

**Mathematical Art Against Hate:
Which Side Are You On?**

**Ainsley Macleod, Summer Walker, David Fried and Julian Fleron
May 2018**

Hate, Racism, Bullying, Sexual Harassment, Bigotry, Oppression, Homophobia, Bias, Discrimination, ... Powerful words fill the viewer's eye as they see what appears as a single, large panel seen in perspective. Moving parallel to the face of Which Side Are You On? these words dissolve into a mosaic of faces of thousands of Westfield State students, faculty and staff. Walking further still these faces dissolve and a third new panel appears displaying new powerful words: Tolerance, Respect, Equality, Unity, Freedom, Open Mindedness, ...

Humanity between Hate and Tolerance.

Which Side Are You On? calls the viewer to reflect on the question:

Is that Hate or is that Tolerance? Does it matter where you are standing?

In the fall of 2017, 25 first-year, Westfield State students in Prof. Fleron's MATH0110 – Mathematical Explorations course studied the mathematics of perspective, perception, visualization and the interplay between the different physical dimensions. Faced with ongoing issues of hate and racism the students responded by designing several pieces of art for a collection of Mathematical Art Against Hate. Several powerful pieces were designed and proof of concept models were made. Time and resources precluded the completion of large-scale installations.

The project was continued in Spring 2018 by Ainsley Macleod (Communications, '21), Summer Walker (Mathematics, '18), David Fried (Marketing) and Julian Fleron (Mathematics).

Which Side Are You On? is an example of *lenticular art* – a single piece of art that shows different views from different viewing angles. Based on the fall designs from Mathematical Explorations students, the artists created dynamic mathematical models in GeoGebra and SketchUp to investigate sizes, scales, viewing angles and the necessary adjustments to insure the central panel was nearly 100% visible and that the panels on either side appropriately mimicked a single, flat image seen in perspective. The smaller hanging panels vary in size and have been keystoneed (stretched) on the trailing end to ensure continuity of the perceived image from one panel to the next. This final design stages used Photoshop, InDesign and Illustrator.

Work on this piece owes a debt to the students in Mathematical Explorations and to many other students, staff and family that helped in various stages of the construction. These include: Jim Walker, Wayne Walker, Nick Scyocurka, Kris Hedblom, Matthew Macleod, Ryan Cramton, Andrea O'Brien, Janet Garcia, Bryan Scott, Peter Aldrich, Lauren Hartmann, Dan Blais, Jill Devlin, Rebecca Ross, Tyler Heer, Chris Rose, Ashley Whitaker, Kevin VanOudenhoven and Abbey Schoner.

