What I See When My Eyes Are Closed

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ABSTRACT What I See When My Eyes Are Closed is an online data visualization project that documents the approximate colors seen by users when their eyes are closed. The data was gathered using Amazon's Mechanical Turk, a site for crowd-sourced labor. Participants closed their eyes while facing a white screen, they then recorded the color they saw. Their name and location, when provided, are associated to the color. FIGURE 1 shows a screenshot of the results. Research into "soft data" is of particular interest: data sets culled from cultural or personal sources suggest a lack of utility that aligns this kind of information with poetics and removes the often-arbitrary relationship of data-point to image. Specifically, What I See When My Eyes Are Closed gives a very human interaction with anonymous Mechanical Turk workers, who are located across the globe. Clicking on a color fills the screen for an immersive view that simulates a temporal shift into that person's body.

FIGURE 1: A screenshot of the project; each rectangle is a data point from a single person, including the color seen with their eyes closed and staring at a white screen, their name, and geographic location.

FIGURE 2.1: A screenshot of the input form; after staring at the blank white space with their eyes closed, workers selected a color using the color selector shown.

FIGURE 2.2: A detail of screenshot

AMAZON’S MECHANICAL TURK

The majority of the data for What I See When My Eyes Are Closed was gathered using Amazon's Mechanical Turk, a labor crowd-sourcing service. Workers on Mechanical Turk were paid a small fee to close their eyes and stare at a white computer screen, then record the color they saw as a hexadecimal value along with their name (pseudonyms and handles were allowed instead of a full name) and their location (either as city/state/country or latitude/longitude), see FIGURE 2.

The jobs on Mechanical Turk, called HITs, were put out in two large batches of approximately 200 per batch. The results were returned with surprising speed. The first batch finished within several hours and the second completed...
over the course of a single day. Based on suggested methods for artistic projects using Mechanical Turk from Andy Baio, whose project, The Faces of Mechanical Turk, provides an interesting tactic for humanizing online data mining, the fee paid for each participant was $0.75. At an average of 172 seconds per HIT, this makes the composite hourly wage approximately $15.60. This rate was meant to be fair and considerate of the often anonymous Mechanical Turk workers. In addition the task was an attempt to artistically balance against the bulk of the tasks on Mechanical Turk, many of which are mundane data entry that pay only five or ten cents—or simply ploys to gather working email addresses. The results, including detailed statistics for each task, are collated by Amazon as a downloadable, comma-separated values (CSV) file (see FIGURE 3). This file was converted to a MySQL database, which is read automatically by the project site using PHP for data parsing and formatting the content.

**LESS DATA IN A TIME OF VALUABLE DATA**

Prior to the 20th century, a “computer” was a person. Their task was that of performing mathematical calculations. Since many scientists and engineers needed the same kinds of calculations (logarithm tables or lists of prime numbers, for example) the tedious work was best performed only once and then the result published as a reference text. Even as “computer” came to mean what we understand it to be today, access to such calculating machines was limited. Texts of calculations continued to be published into the middle of the 20th century. A complex calculation could be looked up quickly, eliminating the need to write a program and schedule time on a mainframe computer for a single answer.

Today, these books of calculations are virtually useless beyond their historical interest. Their lack of utility, however, transforms the way these texts are perceived. It renders them poetic works, more related to the minimalist grid or color field painting than to the hard sciences from which they were derived. Two works are of particular note and served as a major influence on this project.

Élie Joncourt’s 1762 book De natura et praecario usu simplicissimae speciei numerorum trigonialium is a listing of the “triangular numbers” to nine digits, FIGURE 4. These are numbers which, when stacked, visually form equilateral triangles (numbers squared form squares, hence the name, etc). Printed in 300 pages of fastidious and delicate tables (see example, FIGURE 5), Joncourt’s text is now completely useless for scientific work, as a pocket calculator (or smartphone) is faster, more flexible, and not prone to the human error that a book of this size is susceptible to.

**FIGURE 3:** A screenshot of the exported CSV file from Amazon; personal data has been obscured here for privacy, but the full file includes information about when the HITs were created, a worker ID number, whether the work was accepted or rejected, and the amount of time spent on the task.

**FIGURE 4:** Numbers are “triangular” when, if stacked, they form an equilateral triangle. Here we see the first six triangular numbers (1, 3, 6, 10, 15, and 21).

**FIGURE 5:** A sample from Joncourt’s book. The first number is the “natural” number or base, then that value’s resulting “triangular” number.
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A similar text, though far more technically complex, is the Rand Corporation’s *A Million Random Digits with 100,000 Normal Deviates,* published in 1955. Essentially a tremendous list of random numbers (Figure 6), the book begins with an in-depth description of how the digits were created. The creation of truly random numbers using a digital system is not trivial, and the list was extremely useful in its time. Similar to Joncourt’s book, *A Million Random Digits* is now a patterned but highly precise scattershot, its function replicable through a single line of computer code.

In contrast, Facebook’s estimated $100 billion IPO this year is built around the value of massive amounts of data. With approximately 15 billion images uploaded each day, Facebook’s servers hold more than 100 petabytes of photo and video data alone. Brick and mortar stores like Wal-Mart generate massive data collections about customer shopping and buying habits. In 2004, the New York Times estimated Wal-Mart’s total data storage at 460 terabytes; by 2010, The Economist reported that Wal-Mart was generating 2.5 petabytes of data per hour. This information is not just valuable to the institutions that create the data, but are secondary products that can be sold to other companies, marketing firms, and political campaigns.

**Experiential Data**

Akin to a critical re-reading of Joncourt and the Rand Corporation’s now-defunct text, *What I See When My Eyes Are Closed* is not about a utilitarian use of a data set, but rather about an experiential, patterned, and subjective result from a data-based process. I am particularly interested in the friction data has in relation to poetic and conceptual concerns of the fine arts. Admittedly a somewhat slippery and catch-all term, I use “poetics” to describe a practice whose focus is on creating experiential projects that are not easily described verbally, but rather insist on being phenomenologically experienced. At the center of this kind of data-based artwork there is no utility in the traditional sense of a design or scientific project; the only goal is the furtherance of the poetic experience.

While providing fascinating and often important findings, traditional data visualization and sonification projects tend to have a rather arbitrary link between data-point and form; for example, a triangle could be swapped for a square, orange substituted for red. This cannot be the case with a poetically-focused data practice, where all parts of the work must address and help buttress the poetics of the piece. In the case of *What I See When My Eyes Are Closed,* some decisions were made aesthetically: the presentation as a grid is meant to remove hierarchy and level the data points as well as to reference minimalism and the structure of technical texts like Joncourt’s. Other decisions were made conceptually from the internal logic of the project. Allowing visitors to see a full screen view of the color a real person sees with their eyes closed displaces the viewer, swapping their temporal presence momentarily with the faceless laborer who created that content (see Figure 7).

Closer to this project, then, are works such as Markus Kison’s “Touched Echo,” a public sound installation addressing the bombing of Dresden in World War II. Visitors are instructed to lean on a metal railing with hands cupped by their ears. “When one leans on the balustrade the sounds of airplanes and explosions” conducted as vibrations through the elbows, up the arm bones, and into the skull and experienced through the ears—no sound is present except through this physical gesture. Opposite of what Douglas Kahn calls the “deboned voice” of the phonographic recording, “Touched Echo” reinforces the personal experience of what might otherwise be a set of figures and photographs.
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Figure 8 and 9: Two fullscreen color examples, the first from a woman named Antoinette from Long Beach, California (the color is #7A3833), the next from a worker using the handle Doplers6 from Belgrade, Serbia (#3B0C0D).

Figure 10: Using the powerful realtime features of the MySQL database format, the data can be sorted by color value, name, geography, or be randomly shuffled. This function is not intended to reveal new statistical properties of the data set or as a method to find patterns in the data; rather, it suggests a narrative arc through the information and prioritizes certain data points that might otherwise be lost. Here we see the data set sorted by color (note this is not as seen on the project site, but a visualization so the entire data set can be seen).
This connection to the physical is important in the case of *What I See When My Eyes Are Closed*, as the colors we see are due to the thickness of the skin of the eyelid—a highly specific detail of a person’s anatomy. The gesture of sitting in front of a computer screen with eyes closed is intimate and political as well, a meditation amid the highly commoditized database structures of e-commerce and remote labor. The color values are the result of a poetic experience between the worker and the interface. This personal data is then re-presented in a database format and retrieved by the web browser when called by the viewer. Sorting the data by color, name, or geography is not about finding usable patterns (people from southeast Asia tend towards this kind of color, etc), but is instead about creating new narrative pathways through the data set (see Figures 8, 9, and 10). In its final form as fullscreen color the viewer is placed in a simulated body, a telepresent moment which argues that data can be gathered, parsed, and presented with a focus on the experiential and poetic. The eyelids of an anonymous worker are transposed with ours and for a moment we “see through their eyes”.

**BIographies**

Jeff Thompson is Assistant Professor of New Genres and Digital Arts at the University of Nebraska-Lincoln, where he is also artist-in-residence at the Holland Computing Center. Thompson has exhibited his work internationally, most recently at site Santa Fe, Bemis Center for Contemporary Arts, the Sheldon Museum of Art, and the Taubman Museum of Art.

**Notes**


4 “High quality” random numbers, it should be noted, are still not a trivial matter to generate. That said, virtually all programming languages have a built-in random number function, often accomplished using the current date and time (to the millisecond) as a “seed.”


