MIND MAPS AND OTHER VISUAL TOOLS: USING COLORS, PICTURES AND STICK PEOPLE TO MANAGE INFORMATION

By Margaret Montet

“What’s in it for me?” that is the question I imagine people asking when they read my work or listen to me speak. Reminding myself of that question helps me keep things relevant for my audience. In the case of this piece about mind maps and other styles of graphic representations of information, the benefits for the audience are numerous. Organizing information visually can help us organize, schedule, brainstorm, and present information, and even help us attain a higher level of thinking and learning. I have seen these techniques used by elementary school students organizing book reports and on television shows where detectives brainstorm to solve a case. They are used to organize medical information: http://www.informationtamers.com/WikIT/index.php?title=Medical_mind_map_sources - Kathleen Sundmark and to help visual arts students organize their research: http://www.risd.edu/pdf/conceptmapping.pps (thank you to Librarian Ellen Petraits at the Rhode Island School of Design). Google is using a visual tool similar to a mind map called the Wonder Wheel. (Find it by clicking on “other options” on Google.)

Although I will be exploring some other techniques in this paper, most of my examples will be similar to mind maps because I find these the most useful. My style is an adaptation of Tony Buzan’s mind mapping style. Buzan, the creator of mind maps and the author of The Mind Map Book (1996) and Mind Maps for Business (2010), advocates using a single word to a branch and drawing only curved branches. I find that that there are occasions where I need a phrase rather than a single word. Buzan claims that curved branches are more pleasing to the eye since they have “rhythm.” This may be true, but I still draw both curved and straight lines. I’ve posted a sample mind map here in my own style that I used to plan this project. Notice the four main branches, “Uses,” “Other Types of Visual Representations,” “Software vs. Hand-drawn,” and “Learning Styles.”
Mind maps appeal especially to people who learn primarily by taking in information visually. There are many theories of learning styles, but the simplest model recognizes that people learn best visually, aurally or kinesthetically. Most people learn in multiple ways, but can identify with one of these in particular. Visual learners tend to be readers and respond to colors, diagrams and pictures. They are flabbergasted by a calendar that starts on Monday instead of Sunday, for example. These learners are the most likely to be attracted to mind maps. Aural learners are most comfortable when information comes to their brains through their ears. They will enjoy audio books while driving and make up melodic mnemonics to remember sequential information. Consider this short video about how to draw a pig:  http://www.youtube.com/watch?v=s0IjDmuijw44 An aural learner will remember the tune while a visual learner will remember the sizes of the circles and other shapes on the page. A kinesthetic learner will learn by drawing the circles and shapes that make up the pig. Kinesthetic learners learn by doing, and will probably retain more information by drawing and organizing a mind map than by reviewing it later.

There are styles of learning and then there are levels of learning. Mind maps and other graphic representations help with both. Bloom’s Taxonomy, itself traditionally represented graphically, labels levels of learning. In 1956, Benjamin Bloom led a group of educational psychologists who defined and labeled the phases a learner goes through on the way to mastering of information. These phases, originally Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation, are represented in a triangle with the basic thinking at the bottom and the most advanced (Evaluation) at the top. In 2001, Anderson and Krathwohl updated the taxonomy to make it more relevant to twenty-first century learning. From bottom to top and now expressed in verbs rather than nouns, the phases are:
Evaluating and Synthesizing/Creating are found in the top two slots of either the 1956 or 2001 taxonomy triangles, representing the highest levels of learning and cognition. Learners use mind maps and other graphic representations of information to attain those higher levels by identifying connections. Establishing hierarchies, and evaluating key concepts.

For this project, I have used my own mind maps created for organizing different kinds of information over the years. At times I may seem to be going off-topic, but I have to describe the content and situation before I can describe the organization of it. So while I am imagining you asking, “What’s in it for me?” please remind yourself, “She promises she has a point.”

In order to make this information relevant to today’s learners, the intended beneficiaries of this project, I have tried to include social media tools whenever appropriate. I created the official MargaretMindMapping Blog (http://margaretmindmapping.blogspot.com) and a Twitter account dedicated to exchanging information about mind mapping (http://www.twitter.com/margaretmndmpng). I am delighted with the amount of mind map information I have gathered with Twitter: I intended this to be a way to share interesting sites, software, and uses for mind maps, but I am learning much more than I'm contributing from mind map experts around the world. I have begun a collection of Other People's Mind Maps that I find especially useful and aesthetically pleasing, and I've added to my mind map links here: http://delicious.com/margaretmontet/mindmapping.

How I Usually Use Mind Maps

I've been using mind maps for about twenty years, since I was introduced to them in a book club meeting. I realized their potential for note-taking right away, and frequently draw a mind map before book discussions to remember key points and details. I began using them for creating schedules and triaging deadlines, too. Later on, when I
discovered mind mapping software at an education conference I realized that they were also great tools for presenting information, and I began using them at work.

Today, I use mind maps most often for organizing ideas and making connections between points of information when I write. I am a freelance writer and research information for stories, visit destinations and interview experts and public relations people. Information from all of these sources has to be organized somehow, and for me (a visual learner) a mind map is the most effective way. Not all my writing makes it into print or online publications. Sometimes I’m content to write about my travels on my other blog devoted to writing (http://margaretmontet.blogspot.com/) with photos and videos added. Sometimes these blogposts grow or combine to make bigger articles, but sometimes they just occupy space on my blog and remind me what I saw and what I thought while I was in a place.

The following picture is a typical mind map that I would make as an aid to writing about a place. I visited The Vizcaya Museum & Gardens in Miami and organized my information in a hand-drawn mind map. I like mind mapping software, and I use it almost always when other people are going to be looking at my notes, but I enjoy the process of creating the visual representation of my topic with colors, lines and varying font sizes when the mind map is just for me. Some thought had to go into the initial organization of this mind map before I started drawing. I decided to start with four main subtopics ("History," "Mansion Inside," "Waterfront," and "Garden") before I started adding subtopics. The best mind maps have little pictures associated with their topics, but I shy away from even the most rudimentary drawing. I do enjoy using colors, and my brain tends to remember colors that I associate with concepts. I only took the time to apply colors to the first level of subtopics in the Vizcaya mind map, but sometimes I color-in boxes and circles, reinforce connecting lines, and shade entire areas.
I have found mind maps to be helpful tools when I am not sure how to organize a section of an article. For example, I had some good ideas for the beginning of this article but could not decide how to start or how to segue into the various points and ideas. By spreading out my ideas on a mind map, linking similarities and illustrating hierarchies, I developed a clearer picture of the organization and flow. The following mind map that I used to organize my ideas was created on my iPhone with Tony Buzan’s iMindMap application mentioned later in the Software section.
Last year I presented a five-hour seminar for twenty-five librarians focusing on information literacy, best teaching practices, and new tools for teaching. Five hours is a long time to speak, but I organized all of this information visually. I had one main hand-drawn mind map to refer to during the workshop, and this launched me to two older mind maps and my Delicious.com site for certain sections. The mind maps in this case were for my purposes only. I did show the participants the mind map I was using and I made my mind map business cards with my blog address and Twitter handle on them available. My Delicious.com site also has many mind map links on it, so I am hoping I at least created some curiosity about the effectiveness of mind maps as a tool for organizing.
Organizing and Learning with Mind Maps

A mind map recently helped me learn some esoteric educational information for a committee. In prior meetings with this group I had experienced the uneasy feeling that everyone could speak this unfamiliar language but me. Of course, it wasn’t a different language—it was English with a whole lot of educational jargon. I created a mind map which included what I felt to be the important points and vocabulary. I linked similar items and relationships. Then I studied it every day. The initial process of organizing the information and creating the mind map helped me assimilate the information, too.

Another time I was stuck for a way to communicate a multifaceted idea of mine. The idea was to be communicated visually rather than verbally or with text only. This would be a poster session with a display on that tri-fold cardboard used for science fairs. This should have been a no-brainer for a lover of mind maps like me, but it took about a week of rumination before it dawned on me. I made the mind map in the shape of an apple tree with the main concept on the trunk. The branches each represented a higher-level subconcept, and the leaves and apples represented the next level of detail. It worked intellectually and the browns, greens and reds grabbed the attention of attendees at the event.

The moral of these stories is this: mind maps are not only organization and memory tools. They are dynamic methods for learning, teaching and communication, whether in the form of an apple tree or in a complex computer-generated diagram. Save information, brainstorm it, learn it, and communicate it.

Learning with Mind Maps: The Brain and Music

Since I am studying how mind maps can help us learn, I decided it would be informative for me to use them to learn something new. Whatever content I choose should be unfamiliar to me, or I would simply be organizing learned information (what I usually do with mind maps). The content should also be interesting so that it stays compelling to me. I decided to tackle a small (but ever-growing) pile of books I have been meaning to read about how the brain listens to and understands music. The first of these, Daniel J. Levitin’s *This is Your Brain on Music* (2006), explains in detail the parts of the brain involved in listening to and performing music and how each contributes to the musical experience. The brain functions are new to me, but the music fundamentals are not. The meat of the book details the cognitive neuroscience going on in our brains when we encounter music by listening, performing, or even simply imagining it. The descriptions of the brain parts and what they do are easy to understand, making this book a good introduction to the field. In order to get my own brain to understand and retain the information, I took traditional, linear notes, but I also made a mind map for each part involved in music cognition. The linear notes are
more wordy with quotes and explanations. The mind maps are color-coded and show where the brain part is located in the brain. Here is my cerebellum map:

![Cerebellum Map](image1)

The colors I used in these maps correspond to a larger, more complex mind map which summarizes the various processes involved in listening to or performing music, and which brain parts are involved:

![Complex Mind Map](image2)
(Also, I couldn't resist retrospectively color-coding my linear notes to match these mind maps. My brain responds to and remembers colors.)

Both kinds of notes are helpful to me. The linear notes are good for review. I can repeatedly read over the sections I want to master and the words eventually stick. The mind maps help the visual part of my brain remember the spatial stuff, and they serve as a brief review of concepts. Once the details are mastered from reading and linear note review, the mind maps will prompt the concepts and their relationships and provide the framework for future writing and speaking. Simply from taking the notes, creating the mind maps (and assigning colors), this process has already started to occur.

Another book about the brain and music is *Musicophilia* (2007). It was written by the psychiatrist on whom the movie "Awakenings" focused, Oliver Sacks, and is more a recounting of tales about patients he's seen than a step-by-step description of how the brain processes music. He recounts fascinating tales of people experiencing musical hallucinations, musicogenic epilepsy, musical savantism, and other musical phenomena in the brain. He describes what is really happening when we find ourselves with an "earworm," or a tune stuck in our head. Dr. Sacks also writes at length about music therapists. Music therapists work with children, but also with adults suffering from brain disorders. Exposure to music, whether familiar to the patient or not, frequently brings out the patient’s “self.” Dr. Sacks supposes that the reactions to music are based on subcortical (rather than cortical responses), which I have learned is commonly referred to as the reptilian brain.

Early on in the reading of *Musicophilia*, I realized that linear, outlined notes would be easy, but a graphic representation would be much more difficult. This is because the book is made up of a series of tales of Dr. Sacks's patients with some explanation of why they act as they do and what might be going on in their brains. I created mind maps, but they are simply chronological, chapter by chapter. Perhaps these mind maps are an intermediary step and a more creative way to organize the information will occur to me later. Here is a sample of the wordy mind map I made for Part I of *Musicophilia* called “Haunted by Music,” which shows how and where in the brain these phenomena occur. Technically, it is not a mind map by Tony Buzan’s definition (there are way too many words), but it does help me remember what that section of the book was all about. I was interested in the parts of the brain affected and made sure to include them wherever possible.
Some of the discussions, for example on dementia and Williams Syndrome, are extensive and could warrant their own mind maps (or other type of visualizations). These are the two brain pathologies that are the most intertwined with the brain's processing of music, and so there is a lot of information to organize from Dr. Sacks's studies and observations in addition to many citations of other studies.

As I have said before, the mere act of creating a mind map helps me see connections and hierarchies. Recognizing my own handwriting reminds me of the thoughts I had while creating. The mind maps then become helpful references for future reading on the topic. Sometimes, a mind map is not the best way to represent information, though, and that is why I experimented with some other kinds of visual representations.

Other Types of Visual Representations

Periodic Table

This Periodic Table has nothing to do with chemistry. It illustrates many ways to visualize information: [http://www.visual-literacy.org/periodic_table/periodic_table.html](http://www.visual-literacy.org/periodic_table/periodic_table.html) I'm partial to the aqua Concept Visualization elements here: Mi for Mind Mapping and Co for Concept
Mapping. *However*, I am drawn to the Compound Visualization elements in cornflower blue: Lm for Learning Map, Ri for Rich Picture, and Kn for Knowledge Map. The Periodic Table itself is a masterpiece of visual organization. Organizing these visualization methods into such an elegant image took some research, deep original thought and obviously a knack for visualization.

Knowledge Maps

After studying the Periodic Table of Visualization Methods and admiring the knowledge map, and deciding that those don't require too much drawing skill, I tried one:

This is for an article on Twitter and Facebook and the different ways they are used. For the local publication that will be publishing the article, eventually, I brought in some local uses of the two tools.

Social Media is represented by the mainland on the left, and Twitter, Facebook, etc., are countries. In fainter print I've reminded myself of the various uses of each. The local users in Bucks County are represented on the green island. I made a few notes on their handles so that I can mention them in the article. The best quotes I received were from Peddler's Village (a quaint shopping village that features popular restaurants and many events), and Bucks County Community College (my main employer). Peddler's Village is
linked to the mainland of Social Media by bridges, and BCCC runs a ferry service there. A road sign at the bottom points the way off-page to other social media countries I didn’t treat in the article.

I enjoyed this exercise and, just like with a mind map, the act of drawing it helped me organize my thoughts and data. Just like with a mind map, many of the items work as prompts to help me remember the details I want to include. I’m hoping to wrap up this article tomorrow, but if I have to leave it for a few days, my whimsical knowledge map will help me pick up where I left off.

While doing some background reading on the brain, I was impressed with the effectiveness of the knowledge maps in You: The Owner’s Manual (Roizen and Oz, 2005). These helpful graphics show the systems of the human body as easy-to-understand maps. They add clarity to the explanations in the text.

Concept Maps

This winter, I hunkered down with a stack of books during a blizzard to do some heavy reading. These books turned out to be my primary source of entertainment after the electricity was out for three days. I chose these to read from the stack: Silent Spring by Rachel Carson, Travels with Charley by John Steinbeck, and Notes from the Shore by Jennifer Ackerman. I thought I was choosing very different books, but I was surprised (and delighted) by the overlap.

Travels with Charley, where Steinbeck leaves his home on Long Island and travels across the county with his dog in a customized pick-up truck, and Silent Spring, Rachel Carson’s groundbreaking environmental book, were both published in the very early 1960s. (In the very early 1960s, I was a newborn and living in the very Cape May house in which I was experiencing the blizzard now commonly known as Snowmageddon I. As a small child I remember the mosquito trucks driving around the neighborhood spraying their fog. Between the Delaware Bay four blocks away and all the salt marshes in the area, we had a lot of mosquitoes.) Both Steinbeck and Carson describe the same America but from different perspectives. His is that of a writer who observes people, and hers is that of a writer who observes nature. Both describe a country and culture that has changed enormously in about fifty years.

Jennifer Ackerman’s Notes from the Shore is a much more recent book, published in 1995. It is a collection of nine essays about Cape Hennlopen, across the Delaware Bay from Cape May. Ackerman is also a nature observer and writer, and describes this environment which is very similar to Cape May. One of her essays is dedicated to the osprey, a large bird of prey that was almost wiped out by DDT spraying in the 1950s and 1960s. The poison chemicals made their eggs so weak and brittle that the female osprey would crack them when she went to roost. The osprey population has rebuilt itself now, and we can see pairs of them in the warm weather on their nests. By page forty-eight of Ackerman’s book, she had mentioned both Rachel Carson and John Steinbeck. Carson was no surprise since she was largely responsible for the public awareness that put an end to blanket pesticide spraying that allowed the ospreys to come back. But Steinbeck?
It seems that John Steinbeck found, in his Long Island garden, a gigantic osprey nest (they usually are) that contained three shirts, a bath towel, an arrow and a rake. (A naturalist in Cape May once told me that an osprey nest there contained a hula hoop.)

Since I'm documenting my reading during this sabbatical, I wanted to show the relationships between these three books. A mind map wasn't going to work for this because it wouldn't allow me to compare them as effectively. Instead, I took a stab at a concept map, which is a way to map out similarities and differences between things. (Also, if you are interested in what I'm reading, check my list on LibraryThing where I am known as MargaretMontet.)

Dan Roam’s *The Back of the Napkin*

The human brain thinks and imagines naturally in pictures. As children, we communicate with pictures and have no inhibitions about drawing. As we grow older, we become more comfortable with language and most people become less confident about their drawing skills. Dan Roam, author of *The Back of the Napkin*, believes that we never lose the ability to understand concepts and ideas conveyed with pictures, and that we can use very simple drawings and stick people to explain ideas and influence
In this book, he breaks down his process, or toolkit, for solving problems and selling ideas with pictures by using the same process he is teaching. First he explains the process of Look-See-Imagine-Show where we analyze the idea and decide how to show it. Then we proceed to the SQVID analysis where we decide where our picture will fit on one or more continuums: simple/elaborate, qualitative/quantitative, vision/execution, individual/comparison or change/status quo. Next is The Six Ways We See, where we decide how to present the idea: who/what (picture), how much (graph), where (map), when (timeline), how (flowchart) and why (plot). Here is my Napkin-inspired flowchart of the book:

More than one choice from the SQVID and The Six Ways We See can be incorporated into our graphic in order to represent or sell our idea. (Notice that the first continuum in the SQVID analysis is simple/elaborate.)

My visual brain responded to this book and started using its process to graphically represent my own concepts before I had gotten halfway through. Here's a timeline explaining information literacy that I am hoping will inspire and illuminate college students:
Mind maps are useful for almost anything, but over the course of this project I began to feel a need for a way to show time and process.

Mind Mapping Software

My project is an analysis of mind mapping and other visual representations of information and using these image-laden diagrams to study, recall, brainstorm, organize, and communicate information. Although I usually draw these by hand, I am fond of a few of the programs available for creating mind maps. These tools are especially useful for sharing mind maps with others through projection or handouts. Web pages or additional information can be linked to the mind map and conjured up with the click of a mouse and then hidden again. I still believe that hand-drawn mind maps are more effective for individual use because of the kinesthetic learning component.

Earlier in this article, I mentioned iMindMap, software available for computers and mobile devices. This is the software designed and endorsed by Tony Buzan, the author of *The Mind Map Book*, and expert on memory, brain potential and mind mapping. Unlike the computer version, the basic iPhone app is free. For a few dollars more, an enhanced application will permit more control over the drawing of the map and the ability to email a picture of the mind map.

I have also experimented with MindMeister. This program is interesting because it allows the mind mapper to store mind maps in cyberspace (known as The Cloud) and access them from anywhere. These mind maps can be accessed by others for
collaboration and brainstorming purposes. The stripped-down sample MindMeister is free, and there are two more elaborate versions that cost some money. Whatever you see here from MindMeister will be from the free version. Here is my MindMeister Mind Map from an early stage in my brain and music project: http://www.mindmeister.com/44876228. I can add to it and access it from anywhere.

More versions of mind mapping software, free, nearly free, and costly, are listed here: http://lifehacker.com/5188833/hive-five-five-best-mind-mapping-applications

To sum up, mind maps, whether hand-drawn or electronically produced, are an effective tool for organizing and learning. We can use their colors, pictures and branches to schedule, brainstorm and present information while showing hierarchies and relationships. Mind maps help us reach higher levels of thinking and deeper learning. Other types of visual representation are effective, too: concept maps for illustrating comparisons and knowledge maps for showing functions. The stick people, simple drawings and strategies for showing processes described in The Back of the Napkin (Roam, 2008) can help persuade an audience and sell an idea. It is my hope that students will find these methods effective tools for learning and use them throughout their academic careers and beyond.

MIND MAPPING BIBLIOGRAPHY


