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David Carter: Conquering the Third Dimension in Paper

The Engineer behind *Horton Hears a Who* Pop-Up

By Jamie Engle

Not many things are more satisfying than cuddling with a child and reading a book. As they get older, we employ many devices to hold their attention, such as using different voices and pointing to pictures on the page. Children are delighted when an image pops-up as the page is turned. They can't wait to see what's under the flap, or what happens when a tab is pulled in pop-up books. Local artist David Carter knows all about that kind of excitement. He's a paper artist and paper engineer.

Paper engineers are the creative technical minds bringing pop-up books to life by using kinetic energy to make the artwork leap off the page, delighting children and adults alike.

"Pop-up books are really a parent-child thing," Carter said. "Children start at their parent's lap or snuggled tight in bed. They watch and learn how to work the pop-ups, which direction to move the tabs. Eventually, they get to the point where they can manage on their own. Now, we have a generation of kids who grew up on pop-up books. Those children are parents and buying books for their kids' kids."

Carter wasn't introduced to pop-ups until he was an adult. He has been involved in over 150 pop-up book projects, either as the paper engineer, project director, artist/illustrator, writer, or any combination thereof. He was the paper engineer behind the pop-up version of *Dr. Seuss's Horton Hears a Who Pop-Up*, released in 2008. The book was published under the Robin Corey Books imprint at Random House. Before moving to Random House, Corey was Carter's editor at Simon & Schuster for many years.

"In a project like *Dr. Seuss*, the artwork and story already exist, so it's a matter of adapting it to the pop-up genre," Carter said. "We used the full story text and I did very little tweaking to the original illustrations. You have to be careful not to change the original Seuss look and feel. I made very few changes to make it a pop-up book." Carter used almost every illustration in the original book and a combination of pop-up styles: full pop-ups that burst off the page, movables and pull tabs, just to name a few. He worked on the project for a year.

"I spent probably two or three months spending time with the book: reading, studying, taking notes, thinking and sketching," Carter said. "It's different than doing my own work - I treated the project like it was a collaboration with Seuss." Carter feels an affinity with Ted Geisel: both have illustrated books other wrote, but mostly have written their own title; both have written numerous books for beginning readers, and both have sold millions of books. "Unfortunately though, I never had the pleasure of meeting Mr. Geisel," he said.

Carter is the author of more than 70 pop-books, 37 of which are included in the bestselling *Bugs in a Box* series, which has sold more than six million copies. He completes from three to five projects in a year, sometimes

literature. The books are both a counting book and a seek-and-find. "The Red Dot series is about the art of paper," Carter said. "I did many, many paper structures then chose nine to put in the book and write about them. It's experimentation in the art of paper engineering."

In *Elements of Pop-Up*, Diaz and Carter say the term "pop-up" is a catchall phrase used for dimensional and movable books and greeting cards. The first movable book is believed to date back to



juggling two or three projects at a time. "There are often spaces where a project might be at the publisher or printer," Carter said. "One might be in concept, another in illustration, for example. I constantly juggle back and forth. It keeps things fresh, so I like doing it that way."

Paper engineering is an art form passed from one paper engineer to another. As such, Carter feels compelled to talk to students about paper engineering and the pop-up genre. Students would ask how he got his ideas and how to make pop-up books.

Carter and a colleague, James Diaz, co-wrote *Elements of Pop-Up: A Pop-Up Book for Aspiring Paper Engineers*. Published in 1999, the book chronicles what the men know, including designs, techniques of palette, and paper engineering structures. "There are 44 basic structures," Carter said. "If you take a look at *Horton Hears a Who Pop-Up* and any complicated pop-up book, you will see paper engineers used the structures in very creative ways, but they are all there." *Elements of Pop-Up* is used by aspiring paper engineers, and some teachers use it as a textbook for their paper engineering classes.

Paper engineers blend art, math and physics and develop their own unique styles, but readers may not always see it. Carter says it depends on how much of the work the engineers are doing in the book. "If it's basic work, you can't see their style," he said. "We're all using the same methods. It's about how the illustrations are applied to paper engineering. It's a matter of how we design, our illustrations, our concept. When one person controls all the elements, then you will start to see their style in a book."

Carter considers his Red Dot series, which he wrote, illustrated, designed and engineered, more artwork than children's

1306, for an astrological book. It wasn't until the 1700s that movable books shifted from medical and science books to children's literature. The first "golden age" of pop-up books in Europe was from 1800 to the beginning of World War I. In America, the pop-up genre was prolific beginning in the 1960s.

Pop-up books are very complicated to mass produce and most pop-up books are printed outside the United States. Carter began designing pop-up books in the 1980s. In the early 1990s, he saw a big change in the industry.

"What happened was a real boom in ability to manufacture pop-up books. That's what changed everything," Carter said. "The manufacturers and printers had certain capabilities, which defined what paper engineers could do, down to the number of glue points." In the early 90s, the printing shifted to China. There, publishers - and paper engineers - found a willingness to do what it took make more complicated designs possible to mass produce. "We didn't hear 'we can't do that' anymore. Paper engineers went crazy with the complexity," Carter said. "Designers suddenly had a tremendous amount of freedom. If they had an idea for something more complex, they had the freedom to push the barriers. I have ideas for art books that could sell for \$1,000 because of the complexity. You can really go nuts with that stuff now."

Pop-up books have inspired collectors and their own society, The Movable Book Society (www.MovableBookSociety.org). "Collectors spend a lot of time and effort collecting books," Carter marveled. "One collector has 70,000 pop-ups, some worth \$10,000 to \$15,000 a piece!"

Despite the boom, paper engineers remain a small community. "Most of my career, I've known 15 to 16 paper engineers," he said. "Those people have changed over the years, but it's stayed pretty much the same size." Carter's father-in-law is one of the original paper engineers.