Chapter 3: Searching for Guinea Pig B: Case Study in Online Research

Getting Started with Online Research

- Curiosity-driven research
  - Begins with a name or word
  - Too little information to begin an informed search with a search engine
- Searching for information on R. Buckminster Fuller
  - Google search on Buckminster AND Fuller
    - Returns at least 1,010,000 hits
  - Limiting to Buckminster AND Fuller AND biography
    - Reduces hit count to 123,000 — still too many
  - Need to gather identifying information (possibly from another source) for a more effective, focused search

Narrowing the Search

- In this case, an online biography source
  - www.biography.com/search/

Expanding the View

- From Fuller's biography we learn:
  - His full name (Richard Buckminster Fuller)
  - He is great-nephew of Margaret Fuller
    - Who is she? We look her up on biography.com
  - That he invented a house and a car that he named Dymaxion
- One biography from Wikipedia lists a different number of patents, which reminds us that
  - Different sources differ in the quality of information
  - In all academic institutions, Wikipedia is unacceptable as a major source for a research paper as no credentials. Similarly, if you were quoting The Herald Journal on medical findings it would be unacceptable.
- New search on Buckminster AND Fuller AND biography AND Dymaxion
  - Returns 87,300 results
Searching for Images

- To find out what Fuller looked like:
  - Use Google’s image search (click the Images tab from www.google.com)
  - Entering Buckminster Fuller returns more than 14,500 JPEG and GIF images

**Figure 6.5** Three photographs of R. Buckminster Fuller.

Bookmarking Links

- For sites we might want to return to later
- For pictures, it’s easier to save a copy rather than bookmark the URL
- When researching, bookmark every site visited and record all search keywords in a file, so you can reconstruct the search.
- Bookmarks can always be deleted

Primary Sources

- Fuller called himself "Guinea Pig B"
- Search for Buckminster AND Fuller AND "Guinea Pig B" AND dymaxion returns 218 results
- First hit is from WNET (New York Public Television) documentary on Fuller
  - Links to essays, one by Fuller’s daughter and one by a collaborator
    - These are primary sources — writing from direct personal experience

Assessing our Progress

- Secondary sources like Biography.com provide quick introduction to material
- Primary sources give us most accurate specific information
  - Answers questions short biographies cannot, like the meaning of Dymaxion ("dynamic, maximum, ion")
Finding Video Clips

- Video clips of subject are also primary information
  - Fuller describing his ideas in his own words
  - Hear the conviction in his voice
  - See the emphasis of his gestures

Chronfile and Everything I Know

- Second result from Google search is a link to the Buckminster Fuller Institute (BFI)
- Timeline of Fuller's life
- Everything I Know: 42 hours worth of recordings
  - Also transcribed so it can be searched

Surfing the BFI Site

- Fuller's Dymaxion Map
  - Surface of the globe projected onto icosahedron (20 triangular faces), which produces a minimal distortion flat map

Resolving Questions

- We know:
  - Fuller invented the geodesic dome
  - Fuller invented the Dymaxion Map
- Are they the same idea? If not, how are they related?
  How do we find the answer to these questions?
  1. Determine what kind of information will answer the question
  2. Look where that type of information may be found
     • In this case, the definitions of the two words may answer the question
  3. Consider the source. Look for corroborating evidence.
Resolving Questions (cont’d)

- To define “geodesic” and “icosahedron”, try an online dictionary.

| geodesic, adj. | A least or light straight structural elements mostly in tension <as geodesic dome>.
| icosahedron, n. | A 20-sided polyhedron.

Secondary Sources

- Completing the Picture
  - Secondary sources can:
    - Give us a more thorough investigation of the topic and help fill in gaps
    - Help us organize the information
    - Provide other authors’ interpretations and insights
  - Remember to investigate the sources for authenticity

Investigating Controversial Questions

- Controversy regarding discovery of “tensegrity”
- Fuller’s student Ken Snelson feels he was not given due credit for his part
- Find each party’s version of events:
  - Snelson’s version in an e-mail to International Journal of Space Structures
  - Fuller’s version in “Everything I Know”

Exploring Side Questions

- Our sources have repeated mention of “buckminsterfullerenes.” What are they?
- Google search on the term returns many useful links
  - From Scientific American to SUNY Stony Brook, to Michigan State University, to online dictionary, we find the answer:
    - A fullerene is a stable molecule of carbon composed of 60 or 70 atoms in the shape of a geodesic sphere
Case Study Wrap Up

- If we are going to use this information to write a report, we should create a summary file containing:
  - bookmarks from the sites visited
  - notebook entries of the search terms used
  - brief notes of our impressions from the information we found — interesting discoveries, most useful sites, why we followed up some topics and not others, etc.

- Optimize for time. Read once — note important points.

- Feel like you don’t understand anything? Making a specific list gives some comfort as unknowns are finite.

- Make lists of questions. Often you will be able to answer your own questions, just by making them more specific.

Table 6.1: Record of the case study search (Continued)

| Assess sources — Application and Snyder are primary. Delano is archivist |
| Check on Netmex, first at biography site, then W&I (correct personal, writer with access to papers) |
| Read Applewhite’s essay on professional assessment — great detail, clear, influential |
| Read Snyder’s essay for NDFS as father — warm, loving, deeply believed in primary experience |
| Read Delano’s essay — “experience” of NDFS site, he called Expo dome Taj Mahal to Annette |
| Read Delano’s essay — reads NDFS facts with personal aspects of success, tragedy, and family |
| Summarize our impressions of essay |
| View video clips. Fuller passionately argues world hunger housing woes can be eliminated by 1989 |

Visit Buckminster Fuller Institute site |

Check RFIs authorship |

Review Basic Chronology — married to Annette, two children, one died, many jobs, many awards |

Discover Everything: fifteen—six hours of audio |

Listen to Fuller describe Allegro’s asking him to become more animated |

Discover Dymaxion map on computer and watch animation |

View the Monsanto Expo 67 geodesic dome |

Wonder new geodesic and geodesic dome relate |

Check dictionaries for definitions — unsatisfactory |

Check dictionaries further and interpret definitions relative to map and Expo dome |