Categorizing color

8 January, 2015

UC Irvine researchers have received a $980,923 grant from the National Science Foundation to investigate and develop a new publicly accessible color categorization database.

The interdisciplinary project involves collaborative efforts among Institute for Mathematical Behavioral Sciences faculty from UCI departments of cognitive sciences, mathematics, and ecology and evolutionary biology.

The project is under the direction of Kimberly A. Jameson, Institute for Mathematical Behavioral Sciences associate project scientist; Natalia Komarova, mathematics professor; Dominik Wodarz, ecology and evolutionary biology professor; and Louis Narens, cognitive sciences professor.

The research examines questions surrounding the formation and sharing of semantic meaning based on perceptual experience and across cultures.

The research addresses the following questions:

- What are the cognitive factors that influence the assignment of linguistic categories to conceptual domains such as everyday color experience?
- How does this vary with language and culture?

Jameson explains: "The ways individuals classify color depends on, among other things, the uses and importance of color in our everyday visual processing environments and the ways different societies of people develop meaning systems on the rather uniform domain of color perception can tell us a lot about cognition, communication, perceptual processing and environmental color salience and utility."

The project’s investigations focus on the extensive color categorization data available in the existing World Color Survey and the new database they will develop for the Mesoamerican Color Survey archives. Research will examine general issues of categorization across languages that are related geographically or phylogenetically, and will more than double existing databases on this topic. The researchers will use new interdisciplinary and mathematical modeling approaches that are likely to extend beyond color categorization behaviors, increasing our general understanding of how people form and share information.

The project extends Jameson’s previous color categorization work funded by the UC Pacific Rim Research Program.

Two projects the investigators proposed for student-support were also recently awarded funding from the Calit2-URP sponsored Multidisciplinary Design Program at UCI, with the aim of increasing student participation in the NSF project. The project researchers will mentor teams of students in original research in collaboration with Ian Harris, computer science associate professor; Sergio Gago Masagué, Calit2 lead interface engineer; and Sean Tauber, Institute for Mathematical Behavioral Sciences associate specialist.

Funding for the NSF work began in September 2014 and runs through February 2018.

*pictured: Munsell Color Space*