Chapter 28
Visualizing Big Data From a Philosophical Perspective

Jeremy Horne
International Institute of Informatics and Systemics, USA

ABSTRACT

Big Data-wow! Look at the size of it! People are dazzled easily and impressed by the amount of data legions of developers can produce and moreover how they store it. But one should ask why so much data is being collected. Part of the answer is simple in light of scientific projects but why is there so much data on us? Such questions prompt this chapter on the philosophy of Big Data. After some background on definitions, origins and contemporary applications, the main discussion begins with thinking about Big Data from a complexity standpoint. Big Data is turned into knowledge but knowledge is extrapolated from the past and used to manage the future. Yet it is questionable whether humans have the capacity to manage contemporary technological and social complexity evidenced by our world in crisis and possibly on the brink of extinction. We are at the center of observation from which Big Data emerges, the overall human project being not only to create an artificial brain with an attendant mind but a society that might be able to survive what "natural" humans cannot.

INTRODUCTION

It is likely that each one of us has encountered some aspect of Big Data, it often being a buzz word. Whenever we interact with a government agency, go to school, shop or use a computer, data is collected with or without our consent. The trail from the origins of data as representations of information ages ago to its present uses is long. While we marvel at the technology, it is critical to understand why the technology was created in the first place.

You are reading *Big Data Storage and Visualization Techniques* but with "Visualizing Big Data from a Philosophical Perspective", most of the discussion is not simply of techniques but about the thinking underscoring why Big Data should be generated at all. As to the Visualization, there are just as many ways of displaying data as there are projects and methods for creating it as will be seen below. One can type in "Big Data Visualization" and similar phrases on the Internet and literally millions of entries will appear.

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This chapter describes Big Data, what is collected and how and the limits of collecting large quantities of data. If something can be measured, data can be collected be it the length of every spider's leg, width of every tree or weight of every grain of sand. There is no dearth of facts but without organization and context there is little or no meaning. An overarching consideration is whether it should be collected at all.

Contemporary events may seem to be enveloping us, the proverbial tail wagging the dog. One need to point only to global warming, exploding populations, mounting political and religious violence, and economic failures. There are luminaries who doubt the capacity of this species even to survive the next 100 years (Firth, 2015; Rees, 2008; Sheldrick, 2014; Carey, 2014). We read of events daily often noting the facts but failing to apprehend the context. Reactions to technology often are like this where people learn of the cleverness being developed, the "Gee Whiz" and glitz of the gadgets. Big Data is no exception as in the wide eyed reaction to being told of huge data storage capacities. Older generations accustomed to paper based card catalog systems in libraries especially are taken aback in learning the Big Data of the whole of the Library of Congress in the very near future (and even now with 20 ten terabyte (TB) hard drives) can be sitting on their desk at home or on their laptop (Hard Drive Capacity, 2015).

Facts are meaningless in themselves and they need to be connected to each other. Even if a person relates the facts to each other still there is no final coherence unless there is a framework for that coherence, i.e., a theme. There are two basic ways of remembering a situation: rote and as a series of connected events or motif. Describing the beautiful setting of the Grand Canyon including the ecology, geological history and so forth is further impressed upon us by introducing something closer and to which we can translate as a relevant experience the way someone like ourselves interacted with that environment as a story. So, one tells of a story of someone in the Grand Canyon invoking the description of all the things the narrator would like for the audience to remember - the environment, history and so forth. This is the way knowledge was passed down throughout prehistoric times by tales, proverbs, myths and other oral communications (Eliade, 1954). Here, a story is told about the development of Big Data, that story being analogous to a parable conveying meaning of the assemblage of descriptions about that Big Data.

To provide meaning, one needs to know what gives rise to the data in the first place including the rationale for it, how it is collected and how it is processed. Science gives the rationale for technology, theory does it for practice and overall the "why" is necessary for the "what" of anything. Besides the ways we think, the "why" of thinking is the subject of philosophy. We are also looking for an explanatory model of events that is consistent. There are immediate purposes for collecting data such as for doing scientific experiments and financial transactions but one should start wondering about the reasons large volumes of data are collected on persons. Science exists because one wants to control the future but this is done by understanding the past and such involves measurement and attendant data collection followed by analysis. Big Data on us often is collected systematically and a case can be made that it is done for the same reason.

In many cases it seems that science and the technology emanating from it have been sufficient to solve problems where antibiotics in medicine, phones and computers in communications and automobiles in transportation are obvious examples. In each of these areas we can identify Big Data sets. There are huge research projects like the Dark Energy Survey which uses a 570 megapixel camera and the 4-meter Blanco telescope at the Cerro Tololo Inter-American Observatory in Chile (Wikipedia, 2017h). Genome Sequencing, modeling chemical interactions, analysis of social systems and ecological studies are others. Meteorological agencies are attempting to capture meaning through thermodynamic models of weather systems. Then, there is Big Data captured in sociological analysis. Searching "sources of