EPISODE 82: SKYE MORÉT – DATA VISUALIZATION

Ken White

From the College of William & Mary in Williamsburg, Virginia. This is Leadership & Business. The weekly podcast brings you the latest and best thinking from today's business leaders from across the world. We share the strategies, tactics, and information that can make you a more effective leader, communicator, and professional. I'm your host Ken White. Thanks for listening. One of the hottest topics in business today is storytelling. Finding effective ways to connect with others by sharing compelling stories. Whether it's building the brand, closing the sale, or presenting to the board, many professionals and organizations are spending time and effort improving their storytelling abilities. Often stories in business include data, and that presents a hurdle for many. How to present complex data in a way that helps the audience easily understand. That's where data visualization comes in. Skye Morét is a data visualizer at Periscopic in Portland, Oregon. Her work combines data-driven design and storytelling, which helps make complex issues easier to understand. She recently visited William & Mary for the online MBA programs residency weekend. Afterward, she joined us to discuss the many ways data visualization helps professionals tell compelling stories. Here's our conversation with Skye Morét.

Ken White

Skye, thanks for joining us. You just came back from talking to a large group of online MBA students. So thank you for taking the time to sit down with us.

Skye Morét

My pleasure, and what a great group.

Ken White

Yeah, they are. They had some fantastic questions and really about data visualization, which is just everybody in business seems to be talking about this. How do you define that when somebody asks you what do you do for a living how do you define what you do.

Skye Morét

I guess the best way I define it is creating a visual narrative that people can engage with. It allows them to hopefully to ask their own questions, answer their own questions, has kind

of falls along the spectrum from a presentation of information to allowing them to explore the exploration factor.

Ken White
And in business, it's hot, but it seems to be hot in everywhere. So some of the projects you're working on they're not necessarily bottom-line business problems. They're all over the map, aren't they?

Skye Morét
Oh, it's exciting. I mean, even if you look at NSA programs in this country, more and more information design programs, data science programs are popping up all over the country. Work that we do clients range from nonprofits, foundations to Google, Microsoft. Kind of at Periscopic, which is where I work as a data visualizer. We really focus on do good with data is our tagline, and data ranges from education data groups looking at how much you know, really analyzing how many people in the United States have degrees have credentials. How can we increase that to a certain amount by a certain year? We're looking at redesigning the FDA medication guide for, you know, for ibuprofen, for example. All these things we get every day literally people go to get their little sheet in the prescription bag and throw it away cause it's six-point type. It's very difficult to read. How can we visualize that in a way that has a quick read that really can make an impact on the trajectory of someone's medical health?

Ken White
Yeah, no question.

Skye Morét
And even some projects are helping companies. One of my favorite projects that was a bit more artistic was just simply visualizing 15 years of work that had been put into a nonprofit in California that empowers youth, democracy. They give a lot of money out per year, and they wanted to show that impact. And we just essentially they're in California, right, so this the poppy is their state flower. So we essentially visualized the amount of money they gave out each year and the amount of grants they gave in the form of these kind of dynamic beautiful little poppies, but they signify data, and there was an axis and labels and such.

Ken White
Is most of the visualization print based it's on a piece of paper or on a flat screen that we're watching?

Skye Morét

So I was trained in print and have done a lot of that. The piece I just told you about was print-based. I've made quite a few posters for community groups, especially stakeholder groups for marine policy and such. I have a big marine science background. But what we do at Periscopic is or often designing interactive websites that really have offer the audience a lot of drill down and allow you to explore data in different ways. You know, there's a lot of data involved, kind of piecing that together.

Ken White

And with the visualization, the user can really get into it.

Skye Morét

Right, and they can hover over, they can arrange things the way they want, they can sort something in a different way, they can perhaps export that then as a PDF it is printed that allows them to take that home in the way that they wanted to see something which is pretty new concept.

Ken White

Yeah. Now you had talked about when you were talking to the MBAs about starting off with the audience first before you do anything, and you talked about the why, the who, the what, and how can you explain that.

Skye Morét

Right. So I think about information as kind of a two parts to inform and formation and inform part of information. You have to think about who your audience is and why do they care. And if you haven't don't know can't answer those two questions, you should not be making creating this graphic. So you know who this is for your audience can really you generally have some idea right. But then you kind of think about what is that audience like. Is it more specialized, should it more scientific? Should this piece that I'm creating can it still have jargon in it that maybe only my managers know or my team can understand? Or is this for the public or our clients, where it needs to have a bit more of a journalistic quality? It needs to have a quick access and certain levels of bias within each of these kind of data types, visualization types in terms of scientific specialized information it's very clean and clear unbiased. We're looking we're using as a tool for discovery as opposed to, you know, stuff we see in journalism that it tries to be unbiased. But you know they talk to certain people and maybe not others.

Ken White
Sure.

Skye Morét

And then we have an artistic side artistic audience which often gets a lot of press. Usually, these are visualization types that are trying to do something different, kind of disrupt the status quo, maybe visualize something a different way, or make us see something we haven't seen that way before, which always exciting, and so you have to think of is my audience am I framing this visualization in a scientific way, specialized, journalistic, or artistic.

Ken White

Wow. And then, if it's off, you're not going to connect with the audience. So you've really got to go through these steps before you do anything.

Skye Morét

And why do they care? Yup.

Ken White

That's the bottom line, right? Why do they care? You talked about three types of data when you were discussing with the student nominal, ordinal, and quantitative. How do you use those, and how do you differentiate them?

Skye Morét

Understanding these three data types is useful in thinking about how do we want to frame this visualization and how are we nesting categories how we organizing our information to allow drill down or allow some level of exploration in our data. And so if you give them all the details at once, nobody wants to see that nobody wants to look at that read that right. So if you can nest it and in the three categories you talk about, the first one is nominal data or categorical data. I am saying this is different than this. Brazil is different than Japan. If we're looking at nominal data we're not, we're not comparing anything necessarily in terms of numbers or value or ranking it in any way. We're saying this is different than this. This kind of data this type of product is different in this type of product. Then we have ordinal data. We're ranking something. We can say, you know, Brazil has more people than Japan, but Japan has more CO_2 than perhaps I don't know if that's true. And then, we have quantitative data. So then we start to have hard numbers. And so we ask different questions when we're showing data in an ordinal fashion versus giving them all the numbers, and you really have to think about what levels of information does my audience need to know or want to know at this point, or if I have my mouse over a ranked system you know that that's colored in that order then do I get the information. So just trying to think about these layers of information and really the information architecture of your data. It's a challenge unto itself before you even get into visualizing it.

Ken White

Of course, so you are doing two things. You've got to understand the numbers, and you have to have the artistic or the visual side of things. Not everybody can do this.

Skye Morét

I think everybody can.

Ken White

Because of the tools or how. How can everybody do it?

Skye Morét

I mean, if you everybody can do the napkin test right at dinner where you're sitting down, and you have a white napkin, and I say, you know, explain to me this thing that you know about your data, you could probably find a way especially if I'm some you know revered aunt or something and you're like okay I got to show this information, and you know you draw maybe two circles where ones bigger and one smaller. Okay. That's a ranking system. You're saying one's bigger than the other. And you start to get into, okay, this one perhaps you know now I'm making a pie chart. This one these are my different sectors of what I'm talking about. Oh, you just created a data visualization.

Ken White

How about it, yeah.

Skye Morét

Anybody can do it.

Ken White

Interesting. Now you talked about visual structures, and there were six of them can. You can you walk us through those and what they mean, and why you would adopt each one.

Skye Morét

Yes. So why I talk about these six main types is I had a amazing teacher, information design historian Isabel Morales who wrote one of the first books about this called Design for information. Wonderful book, and her six chapters are these six visualization types. And so this is a book that I teach with. And the first chapter is hierarchical data. So we have a hierarchy. You can think of a family tree or a management structure. There's some kind of some of the top, then the next people lower. There's levels of data. They're not necessarily connected between layers, but they're connected. And so we can use tree maps, sunburst diagrams, different ways to explain what is that quantity of people at that level and how does that compare to perhaps the same size, same type of group in

another, you know another company or another level or how do we compare this amount of people at this level to a higher level. It's really about understanding the organization of the system.

Ken White

Yeah, is that used often?

Skye Morét

I think so.

Ken White

Yeah, it seems like it would be.

Skye Morét

Right. I think relational structures are a little more common, and I can talk about that.

Ken White

Yeah, please.

Skye Morét

Relational structures are the next when you can think of networks. So hierarchical structures, the emphasis is on the node. How many people are here versus here? How many you know? How many degrees of separation are there from this person to that person? Relational data is completely about the links between those nodes, so how many tweets go back and forth between two people? But how you know, for example? We just at Periscopic we did a recent project looking at patent data and made a piece for Fast Company about the different innovation signatures between Google and Apple, and you can see all these little dots that are all the different patent holders, and the size of the dot is how many inventions they have and then the amount of links that goes from them it is determined by how many links they who how many people have they invented stuff with. And how many people were authors on that patent essentially, and so you start to see these very different structures between Apple and Google? It's kind of very. I don't know if it's top-down, but very centralized structure at Apple versus a very democratic kind of even steven dispersion of lots of tiny people with many people with not a lot of patents, including the CEOs at Google, and so the focus for relational is really on those links. And then you can also get into the volume of those links, so if you think of flow diagrams or sync diagrams or alluvial diagrams. Diagrams, where there's 100 percent of something, say, you know, all the people that came to a conference, how many of them came from different states. So we have we know there's so many states in the US, perhaps only 37 people came from. You can say this many people came to the conference. You can draw a

quantity that shows the flow from those states. Perhaps they're only in these industries. Okay, we're kind of narrowing down. But again, they're only there's 100 percent of a certain amount of industries that were at that conference, so you kind of can make these beautiful flow diagrams and can simply very quickly explain to someone what the structure or volume of information as you often see this with energy diagrams. In terms of this, much energy went in here's where it was separated, or this many people came to this college, this many are in these different departments, then they ended up getting MFAs or MBAs or whatever. So it's a nice way of dividing information.

Ken White

We'll continue our conversation with Skye Morét in just a minute. Our podcast is brought to you by the Center for Corporate Education at the College of William & Mary. The Center for Corporate Education can help you and your organization reach your goals with a leadership development program specifically designed for your organization and delivered by our world-class business school faculty. If you're interested in learning more about the opportunities at the Center for Corporate Education, visit our website at wmleadership.com. Now back to our conversation with Skye Morét.

Ken White

From a temporal.

Skye Morét

Yeah, so temporal visualization structures our time timelines. So any timeline you can think of? Usually, time is on the x-axis. You can think of time flowing from left to right. You can think of having multiple like, especially the data's pretty simple, and you want to compare a bunch of different places. You can have small multiples, which means you have lots of tiny simple graphs on kind of a grid system, and you can quickly see, okay, Alabama had very different rates than California or whatever. So timelines, you know, we're pretty used to seeing those, but there are lots of new ways that people are exploring timelines which is pretty interesting in terms of interaction.

Ken White

Spatial?

Skye Morét

Spatial maps. We're used to seeing maps, so the fourth type is maps.

Ken White

We are, aren't we? Yeah.

Skye Morét

And I mentioned to your students thematic maps means that it's not just a location on a map here overlaying some variable onto that map. So say homelessness or, you know, rates of CO_2 emissions or something in an industry area. If you are showing that color with the size of a circle, that's a thematic map. And yeah, we're pretty used to seeing those, but there's so many online tools out there that we can make those now.

Ken White

Spatial-temporal?

Skye Morét

Spatial, temporal maps or spatial means map, temporal means time, so time and space together these maps are slowly become proliferating and becoming more common. And if you're looking at, for example, how much traffic is flowing through a certain area at a particular hour or over the course of a day, you'll see hubs of activity where most people are commuting to work, et cetera. And so we can look at that in terms of shipping, and we can look at that in terms of anything that's moving through space. Obviously, this is really helpful for lots of transportation companies like Uber.

Ken White

Absolutely.

Skye Morét

But I don't do as much of that in my work.

Ken White

And then you have textual as the sixth.

Skye Morét

So the final visual structure is textual, and this is up and coming not a lot of tools right now for textual analysis, but it's exciting in that, right? We deal with text every day. That's what we're used to. We have surveys that we look at stuff online. There are tools out there now online for free where we can analyze them and take a whole book or take a bunch of survey data and say, you know, we can make word clouds out of it that's lexical that's thinking of each individual word as kind of an atomic unit pulling it out and saying how many times do we see the word explore or challenge or something. Those are a little less robust in terms of actually offering you helpful information. They're cool looking, and I generally think that you know, I told your students that anything that's cool kind of beware if it's decorative it's probably not a good idea, but certainly they're interesting as a first pass of what were the big themes that were in this text. Kind of the next textual analysis

and visual structures, word trees. You can I think jasondavies.com has a has the word tree free software that I commonly use. I just cut and paste my text in there, and it allows you to kind of follow the following the grammar of a sentence, pick a word, say more, and then you can see all the survey data. They wanted more discussions more assignments more. You can see all the different repeated words and how people used maybe a couple words together, and allows you to kind of get that drill down.

Ken White
No kidding.

Skye Morét
And then there's the semantic level. So there are now some Periscoptic worked on one a tool that allows you to explore. I just wrote this big report. How's the reading level on this? Does it seem positive, doesn't seem negative? What is the general feeling of this? Which is pretty powerful.

Ken White
Yes, amazing.

Skye Morét
And I think it will be increasingly common in the future and used hopefully.

Ken White
For practitioners for professionals who wanted to do some visualization with their data. You had talked about a couple tools that are out there and available.

Skye Morét
Right, so Tableau is not certainly not free. It's free. I think it's free for students, but it is super useful. We use it every day in terms of data exploration. So it is not a final graphic tool for us. And I don't know that it should be, I think. I think you can do a bit more with it, like a couple more simple steps, you know, and simple programs on your laptop to make it a little flashier for your company a bit more contextual in terms of adding a title and subtitle. But for basic exploration, I mean when we get we get data right away, we probably make 50 plus Tableau. You can think of them as Excel worksheets. Little sheets that have that we're comparing data in different ways. And unlike excel, where you really need to know what you want your data to look like already, like, oh, I want this on axis X axis and this on the y. You can quickly in tableau kind of select variables and try should this be a bubble chart. Should this be a Gannt chart? Should this be a map? Should this, and you can do calculations. I want to see what is the difference from the median from the mean. And it's pretty flexible now. It's getting better and better, and then the other one I

showed you guys that has a couple of different tools. It's pretty new. It's called RAWGraphs it's rawgraphs.io, and it was put out by a Density Design Lab in Milan. And it allows you to make things like the Sankey diagrams that I was telling you about, those flow maps you can make sunburst diagrams that allow you look at hierarchical structures. You can just kind of play with data quickly and then change colors and kind of export and a bit of a sexier way, and you can even make it. There's a way to export it interactively if you want and make it if you have. If you or an IT person that you work with know a bit of JavaScript, you can. You can make this online thing that lives on your website, which is exciting.

Ken White

For someone who knows it's important. They haven't experimented. Where do you recommend they start, or what do you recommend they do to kind of get their feet wet?

Skye Morét

I mean, I honestly think starting with Tableau or taking one of these any data set, there is so many freely available data sets out there on, you know, cheese production in the United States.

Ken White

Sure.

Skye Morét

I mean, honestly, if you go to data.gov, you can find a lot of random data sets or the census data in your area. I mean, you know, pick one subject, one word, and you can dive in so deep and so just looking at, you know, finding a data set that you're excited about. Ideally, one that doesn't have a lot of holes because that's always frustrating. You know, areas where you need a little more QC and finessing and quality check, but just make sure just work with, you know, what are my variables, what type of data is it, who would my audience. What is the compelling narrative here when I start to play with the data then think about who is my audience? How do I if I was to make a visualization, how would I want to frame this and actually, that's the point where I personally sketch tons of I mean, my notebook is full of sketches because I it's much takes a lot more time to make something digitally right than any of us you me all your students can sketch out you know what they want this idea to look like and what I've learned from that process is my first idea is never my best. My fifth idea is usually terrible also, and usually, you know, the 10th 12th sketch, I start seeing components that I like and start forming something that I think could actually be worthwhile. And I'm not. That's the best thing that you can do, and even if you just practice that before you want to get into kind of sexier design then, then you're well on your way.

Ken White

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