

# **Sensemaking and Big Data Science Used in Marketing to Solve Social and Behavioral Problems**

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*The way Big Data Science was enabled through the marriage of technology in the form of computer science and the discipline of statistics was told by Gil Press in his (2013) Forbes piece titled 'A Very Short History of Data Science.' Data Science is now the discipline charged with utilizing Big Data. But making sense of data has a much longer history. Karl Weick (1993) introduced the concept of Sensemaking in organizational decision making to account for failures in data-driven decision making. This paper explores Sensemaking and Big Data Science being used in marketing to solve social and behavioral problems.*

*Keywords: sensemaking, marketing, big data, Science*

## **WHERE DID BIG DATA BEGIN?**

In 1947, John Tukey coined the term “bit” according to Claude Shannon as recorded in his 1948 paper “A Mathematical Theory of Communications.” In Tukey’s work done for the Army Research Office in 1961 and published in 1962 titled, “The Future of Data Analysis,” John Tukey wrote,

*“For a long time I thought I was a statistician, interested in inferences from the particular to the general. But as I have watched mathematical statistics evolve, I have had cause to wonder and doubt... I have come to feel that my central interest is in data analysis... Data analysis, and the parts of statistics which adhere to it, must... take on the characteristics of science rather than those of mathematics... data analysis is intrinsically an empirical science... How vital and how important... is the rise of the stored-program electronic computer? In many instances the answer may surprise many by being ‘important but not vital,’ although in others there is no doubt but what the computer has been ‘vital.’”*

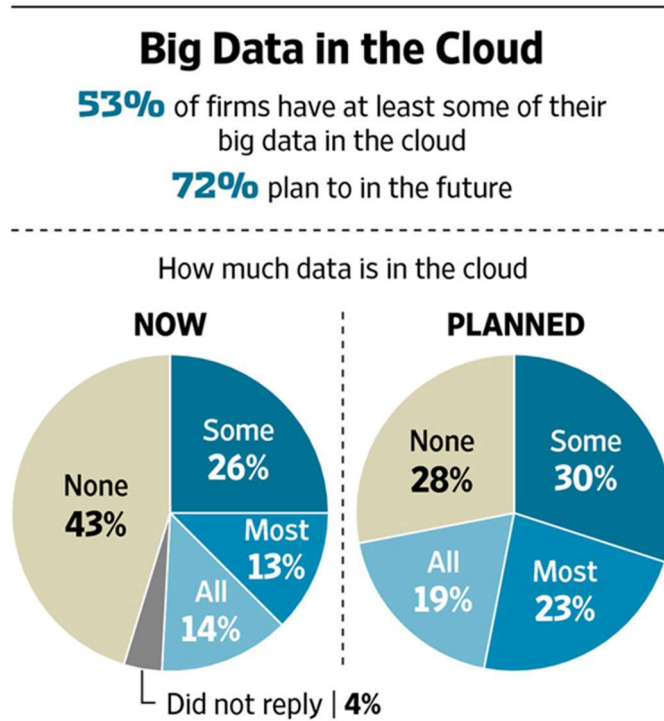
Then, in 1977, Tukey published his widely used text “Exploratory Data Analysis,” where he said that, “more emphasis needs to be placed on using data to suggest hypotheses to test and that Exploratory Data Analysis and Confirmatory Data Analysis “can—and should—proceed side by side.”

## **WHERE IS BIG DATA TODAY?**

Some say John Massey made the term “Big Data” popular in in his presentation “*Big Data... and the Next Wave of InfraStress Problems, Solutions, Opportunities*” (1998).

The Wall Street Journal has estimated the extent of ‘Big Data’ collection (See FIGURE 1).

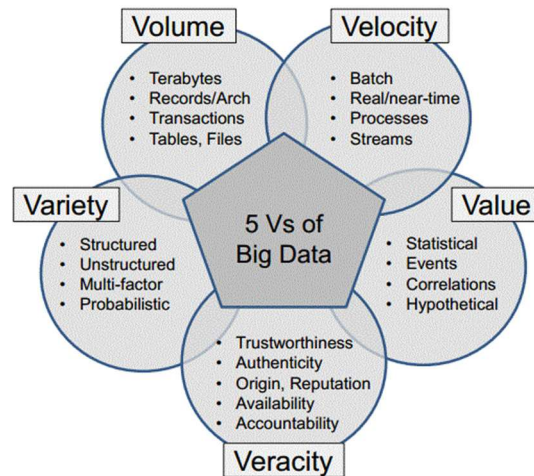
**FIGURE 1  
BIG DATA IN THE CLOUD**



Source: AtScale Inc. global survey of more than 2,550 big-data professionals, conducted in the fall of 2016  
THE WALL STREET JOURNAL.

Four of the Five V's of Big Data (See FIGURE 2) provide a structure for evaluating sources of data and their integrity, but they don't provide value or meaning.

**FIGURE 2  
FOUR OF THE FIVE V'S OF BIG DATA**



Source: Big Data and NoSQL

## THE CAVEATS

A strong caveat concerning Big Data came from a 1963 paper by sociologist William Bruce Cameron:

"It would be nice if all of the data which sociologists require could be enumerated because then we could run them through IBM machines and draw charts as the economists do. However, not everything that can be counted counts, and not everything that counts can be counted."

Some Big Data Analytic Companies Such as McKinsey & Company are having second thoughts about the value of growth in Big Data (Gordon, Perrey, & Spillecke, 2013).

Martin (2015) in a blog Q&A on Quora answered a question about how businesses can use Big Data effectively and recommends focusing on the following three principles of using Big Data to make decisions:

- Use analytics to identify valuable opportunities.
- Start with the customer decision journey.
- Keep it fast and simple.

## WHAT IS SENSEMAKING AND WHY IS IT IMPORTANT?

Sensemaking combined with Big Data embodies the three decision making principles. In addition, Madsberg says it arises out of 'Thick Data' which is the stuff of knowledge coming primarily from Sensemaking. He defines the four types of knowledge underlying how we know what we know. These four types of knowledge are:

1. Objective Knowledge – involves all things that can be observed and measured directly making it akin to Big Data
2. Subjective Knowledge – involves personal opinions and feelings that are true for that person and moment
3. Shared Knowledge– this is public knowledge constituting knowledge that is 'in between' objective and subjective knowledge and which makes thick data powerful
4. Sensory Knowledge – comes from inside the 'body' and is sometimes described as a 'sixth sense' or being a part of the events in the environment

Operating in an integrated way, the synthesizing of these four kinds of knowledge leads to Pattern Recognition, the process of thinking combines reason, emotion, judgement, and analysis simultaneously into Thick Data as opposed to Big and Thin Data. This process has been physically documented by Frank (2009) in his research on Neuromarketing and how consumers' medial prefrontal cortex react to storytelling about products. Several examples of how it works to solve business problems are provided by Christian Madsbjerg and Mikkel B. Rasmussen in their Harvard Business Review article titled 'An Anthropologist Walks Into A Bar...' with Starbucks being probably the best known example of a subtle and complex experience for a customer that big data could never predict.

## TURNING THE BIG DATA PROMISE INTO REALITY WITH EXAMPLES OF SENSEMAKING AND BIG DATA ANALYTICS

The areas of application for Big Data and Sensemaking are everywhere. One area where they are used in analytics daily is marketing. Some examples from this domain are below.

1. In Marketing, Big data has changed the way we target customers and interact/engage with them. Instead of giving consumers mass media messages in which they have no interest, marketers can show them ads for services/products they truly relate to and care about based on search activities, media preferences, shopping habits, interests, passions, etc. Big data can more accurately predict customer loyalty and satisfaction. Big data can be used to identify the problems marketers can solve and provide value to the consumers in their environments.

2. Data mining in the pharmaceutical industry can be used to identify use segments prior to launch yet may not succeed in establishing a foothold in the market.
3. How Pepsi lost the Cola Wars to Coke despite winning taste tests consistently.

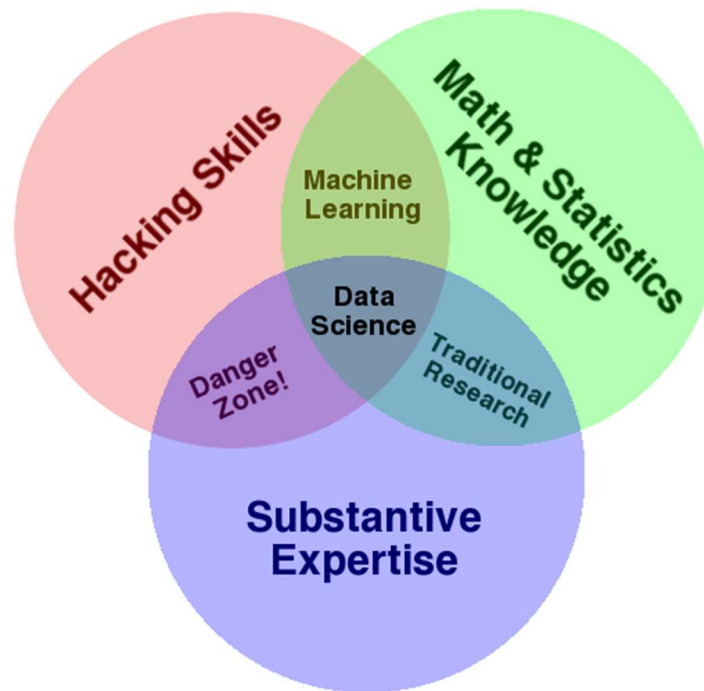
Other examples from other domains are offered in the many examples of business problems having a sensemaking solution including Legos and a major European brewing company.

## CONCLUSION

Mason and Wiggins (2010) wrote A Taxonomy of Data Science including the Venn Diagram created by Drew Conway, an American data scientist known for creating the elements below (SEE FIGURE 3). In The Data Science Venn Diagram (2010), Conway wrote "... one needs to learn a lot as they aspire to become a fully competent data scientist. Unfortunately, simply enumerating texts and tutorials does not untangle the knots. Therefore, in an effort to simplify discussion, and add my own thoughts to what is already a crowded market of ideas, I present the Data Science Venn Diagram."

It is contended here, that the 'Substantive Expertise' section of the Venn Diagram includes applications of computational methods in data science to marketing in the form of social and behavioral problems at a large data scale. That is both hard and soft skills are needed for sense making in this complex field.

**FIGURE 3  
THE DATA SCIENCE VENN DIAGRAM**



Source: Drew Conway

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