

# Beauty in the visual arts through the eyes of physics

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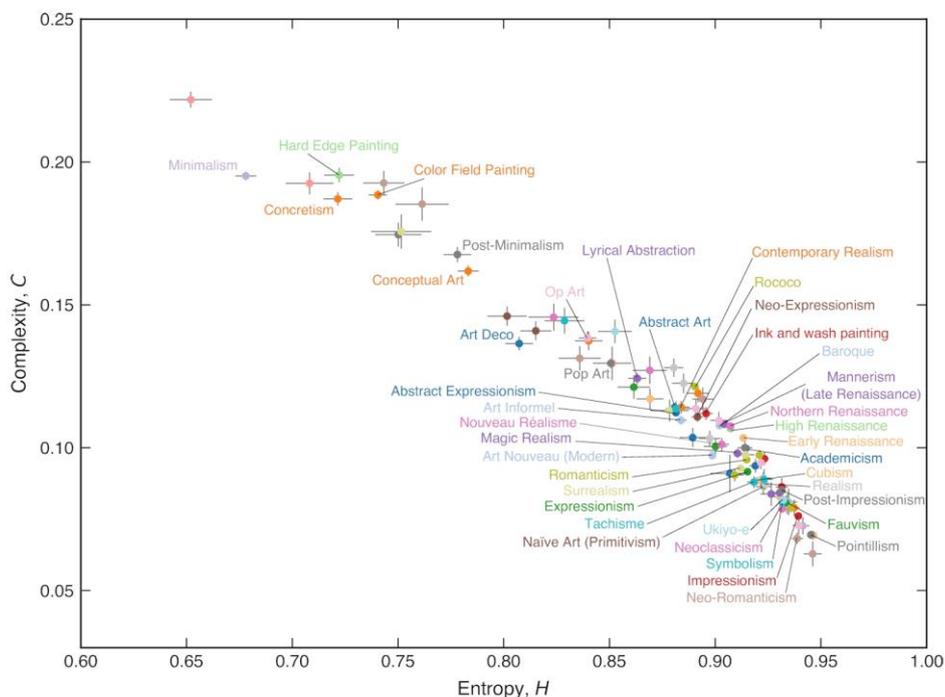
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**Abstract.** The 20th century is often referred to as the century of physics. From x-rays to the semiconductor industry, human societies today would indeed be very different were it not for the progress made in physics laboratories around the world [1,2]. What the past 100 years have been for science, the past millennium has been for the arts. From the late Byzantine and Islamic art to Renaissance, Realism and Pop art, the past 1000 years are packed with the most productive periods of our creative existence. The availability of digitized visual artworks allows us to perform large-scale quantitative analysis of the history of art. We have analyzed almost 140,000 visual artworks [3], the majority of which were paintings, by more than 2,300 artists created between the years 1031 and 2016. Based on the complexity and entropy of spatial patterns in the artworks, we were able to hierarchically categorize the artworks on a scale of order-disorder and simplicity-complexity, revealing a temporal evolution of the artworks that coincides with the main historical periods of art. We also outline possibilities for similar research in other forms of art [4].



**FIG 1.** Different artistic styles on the complexity-entropy plane. The colorful dots represent the average values of  $H$  and  $C$  for each one of the 92 styles with more than 100 images in the dataset. Only 41 artistic styles with more than 500 images each are labeled for clarity.

## References

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