

Digital Arts - A2 Essay

3. Discuss and evaluate one or more new forms of art practice enabled by digital media and/or digital communication technologies. Use Specified examples of art works to illustrate your answer.

Enabled by the digital media and digital communication technologies, digital data visualization is a new form of art practice that is generating new data-based artworks, data art. Data visualization has existed for a long time in analogue form and has only recently been brought into the digital age. The consequent transformation of the nature of data into a digital form has brought its own issues and requirements. With the tremendous resource of such data, data visualization consistently deals with the politics on the presentation of said data, often balancing traditional and novel forms of depiction. Data art itself is revelatory in its existence, provoking users about its data, presented relationships, and the fractal nature of its depictions.

Within this digital age, data visualization has transitioned from the analogue to the digital, giving birth to data art. Data visualization traditionally appeared in mathematics, and then expanding to geography and eventually the sciences. They were depicted as maps and graphs, all hand-drawn and with small data-sets [Friendly, 2009] . This evolved within the 20th century, with the introduction of computers as societies began transforming analogue data into digital for computer storage. This resulted in uniform data-types (e.g. Monday the 5th of September 1959, became, 05/11/59), as well as much more efficient work flows, with data storage and mining. Representing data in the form of simple graphs became much more automated, drawn by computer and as a result, larger data sets could be depicted. Data representations in digital form became much more efficient than their analogue counterparts, as seen in the comparison between Mark Lombardi's hand-drawn 'Narrative Structures', a map of nodes linked by arcs to depict individual relationships, and Josh On's 'theyRule.net' , a website that lets users generate their own links between directors of the Fortune 500. With increasingly faster computers, networks of data were being generated (eg. the world wide web), with visualizations using real-time data such as RSS feeds. The need to depict even larger data sets lead to the user's direct interaction with a work so they could easily navigate, explore, access and filter data. Such interaction can be found in Google Earth's (which allows user to navigate and zoom in on the globe) user-generated maps, like layered maps of the oil-usage of every country in the form of columns extruding from their relevant countries. Though data visualization has been commonly focused in areas of mathematics, economics, and the sciences, it has been gradually emerging in the cultural sphere, either as a

functional part of our daily lives in the form of time-efficiency software like 'RescueTime', unique stock observing software, James Grant's 'Stoc', or as data art, commonly providing novel provocative representations of data. Data visualization has evolved from its humble analogue origins into a digitally efficient data beast.

Data is the building block of all data visualizations. It can be contributed directly from users or collected unknowingly or through pre-existing databases. In order to efficiently map data, they must conform to a uniform encoding (eg. 05/11/59) [Thomas, 2005]. Data can also be dynamic, ever-changing, with systems removing and adding data constantly. As a consequence of this, storing data can become an issue as the database is no longer static. Relying on certain servers or external sources can sometimes result in corrupted and dead data as is the nature of the digital age [Lima, 2009a]. The choice of data is not necessarily important in a work, an artist could choose commonly accessible stock data or use the recorded bits of music (like in music visualizers), their contribution to the work rests solely on their context and the relationships revealed by the work between data. The very use of data in works often brings forth issues in privacy, surveillance, as clearly demonstrated in Karsten Schmidt's and Sascha Pohflepp's SocialCollider(.net), which reveals public tweets and the relationships between tweets from the micro-blogging site twitter. The publication of certain information has also carried with it a positive notion as the digital age has brought forth a greater sense of a societies' democratic right to their data [Taggart, 2009] . Carrying with it its own storage and social issues, though data is the discrete photons of all visualizations, its overall contribution to a work varies according to the work's context and not its own.

With raw data, there are infinite ways of presenting their relationships, hence the politics that govern the mapping of data is an important aspect of data art. As humans exist in four dimensions (the three spacial dimensions height, width, depth, and time), this is the maximum number of dimensions data can be effectively visually represented [Manovich, 2002]. As it is common to represent one medium or data-set inside another, other senses are also utilized sometimes to add further depth to a visualization such as Joan Kuchera's science demonstration of the Allosphere with sound-emitting Hydrogen and Zinc atoms. Kuchera's Allosphere demo also presented data points of atoms, organs, bacteria, in landscape and planetary forms, this depicts the traditional framework undertaken by a visualization, whether it be navigation or style, also evidenced in Oliver Reichenstein's Web Trend Map 2.0, depicting the success of different websites and their relations in the form of a train map. Though works often utilize some form of familiarity in their visuals, novel representations of data are the main focus (as in Ben Fry's 'Tendrils', based off of the artificial evolution of data after it has been

acquired, it is a 3D typographic structure with tentacles of spiralling words outputted by a web-crawler). However, due to the vast number of choices of presentation, artists can sometimes become overwhelmed and wrongly choose the prettiest depiction, losing sight of the abstract relationships that are ripe for discovery [Lima, 2009b, 2009c] . The relationships that a piece represents are quite abstract, which is quite opposite to the concrete data such pieces are based off, artists choose to present these abstract relationships in a concrete manner, providing audiences with a tangible big-picture of the network of data. Overall, the depiction of any good visualization is chosen with care, taking into account novelty, user familiarity, navigability, and comprehensibility, to effectively present the relations of data within a work.

The revelatory nature of data art is presented through its data, representations and existence. The simple existence of data within pieces can raise issues on its publicity, surveillance, authenticity and authorship, as demonstrated in Aaron Zinman's 'Personas', a critique on data mining, it categorizes the internet data found on a person's name into bar graph with multiple characteristics. Representations of the relationships between data relies on the human ability to process patterns, providing an overall insight into the specific network of data [West, 1999]. These representations often reflect our culture, collective consciousness and behavioral attributes, as depicted in Golan Levin's 'The Secret Lives of Numbers', which is a navigable bar graph of the popularity of different integers, it represents our social associations with different numbers. The very existence of 'data art' promotes itself in that each work is hardly ever similar to another due to the infinite possibilities in representing data, it is a new form of art practice that has been increasing researched, with much unexplored territory in the way of presentation.

Data art is beautiful in that it strives to portray the unknown, giving sensual meaning to mass streams of bland data. Based on discrete facts and abstract relations, it does not portray physical objects directly, but depicts nodes through their behaviors and relationships, revealing changes in a network of data. Even though there are an infinite amount of possible presentations with many new methods being discovered, all are beautifully fractal, a series of countless networks composed through data. Enabled by the digital age, data visualization, the basis of data art, is an art practice that provokes the audience through its whole form, its concrete data, abstract relations and tangible existence.

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