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CS 7450 – Homework 6

Grokker and SequoiaView are programs that visualize contents of computer hard drives. Grokker also provides functionality for visualizing websites, Google search results, and Amazon.com product information. Part one of this paper describes my experience using Grokker, part two describes my experience using SequoiaView, and part three provides concluding remarks about these programs.

# 1. Grokker

Grokker is a tool that creates interactive visual maps out of websites and computer hard drives. The term *grok* originated in Robert Heinlein's sci-fi novel *Stranger in a Strange Land*. In the book, "grokking" something meant gaining a profound understanding of it. I would argue that using Grokker on a computer hard drive does not lead to a profound understanding of the hard drive; the program, however, is extremely useful as a front end for search engines and internet shopping sites. I used Grokker for the following tasks:

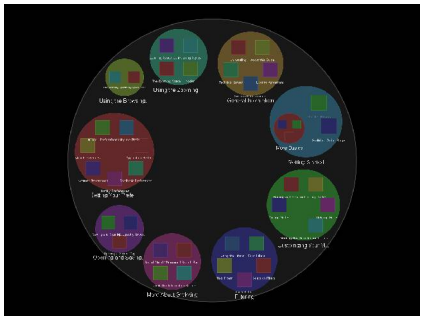
- Browsing and searching the contents of my hard drive
- Viewing several websites
- Searching for information about dogs using Google
- Shopping for digital cameras at Amazon.com

To use Grokker, a user first specifies what should be "grokked" via a dropdown box with four choices: the contents of a hard drive, Amazon.com, Google, or a website. To the right of the dropdown box is a textbox that looks like a URL bar in a browser. In the textbox, a user can type an Amazon or Google search term, a website URL, or a directory on a hard drive. Clicking the *Grok* button, which is located next to the textbox, causes the program to fetch and categorize the website, hard drive, or search results.

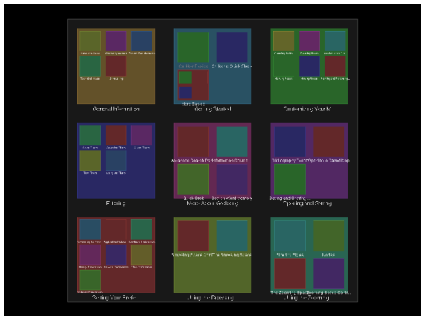
Results are grouped into categories, represented by default as a circle. The size of a given category relative to other categories is represented by the size of the circle. Subcategories are represented as different colored circles drawn inside of the original category circle. Files, websites, and Amazon items are represented as squares.[1] By clicking on a circle, users can zoom in the view to a category or subcategory of interest. Mousing over a square provides information about the file, website, or Amazon item, and clicking on the square lets the user view it in Grokker's integrated file/web browser. Clicking on the area next to a category lets the user zoom back out. Zooming is extremely well implemented in Grokker. The graphical transitions are smooth and visually appealing. As with other zooming interfaces, however, it is easy to forget where you are within the visualization after zooming several times.

Panning is only partially implemented in Grokker. If I saw part of another category (a circle or square) on my screen, I could click on it to pan over to it. However, this panning is only limited to the case in which I could see part of another category on the screen. If I wanted to pan over to a category completely off the screen, I had to instead zoom back out to select the category.

The default circle view of Grokker looks cute, but it inefficiently uses screen real estate and quickly loses its appeal when dealing with large numbers of categories. Grokker also includes an alternative square view that wastes less room on the screen. However, information about relative sizes is lost in this view, and files and sub categories are both represented as squares. Overall, I preferred using the square view in Grokker.



*Circular View*



*Square View*

**Figure 1: Two views of Grokker**

[1] When using Grokker for Amazon searches, the squares also contain thumbnail pictures of items for sale.

In Grokker, the screen can also be split into two parts. The left contains the circle/square visualization, and the right contains a file browser or web browser. The browser is helpful, because it mitigates the need to open another program to view a website or file. Unfortunately, the browser's usefulness is in reality limited, because it often runs slowly or causes Grokker to crash.

Users can browse results before the search is complete; the search progress is indicated in the top section of controls on the screen. Browsing results before search completion is handy, because some of the searches take a long time. In some cases, however, I found that browsing in the middle of a search frustrating. As the results appeared within a category, their positions shifted within the category box. In some cases, I found that just as I put the mouse pointer over a box I wanted to zoom in on, the box "ran away" to another location within the category.

Users can filter results by specifying a text string, "marking," or using sliders that are specific to the type of grokking being done.[2] After filtering, unfiltered items can be either displayed in grey or made invisible. I particularly liked the ability to mark items of interest. After marking items, I could create a view of the visualization that showed only the marked items. This was especially helpful when searching for items at Amazon.com. Although the sliders were helpful, I would have liked it better if they moved in both directions. For example, when using Grokker on my hard drive, I could only run a size filter in which I could specify the minimum file size. There was no way to filter for files under a maximum file size.

## Task 1: Browsing/Searching Hard Drive

Grokker was marginally useful for browsing and searching my hard drive. In the circular view, I could get some idea whether one file or directory was bigger than another, but I couldn't easily tell which files were eating up the most space on the hard drive. By mousing over individual files, however, I could find out their size and other pertinent information.

The categories Grokker uses to display my hard drive's contents do not match the underlying directory structure of the drive, so I would not choose to use this tool for understanding directory structures. Grokker's ability to filter by modification date, file name, file size, or program used to open the file could be useful for search tasks, such as finding all MS word documents on a computer. However, I could just as easily use the search functions built into Windows, so I am not convinced that Grokker offers a significant advantage for finding content on a hard drive. Overall, Grokker seems much more suited for visualizing things on the web rather than computer hard drives.

## Task 2: Website Grokking

Grokker shows websites and their links as categories, and seems to be a hit-or-miss kind of feature. The utility of this function seems highly dependant on the actual structure of the site in question. A site like http://www.yahoo.com, with pre-categorized information on its pages, lends itself well to viewing with Grokker. Sites with more jumbled structures, however, did not get split into categories that made much sense.

In some cases, I could easily tell that the categories were made up by a computer program with no understanding of context. For instance, when grokking http://money.cnn.com, Grokker returned a category called "companies," but it also returned a separate category called "fortunes" that contained information about Fortune 500 companies. As a remedy for this problem, Grokker lets users manually move items into different categories, as well as create custom categories. Unfortunately, there is no undo button in Grokker, so users need to think carefully before deciding to make any changes.

## Task 3: Google Search

In a traditional web search, results are returned as a list. Users choose which websites to view based on reading a website title and small text description, and sometimes it is difficult to tell a website's content or quality based on its description. Furthermore, listings that are at the top position of a search list are sometimes there because someone paid to have that spot.

Grokker breaks up search results into categories. Viewing web search results in category format makes it easier and faster to find what you are searching for. Instead of having to read text blurbs about each website and pick the ones that are most relevant, the categories Grokker provides makes it easier to focus on what is relevant (and filter out what isn't.) Grokker also makes it easier to zoom back out to see the entire search compared to Google's search-within-results function.

[2] When grokking Amazon, users can filter by user rating, price, or shipping information. When grokking a hard drive, users can filter by modification date, program used to open the file, or file size.

Since Grokker does not preserve the rankings of results, one might argue that the results it returns might not be as biased, because there are no "sponsored links" at the top of the search results. Another similar advantage that comes with using Grokker for a web search is that users aren't forced to view banner or text advertisements when viewing search results.

## Task 4: Digital Camera Shopping at Amazon.com

I also used Grokker to window shop for digital cameras at Amazon.com. Of all of the features in Grokker, its ability to serve as an alternative interface for Amazon.com was my favorite. I'm an avid Amazon shopper, but sometimes their interface frustrates me, because I can't easily filter out items that are irrelevant, are too expensive, or have a poor customer rating.

Grokker returns Amazon.com results in categories, and shows thumbnail pictures of items for sale. Mousing over an item gives information about the product's manufacturer, price, and time required for shipping. Using the filters at the bottom of the screen, I could easily search for by keyword or limit my search by price, average customer rating, or shipping information. I found Grokker's capability to mark items (and filter out unmarked items) especially useful for Amazon searches. In the case of looking at digital cameras, I could easily mark my favorites so that I could come back to them later or show them to a friend.

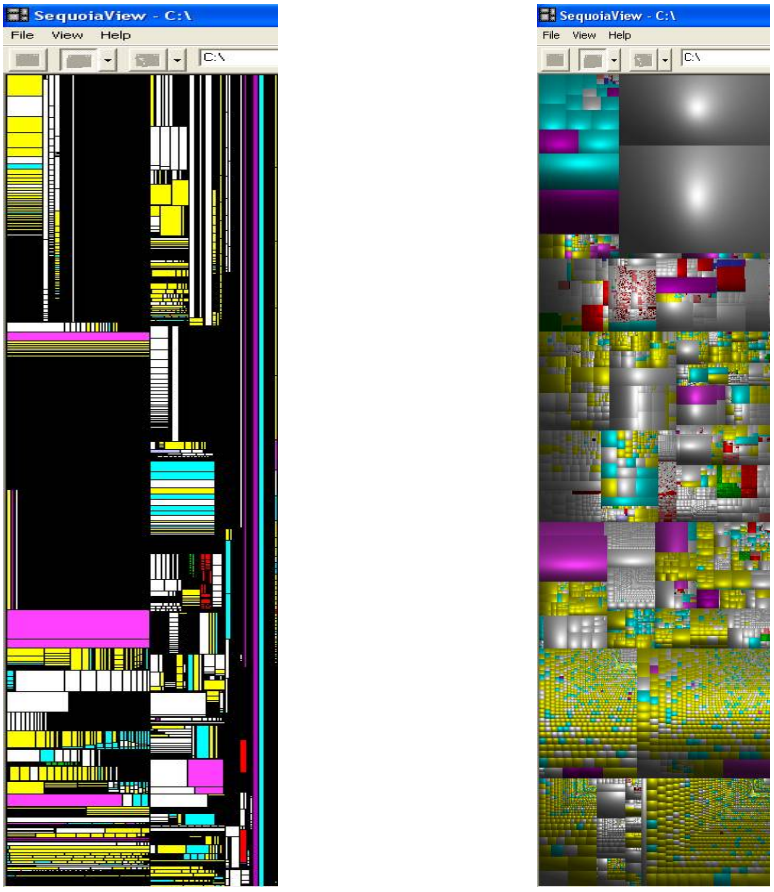
The categories Grokker made for my digital camera search mostly made sense, but when I ran a search for "Nikon," a popular camera manufacturer, I also received a large set of results that matched the keyword "Nixon." These results really confused me, so also I ran a search for "Nikon" on amazon.com in a regular web browser. With the standard web browser, I didn't see any results for "Nixon." Does Grokker check for alternative spellings? Is it following some obscure set of links on the Amazon website that I didn't notice?


**Figure 2: I searched Amazon for "Nikon" but Grokker also returned results for "Nixon."**

# 2. SequoiaView

SequoiaView was without a doubt written by engineers for engineers. It's completely functional, fast, space efficient, and has an awful user interface. Although SequoiaView is ugly and doesn't have any flashy user interface features, it certainly is faster than Grokker, and never crashed when I used it.

SequoiaView uses treemaps to visualize the contents of a hard drive. In one screen, it gives an overview of what is on the hard drive, as well as a visual representation of the amount of space each file takes up. Users can select three varieties of treemaps: regular, cushioned, and squarified cushioned. I preferred the squarified cushioned layout, because it was easier to differentiate between small files.




*Treemap View* *Cushioned Squarified View*

**Figure 3: Smaller files are easier to see with the cushioned squarified view**

In any variety of treemap, files appear as colored rectangles/squares on the screen. The color of the square indicates file type. Mousing over the file shows its name and location.

For the purpose of browsing hard drives, I thought SequoiaView was much more useful than Grokker. This program excels at helping users figure out what is using up all of their hard drive space, as well as discover files that might be hidden somewhere on the hard drive.[3] However, SequoiaView is severely hindered by its awful user interface.

Overall, SequoiaView seems like most like the file explorer included with MS Windows, but it has some quirks that don't fit my mental model of how a file explorer works. Unlike a file explorer, SequoiaView will not allow users to delete files. Opening a file is also a completely unintuitive process. I expected that double clicking on a file's square would open up the file, because this is the standard response to double-clicking on a file in Windows. Instead, SequoiaView dropped me down into a treemap view of the file folder that holds the file I double-clicked on. To make things worse, it moved the place on

[3] In my case, I found that windows included several multimedia files I had no clue were on my hard drive.

the screen in which the file I was interested was located, but did not move my mouse pointer to where the file was. At this point, I was now mousing over a mysterious file I didn't care about.[4]

What frustrated me most about SequoiaView is how the most needed functionality is hidden away. Filters are hidden in a dropdown menu and are extremely limited in functionality. For example, finding all documents with "cs7450" in the title is just about impossible with this program. I could use really simple regular expressions in filters, (e.g. show only files matching "*.bmp"), but anything more complicated (even as simple as matching "*cs7450*") is not supported. Being able to filter items using regular expressions would make this program *so* much more useful, yet still appeal to the inner geek living in all of us. For those of us who are not so geeky, sliders on the side or bottom of the screen would also add significant functionality to SequoiaView.

The navigation in SequoiaView is awkward at best. To zoom in on a directory, users can either enter a file path in a box in the top toolbar, or double click on a file's square to zoom in on the folder that holds the file. When zooming using the double-click method, the user gets no clue about which part of the overall structure he or she is viewing. The addition of graphical transitions into the zooming function may help with this problem. Zooming out of directories is also awkward. To zoom out, a user either has to right click and then select the option out of a dropdown menu, or click on the "up a level" button on the toolbar at the top of the screen.

# 3. Concluding Thoughts

When looking at the user interface of each program, I could immediately tell that Grokker was commercial product and SequoiaView was not. When using Grokker, I felt like a too-cool-for-you World Wide Web hipster, whereas using SequoiaView left me feeling like a nerdy engineer with a pocket protector, taped glasses, and no date to the prom. Grokker has slick user interface with pretty colors. The shapes it uses to represent categories and files are pleasing to the eye, and the program's zooming capabilities are oh-so-smooth. SequoiaView, although fast and space efficient, has little more to offer than a clunky interface and an extraordinarily ugly color scheme. In some respects, however, I found both programs frustrating. Grokker had a pretty interface, but the prettiness often compromised speed and stability of the program. SequoiaView never crashed, but it was extremely hampered by its terrible user interface.

Furthermore, although both programs let users view the contents of their hard drives, neither has support for helping users learn about their computers (e.g. "What's an autoexec.bat? Is this file important or junk?"). Nor does either program help people make informed decisions about managing their computers (e.g. "I notice a weirdly named file. Do I have malicious software on my machine? What can I do about it?").

I would love to see a program that provided the functionality afforded by both programs, the speed and stability of SequoiaView, and the nice UI of Grokker, along with additional capabilities to help users actually make sense of the results the program returns.

[4] Later, I found that to open a file, I had to right click on the file's square and select "open file" off of a dropdown menu.