

New research explores how culture affects our conceptions of nature

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Do we think of nature as something that we enjoy when we visit a national park and something we need to "preserve?" Or do we think of ourselves as a part of nature? A bird's nest is a part of nature, but what about a house?

The answers to these questions reflect different cultural orientations. They are also reflected in our actions, our speech and in cultural artifacts.

A new Northwestern University study, in partnership with the University of Washington, the American Indian Center of Chicago and the Menominee tribe of Wisconsin, focuses on science communication and how that discipline necessarily involves language and other media-related artifacts such as illustrations. The challenge is to identify effective ways of communicating information to culturally diverse groups in a way that avoids cultural polarization, say the authors.

"We suggest that trying to present science in a culturally neutral way is like trying to paint a picture without taking a perspective," said Douglas Medin, lead author of the study and professor of psychology in the Weinberg College of Arts and Sciences and the School of Education and Social Policy at Northwestern.

This research builds on the broader research on cultural differences in the understanding of and engagement with science.

"We argue that science communication—for example, words, photographs and illustrations—necessarily makes use of artifacts, both physical and conceptual, and these artifacts commonly reflect the cultural orientations and assumptions of their creators," write the authors.

"These cultural artifacts both reflect and reinforce ways of seeing the world and are correlated with cultural differences in ways of thinking about nature. Therefore, [science communication](#) must pay attention to culture and the corresponding different ways of looking at the world."

Medin said their previous work reveals that Native Americans traditionally see themselves as a part of nature and tend to focus on ecological relationships. In contrast, European-Americans tend to see humans as apart from nature and focus more on taxonomic relationships.

"We show that these [cultural differences](#) are also reflected in media, such as children's picture books," said Medin, who co-authored the study with Megan Bang of the University of Washington. "Books authored and illustrated by Native Americans are more likely to have illustrations of scenes that are close-up, and the text is more likely to mention the plants, trees and other geographic features and relationships that are present compared with popular children's books not done by Native Americans."

"The European-American cultural assumption that humans are not part of ecosystems is readily apparent in illustrations," he said.

The authors went to Google images and entered "ecosystems," and 98 percent of the images did not have humans present. A fair number of the remaining 2 percent had children outside the ecosystem, observing it through a magnifying glass and saying, "I spy an ecosystem."

"These results suggest that formal and informal science communications

are not culturally neutral but rather embody particular cultural assumptions that exclude people from nature," Medin said.

Medin and his research team have developed a series of "urban ecology" programs at the American Indian Center of Chicago, and these programs suggest that children can learn about the rest of nature in urban settings and come to see humans as active players in the world ecosystems.

More information: "The Cultural Side of Science Communication" was published in the *Proceedings of the National Academy of Sciences*. www.pnas.org/content/111/Supplement_4/13621.short

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