

# WAYFINDING AND NAVIGATION: A LOOK AT BROWSING VIA AERIAL MAP STYLE NAVIGATION

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## **Abstract**

We have designed a method of wayfinding, navigating and personalizing the user experience using a map or aerial view style navigation.

Maps allow the user to explore the content from an aerial perspective, thus getting a birds eye view of how objects are related; this allows the user to quickly orient them.

Maps also provide spatial knowledge allowing the user to judge relationships and distances to relative objects and landmarks.

Wayfinding as described by Jan Carpmann and Myron Grant. Evans & Co, "Wayfinding is a fancy word for the series of things people know and do in order to get from one place to another, inside or out. Wayfinding can be a snap or onerous task, depending on the person, the environment, and the situation." Furthermore, wayfinding is described as a process that involves knowing where you are, having a destination or a goal in mind and being able to achieve the goal, reaching the destination. Once

the destination is reached the person must have the ability to find a way back. Proper wayfinding should provide orientation as to where the user is, where they have been and where they can go within an environment.

## **Project/problem statement**

With the growth of user personalized and generated content, web site navigation structures are becoming harder to build and accurately reflect the content within a web site. This makes the process of browsing and wayfinding complicating and confusing.

This can be seen in web sites such as MySpace (Blogs) and in e-commerce sites such as Amazon.com, where users can open stores and review products and seller information. In these types of web sites content is being created at a rate that is almost impossible for a navigation structure to accurately track. This provides a critical need for proper wayfinding devices.

## **Problems**

- Due to the excessive amount of user generated content being created navigation systems are becoming overly complex and harder to accurately reflect the content on the web site. This can to lack of trust and frustration by users.
- Complex and constantly evolving navigation and content structures makes wayfinding difficult. Poor wayfinding can lead to frustration, inefficiencies and loss of trust.

## Goals

- Gain insight into how people navigate an environment using a map in the physical world. These findings can then be used to implement virtual map style navigation.
- Create a wayfinding device using a map or aerial style navigation to effectively link the user's cognitive model of the physical world to the virtual world, allowing the user to spatially recognize where they are within a web site.
- Allow the user to view the web site structure from a birds eye view to provide information on orientation and object relationships.

## Solution

Its important to understand how wayfinding works in the physical world when applying wayfinding devices in the virtual world. Wayfinding can be seen in the physical world in the shape of signs, maps, lights, colors, carpet, etc, and to provide visual cues as to where a person is

within an environment. For example, a private area of a building might have an entrance that uses a different style door or contains different carpeting and lighting. These visual cues allow people to easily differentiate different areas within an environment.

In the virtual world some of the same methods can be used. Different sections of a web site or application can be color coded or different type faces can be used to separate different areas. For example, Nike uses colors, fonts, and other visual differentiators to separate its corporate site from its public or marketing sites.

Maps are used in the physical world to allow individuals to navigate from one point to another giving an aerial view and spatial relationships.

Within the virtual world navigational cues usually take place in the form of linear hyperlinks. While a linear navigation could possibly provide a better experience for users with specific goals and knowledge of an environment, does a linear navigation provide a better experience for a user who is unfamiliar to an environment. Maps also allow the user to segment an area into specific locations. This segmenting of data corresponds with how humans naturally categorize and group information.

Maps have been used as effective navigation tools for centuries, helping hunters track food and guiding ship captains between continents. Providing the person with a birds eye view of an environment. From this view the

person can view the entire environment or parts of the environment as well as determine spatial relationships.

A study [2] conducted on 2 groups of students at South Carolina University in Columbus yielded valuable insight into the power of using maps as a learning tool. During this study, students were chosen who lived in Columbus South Carolina for more than 2 years. One group of students was given a map of Fargo North Dakota to study; however, the map was not of Fargo but of Columbus, with the names of the landmarks changed. After a few minutes of studying the map the group was asked to make decisions on distance and directions. The group of second students who did not see the map was asked to make the same decisions. In conclusion the students who viewed the map of 'Fargo' were much more accurate in their decisions than the students who lived in Columbus for more than 2 years but did not view the map. Thus, a few minutes of map study produced more accurate configurable knowledge than over 2 years of first hand experience.

When a user is lost within an application a map can provide an aerial view, using landmarks to allow the user to orientate them.

A study conducted on spatial relationships discovered that [3]"Landmark knowledge is often the basis for building our cognitive maps. The development of visual navigation knowledge may start with highly salient visual landmarks in the environment such as unique or magnificent buildings and natural landscapes. People

associate their location in the environment with reference to these landmarks."

It's important that landmarks differentiate themselves and remain constant in the environment. Due to the above factors, mountains were and still are used as landmarks. Sailors have long used the stars and moons to navigate themselves through unknown waters.

People associate their location relative to landmarks. According to T. Todd Elvins, "Landmark knowledge represents shape, size, color and contextual information for a specific location in an environment."

Home pages and key category pages usually become landmarks within web sites. For example, if a user is looking for a type of shoe they might remember that they were within the shoe section of a web site. They might remember this page as having a certain color or look that differentiated itself from other pages. Once the user is able to find this web page they are more likely able to retrace their steps and find the product they were looking for.

Allowing users to set favorite places can also be used as effective landmarks. A user can bookmark a page within a web site from which they can journey from and find other key pages of interest.

When people navigate an environment they usually leave some form of breadcrumb. This occurs in nature when animals walk through a forest leaving footprints or if a person is swimming across a lake leaving behind a path of foam. In both these cases a temporary means is

provided as to where the person has been and allowing them to get back if needed.

In the virtual world color can be used to achieve the same purpose. For example, when a user travels from page to page the visited parts of the site map or navigation can change color. Breadcrumbs, are commonly used in web pages to display the pages visited in a historical linear fashion.

### **Next Steps**

Although we have conducted research and gathered best practices it is not clearly realized that our “map” style navigation is a more efficient, learnable and easier to understand method of navigation. In order to determine this, a contextual inquiry would need to be planned. (During a contextual inquiry the observer watches the user as he or she works through a set of tasks.)

- Develop a prototype of the application for testing and gather a set of users to participate in the contextual inquiry
- Create a testing plan with clearly defined tasks, objectives and follow up questions.
- Compile the results and refine the prototype based on the findings.

### **Design Concept**

Our design has given users a new perspective on navigating through an interface. To model how this will work, we incorporated navigational maps into the interface of Amazon.com. This is a very large site with a

dynamic content that is mainly organized by categories. These categories bucket information to help users freely browse or seek out specific items. Amazon is a perfect example of a site that would benefit from a better navigational interface.

One of the main design challenges was to avoid linear browsing. The user should feel like they can see the main pieces of the site at once, while also concentrating on the details of the content that are of interest. Perspective and location should be known at all times. In order to accomplish these needs, users are given an aerial view of the site’s architecture. (See figure)

### **Perspective**

The aerial map highlights the main buckets, or categories of a like content, and how they relate to one another. Similar to online mapping interfaces like Google maps, the design allows the user to zoom in and out and travel left to right to better seek out information. These controls are found at the top of the map’s interface.

### **Location/ Relationship**

The user is exploring the interface is a totally unique fashion. The user is not selecting key terms to slowly drill down into content. The user is hovering over the interface, and by selecting categories, magnifying the section to view the detailed content. The user has not left the control center, and can quickly know how their location relates to other sections. This overall perspective allows the user more confidence in their exploration.

Seeing the relationships of the categories provides a comprehensive understanding and sense of control. As a user you want to see everything, and it is the responsibility of the design to give users that feeling. When organizing a large amount of content, seeing all of the pieces is unrealistic. The challenge of the designer is to present the main features, or buckets of content, to tease the user to explore with confidence. If the site is well structured the user will feel like they could see everything because content is easy to find. We have created that “see everything” feeling in our design. When a user first visits the main page of the site, the most distant view of the interface is presented. At this stage the user is zoomed out to the highest state. The major categories are present, and the main relationships are shown. (See figure) As the user zooms in, the irrelevant, or distant, sections collapse to make room for the more detailed content. A key element to notice; the distant main categories are still present, just minimized giving a sense of location and perspective.

### **Visual Cues**

*Color:* Color is used to show a difference between different categories of content. All unique content is not parsed out with unique colors to avoid an overwhelming rainbow of color that hinders readability. The color difference is small, but effective enough to let the user know how content can be identified. (See figure)

Knowing where you have visited is universally shown through breadcrumbs (*refer to section of paper*). Since this map interface is not linear, outlining this information

is not as simple as displaying a list of visited pages. So visited areas appear faded in comparison to unvisited.

### *Depth*

In a large site like Amazon.com the depth of information varies by topic. To reinforce the sense of “seeing all,” understanding the magnitude of content is important. Letting users know how much content exists under each category is accomplished by adding visual cues to the map. The rings around the categories represent the various levels of content. In the below image, the fiction category has three rings indicating the majority of content is in this section, therefore the largest category in relation to the other.

### **Personalization**

To develop loyalty to a product, it is important for users to make their mark. Flagging favorite content is a useful way to for users to see themselves published on a live site. On consumer sites, like Amazon.com, establishing favorites is a nice way to remember what you have viewed and hopefully revisit. To mark a favorite section or item, the user can right click and select “add to favorites.” This menu also allows the user to rate this item, recommend to a friend or add to shopping cart. (See figure) These features expand the utility of the site, and encourage community. By rating an item, once again the user is making their mark on the product. This sort of activity strengthens the user’s bond with the product as well as encourages others to join the community.

Not only are the users encouraged by their own actions, but also the actions of others are very influential. Amazon.com is a leader in this technique by allowing users to rate products and present the reviews to

perspective buyers. The map interface has adapted this technique by providing reviews of other community member's opinions at the detail level. (See figure)

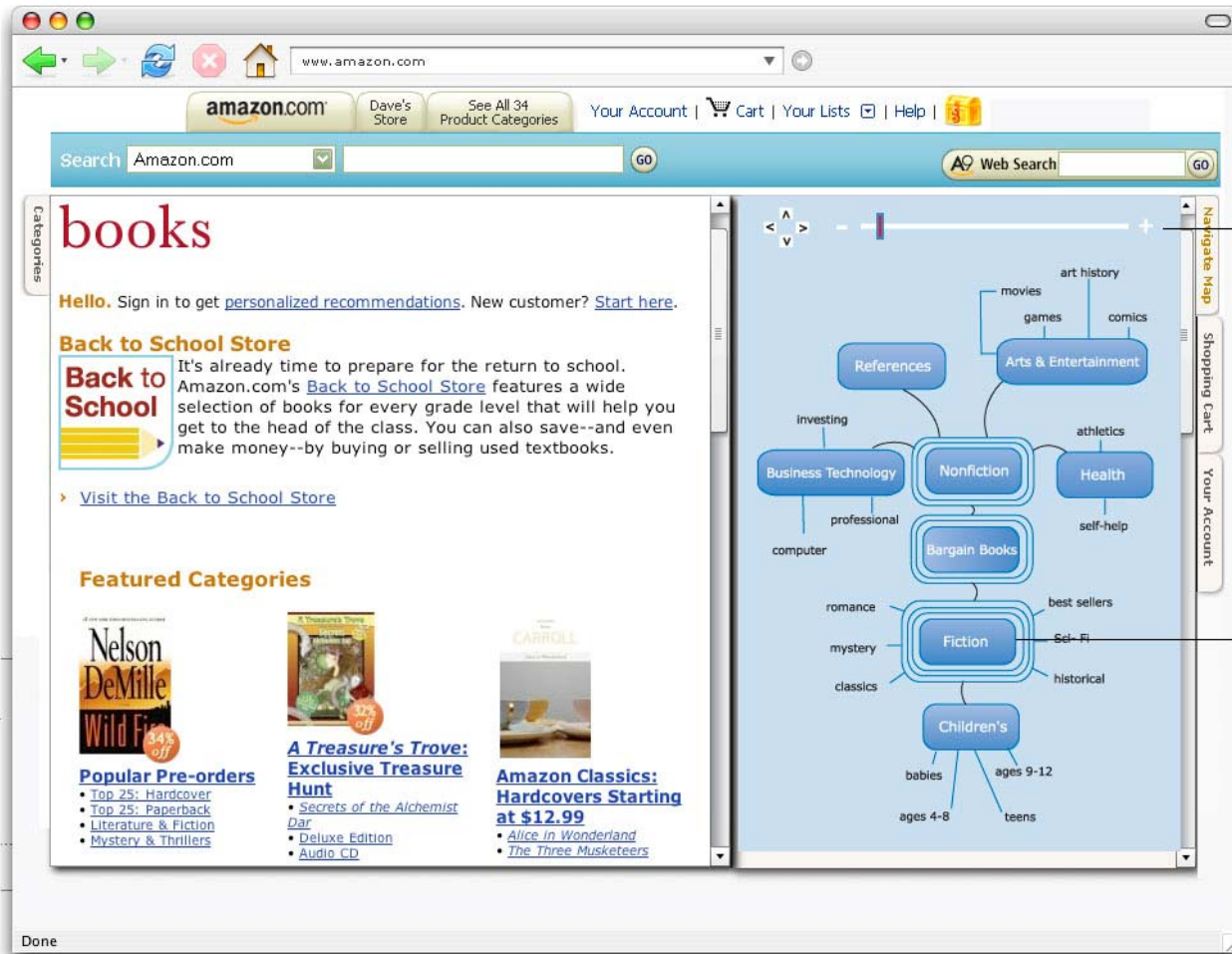


Figure 1:

This view is the highest level of perspective. Here the user sees all of the categories.

navigation controls

The three ring show the magnitude of the content in this section. Fiction has the most content compared to the other categories

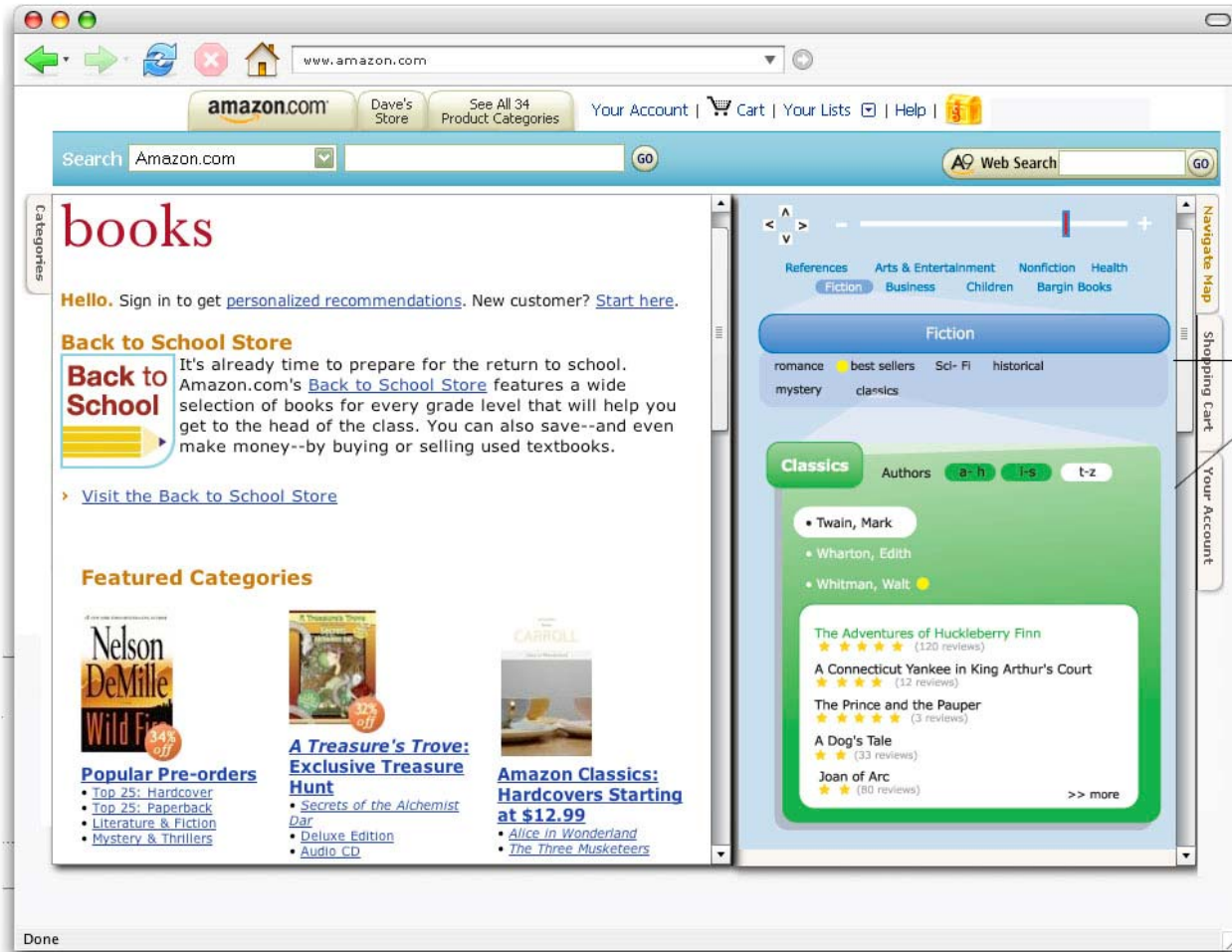


Figure 2:

This is a more detailed view. Here the content item is shown, yet the parent categories are still present. The user knows their location, and is given a perspective of where they are within the interface.

The colors help separate the Classic category from the parent fiction category



Figure 3:

This is a more detailed view. Here the content item is shown, yet the parent categories are still present. Here the user has right clicked to select the personalization menu.

This author is marked as a favorite

**Personalization menu**  
This feature allows users to tag content as a favorite, rate this item for other to view or recommend this item to a friend.

Since this is a consumer site this menu also allows the user to purchase this item.

Rate/ review of an item

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