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Data vs. Information

For this short essay, I'm going to use the database systems at the Lawrence Berkeley National Laboratory as an example. Every day, very large amounts of raw data is processed by scientists for various experiments in-progress around the lab. Much of this raw data is simply long strings of alphanumeric characters sent to the database that has no meaning, seems random and completely unorganized. That's because it is; when data is processed, organized, structured or presented in a specific context, it then becomes information that other people can make use of.

One example of the difference between the two would be an experiment testing the acid content of the water in a specific area (for example, New York state). Data from acid level sampling machines are sent to the server via the Internet, but what is received is merely numbers. The acid content of the water in Poughkeepsie could be 6. '6' is meaningless until it is presented with context: 6 pH tells the reader that the acid content of the water in Poughkeepsie is less than 7 pH, which is the neutral zone between acidic and basic.

The transformation of data to information is extremely beneficial because often, the context in which data is presented is the only way we can understand what the data means. Information is useful, raw data holds only the potential to be useful. By itself, data does not help at all.