courses offered in high school or college contain at least one session that examines microscopic organisms, Nicholas Money feels that these small organisms deserve much more attention and research support. So he passionately and expertly goes on to demonstrate that there are all sorts of fascinating and weird microbes in the earth, in the water, in the air, and even in and on our bodies. They don’t just exist but have essential roles interacting intimately with each other, their environment, and the larger hosts that they inhabit. Over time these small organisms have even begun to share some or all of their genetic information, sometimes integrating their genetic information into the DNA of the host or existing as organelles within the host cell.

Despite our in-depth knowledge of a few model microbes such as the bacterium Escherichia coli, the fungus Aspergillus, the yeast Saccharomyces cerevisiae, and even viruses, we have barely scratched the surface of this vast and diverse group, which includes various organisms that we commonly recognize as viruses, bacteria, molds, fungi, lichens, and algae, and those less known: archaea, paramecia, diatoms, and amoebae. Many of these small organisms defy easy classification into genera, species, and kingdoms. Sequencing DNA and RNA suggests that there may be billions, or at least millions, of different organisms. They inhabit various niches, even extreme environments, and have many roles, many of them still unfathomed, in keeping our environment in balance. An important example is the sequestration of carbon dioxide on our planet. Another example is the discovery in the last few years that bacteria inhabiting the human gut are found to have immense influence not only in how we process food, but also in how we regulate our immune and neurological functions. In describing the relation between humans and their bacteria, here is a good example of the author’s unusual perspective that I quote:

“I’m captivated by the revelation that my breakfast feeds the 100 trillion bacteria in my colon, and that they feed me with short-chain fatty acids. I’m thrilled by the fact that I am farmed by my microbes as much as I cultivate them, that bacteria modulate my well being, and that my microbes are programmed to eat me from the inside out as soon as my heart stops delivering oxygenated blood to my gut.”

I wish there were more illustrations of these small organisms in the book. Line drawings and a few colored plates are shown in the first half of the book demonstrating the symmetry, beauty, or the strange constructions of these organisms. Unfortunately, the author has failed to provide some indication of size or magnification in most of them. Although most of the individual cells are invisible to the unaided eye, these organisms can vary over 1,000-fold in size. The author demonstrates a thorough knowledge and appreciation of microbes worldwide using not just current isolates but also examples from history as well as from the fossil record. But the use of their Latin names, especially in the opening chapters, is often confusing and does not add to a better appreciation of their diversity and complexity. The writing style is a bit turgid, making the reading slow going despite the author’s attempts at literary and historical references and humorous analogies. Nonetheless, for the initiated, especially those who teach, this is a must read. It is an amazing compilation of the wide-ranging roles that these various small organisms and the variety of extreme niches that they occupy. The author is certainly successful in convincing this reviewer of the need to pay greater attention to small organisms. For students and novices, if they can slog through the first few chapters, it would be hard not to succumb to the author’s proselytizing and become an enthusiastic acolyte.

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Houston, We Have a Narrative: Why Science Needs Story

Randy Olson gives us yet another tool for our communication belts. . . and I’m glad to say my pants are beginning to sag! We are blessed to have excellent books, videos, podcasts, blogs, online training, and workshops available to help us improve our communication skills. One of the best books I’ve come
across recently is Olson’s Houston, We Have a Narrative: Why Science Needs Story. Following his popular book, Don’t Be Such a Scientist (2009), Olson takes a deeper analysis of the substance (not style) of science communication, which remains shamefully in need of improvement. I am delighted to report that by applying some of the methods explained in this book, Olson is helping me and many other emotionally stingy scientists, engineers, and technicians better connect with fellow humans.

Olson, a former tenured professor and current documentary filmmaker, has spent 25 years trying to figure out how to communicate science in a way that is interesting, entertaining, and informative. To do this, he immerses himself in the world of Hollywood entertainment and learns from the best how to connect with mass audiences. Scriptwriters tell us mastering the narrative process (i.e., storytelling) is “the soul of good communication.” Olson cautions us that learning narrative is not easy, takes time, and demands a mindset based not on cerebral thinking but rather on human emotions. Mastering narration in a single seminar or weekend workshop is unrealistic. However, through repetitive practice, we will improve...dramatically, as he and successful screenwriters have.

Olson describes a basic tool for writing good narration: a simple, one-sentence story template, called ABT. Begin your talk with a collection of necessary facts connected by the conjunction AND. (Example: I work on protein folding AND in a lab in New York AND I’m a postdoc AND...). Next, insert a BUT statement that says how your story is about to deviate from normal and add tension. (Our lab realized that our research could be used to make a drug to treat dementia. BUT, we first had to overcome a lot of problems, such as...). Finally, bring the story back home with a THEREFORE statement. (We are working hard to take our drug into clinical trials next year.) I have found the ABT template easy to remember and can be used in drafting scripts for talks to students, media, funding agencies, general lay audiences, as well as scientific colleagues. Even elevator pitches follow the ABT format. Olson gives multiple examples of how ABT has been used in real-world situations.

ABT is one of several templates Olson and other storytellers use to help them write better script for their talks. Regardless of what template we use, Olson urges us to make narrative “one of the highest priorities for all science programs and agenda. If many of us do this, we can establish a self-perpetuating narrative culture that raises the expectations and standards for good presentations.” No longer will dull, boring, disjointed talks with complex slides be considered acceptable. Olson devotes the last chapter to ways to build a narrative culture at your university or organization. Abandon the lousy PowerPoint talks and be kind to your listeners.

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