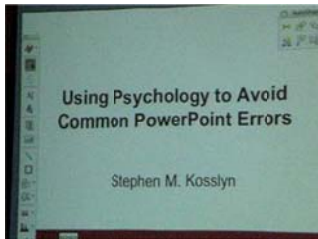


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<http://io9.com/357063/how-cognitive-science-can-improve-your-powerpoint-presentations>

By Annalee Newitz

# How Cognitive Science Can Improve Your PowerPoint Presentations



Harvard cognitive scientist [Stephen M. Kosslyn](#), who studies how brains process images, wants to improve the world with his cutting-edge research. And he's starting with four ways to make your PowerPoint presentations more human brain-compliant. This morning at the American Association for the Advancement of Science annual meeting in Boston, Kosslyn spoke in a symposium devoted to the visualization of data, explaining how breakthroughs in cognitive science have revealed the best way to present information in the PowerPoint format. It was one of the most interesting examples of applied science I've ever seen.

Jumping off from ideas he raises in his recent book, *Clear and to the Point*, Kosslyn explained that the four rules of PowerPoint are: The Goldilocks Rule, The Rudolph Rule, The Rule of Four, and the Birds of a Feather Rule. Here's how they work.

The Goldilocks Rule refers to presenting the "just right" amount of data. Never include more information than your audience needs in a visual image. As an example, Kosslyn showed two graphs of real estate prices over time. One included ten different numbers, one for each year. The other included two numbers: a peak price, and the current price. For the purposes of a presentation about today's prices relative to peak price, those numbers were the only ones necessary.

The Rudolph Rule refers to simple ways you can make information stand out and guide your audience to important details — the way Rudolph the reindeer's red nose stood out from the other reindeers' and led them. If you're presenting a piece of relevant data in a list, why not make the data of interest a different color from the list? Or circle it in red? "The human brain is a difference detector," Kosslyn noted. The eye is immediately drawn to any object that looks different in an image, whether that's due to color, size, or separation from a group. He showed us a pizza with one piece pulled out slightly, noting that our eyes would immediately go to the

piece that was pulled out (which was true). Even small differences guide your audience to what's important.

The Rule of Four is a simple but powerful tool that grows out of the fact that the brain can generally hold only four pieces of visual information simultaneously. So don't ever present your audience with more than four things at once. This is a really important piece of information for people who tend to pack their PowerPoint slides with dense reams of data. Never give more than four pieces of information at once. It's not that people can't think beyond four ideas — it's that when we take in the visual information on a slide we start to get overwhelmed when we reach four items.

The Birds of a Feather Rule is another good rule for how to organize information when you want to show things in groups. "We think of things in groups when they look similar or in proximity to each other," Kosslyn pointed out. Translation into PowerPoint? If you want to indicate to your audience that five things belong in a group, make them similar by giving them the same color or shape. Or group them very close together. This sounds basic, but it often means taking your data apart and reorganizing it. Kosslyn's co-panelist, Stanford psychologist [Barbara Tversky](#), explained that one of the fundamental principles of data visualization is, ironically, misrepresentation in order to get at the truth.

Even these goofy names for each rule of PowerPoint follow a principle from cognitive science: it's always easier to remember an unfamiliar idea if it's named after something familiar.