

John J. Meier

# Science graphic novels for academic libraries

## Collections and collaborations

A small but rapidly growing portion of comics and graphic novels is not only nonfiction, but is also focused on science and scientists. Since these books tackle the topics at an advanced level, they can bring a real benefit to academic library collections. It has been argued that academic libraries can use graphic novels to support the curriculum in a number of subject areas, including history, film, and literature studies.<sup>1</sup> They can also be used as leisure reading materials for students who have grown up with the graphic novel as a pervasive medium in popular culture. Now academic librarians have a real opportunity to support science and engineering curricula with this emerging format.

While librarians seem convinced that comics are appropriate to the academy as professionals,<sup>2</sup> how does this play out in practice? In order to assess the collection of graphic novels in academic libraries, C. Wagner examined ARL collections using a list of award-winning and librarian-recommended graphic novels.<sup>3</sup>

As in many collections studies, higher budgets and larger collections were positively correlated with larger holdings in graphic novels. Compared to collection coverage in other nonacademic literature such as science fiction, however, graphic novels are still collected at a reduced rate. For one institution in comparable studies, 85% of science fiction titles were held while only 65% of graphic novels were held. This rate goes down even further for Japanese comics called *manga*.<sup>4</sup>

So it is important for librarians too seek out graphic novels. In 2008, I attempted to create a bibliography of science graphic novels for both

public and academic libraries to use, but it was only the tip of the iceberg.<sup>5</sup>

Over time I found one way to maintain awareness of new science graphic novels by following leading authors and artists, such as Larry Gonick with his *Cartoon Guide to . . .* books.<sup>6</sup> Gonick has published books on mathematics, chemistry, and physics, which are often used in undergraduate science courses as supplemental textbooks.

Jay Hosler, an evolutionary biologist, has written books on Darwin and the honeybee that have been used in education from the primary school level to graduate courses.<sup>7</sup>

Jim Ottaviani has written a large number of graphic novels and worked with dozens of artists.<sup>8</sup> As a librarian, Ottaviani's books are research-driven, and his scripts are "transformed into a story" by working with different artists and sometimes self-published.<sup>9</sup>

However, what was once a desert of graphic novels in the sciences, with a few oases of note, is now a deluge of books from new creators and authors. *Logicomix: The Epic Search for Truth*, written by a Greek mathematician; *The Stuff of Life: A Graphic Guide to Genetics and DNA*; and Charles Darwin's *On the Origin of Species: A Graphic Adaptation* are all science graphic novels that have received rave reviews and accolades.<sup>10</sup> Others have even expanded from Gonick's work to develop cartoon introductions to economics and even health care reform.

So librarians must search further afield to find science graphic novels. One way is to fol-

---

John J. Meier is science librarian in the Physical and Mathematical Sciences Library at Penn State University, e-mail: meier@psu.edu

© 2012 John J. Meier

low publishers, such as First Second, Hill and Wang, and Fantagraphics, who are frequent publishers of science graphic novels. But caveat emptor, because, as John Dupuis summarizes, there is a mixed bag of science graphic novels:

The first is basically transforming a boring, stilted, text-heavy textbook into a boring, stilted, illustration—and text-heavy graphic novel. In other words, the producers think that anything in graphic novel format will by definition be more interesting and engaging than something that's purely text-based. The second involves taking advantage of the strengths of the graphic novel format to re-imagine how scientific knowledge can be presented to an interested audience.<sup>11</sup>

Look for award winners and favorable reviews and articles in *Booklist*<sup>12</sup> along with other best lists such as “Great Graphic Novels for Teens,” published annually by ALA's Young Adult Library Services Association. Search in the Graphic Novel Core Collection from EBSCO.

Recently a study showed that a science comic book used in addition to traditional instructional materials could improve student learning and attitudes about science at the college level.<sup>13</sup> The researchers found in both introductory and advanced courses that content knowledge and attitudes about biology were improved particularly in the case of nonmajors.

### **Interview with Jay Hosler**

For more insight on science graphic novels, I drove to Juniata College in Huntingdon, Pennsylvania, to speak to one of the researchers, Jay Hosler, who is also a notable science cartoonist. He was most recently the writer for the graphic novel *Evolution: The Story of Life of Earth*, which was mentioned in the *Chronicle of Higher Education*.<sup>14</sup>

#### **Meier: Why do your books as comics?**

**Hosler:** I write books to be for all ages. I want little kids to enjoy them, and I want adults to be able to read it again and again;

something that is fun, but that is also about the real world, to a certain extent. When you bring in art, beautiful images, and pages designed to convey motion or tension, you add a much more visceral element to what is happening. I could write a prose novel about my characters, but I want you to see what I imagine. You get to see the other person's thoughts, and I think that is the magic of a graphic novel.

#### **Meier: What makes a good graphic novel in the sciences?**

**Hosler:** The things that make a good science graphic novel are the same things that make any graphic novel good: an effective interplay of images and text and a narrative. A balance must be struck between the two with word and pictures doing different things.

Of course, one could argue a similar interplay occurs in text books. In most cases, textbook images illustrate, support, and clarify the points in a textbook. A comic book offers the opportunity to embed the text in the images, forcing the reader to interact with the material visually as they read.

Comics also make it possible to tell and illustrate stories about the science. Scientists, animals, plants, even cells and molecules can become characters. This provides a human connection to the material. I think a little anthropomorphization works because talking DNA is so thoroughly ridiculous. All of this acts to draw the reader more deeply into the material and engage them personally.

There is a study comparing how an expert and a novice read textbooks.<sup>15</sup> What an expert does is . . . read through and come[s] to “See Figure 1,” . . . [he or she] go[es] immediately to the figure and make sure [he or she] understand[s] how it works before coming back to the text and continuing to read.

What a student will do is read through, come to the same note, and think, “Oh, good. I don't have to read a quarter of the page.” They will just keep reading without looking at the figure. So experts are routinely trained to go to embedded images, novices don't do that.

But guess what happens with comics? If you make an image part of the story, you have to

move through the figure, through the content to get through the story. You can't avoid it. So [when] I . . . write a comics story and embed a graph . . . it's not disjointed, it's there. There is no way you can just move on to the next panel. You can't skip a panel any more than you can skip a paragraph. Because it's right there. The characters are walking over, around, and on the graph.

**Meier: How do you use comics in the classroom?**

**Hosler:** I think that the making of comics is very important. I teach a General Education course called "Comics in Culture" with a historian named Dave Hsiung.<sup>16</sup> It's very interesting to see the students work through their comics because they really start to discover that it is more difficult than they anticipated. Usually they can write the story, but then representing it visually and thinking of the panel as a camera and how to break up the text . . . becomes very challenging. I've had students tell me afterward that they read comics with a newfound appreciation. But they also discover that they are more than capable of doing it if they try.

**Meier: What is the future of science comics in education?**

**Hosler:** The next big step is going to be realizing that a good popular science piece isn't measured by vast quantities of content.

I'm the director of our scholarship of teaching and learning center, and a lot of the data is showing less content is better for student learning. Less content dealt with in greater detail or greater context is much more useful. There is

actually a growing body of literature of science educators who use narrative, and in all cases they are seeing increased retention relative to the same information embedded in traditional explanation with no narrative.

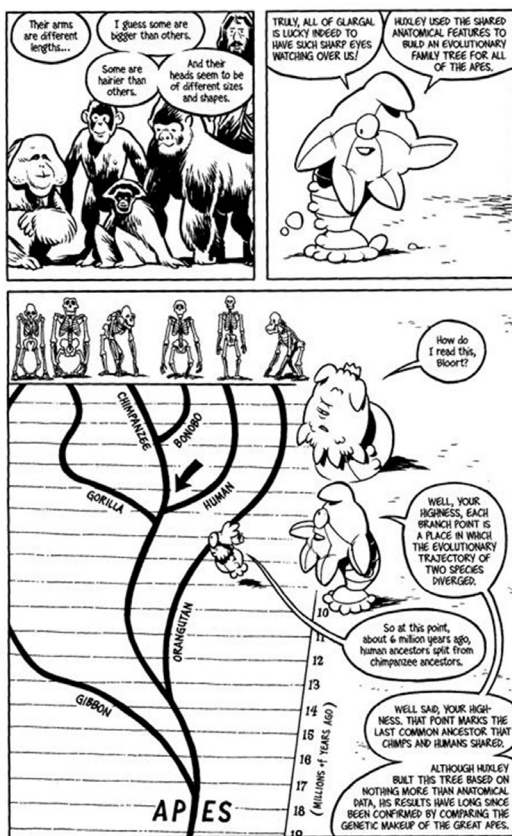
At some level it is intuitive, it just makes sense. Scott McCloud in *Understanding Comics*<sup>17</sup> has a sequence where he shows kids with a picture book, [but] as you get older there are fewer and fewer pictures because that is a grown up way to approach material. But as a scientist, you look at a textbook or an article and it's filled with images. Science in many ways depends

on images to explain things.

**Conclusion**

In order for academic libraries to support the rising importance of image and narrative in science teaching, it is important to broaden our collections to include science comics and graphic novels. This is not the sole responsibility of the art or popular literature librarian, but a collaborative effort among all subjects and disciplines.

Librarians who have already embraced graphic novels should increase outreach to include science and engineering faculty so they



Alien creatures walking on a phylogenetic tree of primates from Jay Hosler's book *Evolution: The Story of Life on Earth*. Illustration by Kevin and Zander Cannon.

can incorporate this powerful media into their instruction. Science graphic novels are another way librarians can contribute to the teaching and learning mission of higher education.

## Notes

1. L. O'English, J. G. Matthews, and E. B. Lindsay, "Graphic Novels in Academic Libraries: From Maus to Manga and Beyond," *Journal of Academic Librarianship* 32 (2006): 173–82.

2. J. Nargis and B. Joseph, "From the Heroic to the Depraved: Mainstream and Underground Comic Books at Northwestern University," *College and Research Libraries News* (2012): 261–64.

3. C. Wagner, "Graphic Novel Collections in Academic ARL Libraries," *College & Research Libraries* (2010): 42–48.

4. G. Masuchika and G. Boldt, "Japanese Manga in Translation and American Graphic Novels: A Preliminary Examination of the Collections in 44 Academic Libraries," *The Journal of Academic Librarianship*, 36 (2010): 511–17.

5. J. J. Meier (2008), "An Exciting Experiment Collecting Graphic Novels in the Sciences," [www.personal.psu.edu/jjm38/sciencegraphicnovels.pdf](http://www.personal.psu.edu/jjm38/sciencegraphicnovels.pdf).

6. "Larry Gonick—The Overeducated Cartoonist!" [www.larrygonick.com/](http://www.larrygonick.com/).

7. Jay Hosler, [www.jayhosler.com/](http://www.jayhosler.com/).

8. S. Weiner, "Part Librarian, Part Publisher," *School Library Journal* 49 (2003): 26–27.

9. "G.T. Labs Comics about scientists? What a dangerous experiment!" (2012) [www.gt-labs.com/](http://www.gt-labs.com/).

10. A. Doxiadis, C. Papadimitriou, A. Papadatos, and A. D. Donna, *Logicomix: An Epic Search for Truth* (New York: Bloomsbury,

2009); M. Schultz, Z. Cannon, and K. Cannon, *The Stuff of Life: A Graphic Guide to Genetics and DNA* (New York: Hill and Wang, 2009); M. Keller and N. R. Fuller, *Charles Darwin's On the Origin of Species: A Graphic Adaptation* (Pennsylvania: Rodale Books, 2009).

11. J. Dupuis, "Reading Diary: Evolution: The story of life on Earth : Confessions of a Science Librarian" (2011) [http://scienceblogs.com/confessions/2011/02/reading\\_diary\\_evolution\\_the\\_st.php](http://scienceblogs.com/confessions/2011/02/reading_diary_evolution_the_st.php).

12. I. Chipman, "Classroom Connections: Graphic Novels with Science and Math Themes," Booklist Online (2010) [www.booklistonline.com/ProductInfo.aspx?pid=4268442&AspxAutoDetectCookieSupport=1](http://www.booklistonline.com/ProductInfo.aspx?pid=4268442&AspxAutoDetectCookieSupport=1).

13. J. Hosler and K. B. Boomer, "Are comic books an effective way to engage nonmajors in learning and appreciating science? *CBE Life Sciences Education* 10 (2011), 309–17, doi:10.1187/cbe.10-07-0090.

14. P. Monaghan, "Colorfully Drawn Science," *The Chronicle Review* (September 18, 2011) <http://chronicle.com/article/Colorfully-Drawn-Science/128981/>.

15. R. E. Mayer and J. K. Gallini, "When is an illustration worth ten thousand words?" *Journal of Educational Psychology* 82 (1990), 715–26, doi:10.1037//0022-0663.82.4.715.

16. Juniata College, "Comics Cultivation: Juniata Professors Explore American Culture Through Comic Books" (2007) [www.juniata.edu/services/news/?action=SHOWARTICLE&id=2565](http://www.juniata.edu/services/news/?action=SHOWARTICLE&id=2565).

17. S. McCloud, *Understanding Comics* (New York: HarperPerennial, 1994). *z*



Photo by Stephanie Gross

## RARE BOOK SCHOOL

at the University of Virginia

RBS offers five-day, intensive courses on manuscript, printed & born-digital materials.

For details, please visit our website.

[www.rarebookschool.org](http://www.rarebookschool.org)