



Technology And Analytics

The Power of Visualization's “Aha!” Moments

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Amanda Cox has been a graphics editor at the New York Times for eight years. Trained as a statistician, Cox develops visualizations across platforms, from simple print infographics to highly complex online interactive data tools. The Times is a visualization leader, but Cox believes the best is yet to come from this discipline, which she calls "both young and not young." I spoke to Cox about the Times' approach to visualization and the power of "Aha!" moments.

Do you think data visualization is entering a time when it's becoming a core communication tool?

I wish there were more examples in the high-end data viz world to back that up. I wish there were more examples where data viz actually mattered. The case studies for us to lean on are sparser than they should be. On the other hand, you can argue it's a young field and people are doing all kinds of crazy interesting things, and that's a good thing. There's that classic idea that it's useful for people to do crazy theoretical things even if they don't know what they're useful for. Like with origami. [Folding patterns turn out to be really useful](#) for many applications, including surgery. But it wasn't clear when people were documenting origami patterns that they would eventually help save lives. I want applications that actually matter. Actionable results.

It seems like there's more focus on trying to get data viz to go viral than to make it "matter."

There's a lot where not much actionable comes out of it. I don't know if the ratio is different from the ratio of bad writing to good, or bad restaurant openings to good, but I think it's an important idea to focus on. There's a strand of the data viz world that argues that everything could be a bar chart. That's possibly true but also possibly a world without joy.

Nicely designed posters with a few numbers on them aren't really data viz.

**What is the right skill set for building good data visualizations?
Seems like the right person is a unicorn, someone who knows some design, some programming and some statistics?**

Here, anyway, I've heard us described as very liberal arts. Those skills you list are useful but we start with curiosity and skepticism. Most people here don't come from statistics, graphic design, or programming backgrounds. We have journalists, biologists, urban planners, mapmakers. The ability to ask good questions is really what we start with. I come from a statistics background, and I'm finding statistics students' portfolios are crazy weak compared to the computer science students, even though they're playing with the same problems. I think it's because comp sci students are encouraged to play, whereas stats majors it's, "here's your rule book, now make things." I don't think that's the good model for making better visualization.

But surely you have to have some of those three core skills?

In bigger projects, we put together teams where those skills are reflected, but it's not like we all need to know how to program. I bring a statistical background. But I'm not a designer by any means.

That's surprising that, as a graphics editor, you don't consider design a strength.

When I first started, I thought design was ten minutes of 'make it cute' at the end that I could talk someone into doing for me. Now I know that design thinking needs to be involved from conception. And after a while you see the math behind it. How do I minimize eye movement on this infographic? Something like that, now I know how to do that because we have design principles. Design and typography do matter. It's about hierarchy of information and how people perceive information. Done properly, that clean up work really matters. On the other hand, it's easy to believe that it matters more than it does. If you make a fantastically interesting chart and some poor design decisions, the data will still come through. If you make a bad chart with a beautiful design, what have you done, really?

Is there resistance to data viz at the *Times*? Does anyone think it's a lot of work for not much reward?

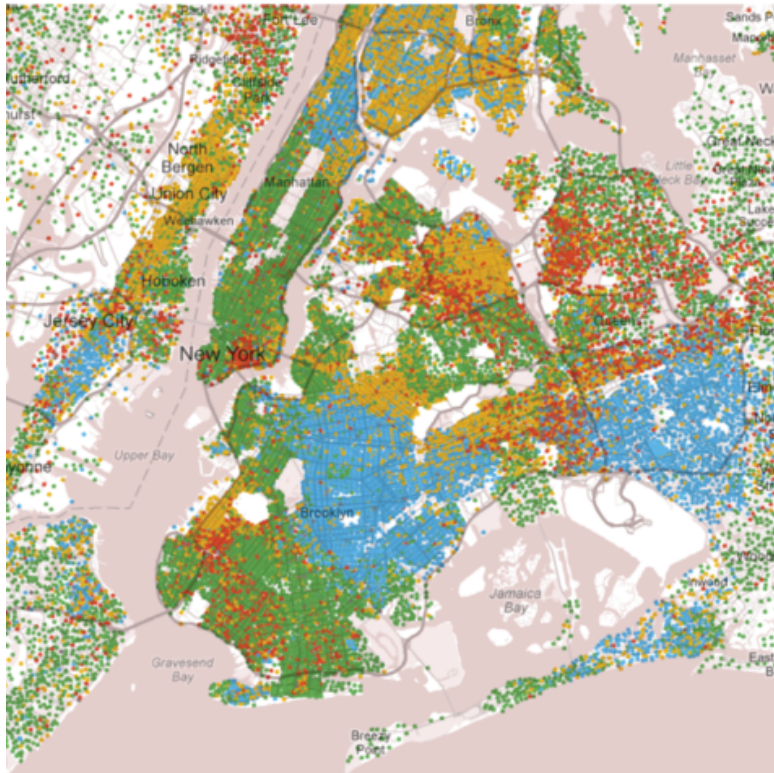
Not a ton of resistance here. Editors and reporters rightfully question why we might want to do a visualization. It's not always immediately obvious to them the journalistic value, and sometimes they're right. The parallel to me is there's room in a newspaper for quirky text stories too. Most everyone here would agree the best way to tell some stories is through data. Some think very rarely, some think most of the time, but they would concede telling the story with data is accepted.

What about the cost-benefit part of it? Data viz is still somewhat new and sometimes it seems like it's a lot of work to make a simple point.

We might be different than a non-news organization but the criteria for us is how interesting or newsworthy is this, just like any story. Also, when people ask us "how long will it take?" our answer is "how long do you have?" We know how to scope based on how much time we have. We rarely kill projects. We'll scale them back, but that's often good, like taking off earrings but making sure you're still well dressed. As far as ROI goes, I'd argue there are lots of times that when people see it, they process information differently, better, than if they were reading bullet points or text. How you measure that return though is a tricky calculus.

Do you have an example of that reaction?

There's an "Aha!" moment sometimes. Even on the most obvious things. Take Matthew Bloch [and Shan Carter and Alan McLean]'s [census maps](#).



Click to see larger image. View the interactive version [here](#).
source: New York Times

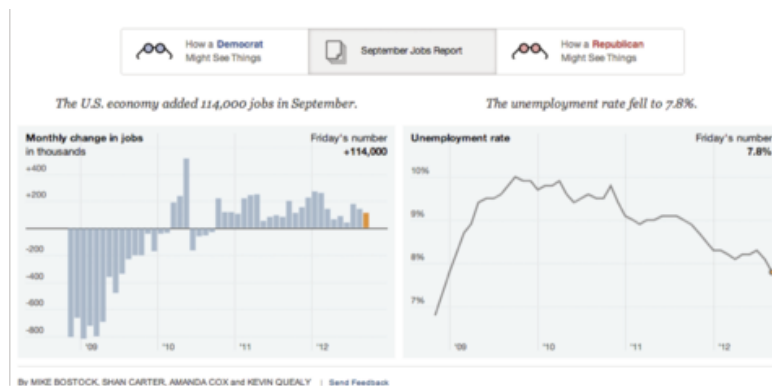
I'm just seeing what I basically know: New York neighborhoods are segregated. But I felt it in a way I never had before. You can feel a good data visualization.

Do you have other favorites working in the field right now?

There's a group out of Harvard doing interesting stuff on [how doctors interpret blood flow](#) in heart diagrams. That kind of work to me is interesting. And whenever [Eric Fisher publishes a new map](#), it's usually more interesting than average.

Do you worry about data viz being used to misrepresent data? Sometimes visualizations can feel like “the answer” even if they’re based on flimsy data.

I think that’s a problem. Coming from a statistics background, when I first got here I thought my big contribution would be to help us account for uncertainty in data viz and that turns out to be very difficult. But I also think we have the power to make people more data and visualization literate. One thing we did was take a very simple unemployment chart — your most basic visualization — and we let people choose a Democrat or Republican interpretation of the data.



Click or touch to see larger image. View the interactive version [here](#).
source: New York Times

You can literally see the visualization change based on whose point of view was highlighted. It would be silly to interpret any data viz as truth. They are interpretations of truth.

Part of what’s driving this focus on data viz is the democratization of the tools needed to create them. Are you positive about the direction of technology to enable this kind of communication?

Yes. You saw a slow period a couple of years ago. Before then, most work was being done in Flash with ActionScript. Then there was a period where I felt like we couldn't do interesting data viz because we had moved away from flash but we didn't have any kind of great replacements for it. Then some of the more tech competent people starting using [D3 javascript](#) and now we're having fun with data again. In some ways it feels of the web in the way that the Flash stuff never did. Now, when someone does something interesting, how they did it is really just sitting out there on the Internet, so you get this great sharing and building off of each other.

What gets you most excited about what's happening in data viz right now?

Data viz is both young and not young. It's still rapidly changing, so I'm hoping it gets more awesome rapidly. But we're already at a place where we can make people understand what they didn't understand. Now we want to make people understand what no one has understood before. The best visualizations cause you to see something you weren't expecting, and allow you to act on it.

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Scott Berinato is a senior editor at Harvard Business Review and the author of [*Good Charts Workbook: Tips Tools, and Exercises for Making Better Data Visualizations*](#) and [*Good Charts: The HBR Guide to Making Smarter, More Persuasive Data Visualizations*](#).