

## “Content Mapping: A Text Analysis and Mnemonic Tool for Interpreters”

EDI 124/131 Class Lecture Notes  
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An important part of the interpreting process is the ability to recognize and distinguish the main ideas and supporting details being communicated by speakers and the relative importance that exists between ideas expressed in discourse events. Developing discourse analysis skills can enhance this ability. Content mapping is an element of discourse analysis that can be used to map the explicit and implicit organization of messages in a visual-spatial manner. Further, content mapping contributes to how information can be processed and stored in the memory—thus, it can function as an important mnemonic tool for interpreters.

*Content maps* are sometimes referred to as mind maps or concept maps—although there are some differences that should be clarified. *Mind Mapping* is a popular technique invented and copyrighted by Tony Buzan from the United Kingdom in 1995. He describes mind maps as, “a visual-spatial map consisting of a central word or concept, around which you draw the five to ten main ideas that relate to that word or concept. You then take each of those words and again draw the five to ten main ideas and/or supporting details that relate to each of those words” (Buzan, 1995).

*Concept maps* are two or three-dimensional spatial or graphic displays that make use of labeled nodes (enclosed circles or boxes) to represent concepts, and lines or arcs to represent relationships between pairs of concepts (Ferry, Hedberg, and Harper, 1997). Professor Joseph D. Novak at Cornell University developed the concept mapping technique in the 1960s. His work was based on the theories of David Ausubel, who stressed the importance of prior knowledge in being able to learn about new concepts. Novak concluded that “meaningful learning involves the assimilation of new concepts and propositions into existing cognitive structures” (Novak, 1991).

The primary difference between mind maps and concept maps is that a mind map focuses on one main concept, while a concept map may have several. You could represent the information in a mind map as a tree (topic as the trunk, limbs as themes, branches as main ideas, twigs as supporting details), whereas, a concept map may need a network representation (multiple topics/concepts represented by labeled nodes woven together by connecting arches and lines indicating subtopics, main ideas, and related details). So, depending on the type and/or amount of information communicated, you might use a mind map or a concept map. For the purposes of this article, the process will be referred to as *content mapping*.

The following will be the working definition of content mapping used for this article.

*Content mapping is a visual-spatial print representation of the main concepts and associated ideas that exist within a text for the purpose of organizing the relative importance of relationships within the text and fostering ready recall of the information.*

There are a variety of principles that promote message organization and recall within this process. Here are a few to consider.

- You begin by writing the main idea, topic, subject, or concept in the center of the page. It may be a picture, symbol, word, phrase, a couple of juxtaposed ideas, or a combination of these options.
- Then, place related ideas on branches that radiate from the central idea.
- An idea may branch many times to include both closely and distantly related ideas.
- You can use arrows to join ideas from different branches.
- If a number of branches contain related ideas, you may want to draw a circle around the whole area or create a label that clusters the ideas together.
- You may want to write a few short sentences in the map itself, to explain, question, or comment on some aspect of the map—for example, the relationship between some of the ideas.
- Spatial organization is important. When related ideas are clustered in a common space, it creates a spatial referent—a spatial peg—that prompts recall of the information. The spatial organization creates the flow of information—your eyes will be drawn to how information is organized within the space and cause you to think about what the organization represents.
- The use of color, symbols and pictures helps to create emphasis within the text and also fosters recall.

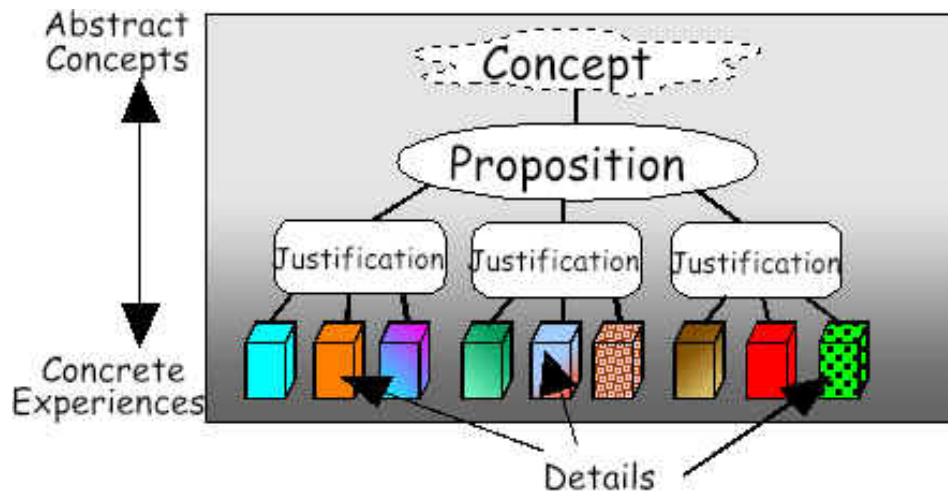
It has been suggested that the structure of such maps parallels the human cognitive mapping structure—reflecting how individuals organize concepts (Novak and Gowin, 1984; Heimlich and Pittelman, 1986; Fisher, et al, 1990; Tobin, Tippings and Gallard, 1994). The cognitive process of mapping during discourse comprehension is based on the mental structures a listener uses to comprehend incoming messages. Listeners use various cues of coherence and continuity—learned through experience with the world and experience with language. For example, as English users, we know that SHE refers to

female, and that THE precedes a definite concept—one that has been mentioned before (e.g. THE newspaper, THE governor), or is the component of a previously mentioned entity (I am grading class essays. THE topics are great.)

Further, this cognitive mapping allows listeners to distinguish the relationships between pieces of information. For example, if I said the terms BOY and GIRL, you would know I was not talking about the same entity. Whereas, the two expressions DOCTOR and MAN, or DOCTOR and WOMAN do not automatically refer to the same entity, and would require further clarification to determine if a relationship exists between the two expressions. So, cognitive mapping allows us to discern relationships.

Cognitive mapping can also help us to predict/anticipate meaning and to make inferences. If you heard the statement, “Catherine’s baby was sick”, the next statement would not surprise you: “She phoned the doctor.” Following the first utterance—the second statement would be a logical and likely consequence. The point is, this ability to distinguish, determine, and use relational information to comprehend messages is the result of our mind’s ability to cognitively map/organize this information.

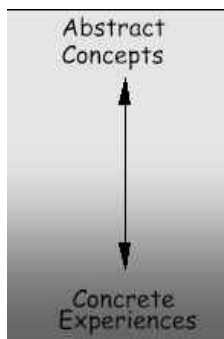
Given this framework, it is easy to see how the work of Novak and Buzan has sought to apply the theories of cognitive mapping to the visual-spatial realm of message analysis and organization. Let’s explore the application of this process a bit further. When a speaker communicates, he or she conveys a series of concepts, propositions—the point(s) that she or he is trying to make – associated ideas that provide a justification for the points being made, and supporting details that further clarify what is being discussed and create texture in the message. According to the work of Walther and Comingore (2003), if we could draw a picture of this organization, it might be something like their illustration below:



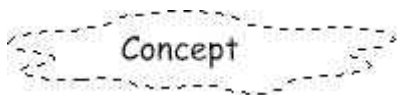
At one level, this illustration could be considered a content map because it provides insight into a potential organization of information. Without any specific information being attached to this illustration, you can still have a sense of the way in which a message could be organized—there is a primary topic (concept level) and one overarching point that is being made (proposition level), supported by three main ideas that justify the point (justifications), and a series of details supporting each of the main ideas.

At the level of concepts, the speaker’s information would be more abstract. However, when a message includes main ideas to justify an overarching point, and those ideas are supported with clear details, the message becomes much more concrete—easier to understand. This may account for why the research of Cokely (1984) found that interpreters are much more effective in communicating the ideas and details associated with a topic than they are in conveying the propositions—the point(s) contained in the message. The fact that the points a speaker is making may be more implicit while ideas and details are more explicit contributes to our understanding of the meaning in messages.

According to Walther and Comingore (2003) we can break down this illustration into its component parts and see how they work together.



To begin with, we might imagine that everything a speaker says or writes about could be classified on a scale representing the spectrum of abstract-to-concrete concepts. The figure below represents such a "spectrum of abstraction." Almost any statement a speaker makes could be placed at a point in the spectrum, depending on how general or how specific it is (Walther and Comingore, 2003). The following discussion draws directly from the work of Walther and Comingore (2003) to provide further illustration.



At the top of the figure, at the highest level of abstraction, is what we might call a "concept." Concepts are vague, difficult-to-define thoughts. Little productive communication can occur on such vague concepts; they must be narrowed considerably. Two people "talking about" concepts like those listed below would experience frustration until they are able to focus their communication on some more specific aspect of the concept.

- love

- family
- poetry
- respect
- economics
- religion

### Proposition

Speakers narrow the focus on concepts by expressing some proposition regarding the concept. It might be helpful to think of propositions as statements, beliefs, points or value judgments about concepts. Propositions begin to provide a more precise shape and clearer focus for a speaker's message. Here are some examples of proposition statements:

- Americans have the right to life, liberty, and the pursuit of happiness.
- The two-parent family is the backbone of American social structure.
- Shakespeare is the greatest dramatist of all times.
- Tax cuts stimulate growth in a free-market economy.
- Baseball is the most "American" of all sports.
- Several categories of consumer electronic devices are currently very popular.

Each of the proposition statements above serves to focus and clarify a belief about a concept, and each makes specific and productive communication more possible. Sometimes speakers convey propositions explicitly—as in the examples above. Other times, the specific proposition is conveyed implicitly—meaning you infer the proposition statement from other information being conveyed.

For example, consider these two ideas. "It is cold in here. The window is open." What is the proposition? How do these two sentences relate? Determining the proposition will directly link these two statements together. From the two statements, you can infer *that if the window were shut, it would not be as cold*. In this example, what you inferred is the proposition—the broader statement, belief, value judgment or point being made by the speaker. As interpreters, we listen/watch for propositions that are communicated both explicitly and implicitly.

### Justification

Justifications are groupings of ideas that support proposition statements. Depending upon the type of writing or communicating we are doing, justifications might be described as "reasons," "arguments," "categories," "classes," "causes," "proofs," "features," or any other number of labels. If you look at each of the proposition statements above, you might be

able to predict the types of justifications a writer or speaker could use to support his or her proposition:

- The two-parent family gives a home stability, positive role models, and economic advantages.
- Personal computers, camcorders, and digital video players are the most common electronic purchases by today's consumers.
- Shakespeare's enduring human themes and powerful characters justify the playwright's position as the greatest dramatist.

Note how the justifications play a role in supporting the proposition and move the communication to an even more specific level.



Details

Finally, the most specific level in the abstraction spectrum is in details. Details represent the realm of concrete experiences: events that can be observed or "sensed" directly (examples, factual information, statistics, and so on). As suggested by the illustration, details have a depth, texture, or "color" that mark them as real and unique. If Shakespeare's plays have enduring human themes, what are some of the examples and how are they illustrated in the plays? How many digital video players are being sold? What are some examples of how two parents give economic advantages to a family? In effective communication, each justification must be supported by concrete details.

Perhaps you have heard the folksy sayings that express the common-sense view we have about judging the merits of a person's ideas: "The devil is in the details" and "The proof is in the pudding." These sayings mean that it is easy to talk generally about concepts, propositions, or even justifications without offering any real substance. Only when we get down to the "nitty-gritty" level of detailed information can we see the merits of a person's justifications and the proposition he or she is trying to support. It might be helpful to think of concrete details as the *essential foundation* of a person's communication. Without them, communication remains too far up in the abstract level of the spectrum and of little practical use.

However, conversely, details that are not anchored to clear propositions and ideas are also of little practical use. That is why as interpreters, we must be able to convey all elements of a message. When the elements are considered as a whole, you have a coherent message. The process of content mapping is intended to help you isolate the elements of a message—the concepts (topic), propositions (points), the justifications (main ideas supporting the points), and the associated details—towards the goal of better understanding the

message as a whole. The more you understand the logic within messages, the better you will be able to find the inherent relationships within a message, and the better you will be at remembering/recalling what you hear/see during the interpreting process. ***So, the goal of content mapping is to increase your ability to convey a coherent and whole message through logical recall of message content.***

Let's see how it works at a more practical level by reading a text, examining the elements of the message, and then creating a related content map. The first text is entitled, "Lecture Comprehension", drawn from *Learn to Listen; Listen to Learn* by Roni S. Lebauer and published by Prentice Hall in 1988. It is printed here in its entirety, followed by the associated content map.

#### TEXT 1: Lecture Comprehension

The organization of a lecture is not like the organization of a piece of writing. Spoken language allows for much more paraphrase, repetition, and tangential information. Because spoken language is temporal (e.g. it does not last in time), organization is much more flexible. A speaker may raise a topic, go off on a tangent or discuss a related topic, and finally return to the topic. In written language, new ideas are signaled by paragraph boundaries. In speech, new ideas and emphasized ideas are signaled by linguistic means, paralinguistic means (such as intonation), or by body language (such as leaning forward).

When listening to a lecture, the listener must first try to figure out what the lecturer is trying to communicate, what the lecturer's goals are, what the lecturer expects and wants the audience to take from the lecture. For example, does the lecturer expect and want the listener to understand a definition? Does the lecturer expect and want the listener to be able to visualize how something looks? Does the lecturer expect and want the listener to know how something works? The lecturer speaks in order to transmit an idea. The lecturer organizes her ideas in some manner in order to transmit those ideas.

1. What is the concept being addressed in this text?  
Lecture Comprehension. This concept constitutes the topic.
2. What are the main propositions of this text? Here is a possible list.
  - There is a difference between the organization of written and spoken information.

- Speakers use specific linguistic devices to create message organization and the devices differ depending on whether the message is written or spoken.
  - Spoken language allows more flexibility in how information is organized.
  - Speakers have goals and expectations for the audience that receives the message.
  - Listeners use their knowledge of speaker goals and expectations and their knowledge of linguistic devices to comprehend/understand messages.
3. What are the justifications (ideas) that support the main propositions? The order of the following list corresponds to the list of possible propositions.
- The organization of a lecture is not like the organization of a piece of writing. Spoken language allows for much more paraphrase, repetition, and tangential information.
  - In written language, new ideas are signaled by paragraph boundaries. In speech, new ideas and emphasized ideas are signaled by linguistic means.
  - Spoken language allows for much more paraphrase, repetition, and tangential information. Because spoken language is temporal, organization is much more flexible.
  - The lecturer speaks in order to transmit an idea. The lecturer organizes her ideas in some manner in order to transmit those ideas.
  - The listener must first try to figure out what the lecturer is trying to communicate.
4. What are the supporting details? Again, the following list corresponds to the listing of justifications.
- A speaker may raise a topic, go off on a tangent or discuss a related topic, and finally return to the topic.
  - Linguistic features include paralinguistic means (such as intonation), or by body language (such as leaning forward).
  - Temporal means it does not last in time.
  - What are the lecturer's goals, what does the lecturer expect and wants the audience to take from the lecture?
  - Does the lecturer expect and want the listener to understand a definition? Does the lecturer expect and want the listener to be able to visualize how something looks? Does the lecturer expect and want the listener to know how something works?



This analysis of each element provides us with a sense of the overall message organization. The next illustration conveys how these elements might be represented in a content map that relies strongly on visual/symbolic references (for the purpose of furthering the mnemonic benefit of content mapping) and a limited number of key phrases or words.



*Illustration 1*

The content map is much more efficient and compact than the written version of the original text. As well, it is intended to be a visual/spatial representation of the content instead of a linear representation, as provided from the analysis of the concepts, propositions, justifications, and details. Keeping in mind the principles of mapping and recall discussed on page 2 of this article, look over the map and consider whether it sufficiently represents the message in a visual/spatial manner and fosters your recall of the more specific details associated with the original text. What might you change and why?

Let's try another text entitled, "Acid Rain", drawn from *Learn to Listen: Listen to Learn* by Roni S. Lebauer and published by Prentice Hall in 1988. It is printed here in its entirety, followed by the analysis of concepts, propositions, justifications, and details, followed by the associated content map.

#### Text 2: Acid Rain

Let's discuss acid rain. It is any form of precipitation that is rain, snow, sleet, or fog, that contains high levels of acid—particularly sulfuric acid and nitric acid.

I have noticed many changes in the 20 years I have lived in the Adirondack Mountains of upstate New York, one of the regions hardest hit by acid rain. Many of my neighbors have had to replace their copper and lead plumbing with plastic lines as acidic waters corroded the pipes. At least 600 lakes and ponds in the Western Adirondacks have been acidified to some degree, and the red spruce forests on the higher peaks show extensive damage.

After studying the problems with acid rain in the United States, I traveled to Scandinavia and Switzerland in 1989 to take a look at the big problem. This foreign exposure revealed that acid fallout is not just an American or Canadian problem; it affects Europe and all densely populated, industrialized nations that use fossil fuels to produce energy.

Acid rain is also threatening trout high in the Rocky Mountains and sugar maples in Vermont and Ontario. It is dissolving India's Taj Mahal and is making some European game animals' organs unfit to eat. According to Earthscan, an independent news source, more than 16 million acres of forest in nine European countries have been damaged by acid rain. The Acropolis, the Tower of London, and Cologne Cathedral are also becoming victims. As one Danish architect commented, "These buildings are melting away like sugar candy." Even urban areas of Latin America and Africa are showing signs of danger.

Let's again examine the elements of concept(s), propositions, justifications and details.

1. What is the concept being addressed in this text?  
Acid Rain.
  
2. What are the propositions that exist in this text?
  - Acid rain is precipitation that contains high levels of acid.
  - Acid rain is a problem in America and Europe.
  - Acid rain has caused direct damage to architectural structures in nations that use fossil fuel.
  - The effects of acid rain are numerous.
  - The damage has occurred over time.
  
3. What are the justifications (ideas) that support the main propositions? The order of the following list corresponds to the list of possible propositions.
  - It is any form of precipitation that is rain, snow, sleet, or fog, that contains high levels of acid
  - After studying the problems with acid rain in the United States, I traveled to take a look at the big problem.
  - Acid Rain occurs in nations that are densely populated and industrialized. It is dissolving India's Taj Mahal, the Acropolis, the Tower of London, and Cologne Cathedral.
  - Acid rain is also threatening trout and sugar maples. Many of my neighbors have had to replace their copper and lead plumbing. Lakes and ponds have been acidified to some degree, and the red spruce forests show extensive damage. Forests in European countries have been damaged by acid rain.
  - I have noticed many changes in the 20 years I have lived in the Adirondack Mountains of upstate New York.
  
4. What are the supporting details? Again, the following list corresponds to the listing of justifications.
  - Acid rain contains high levels of acid—particularly sulfuric acid and nitric acid.
  - Author traveled to Scandinavia and Switzerland in 1989.
  - All are becoming victims. One Danish architect commented, "These buildings are melting away like sugar candy." Even urban areas of Latin America and Africa are showing signs of danger.

- Trout high in the Rocky Mountains and Maples in Vermont and Ontario. Neighbors replace piping with plastic lines as acidic water corroded the pipes. At least 600 lakes and ponds in Western Adirondacks effected, as well as forests on the higher peaks. According to Earthscan, an independent news source, more than 16 million acres of forest in 9 countries effected.
- Adirondack Mountains of upstate New York is one of the regions hardest hit.

Distinguishing the hierarchy of information discussed in the text on a continuum between that which is more abstract (concepts and propositions) to that which is more concrete (justifications and supporting details) allows us to understand how pieces of information relate to one another and the overall structure of the message.

Consider how you might take the essence of each element—the concept (topic), the propositions (points being made), the justifications (main ideas that give evidence to the points or demonstrate the points, and the supporting details (the specific information that further illustrates the evidence). By isolating the essence—the few key words or images that can represent the full statement or idea—you can further reduce the information into a form that you can chart in a visual-spatial manner.

Here is a possible example of a content map for the Acid Rain text.

CONTENT MAP FOR ACID RAIN TEXT

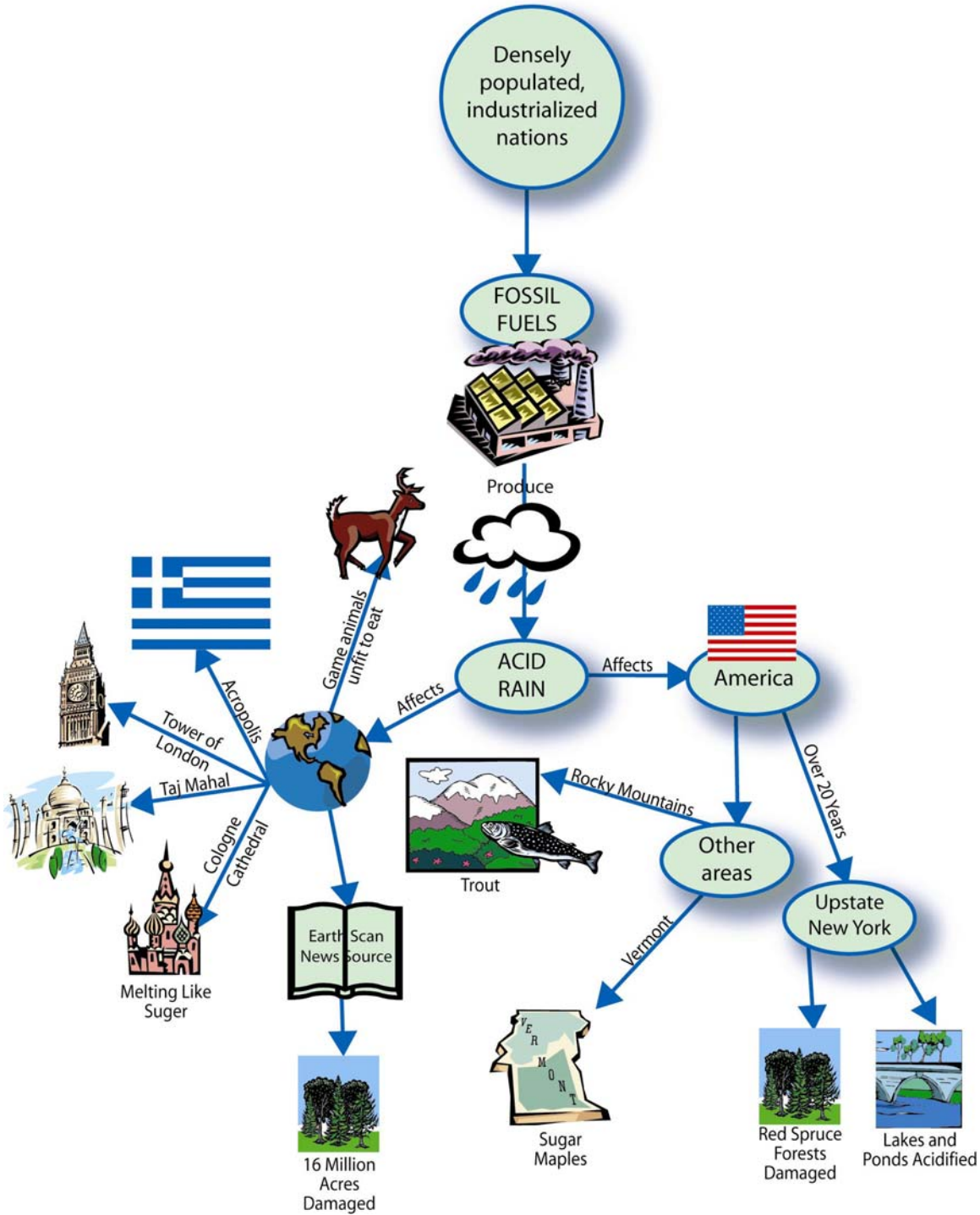


Illustration 2

Again, the content map is much more efficient and compact than the written version of the original text, because it is intended to be a visual/spatial representation of the content. Look over the map and consider whether it sufficiently represents the message in a visual/spatial manner and fosters your recall of the more specific details associated with the original text. What might you change and why?

### **Software related to mapping**

There are a variety of computer tools and software that can be used for content mapping. The two maps in this article were done with Adobe Illustrator, a general purpose graphics program. You can also create maps in presentation programs like PowerPoint. However there are some programs, such as Inspiration and Mind Manager, that are specifically designed for creating mind maps or concept maps. At the Inspiration web site, <http://www.inspiration.com>, you can access the Inspiration software on a 30-day free trial and practice the various applications of this tool. As well, a variety of content maps are available for review and consideration at the Inspiration site. You can access a broader range of samples of content maps by using your favorite Internet search engine—such as Google.com—and putting in the key words “mind mapping” or “concept mapping”.

What the Inspiration software—or other similar software—allows you to do is to organize patterns of information conveyed in texts. Typically, you work from general to specific information within the text.

### **Summary**

Content mapping has many applications including: brainstorming, weaving new information onto a map of prior knowledge, summarizing readings or lectures, note-taking, reviewing for an exam, creative writing, developing a presentation or essay (Buzan, 1995). For the purposes of interpreter education, it is a tool for mapping the content of a text after it has been analyzed for meaning and intent.

When used for mapping content, there are a number of principles that will maximize the effectiveness of the process. Remember, the goal is to create a visual-spatial representation of a text in a manner that isolates the main concepts and associated ideas that exist in the text.

Principles taken from Buzan (1995):

- Either type or print in capitals, for ease of reading. This will also encourage you to keep the points brief.

- Use unlined paper, since the presence of lines on paper may hinder the non-linear process of mapping.
- Connect all words or phrases or lists with lines, to the center or to other branches. When you want to record a new idea, start again with a new 'spoke' from the center of the page.
- You may find the use of color-coding useful to group/cluster sections of the map. For example, you might put themes in one color, main ideas in another, and supporting details in another.

There are a variety of benefits associated with mapping. Because a content map defines the central idea of a text by positioning it in the center of the page, allows for the relative importance of each idea within the text to be indicated, and denotes the links among the key ideas within the text all on one page, it makes recall and review more efficient. Therefore, one of the most significant benefits of the content mapping process is that it organizes information in a way that fosters advance preparation for interpretation, and easy recall of the content.

Another benefit is that the visual-spatial representation of the text enables you to consider the information from different viewpoints—it is not a linear outline of the information. It is a process that also helps you to see the complex relationships among ideas which guides you to an understanding of the underlying and inherent logic and organization of a text. Once the text is mapped into a visual-spatial representation, you can see contradictions, paradoxes, and gaps that may exist in a text—or in your own interpretation of the text—and therefore, encourages further review and understanding of the text.

### References:

Buzan, T. (1995). *The MindMap Book* (2<sup>ND</sup> edition). London, UK: BBC Books.

Ferry, B. (1996). Probing Understanding: The Use of a Computer-Based Tool to Help Pre-service Teachers to Map Subject Matter Knowledge. *Research in Science Education*, Volume 26(2), pp. 205-219.

Ferry, B., Hedberg, J., and Harper, B. (1997). How Do Pre-service Teachers Use Concept Maps to Organize Their Curriculum Content Knowledge? *ASCILITE Conference Proceedings*, pp. 1-13.

Fisher, K., Faletti, J., Patterson, H., Thorton, R., Lipson, J., and Spring, C. (1990). Computer-based concept mapping-SemNet software: a tool for describing knowledge networks. *Journal of College Science and Technology*, Volume 19, pp.347-352.

Heimlich, J. and Pittelman, S. (1986). *Semantic Mapping: Classroom Application*. Newark, Delaware: International Reading Association.

Lebauer, R. S. (1988). *Learn to Listen; Listen to Learn*. Englewood Cliffs, NJ: Prentice Hall Publishers.

Novak, J.D., and Gowin, D. B. (1984). *Learning How to Learn*. NYC, NY: Cambridge University Press.

Novak, J. D. (1991). Clarify with Concept Maps: A Tool for Students and Teachers Alike. In *The Science Teacher*, Volume 58(7), pp. 45-49.

Novak, J. D. (1993). How do we learn our lesson?: Taking students through the process. In *The Science Teacher*, Volume 60(3), pp. 50-55.

Tobin, K., Tippings, D., and Gallard, A. (1994). Research on Instructional Strategies for Teaching Science. In D. Gabel (Ed.), *Handbook of Research on Science Teaching and Learning*. NYC, NY: Macmillan.

Walther, D. & Comingore, T. (2003). Study and learning skills: The elements of eloquent essays. *Learning Assistance Center*. Lake Jackson, TX: Brazoport College.