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What Good are Aesthetics?

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Definitions of art and aesthetics are topics for philosophers, but here we will define art as the instantiation of a vision, and aesthetics as a yardstick for art. In that sense, we identify four aesthetics of flow visualizations (FV): beauty, destruction, power and oddness. For example, beauty is used in the work of a number of professional artists. Destruction is exemplified by our fascination with disasters: wildfires, tornadoes and avalanches. Power is observed in controlled displays such as rocket engines and hydropower plants. Oddness abounds in non-Newtonian fluids and Marangoni flows. These aesthetics can be powerful tools for education and outreach. They form a framework that inspires creativity, triggers intrinsic motivation, and can lead to transformative experiences, where students leave a course with expanded perceptions of fluids, seeing them and loving them in their daily experiences. There are a range of techniques for incorporating FV aesthetics in formal classes ranging from asking students to submit examples found online to an entire course devoted to FV, although the lighter exposures are less effective. FV aesthetics can also be used in informal contexts such as science camps and social media, but results are difficult to measure.