Novel to Known: Utilizing Systematic Metaphor Analysis Methodology

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Introduction/ Need for Idea

Metaphors are pervasive in our natural, daily conversation as well as in scholarly literature and popular press. This common component of our language spans speech, text, and sign language across music, architecture, comics, and science (Kövecses, 2020; Lakoff & Johnson, 1980). Scientists and science communicators rely on metaphors to communicate intangible observations and results to the public. The metaphors they choose shape public opinion on the topic, thus necessitating investigation (Kövecses, 2018). Metaphors help make science more accessible to the public because metaphors connect everyday experiences with abstract concepts (Taylor & Dewsbury, 2018). Metaphorical communication allows the audience to connect two seemly dissimilar ideas by transferring the characteristics of a source domain to a target domain. Andriessen and Gubbin (2009) gave the example of "the sensorimotor experience of affection as warmth (the warm body of our affectionate mother or father in our childhood) as the source domain when we conceptualize the subjective experience of a relationship (the target domain) as a 'warm' relationship" (p. 848).

Discourse analysis investigates "language-in-use" (Gee, 2010, p. 3) through a social constructivist approach. This is an appropriate method for studying how a certain phenomenon or topic is discussed and constructed in language, whereas content analysis is more suitable for determining what is being discussed (Schreier, 2012). Jørgensen and Phillips (2002) identified metaphors as one of the tools for textual analysis of discourse. Derived from discourse analysis (Jørgensen & Phillips, 2002), the qualitative research methodology of systematic metaphor analysis aims to "reconstruct models of thought, language, and action" (Schmitt, 2005, p. 368). The inductive approach identifies the primary metaphors already being used in text, revealing the metaphorical concepts authors utilize to describe a particular phenomenon to their audiences (Schmitt, 2015). Systematic metaphor analysis is a method by which to investigate metaphors used in discourse to communicate the science of agriculture so as to identify the current influences on public opinion regarding such topics (Broad, 2020; Delbaere et al., 2020; O'Keefe et al., 2015; Shew et al., 2018).

How It Works

Systematic metaphor analysis consists of seven steps (Andriessen & Gubbins, 2009; O'Keefe et al. 2015; Schmitt, 2005):

1. Identify the target topic for metaphor analysis
2. Collect broad background knowledge and metaphors regarding the topic
3. Sample a selection of text on the target topic
4. Identify passages related to the target topic
5. Identify metaphors within passages related to the target topic
6. Group metaphors by underlying metaphorical concept
7. Determine the frequency of each metaphorical concept within the text

Specific guidance on the number of texts required for analysis is sparse; however, Jørgensen and Phillips (2002) stated, "It is often sufficient to use a sample of just a few texts. The reasons for this are that discursive patterns can be created and maintained by just a few people" (p. 120). Review of the literature reveals researchers commonly use approximately 20 texts, which may be articles, books, interview transcripts, or any other text-based content (Andriessen & Gubbins, 2009; Hill, 2020; Nerlick & Hellsten 2009; O'Keefe et al., 2015).

Results to Date

A relatively novel methodology, recent studies provide examples of applying the steps of systematic metaphor analysis to agricultural topics. Broad et al. (2020) drew from systematic metaphor analysis to analyze interviews, presentation decks, and news articles to identify the dominant metaphors for discussing substitutes for animal meat: *Meat is made* and *the market for alternative meats*. On the surface, these may not seem like metaphors, but consider alternative meats are not literally meat at all, nor are they manufactured though that is exactly what the metaphor *meat is made* suggests. *The market for alternative meats* draws a connection from a literal physical market where goods are exchanged to a conceptual economic construct within the sphere of innovative food system change. These findings offer a glimpse into how alternative meats are being discussed, informing future research as well as practical application opportunities to study and shape the conversation (Broad et al., 2020).

Hill (2020) used systematic metaphor analysis to identify metaphors used to describe the product and process of gene-editing applications in agriculture. Analyzing U.S. online news articles, the study identified metaphorical concepts of gene-editing as, in rank order, *creation, a coding program, a fighter, math, a target, tool, and text editor*. The concept of gene-editing as a *text editor* draws meaning from writing, rewriting, and moving words in a word processor to improvements made by gene-editing, implying only positive results (O'Keefe et al., 2015). The *tool* metaphor is used to convey the action of how gene-editing works while also signaling the different means by which alteration of genetic code occurs. Findings suggest these metaphors are the lenses through which audiences view gene-editing using their own schemas, shaping public opinion. This is insightful for researchers, as well as science and agricultural communicators, as they work to advance and inform public acceptance of the technology (Hill, 2020).

Advice to Others

Researchers who choose to utilize this method should utilize the standards of rigor assigned to qualitative research. Schmitt (2005) pointed out several "steps to trustworthiness" (p. 380) that fall within two primary standards – dependability and credibility. To enhance dependability, keep an audit trail and establish a peer review process (Creswell, 2007; Schmitt, 2005). To enhance credibility, use reflexivity by journaling about the methodological process and personal bias throughout the research process. The peer review process also builds credibility by establishing consensus of interpretation when beginning to identify metaphors in the text, and then again after analysis is complete. Referential adequacy would further support credibility by utilizing low-inference descriptors, that is the exact terms used within the selected text, to create the underlying metaphorical concepts (Ary et al., 2010; Schmitt, 2005). Plenty of time should be allotted so the research team can deliberately, and without haste, step through systematic metaphor analysis leaving room to return to the data to discuss and rectify inconsistencies until agreement on the findings is reached.

Costs/ Resources Needed

This methodology can be executed at no cost to the researcher. Access to a database of content for analysis is necessary, though this can range from a news article repository, such as *Newsbank,* to a collection of interview transcripts. Peer reviewers must be provided with background literature to develop their knowledge of the topic before assisting with analysis.

References

Andriessen, D., & Gubbins, C. (2009). Metaphor analysis as an approach for exploring theoretical concepts: The case of social capital. *Organization Studies, 30*(8), 845–863. https://doi.org/10.1177/0170840609334952

Ary, D., Jacobs, L. C., Razavieh, A., & Sorenson, C. (2010). *Introduction to research in education* (8th ed.). Thomson Wadsworth.

Broad, G. M. (2020). Making meat, better: The metaphors of plant-based and cell-based meat innovation. *Environmental Communication, 14*(7), 919-932. https://doi.org/10.1080/17524032.2020.1725085

Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches*. Sage Publications.

Delbaere, M., Groth, S., & Moreland, M. (2020). Advertising agricultural biotechnology: Metaphors and controversial products. *Journal of Current Issues & Research in Advertising, 41*(2), 191-205. https://doi.org/10.1080/10641734.2020.1724839

Gee, J. P. (2010). *Introduction to discourse analysis: Theory and method*. Routledge.

Hill, N. (2020). *Public opinion of gene-editing in agriculture: A mixed-method study of online media and metaphors* [Dissertation]. [Master's thesis, Texas Tech University]. TTU DSpace Repository. https://www.shorturl.at/nKY18

Jørgensen, M. W., & Phillips, L. J. (2002). *Discourse analysis as theory and method*. Sage.

Kövecses, Z. (2018). Metaphor in media language and cognition: a perspective from Conceptual Metaphor Theory. *Lege Artis: Language Yesterday, Today, Tomorrow,* 3(1), 124–141. https://doi.org/10.2478/lart-2018-0004 ISSN 2453-8035

Kövecses, Z. (2020). *Extended conceptual metaphor theory*. Cambridge University Press.

Lakoff, G. & Johnson, M. (1980). *Metaphors we live by*. University of Chicago Press.

Nerlich, B., & Hellsten, I. (2009). Beyond the human genome: Microbes, metaphors and what it means to be human in an interconnected post-genomic world. *New Genetics and Society, 28*(1), 19–36. https://doi.org/10.1080/14636770802670233

O'Keefe, M., Perrault, S., Halpern, J., Ikemoto, L., Yarborough, M. & UC North Bioethics Collaboratory for Life & Health Sciences (2015). "Editing" genes: A case study about how language matters in bioethics. *The American Journal of Bioethics, 15*(12), 3–10. https://www.doi.org/10.1080/15265161.2015.1103804

Schmitt, R. (2005). Systematic metaphor analysis as a method of qualitative research. *The Qualitative Report*, *10*(2), 358–94. https://nsuworks.nova.edu/tqr/vol10/iss2/10

Shew, A. M., Nalley, L. L., Snell, H. A., Nayga Jr., R. M., & Dixon, B. L. (2018). CRISPR versus GMOs: Public acceptance and valuation. *Global Food Security, 19*, 71–80. https://doi.org/10.1016/j.gfs.2018.10.005

Taylor, C., & Dewsbury, B. M. (2018). On the problem and promise of metaphor use in science and science communication. *Journal of Microbiology & Biology Education, 19*(1). https://dx.doi.org/10.1128%2Fjmbe.v19i1.1538