

Genomics Salon XXIV: Metaphors in Science

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I. Background

- Lakoff and Johnson *cognitive perspective* on metaphor: metaphors shape perception, thought, and action and are deeply embedded in everyday life
- A *conceptual metaphor* can be restated as “X is Y,” where X is the tenor (thing being described) and Y is the vehicle (thing used to describe)
- There are commonplaces that come to mind when you consider the tenor and the vehicle in isolation; the *associated commonplaces* arise from the interaction of tenor and vehicle
- The implications/consequences of a given metaphor are its *entailments*

II. Activity #1

Identify the conceptual metaphors in each fragment of text below. It may be easier to first articulate the vehicle, and then identify the tenor.

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| 1 | [Getting genetic information] “might just be one additional piece of information to add to the toolbox” |
| 2 | [Receiving genetic results for a child] “could be a piece of information for them...to have in their arsenal for decisions that they’re going to make in their lives” |
| 3 | “So you don’t want too much information and, and with, I think with this, it’s so much. Genetic, there’s so much out there, you don’t want to be bombarded either.” |
| 4 | [Receiving positive results, e.g., about athletic ability] “would be like hey there’s a light in the end of the tunnel” |
| 5 | “To know that I would develop early onset Alzheimer’s or, or something like that, I think it would be a consistent cloud over my life” |
| 6 | “I’m going to want to [get] results on all of them. I’m curious like that. But I’m...not very confident. Kind of like opening Pandora’s box, do you want to know what’s inside?” |
| 7 | [On choosing when to receive results] “I want to open that box that’s, that’s mine.” |
| 8 | “I don’t think I’m closed out to anything. I, I like the good and the bad because it all makes the whole picture.” |
| 9 | “If there was an architect going through the neighborhood and they were drawing plans, I want a copy of the plans of my house... I’m not going to build a house, I just want it.” |
| 10 | “...it would be nice to know, I guess I’m thinking of credit score like, here’s your credit score and here’s how you can improve it.” |
| 11 | “...if I knew that someone somewhere had a genetic disease show up how many generations could that kinda be sleeping until it shows up again.” |
| 12 | “Epilepsy I believe probably would’ve already reared its ugly head by now.” |

III. Activity #2

Identify the metaphorical language below. As a next step, attempt to articulate the tenor and vehicle so you can state the underlying conceptual metaphor as “X is Y.”

CRISPR has two components. The first is essentially a cellular scalpel that cuts DNA. The other consists of RNA, the molecule most often used to transmit biological information throughout the genome. It serves as a guide, leading the scalpel on a search past thousands of genes until it finds and fixes itself to the precise string of nucleotides it needs to cut. It has been clear at least since Louis Pasteur did some of his earliest experiments into the germ theory of disease, in the nineteenth century, that the immune systems of humans and other vertebrates are capable of adapting to new threats. But few scientists had considered the possibility that single bacterial cells could defend themselves in the same way...

It didn't take Zhang or other scientists long to realize that, if nature could turn these molecules into the genetic equivalent of a global positioning system, so could we. Researchers soon learned how to create synthetic versions of the RNA guides and program them to deliver their cargo to virtually any cell. Once the enzyme locks onto the matching DNA sequence, it can cut and paste nucleotides with the precision we have come to expect from the search-and-replace function of a word processor. “This was a finding of mind-boggling importance,” Zhang told me. “And it set off a cascade of experiments that have transformed genetic research.”

-- Excerpted from “The Gene Hackers” by Michael Specter, *New Yorker Magazine*, Nov. 16, 2015

IV. Additional readings/references

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