



Where Data & Story Meet —

THE MODERN DATA SCIENTIST & MODERN MARKETER

Data is rapidly transforming the way companies are transacting and engaging with customers. Gone are the days of not having enough data, now we are being inundated with too much data and are struggling to find ways to make sense of it.

Many organizations seem to be responding by hiring data scientists, an approach advocated by Benjamin Spiegel in an article in Marketing Land, where he writes that every marketing department needs a data scientist because they are the “secret weapon” in helping to demystify the rising complexity of the data landscape. I worry this position supports the stereotype – one that has often let me down – that every data scientist is also a great data storyteller. After reading this, I couldn’t help but wonder why the “skillset”

or “mindset” of great data storytelling seemed so elusive among both data scientists and marketers. I also wondered if there was a specific role better suited for data storytelling and whether or not we should be seeking the necessary qualities in one individual or to build a team of varied skillsets?

I found a kindred spirit in Aaron Merlob, formerly an Associate in Biomedical Informatics at Harvard Medical School. We met when he was an instructor at Galvanize in San Francisco, where I learned he and I share concerns about the growing gap in great data storytelling. We have teamed up to try and shed some light on the subject in hopes the gap in data storytelling talent will soon dissipate.

As a business leader, especially in the roles of data science and marketing, your success is heavily reliant on bridging the gap between data and story. It is becoming imperative to build and nurture a great data storytelling capability, so that you and your teams can make informed decisions to help grow and transform your business. In this piece, we explore the increasing demands in skillsets for the modern data scientist and marketer. Further, we explore the mindset of data scientists and whether or not that mindset differs from great data storytellers. We also reveal different ways to build the data storytelling capability.

Before we explore the requirements of data scientists and marketers, the mindsets of great data storytellers and how to best build the capability of data storytelling, we must first define what we mean by data storytelling.

What is Data Storytelling?

Data storytelling is the act of humanizing data by turning it into narrative or a story that creates actionable insights, frequently supported by visualizations.

As humans, we are conditioned to consume information not in the form of data, but in the form of stories – even before we can speak as children. Data storytelling taps into this by integrating data and story to provide readers, or participants, with a true understanding of the insights and an actionable roadmap of what to do next.

Lisa Morgan captured a number of different perspectives on who should be the data storyteller and how you can write a data story in a recent article for InformationWeek. "The varying perspectives were intriguing – and we especially liked that of contributors Martin Brown, a GM at FM Outsourcing, and Zoher Karu, a VP at eBay.

Brown said he often has data scientists, business analysts, and marketers collaborating on a single story. However, in doing so, he finds there are three versions

of the same story. Brown continues with a description of what might be the perfect data storyteller:

"Ideally, it would be a data scientist with a flair for articulate and emotional evocation. However, I am still looking for this elusive person."

"[Data storytelling] is definitely an interdisciplinary activity," said Karu. "Data scientists are needed to extract patterns in data, visualization experts are needed to convey the message in a compelling easy-to-understand manner, marketing [needs to be included] to understand the needs of and reach the desired target audience, business domain experience is necessary to hone in on the right set of questions, and an editorial staff is needed to communicate the surrounding text in a compelling way."

The InformationWeek article also recommends data storytelling follow general storytelling rules (finding the conflict, adding the characters, and calling out the drama) and should convey, in a creative way, how the data can help the business. Clearly, this is an art form – and quite a complex one at that – so let's see how we can isolate the traits of great data storytellers in both data scientists and modern marketers and then profile the organizational or operational design that best nurtures a great storytelling environment.

Understanding the Modern Data Scientist and Modern Marketer

The modern data scientist must not only be a master in data analysis; but also, must understand the business at hand, be able to produce actionable insights, and convey the findings in a way in which all business functions can benefit. Similarly, the modern marketer must not only work in a creative capacity and rely on data to make decisions; but also, must possess

strategic insight and understanding of that data in order to activate and communicate it effectively.

In order to be successful in today's ever-changing data landscape, the modern data scientist should ideally possess eight different skills and abilities: advanced analytics, business acumen, communications & collaboration, creativity, data integration, data visualization, software development, and system administration.¹ But can one person actually possess all of those skills and abilities? According to Accenture, it most definitely is a challenge: "Executives are struggling to find individuals who possess all eight data scientist skills and abilities. A data scientist team can serve as an alternative."ⁱⁱⁱ

Similarly, today's marketers require a unique combination of skills, abilities, and mindsets. With the customer experience a driving force in nearly all business decisions, modern marketers must possess creativity, technology, analytics, customer voice and corporate vision capabilities, business acumen, and a thorough understanding of data as it applies to business goals. Yet most, even those holding the CMO designation, do not possess all six traits. According to Forrester's 2017 Predictions Guide, CEOs will exit at least 30% of their CMOs for not mustering the blended skillset needed to drive digital business transformation, design exceptional personalized experiences, and propel growth.^{iv}

The Interactive Advertising Bureau's Data Center of Excellence recently released a model and whitepaper that define the key components of the data lifecycle, using those components as indicators of a company's maturity. The study found only about one-third of marketers feel they have a good grasp of dealing with data. According to Neil O'Keefe, SVP at the Direct Marketing Association (DMA), "This is a cry for help from the marketing community. This is the future

of marketing and the future is now. More marketers are searching our education to better train existing staff and DMA hears from hiring managers that more and more their target hire is a data scientist and not a marketer."^v

The Modern Data Scientist

The original conception of a data scientist was a businessperson with a technical skillset. More than a simple liaison between business and IT, he or she played on both teams: identifying strategic and tactical business problems and then being a part of the team solving them, too.

In an oft-quoted Quora post from 2014, Michael Hochster at Pandora saw two types of data scientists: **Type A** and **Type B**. The **A** is for **Analysis** and the **B** is for **Building**.^{vi}

Type A "analysis-focused" are the deep subject matter experts, and are highly specialized in getting every last drop of performance out of data.

Type B "building-focused" are more familiar with software engineering practices, contribute to big data systems, online machine learning initiatives, and generally strive to find their work 'in production.' That said, technical specialization does not allow data scientists to live up to their original conception as a business person with a technical skillset: they have become just another technical contributor.

Historically, analysis- and building-focused data scientists were enough to accomplish most all data science requirements; however, we now need data scientists to understand how the data and systems actually apply to the business. Burtch Works, a highly regarded data science recruiting firm, writes: "Put simply,

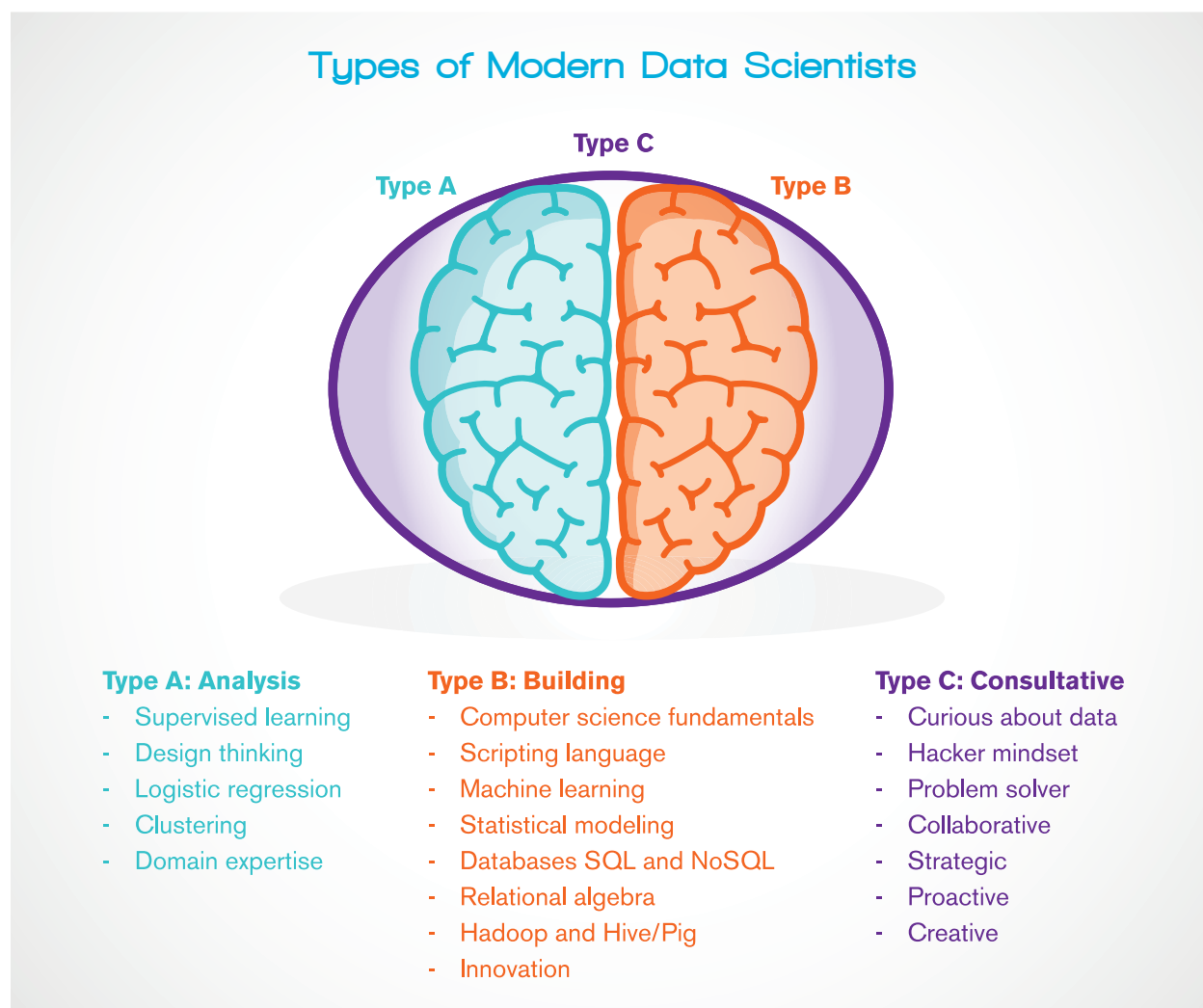
¹Harris, Jeanne; Shetterley, Nathan; Alter, Allan; and Schnell, Krista. "The Team Solution to the Data Scientist Shortage" Accenture Institute for High Performance, 2013.

a data scientist has formidable experience with statistics and computer science, as well as the business acumen to derive actionable insights from data and prescribe actions based on those insights.”^{vii} Following the release of the Burtch Works 2016 Annual Data Science Salary Survey, Linda Burtch, Founder & Managing Director of Burtch Works, indicated “business acumen is the #1 complaint or concern that I hear from clients.”^{viii}

and external data to their broader organizations. Riley Newman at Airbnb wrote about his group as being in a proactive partnership with the business rather than engaging in reactive stats-gathering.^{ix} Meanwhile, Drew Harry at Twitch pointed out, “The consultation process is the heart of what a good data scientist does. They teach their customers how to ask good questions and how to interpret the results. They don’t just hand someone numbers.”^x

Let us now consider a third type of data scientist: **Type C for Consulting. Type C** “consulting-focused” data scientists are part of internal consulting efforts, building internal decision support tools, advising others on how to get the most from data, and above all, helping communicate the value hidden in their internal

In one form or another, the value Type C data scientists bring to the table is their ability to act as change agents, while working in a sea of ambiguity and unknowns, and who, ultimately, tell stories with data. Therefore, effective storytelling, or lack thereof, is either the key accelerant or the key inhibitor of capturing value.



The Modern Marketer


The role of the marketer has not been an easy one to universally define due to varying and growing complexities of the function. There are a number of category iterations of the marketer, and those have often been described in context of either being left-brained or right-brained. Left brained are those marketers who focus more on the “logic” or analytics and tracking side of marketing. Whereas, right brained marketers are those who focus more on the “creative” or content and visual side of marketing. Because we believe the modern marketer must use both sides of the brain, we are going to build on the concept of different “parts” of the modern marketer, as defined by Salesforce in a blog post: Part Artist and Part Scientist.

Part A or the “**scientific**” part uses data to improve marketing accuracy and effectiveness. This part of a marketer is heavily focused on performance tracking, operations, historical and predictive analytics, and how marketing impacts the bottom line. The scientific part of a marketer is well-organized and meticulous.

Part B or the “**artistic**” part connects a company's product or brand to the customer on an emotional level. This part of a marketer tends to be more skilled at written content, creative and visual assets, social collaboration tools, and digital marketing. The artistic part of a marketer is the forever customer advocate.

Let us now consider a third part of a modern marketer: **Part C** or the “**consultative**” part. The consultative part of a marketer bridges the two mindsets of artistic and scientific to move the business forward. It fuels intellectual curiosity and enables strategic problem solving. The consultative part looks beyond the established practices for ways to improve the business and discovers trends in market and customer behaviors to help support the decision making process. It also enables the marketer to know the right questions to ask and gives them the persistence to never give

up until finding a strategic solution. Never being satisfied with the status quo propels the consultative part of a marketer to find ways to use both creative development and data to achieve the most desirable returns.



The Modern Marketer Brain

Part A: Scientific	Part B: Artistic
- Analytics	- Art
- Reasoning	- Intuition
- Science	- Creativity
- Reality	- Imagination
- Control	- Freedom
- Logic	- Innovation

Part C: Consultative	
- Proactive story seeker	- Influencer
- Problem solver	- Strategic
- Change agent	- Curious

Identifying the Characteristics of Great Data Storytellers

To better understand the required skill sets and/or mindset of great data storytellers, we decided to focus on the data scientist function as our target subject, since it is this role that currently carries the bulk of data and insights responsibilities.

We teamed up with Talent Analytics, Corp., an organization that specializes in understanding how to hire and retain top talent by creating customized benchmarks to help companies predict how candidates will do in their jobs, pre-hire. These benchmarks are mostly built around the soft skills and mindsets of candidates, of which companies find difficult to both articulate and assess during the hiring process. Our goal of the Talent Analytics partnership was to explore whether or not we could determine if great data storytellers are governed by a mindset or skill set.

Talent Analytics, Corp. and the International Institute of Analytics conducted a study on Analytics Professionals in order to see if the “mindset” of the data scientist differed from the mindset of other professionals. The study revealed an undeniable “raw talent mindset” of the Analytics Professional.

“Our goal with this groundbreaking Study was to use quantitative analysis to learn more about the mindset of Analytics Professionals / Data Scientists rather than qualitative discussions and guessing,” said Greta Roberts, CEO and co-founder of Talent Analytics, Corp. This Study focused on practical outcomes that could be used by businesses, rather than for purely academic interests. A clear mindset did emerge. This led to the creation of a valuable Industry Benchmark for hiring, deploying and utilizing Analytics Professionals.” Here are some highlights from the study:

- Analytics Professionals have a cognitive “attitude” and will search for deeper knowledge about everything.

- They are driven to be creative and will want to create not only solutions, but also elegant solutions (i.e., the code could be more elegant, or there might be a better graph to visualize the solution).
- They will thrive in a job culture that values different approaches and out-of-the-box thinking.
- They have a strong desire to “do things the right way,” and will encourage others to do the same
- They will be comfortable speaking to defend what they believe to be right, even in the face of controversy.
- They have an extremely high sense of quality, standards, and detail orientation, often evaluating others by these same traits. They are highly conscientious and will provide careful follow-through on detailed projects and complex assignments.
- They tend to be somewhat restrained and reticent in showing emotions, and may be less verbal at team or organizational meetings unless asked for input, or if the topic is one of high importance.
- They may take calculated, educated risks – only after a thoughtful analysis of facts, data, and potential outcomes. They persuade others on the team by careful attention to detail, and through facts, data, and logic, not emotion.
- They appreciate security in projects, systems, and job culture.

We then looked at 30 data scientists, classified as great data storytellers, to determine whether their mindsets differed from the Analytics Professional benchmark.

From this comparison, we found that data scientists who had been classified as great data storytellers are indistinguishable on “mindset dimensions” from the general population of Analytics Professionals. Therefore, when looking at great data storytelling among data scientists, we believe it is a teachable skillset. Why? Because the Analytics Professional mindset is already predisposed to intellectual curiosity, creativity,

and passion for problem solving – characteristics required in data science.

If you already have a data scientist on your team, then it is very likely you can mold them into a great data storyteller via proper support and skills development. If you do not already have a data scientist on your team and are looking to hire one, we recommend you use the Analytical Professional benchmark created by Talent Analytics, Corp. to guide your search.

Developing and Nurturing an Environment for Great Data Storytelling

We interviewed John Miller, principal of Camus Group, to find additional ways to develop the skill set of great data storytelling. An expert on the topic, he built the visual literacy program and curriculum at one of the top global consulting firms and now helps companies bring together the power of data products, design thinking, and management consulting to help clients understand the most important issue to solve, Miller states,

“The responsibility of data storytelling should not be put on one individual, but rather spread across a team made up of individuals, who as a whole, possess the diversity of skills and abilities required for great data storytelling.”

“For example, on a project to visualize the future of healthcare, the primary author was a management consultant who worked with a team to storyboard the narrative, the visual designer inspired the team with sketches of subsequent data visualization, and the data scientist and data analyst debated the validity of the insights and conclusion of the analytic model with

the healthcare industry experts. It is very important to encourage the diversity of skills and perspectives on the final outcome.”

We also interviewed Hunter Whitney, a design strategy consultant, instructor, and author of the book *Data Insights*. He believes effective data storytelling increasingly requires an emerging mindset and skillset that draws on principles from a range of fields including design, statistics, psychology, neuroscience and journalism. “People from many different backgrounds can build up these skills and knowledge,” Whitney says.

Whitney began his career as a journalist and thinks there are many important practices from that profession that directly relate to data storytelling. He says, “Good journalists need to sift through a lot of data and think critically to find the heart of the story. They must also assess the accuracy of what they are reporting and distill it into forms that are concise, accurate, and truly engaging to audiences.” Whitney believes different members of any team will inevitably have different strengths, but that all would benefit from a shared baseline understanding of what’s involved in the full process of identifying and communicating a data story. He is currently working on an online educational program with UC Davis Extension and Coursera that focuses on data visualization and storytelling with Tableau. “The program emphasizes the underlying skills and abilities needed to draw insights from data, and how to communicate those insights in an effective and compelling way.”

Building teams capable of data storytelling is as easy as **ABC: Activation Between Collaborators**. Don’t rely on the ‘unicorns’ in data science, marketing, or other business functions who might have all of the analytical, building, creative, scientific, and consultative skill requirements. After all, how many unicorns have you seen in your lifetime? Instead, bring together people with diverse perspectives and varying technical skills who exhibit a natural curiosity and passion for solving problems and the know-how of change management.

DO

- **Be open** and build a data storytelling team with people who embody a diverse mix of hard and soft skills.
- **Empower the team** with corporate support and training to further develop business judgment and consultative skills.
- **Collaborate** and team with key business units to determine which questions are the “right” questions the team should be asking and answering in their data story. I love this quote from *The Hobbit*, as also shown in Whitney’s book: “There is nothing like looking, if you want to find something... You certainly usually find something, if you look, but it is not always quite the something you were after.”
- **Integrate all participating team members into the line of business.** Your teams will be unsuccessful if you assume each contributing function should stay in their “box” of job responsibilities and do not allow them to fully comprehend the intricacies of your business. Show your data scientists and marketers your real business problems in actual context and illuminate your vision for a better future.
- **Make sure the data story is applicable** to your business challenge, is relatable to how the company can grow its business, and is simple enough for every business unit to understand and apply.

Conclusion

Great data storytelling is not one size fits all. It requires an open mind in how one might structure the team responsibilities, and it also requires on-going engagement to support the data storytelling capability.

Instead of trying to find the “magic bullet” or “unicorn” of the great data storytellers, it is recommended to build a team of diverse individuals who can bring a variety of interest, skill, and perspective to the table.

Companies should support a teaming atmosphere where data scientists, marketers, and professionals alike are immersed in the business line, so that they are better positioned to know what questions to ask to move the company forward.

When comparing which is more crucial to data storytelling success, mindset or skill set, we have determined that the answer is a whole lot of both. There is no question great data storytelling requires a wide range of skill sets; but also, it requires a great deal of intellectual curiosity, healthy skepticism, passion of discovery for growth opportunities, and change management.

Contrary to a perception that qualities of a mindset cannot be taught, scientists are learning that people have more capacity for lifelong learning and brain development than ever thought possible. In her book *Mindset*, Carol Dweck compares what she calls the Fixed Mindset versus the Growth mindset. Fixed being the mindset that I cannot do what has been asked of me; whereas, the Growth mindset would be that I cannot do what has been asked of me yet.

In her book, Dweck writes,

“Although people may differ in every which way – in their initial talents and aptitudes, interests, or temperaments – everyone can change and grow through application and experience.”

Your company and business needs will determine how best to construct your data storytelling team; however, your mindset as a corporate leader may be the most crucial component to successful data storytelling. Are

you willing to lead and support a culture of diversified and design thinking that might in fact disrupt the way in which you are currently doing business? We hope so.

About the authors

Randa McMinn is a marketing and customer insights leader with 18 years of experience in customer acquisition, engagement and revenue growth for retail, business services, and real estate organizations. She is known for her ability to turn crucial insights into business ideas that result in improved organizational and financial performance. Currently, Randa is consulting for organizations in technology and business services with emphasis in start-up, brand development, GTM strategy, restructuring and change management. In other full-time roles, she managed B2B, B2C and B2B2C teams and initiatives that improved enterprise brand frameworks, drove transformational change, and advanced technologies through experimental design and testing.

Aaron Merlob is a data science and engineering leader with 10 years of experience consulting with startups and SMBs. At ABUV Media, Aaron leads a software, reporting and analytics team, a marketing operation team, and works on culture and leadership development. In other full-time roles, he has managed big data teams and projects, owned an analytics product roadmap, and held a faculty appointment at Harvard.

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