Science in culture

Spotlight on a visual language
Do Piet Mondrian’s beliefs about the aesthetic appeal of his art stand up to scientific scrutiny?
Richard Taylor

Piet M. Mondrian’s abstract paintings are celebrated for their simplicity, yet carefully arranged grids of strong black lines and enclosed rectangles of primary colours, which the painter considered to be reflections of the natural laws of the universe. His paintings convey an impression of balanced harmony. But, as the audience at a visual-sciences conference was told last December, Mondrian’s story is not as straightforward as the lines he painted.

Never before had the Great Masters of the art world received such scrutiny from beyond the traditional boundaries of art theory. Recently, painter David Hockney and optical scientist Charles Falcò challenged five centuries of figurative art when they presented evidence that da Vinci, Raphael, Caravaggio, Van Eyck, Velázquez and Rembrandt may have traced images projected onto their canvases using lenses, prisms or mirrors (see Nature 412, 860; 2001). To many, their investigation has relegated masterpieces of figurative art from displays of creative genius to the product of simple copying. So, what does science have to say about the abstract works of modern art?

Abstract art covers a vast visual spectrum, from Mondrian’s geometrical patterns at one end to Jackson Pollock’s intermingled swirls of paint at the other. Pollock’s unorthodox style of dripping paint onto the canvas led to a popular movement that had formed around his aesthetic ideals. Branka Spehar, a perception psychologist from the University of New South Wales in Sydney, presented results that question Mondrian’s belief. In her study, she showed 20 subjects images generated by tilting three of Mondrian’s paintings at four orientations. The four orientations of each painting, including the one intended by Mondrian, were paired in all possible combinations and the subjects were asked to express a preference within each pair. The results, based on 72 trials for each subject, indicate that people show no aesthetic preference for Mondrian’s paintings at four orientations. The four orientations of each painting included the one intended by Mondrian, were paired in all possible combinations and the subjects were asked to express a preference within each pair. The results, based on 72 trials for each subject, indicate that people show no aesthetic preference for Mondrian’s paintings at four orientations.

Mondrian passionately believed that the diagonal represented a disruptive element, and he threatened to break with the ‘De Stijl’ art movement that had formed around his aesthetic ideals. Branka Spehar, a perception psychologist from the University of New South Wales in Sydney, presented results that question Mondrian’s belief. In her study, she showed 20 subjects images generated by tilting three of Mondrian’s paintings at four orientations. The four orientations of each painting, including the one intended by Mondrian, were paired in all possible combinations and the subjects were asked to express a preference within each pair. The results, based on 72 trials for each subject, indicate that people show no aesthetic preference for Mondrian’s paintings at four orientations. The four orientations of each painting included the one intended by Mondrian, were paired in all possible combinations and the subjects were asked to express a preference within each pair. The results, based on 72 trials for each subject, indicate that people show no aesthetic preference for Mondrian’s paintings at four orientations. The four orientations of each painting included the one intended by Mondrian, were paired in all possible combinations and the subjects were asked to express a preference within each pair. The results, based on 72 trials for each subject, indicate that people show no aesthetic preference for Mondrian’s paintings at four orientations.

Few will dispute the artistic value of Mondrian’s visual language. But as scientists turn their expertise towards some of the world’s most treasured paintings, their results can be unexpected. Like characters in a detective story, scientists are simply contributing their own unique clues to one of civilization’s great questions — the meaning of art. Richard Taylor is in the Department of Physics, University of Oregon, Eugene, Oregon 97403, USA.

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