

## Physics and Art at Hudson County Community College

**Hudson County Community College has over 1,900+ art works installed in 9 campus buildings. Over 125 artworks are in our STEM building alone! But how does this relate to Physics?**

The acronym STEM, which stands for “Science, Technology, Engineering, and Mathematics” has given rise to STEAM with the inclusion of “A” for “Art”, thereby incorporating design, imagery, and creativity. If you are interested in how fine art relates to STEM, please take this self-guided walking tour of Physics and Art in Hudson County Community College’s STEM Building at 263 Academy Street in Jersey City.



*Judith Brodsky, Iron Horses (1988), Lithograph, edition of 30, 39” x 29”.* This print can be found on the fourth floor of the STEM building. Thank you to Benjamin J. Dineen, III and Dennis C. Hull for the generous donation of this work.

### **Judith Brodsky - Iron Horses**

Iron happens to be one of the most stable elements. That means the nucleus of an iron atom is very expensive to break. Iron is also used in making the most stable structures. What keeps a container crane—like the ones depicted here that are used to load and unload container ships—stable? At any given time, there are many invisible forces pulling on different parts of it in various directions. You might think there are many reasons for those parts to go out of balance. So, what prevents the crane from wobbling, toppling or crushing? It turns out any two forces of the same strength cancel if they point in opposite directions. Here is the key for a good design: make sure that all those forces are oriented such that they always cancel. We call this the equilibrium condition. There is plenty of physics at work even behind the most serene looking structures!



*Bernarda Bryson-Shahn, Moment of Silence (ca. 1980) Oil on Board, 33” x 33”.* This painting can be found on the fifth floor of the STEM building. This work has been dedicated in memory of his dear friend Victoria Chance by Dr. Glen Gabert.

### **Bernarda Bryson-Shahn - Moment of Silence**

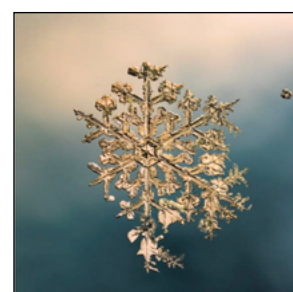
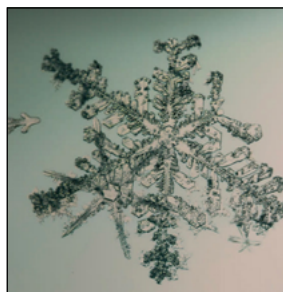
Sunlight is full of colors. It actually contains all the colors that we are able to see. When the colors are all mixed together, what we see is white. So that’s what we get from the sun: white light. But the sun’s light goes through an obstacle on the way to us: the Earth’s atmosphere, full of oxygen and nitrogen molecules. These tiny molecules tend to pick up blue light out of the sunlight and scatter it around. That makes the blue sky and blue oceans of day time for us! What remains after all the blue is taken out of sunlight? Gorgeous rosy-fingered dawn \*—or dusk! And who stands opposite a rising or setting sun? A full moon, seen through golden pink sheers, remains of the sunlight.

*\* Homer wrote about “rosy-fingered dawn” in his work the Odyssey in the eighth Century B.C.E. This is from the translation by Emily Wilson*

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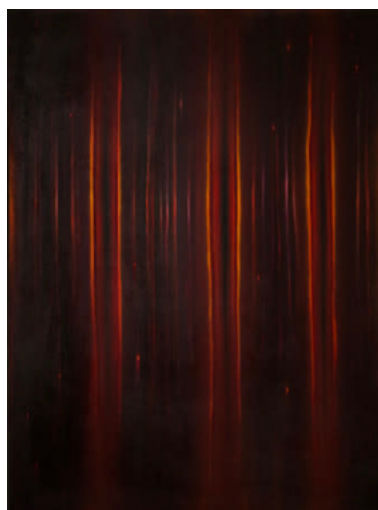
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Mike + Doug Starn, *allevrythingthatisyou* (2014), Limited Edition Prints Using Archival Ink on 100% Rag Paper, 7.5" x 7.5". These four snowflakes can be found on the fifth floor of the STEM building. The Trustees and College community dedicated these works in honor of Professor Lloyd Kahn.

## Mike + Doug Starn - *allevrythingthatisyou*

In nature certain things are in good order, others are less so. Snowflakes represent the most orderly state for water. When water gives off energy to its surroundings, water molecules begin to align in a certain pattern. As a result, liquid water turns into ice crystals. Water molecules are a bit special in the way they form crystals. The colder they get, the farther apart they move—unlike anything else. Here it seems like snowflakes are melting back again, reabsorbing the energy that they have lost, their beautiful shapes gradually disappearing. They are losing their order, which is what happens to everything eventually. The entire universe we live in is gradually transitioning into a disorderly state. Entropy is what we call the measure of disorder, and this is how we can tell the future from the past.



William Stamos, *Earthlings* (2005), Oil on Canvas, 47.5" x 36". This work can be found on the fifth floor of the STEM building. A small donation makes a big difference! Would you like to give to the College in honor of a loved one and have their name memorialized here? Contact the Hudson County Community College Foundation Art Collection at (201) 360-4007.

## William Stamos - *Earthlings*

How do we know what we know about distant stars, interstellar clouds, even galaxies? Specifically, how do we know what is in there? We just look at the light that the distant object sends our way. Scientists use a technique to split this light into individual lines, turning it into a so-called spectrum. Each spectral line is unique and represents a specific substance. Perhaps what we see here is the Earth's spectrum, and the glowing lines against the dark background represent us, the earthlings, as seen by intelligent beings in a distant galaxy. What would they think of us? Weak flickers crushed under the darkness full of doubt, greed, and violence? Or would they see in us bright sparks determined to make their only home a place of harmony, trust, and love?

Thank you to Gunes Senturk of Hudson County Community College who wrote about Physics and Art for this guide.

Students are welcome to work on additions to this guide. If you are interested in writing about Physics and Art, please contact Gunes Senturk, Ph.D., Instructor of Physics, [gsenturk@hccc.edu](mailto:gsenturk@hccc.edu).

**Explore the Foundation Art Collection using our online searchable tools!**

Go to [www.hccc.edu/community/arts/foundation-art-collection/category-collection-search.html](http://www.hccc.edu/community/arts/foundation-art-collection/category-collection-search.html)