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Shocked by Complexity: Q&A with Don Dansereau, Ph.D.

*Have you ever been so confused by the complexity of a map, chart or diagram, that you didn't know where to begin to make sense of it? If so, you may be a victim of visual or map "shock", according to **Donald F. Dansereau, Ph.D.**, of Texas Christian University. Don is Professor of Psychology and Senior Research Scientist in the Institute of Behavioral Research at TCU, and teaches graduate statistics and cognitive psychology. His research focuses on cognitive approaches for improving education, drug abuse prevention, and treatment.*

Cliff Atkinson: *Don, what is "map shock"?*

Don Dansereau: A visual, often audible reaction upon first exposure to the presentation of a complex node-link map. This reaction is strongest when the map does not follow good Gestalt principles.

CA: *For those who are not familiar, what is a complex node-link map - is it similar to a "mind mapping" diagram?*

DD: It is similar but typically more structured than a Mind Map. It also uses labeled links to specify relationships. For example, L for *leads to*, C for *characteristic*, P for *part*.

CA: *What impact does map shock have on someone understanding a map?*

DD: I think it primarily affects motivation and concentration. There is a sense of being "lost"; not knowing where to start or where to go next. This makes processing less efficient and may even bring it to a halt. Systematic desensitization by slowly exposing people to increasing complexity seems to help.

CA: *How did you discover map shock?*

DD: We started exploring the impact of presentations of complex maps to students in the early 1980's. Observations and interviews indicated the existence of map shock. It seems to be reported more strongly by females.

CA: *Are there individual differences in the occurrence of map shock, for example with people who have prior knowledge of the map, or people who are high-spatial learners?*

DD: Prior knowledge of the map content can help, and those who enjoy graphic displays of course seem to do better. As I said before females seem to experience "shock" at a greater frequency than do most males.

CA: *How big of a problem is map shock in education? In the broader culture?*

DD: "Visual shock" -- the superordinate to map shock -- is elicited by graphs, charts, and diagrams. It is a big problem in any communication environment (e.g., education, business, counseling).

CA: *Has there been any research conducted on visual shock?*

DD: There has been a fair amount of work on graphs that have relevance for this and (Edward) Tufte has worked extensively on displays that would presumably minimize visual shock.

CA: *How can someone present information in a way that avoids map shock?*

DD: Building the map yourself or watching someone else build it helps. Breaking a complex map into a set of simpler maps also helps.

CA: *What is the difference between presenting information on a single medium like paper that is unaided by narration, versus presenting it in a multimedia format like PowerPoint?*

DD: Narration is valuable in either case. Maps provide the "big picture" while narration fills in details.

CA: *How can the visual representation of information help people to understand information better?*

DD: It helps individuals see the structure of the domain (symmetries, parallelisms, loops, areas of complexity, etc.). This allows them to better plan detailed processing and provides the basis for asking questions.

CA: *What impact does graphical-aided presentation of information have on people?*

DD: Graphics engage spatial as well as verbal modules in the brain, thus creating multiple views and dual encoding.

CA: *For anyone who presents information, what resources do you recommend for them to learn how to communicate clearly?*

DD: I think that node-link maps can help communication if they exhibit good spatial structure. Our web sites **here** and **here** provide some information on how to create these graphics.

Cliff Atkinson is a leading authority on how to improve communications across organizations using Microsoft PowerPoint. He is a popular keynote speaker, a writer, and an independent management consultant whose clients include companies ranking in the top five of the Fortune 500. He is the author of Beyond Bullet Points (Microsoft Press, 2005).

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