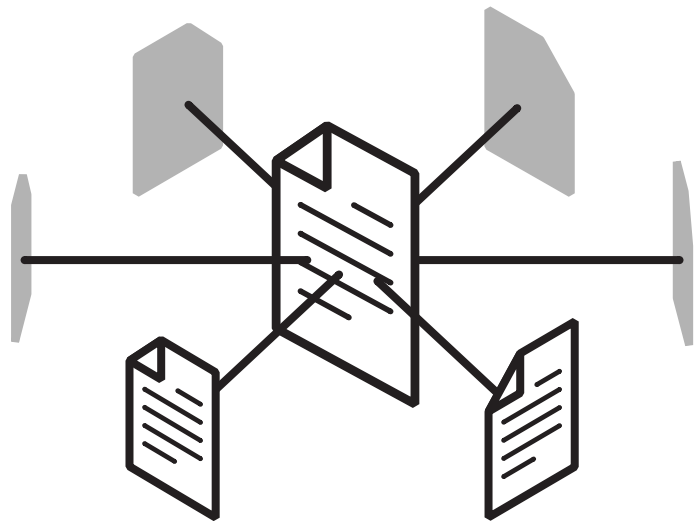*Barry Chudakov*

Making the Page Think Like a Network

Illustrations by Eric Felberg

*This is the first in a series of articles
excerpted from*

A Blinding Glimpse of Everything:
Designing Information for
the Multidimensional Web

Introduction

Because of the way the Web organizes information, we now "read" information differently. No longer do we concern ourselves solely with reading front-to-back. In fact, if information can be abstracted to be a building with various entrances, today there is no front door.

This any-door access is due to the intersection of information and technology. Information now is omnidirectional. It *flows* in all directions *(see FIGURE 01)*.

So, why aren't we organizing our information that way? This series of articles explores the implications of the Web's nature, especially what networked technology is doing to our page-view handling of information. Each article ends with a step-by-step demo of a tool I've developed that starts to make the page think like a network.

Figure 01
Information today flows in all directions.

If Information Is Air, How Long Can You Hold Your Breath?

Every business today is an information business. Plainly, information is the life-blood of critical industries, from medicine and aerospace to genomics and financial markets. Yet, paradoxically, we are now surrounded by so much streaming information, coming at us from more and more sources, that it settles only briefly within us. Our minds use information as our lungs use air. We take it in unnoticed and breathe it out unconsciously. There are times, during heavy mental exertion, when we may notice its passage through us; but shortly the paradox resumes: the *ubiquity* of information renders it invisible.

> …it's difficult to imagine how we could possibly devote enough attention to all the information in our society…60,000 new books that spew out of U.S. presses every year…more than 300,000 books published worldwide…more than 18,000 magazines published in the United States alone…with more than 225 billion pages of editorial content…1.6 trillion pieces of paper that circulate through U.S. offices each year… 400,000 scholarly journals published annually around the world…15 billion catalogs delivered to U.S. homes in 1999, or the 87.2 billion pieces of direct mail that reached U.S. mailboxes in 1998.[1]

For many this causes anxiety; others are bewildered, saying you can't trust any information, it changes too often—and you don't know who to believe anyway; while at the base of this tower of info-babble, cascading streams of information have led wiser voices to call for new tools to manage it all.

> The world's total production of information amounts to about 250 megabytes for each man, woman, and child on earth. It is clear that we are all drowning in a sea of information. The challenge is to learn to swim in that sea, rather than drown in it. Better understanding and better tools are desperately needed if we are to take full advantage of the ever-increasing supply of information described in this report.[2]

The new staging area for many of these points of view, and for the issue itself, is the Web. Why? Because the Web and other digital venues are where so much new information is born.
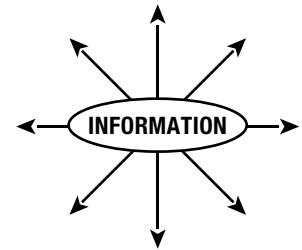
1 Thomas H. Davenport, John C. Beck, *The Attention Economy,* p. 4–5

2 Conclusion from Executive Summary of *How Much Information.* This study (October 2000) was produced by faculty and students at the School of Information Management and Systems at the University of California at Berkeley.

93% of New Information Is Born Digital[3]

Designing information for digital environments isn't a trendy fad. It's a necessary new skill. Digital-born information is nearly all the information we generate. This is a fact of life many of us haven't caught up with. But it's catching up with us.

We have come to this digital world, as we always do, carrying the mind-set of the world where we grew up. We come from printed documents, books, magazines, and newspapers. This alphabetic and word-based world is where we have lived for centuries. We will not abandon the world we came from; but our new world does not behave in exactly the same way.

Information does not typically come with instructions. Now that we sense we are generating too much information, we have run headlong into the well-worn Einstein aphorism, "The significant problems we face cannot be solved at the same level of thinking we were at when we created them."

What's wrong with information, as it is presently formatted, actually has nothing to do with the information itself. There is nothing inherent in information that creates comprehension and management difficulties. Our bodies manage it quite nicely. Most of us don't run off to our doctor and demand that the information transfer between our brain and spleen needs an adjustment because we find it overwhelming.

This is because our bodies, to use a phrase popularized by Dr. Deepak Chopra, manage information flow through *fields of intelligence.* These are non-verbal fields that operate at the sub-conscious level and send and receive trillions of information packets at once. But as we create outside ourselves a distant mirror to the complexity already operating within us, we have unconsciously assumed that our verbal matrix will suffice to manage all our information needs.

The plain fact is, it will not.

Defining the Alphabetic Matrix

Information usually comes to us in words. I call this web of words the verbal or *alphabetic matrix.* This matrix has certain givens—things it does and ways it works. When we think and present information in words we are adopting a one-at-a-time, single-viewpoint, non-simultaneous, one-directional, non-global convention. Of course, it doesn't seem like a convention to us, it seems like we're just using words. But using words, those things come with the territory. The Web doesn't work that way. Its conventions are many-at-a-time, multiple-viewpoint, simultaneous, omnidirectional and global.

Alphabetic Matrix

The traditional structure of verbal language (i.e., words) that tends to create linear, non-objective views of information.

Now, let me be clear about something: I am not advocating wordless communication, or suggesting substituting icons for words, or making light of the powerful cultural good of literacy. What I *am* suggesting is that we look at the alphabetic matrix, or words, as *form.* When our information content is presented in words, we have, for example, expected content to provide context. Typically we don't build into our verbal explanations the many *sides* of information. We don't show histories, comparisons, longer trends. These provide context. The immediacy of content, i.e., a down day in the markets, may tell us little or nothing about overall market strength or weakness. Context must be deliberately built into content; it doesn't come automatically. When it's not there, we become frustrated that we have too much content, searching within the content itself for solutions.

And context is just one of *four* basic comprehension drivers we need from information. Besides context we need *locational, relational,* and *navigational* guidance as well.[4] But words alone cannot manage these needs; they serve an entirely different

purpose. Looked at in this way, putting such an expectation on the alphabetic matrix seems preposterous, like fretting that the casements of our houses don't also see fit to squeegee the windows occasionally.

How Information Behaves

Many of us now believe that we cannot do even our most basic daily tasks in our jobs and lives without consulting vast quantities of information, weighing and considering it all. But whether we embrace information or shun it has almost become immaterial. It seems to take hold of our attention whether we like it or not.

> What is the focus of the new image infrastructure? Attention. It's all designed for capturing, tracking, quantifying, manipulating, holding, buying, selling, and controlling attention.5

Michael S. Malone, writing in *Forbes.com*, used James Burke's phrase to describe the Web's way of attention-grabbing, calling it "The Pinball Effect":

> One interesting effect of the Net is that our brains are apparently being rewired to capture information from multiple sources presenting themselves at the same time around a grid.
>
> Compare a typical Web page to a traditional book, painting, even a movie. The Web page is not only visually dancing at the corners thanks to various banners, but is also presenting data in the form of columns, images, scrolling headlines, etc., reaching to every corner of the display. The result is that we don't apprehend the page from left to right, top to bottom (or in the case of a painting, from the center outwards), but by bouncing all over the screen—even passing through the page to another, only to return.
>
> This is a new way of looking at information….

Actually, it's much more than a new way of looking at information. This is the way digital information behaves. And that understanding is just the tip of a very large iceberg. What's under the surface, presently out of sight, is where it really gets interesting. But knowing its behavior pattern—and the way that pattern affects our ability to pay attention—is fundamental to finding better ways to format information.

> We have learned from information design that structure, itself, has meaning and it can affect not only the effectiveness but the meaning of a message.6 *(see FIGURE 02)*

Information Order on the Web, and Why That Order Is Constantly Changing

Think of the page you're reading as a container. Essentially that's what it does: it holds or contains design elements. In this sense, it also holds those elements in. They're stuck on the page. They don't go anywhere. They have no friends—no one to go out dancing with. I deliberately wrote that in a fanciful way to interrupt your sense of context.

That interruption is analogous to what happens to information on the Web.

On the Web, the page is a far less arbitrary container. It can contain or not contain all of its elements: text, drawings, photos, graphs, etc. Contain, you understand. But, not contain? What does that mean? It means that the page boundary is much

4 I call Context, Location, Navigation, and Relation *The Four Drivers of Information Utility*. To be truly useful, information should provide a context, locate the reader within the information, navigate the reader through the information and provide meaningful relatedness for the content. When evaluating the merits of either a particular body of information, or software designed to make the Web more comprehensible, consider these four drivers. Often you'll find that some or many of the drivers are missing. This is a basic cause of why we mistrust information, or feel anxious that we can't manage or understand it.

5 Bruce Mau, *Life Style*, p. 7
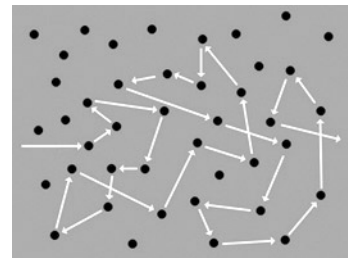
6 Nathan Shedroff, *Experience Design*, p. 34

Figure 02
http://quest.arc.nasa.gov/ltc/soho/pics.html

less fixed on the Web. The page contains only our view of the page, not all the page elements. Text and content relate to other text and context a bounce away. The bounce is so quick that new pages related or unrelated to the page extend, elaborate, contradict, interrupt, or expand the page.

This brings us to the Web's crazy-quilt context. Books, magazines and newspapers have a definable context that, again, contains information by subject, date, etc. The Web blows the doors off containment. A Harley-Davidson Night Train, in a bounce, becomes the context for Muscovite women staging a protest.

It is against this backdrop that we must consider ordering information on the Web. Think outside the box, outside the page. Order information not by what fits on the page, or by what fits anywhere. Order information by islands of meaning. Meaning, in this sense, is with a small m: connection, context, relatedness, purpose, etc. all are meaningful. Whatever means something to you or your subject matter can be ordered in virtually any fashion that communicates your intent. Note that *meaning*, not the page, is the primary design element on the Web. Order, then, becomes far more relative.

For example, suppose you want to present information about repetitive motion injuries. You can order this elementally (i.e., by element) in many ways. If you think elementally, each way of ordering the information can be considered an island of meaning *(see FIGURE 03)*.

On the page you see these elements as a list. But on the Web, these elements are islands of meaning, surrounded by waves of related contexts and subtexts. Because we've abstracted each element, we now have an option not available to information presented solely in the alphabetic framework. We can see these elements textually, as in the list above. And we can see them *visually*. We can order them spatially to create meaning. Moreover, we can re-order them to create views, looking at one element from another's perspective, working through all elements in a round-robin fashion.

- *Injury type*
- *Sport*
- *Body part*
- *Body region*
- *Age*
- *Male*
- *Female*
- *Profession*
- *Location*

Figure 03

How To Use The Web's Potential When Formatting Information

The Web allows us to view information *multi-dimensionally*. At the same time, it is important to maintain focus while operating within that complex environment.

Step 1

Shift formatting protocols from the page to a network.

The page is useful as a first-stage information container, but it cannot handle all our information needs. This is especially true as we consider designing information for the Web. On the Web, information is always in motion. Formatting information for the Web should take this into account *(see FIGURE 04)*.
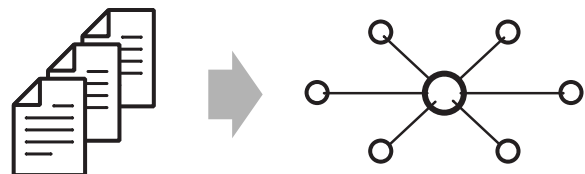
Figure 04

Step 2

Incorporate the page into a larger networking configuration (don't simply abandon the page).

Like Russian nesting dolls, consider the page as living within the larger context of the Web itself. Then format that nesting page into the larger context *(see* FIGURE 05*).*
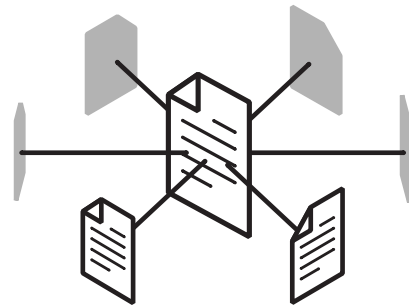
Figure 05

Step 3

Use the power of the network configuration to create connectivity, relatedness, and other useful ways of organizing the information.

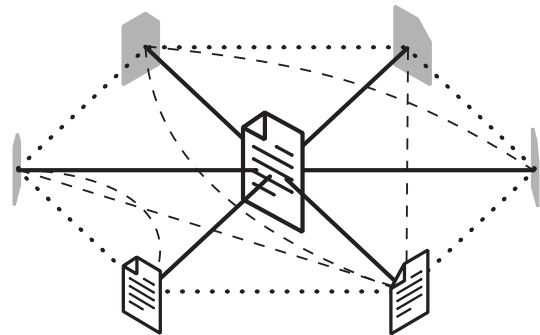Network configurations allow pathways to show through the information in map-like fashion *(see* FIGURE 06*).*

Figure 06

Step 4

Focus is always an issue. Don't splinter users' attention as they engage with a Web design. Instead, work at two levels seamlessly. Establish a network of connectivity to account for a multi-object content overview…

Content can be considered as objects. Then these objects can be configured into a network. Next, establish whatever connections you want to make within the content. But the network must be able to be viewed from near and far; from up-close near the object to far away, taking in the larger network view *(see* FIGURE 07*).*
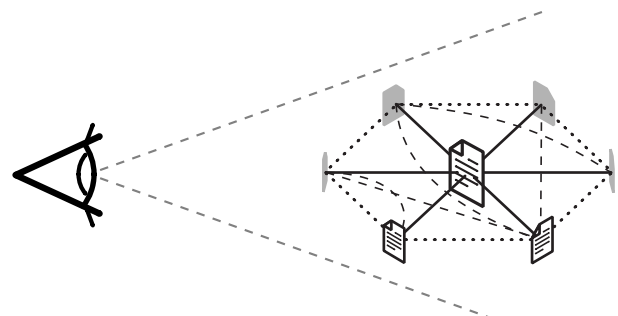
Figure 07

Step 5

…while at the same time configuring the network so that one-at-a-time object views are possible.

This creates visible depth: seeing close-up in the context of far away and vice versa *(see FIGURE 08).*
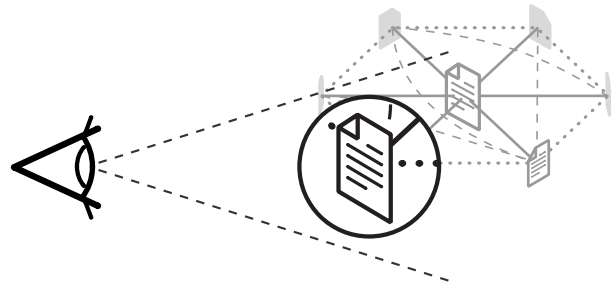

Figure 08

Summary

Since most new information is born digital, designing information for the digital environment is a necessary new skill. While information is now omnidirectional, flowing in all directions at once, we are not designing our information that way. To date we have used the alphabetic matrix to manage this information deluge. However, given the way digital information behaves—it is essentially information in motion—we need improved tools to help us order information by islands of meaning. This approach allows us to better manage and understand information in the digital environment. While a single article cannot present all possible management approaches and tools, this article introduces one way of reconfiguring information formatting to allow the page to think like a network.

Upcoming articles will introduce the importance of topsight in information management; address the new rules of form for digital information; introduce a new information management tool called the **Information Balcony;** *and show an orbital way of configuring and mapping information.*