Form and Code
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Code?

- A set of rules
- A method (*like Galloway says*)
    - Or a procedure for something
- Algorithm
    - *Shiffman from Tues- who explains an algorithm like a baking recipes*
    - Step by step process of problem solving

Form?

- More like the *language*
- How we interpret the code through visual and sensory imagery
- When you think of form is it physical entity or something projected into a screen?

Form and Code combined

- We can think of code as a form of language
    - Code becomes instructions
        - *Yoko Ono's art (pg. 21)*
        - Yoko's art- Instructions for life
        - This type of artwork asks the reader to perform tasks
        - These can all be interpreted differently according to the reader
- *On Tuesday when talking about Galloway* we established the computer as not being a language "it can input language but it is a calculating machine"
    - Therefore, code can be a language because they are being imputing into the machine
- Code is reflecting the natural forms of the world
    - "Code is moving outside the boundaries of the screen and is starting to control more aspects of the physical world" (pg. 23)
    - *Reminds me of the Video games/cinema topic*
        - Can you cry at something that's not physical?

Software

- Software revolves around production and conception
    - Produces an idea and then executes that idea
- 1963- Sketchpad
    - Software that led to graphic design
- PostScript
    - Fonts were treated as software
- These then lead to the idea that the computer is a tool for collaboration
    - Built Centralized offices
    - "Which had a massive impact on open-source software movement, where large and sophisticated applications are often built by a loose collection of individuals united by a shared interest" (pg. 31)

- Used to distribute around the globe

Begins the process of building a form through the use of codes

· "If computers could be used to model what we know, then perhaps we could also use them to simulate what we don't know" (pg. 31)
· How the numerical representation of form can be transformed into something we can perceive, like light or a material
· Up until now we've been talking about forms on a screen…
· Now we can talk about molding something physical
  - Ex) CNC milling, a subtractive process
  - Ex) 3-d printing, additive
  - From a machine- you can 3-d print machine parts- making it full circle

Repetition-

· The act of repeating something in order to create something physical or realistic
· With repetition codes of lines can become fully textured forms
· It can create a chaotic texture through raster imaging and patterns
· Main focus of software- efficiency and precision
  - With modularity- storage space is limited so small graphics work together to create one large image
  - With patterns
  - Recursion- like a leaf, each time branching out more and more
    - One problem- can become an infinite loop
· Is repetition in this form a positive contribution to an efficient workspace or are there negative consequences?

Transformation-

· Altering an image or work of art, for emotional effects or to prove a point
· Depicting an entirely new form

Look at art

Parameterize-

- The act of creating manipulatable qualities to be used in the creation of form.
- "A Parameter is a value that has an effect on the output of a process"
- Using Parameterization, the gap is closed between Transformation and Repetition
- Can be used in software design programs to create structures
  - The Phare Tower in Paris: software was "used to iteratively develop, test, and refine the structure to address multiple parameters essential to the design."
- Can be used to structure template material, like page layouts for magazines, that will be populated by numerous unique information.
- Allows for the use of variables in the parameter.

    - “Variables can be distinguished from constraints, whose values cannot change, such as the force of gravity; or constraints, which are fixed in response to the requirements of the project.”
- Using variable for random parameter values, psuedo-random forms can be created.

Visualize-

- The act of formulating information into a visual medium to improve readability and reveal patterns obscured through numbers.
- Example: New York City Subway Map
    - “The visualization removes unnecessary geographic information and adds information related to train schedules and transfers.”
    - This helps to distinguish patterns in the complex system by filtering unneeded information.
- Can take numerical values for sociographic research and display it in a 2D representation.
- This process can be much more difficult with datasets of more than two or three dimensions.
- For more complex visualizations, Treemaps are used.
- Treemaps invented in 1991, but quickly refined and improved by 2007.
- “A Treemap is a visualization that utilizes nested rectangles to show the relations between one or more data elements.”
- “The Treemap had become so ubiquitous that it was used in the New York Times with the expectation that a general audience can understand it.

Simulate-

- To create a life-like world using code to experiment and engage with.
- Offers an opportunity to replicate life, and to stray from it.
    - “Within other domains, such as design, architecture, and art, high fidelity is less important than the final experience.”
- Differs from Paramterization because it involves “bottom-up mechanisms” rather than the “top-down control” of parameters.
- Can be used to simulate physical systems.
- Creates Artificial Intelligence
    - -Video Games, Banking, Life Simulation
- Genetic Algorithms:
    - Simulate Evolution
    - Simulate Landscape
    - Deign parts by best efficiency.