

Exploring Borders, Boundaries, and Edges: Crossing Disciplines with Peer Faculty

Lydia Barovero, World Language & Women's Studies

Rose Chaffee-Cohen, Science & Bioethics

Lisa Cohen, English

Chris Mango, Mathematics

Ami Shah, History

Ken Weathersby, Visual Arts & Film Studies

Who We Are: Kent Place School

- Summit, NJ
- Upper School PLC (Professional Learning Communities)
- New schedule, Center for Innovation
- Global Perspectives theme: “Borders, Boundaries, and Edges”

Today's Goals

- Share our experience
- Brainstorm: Borders, Boundaries and Edges
- Extensions and classroom applications
- Acknowledge challenges and propose solutions
- Takeaways for our stakeholders

Our Motivation/Inspiration

- Embracing complexity beyond discipline
- Learning as part of teaching
- Understanding student experience
- Finding symmetry across disciplines and themes
- Practicing collaborative and intellectual work
- Valuing process over product

Our Model

- Met once a month during PLC block (about 6 times)
- Rotated through group with one leader each month
- Shared relevant texts, art, or other resources in advance
- One person led discussion and activities that related to their discipline, but also inspired connections.

Our Topics

- Lydia: “On Borders, Home, and Language”
- Rose: “Climate Refugees: Causes and Consequences”
- Chris: “Borders, Numerology, & Mathematical Superstition”
- Lisa: “The Borders of Originality”
- Ami: “The Perils of Cartography”
- Ken: “What is Human?”

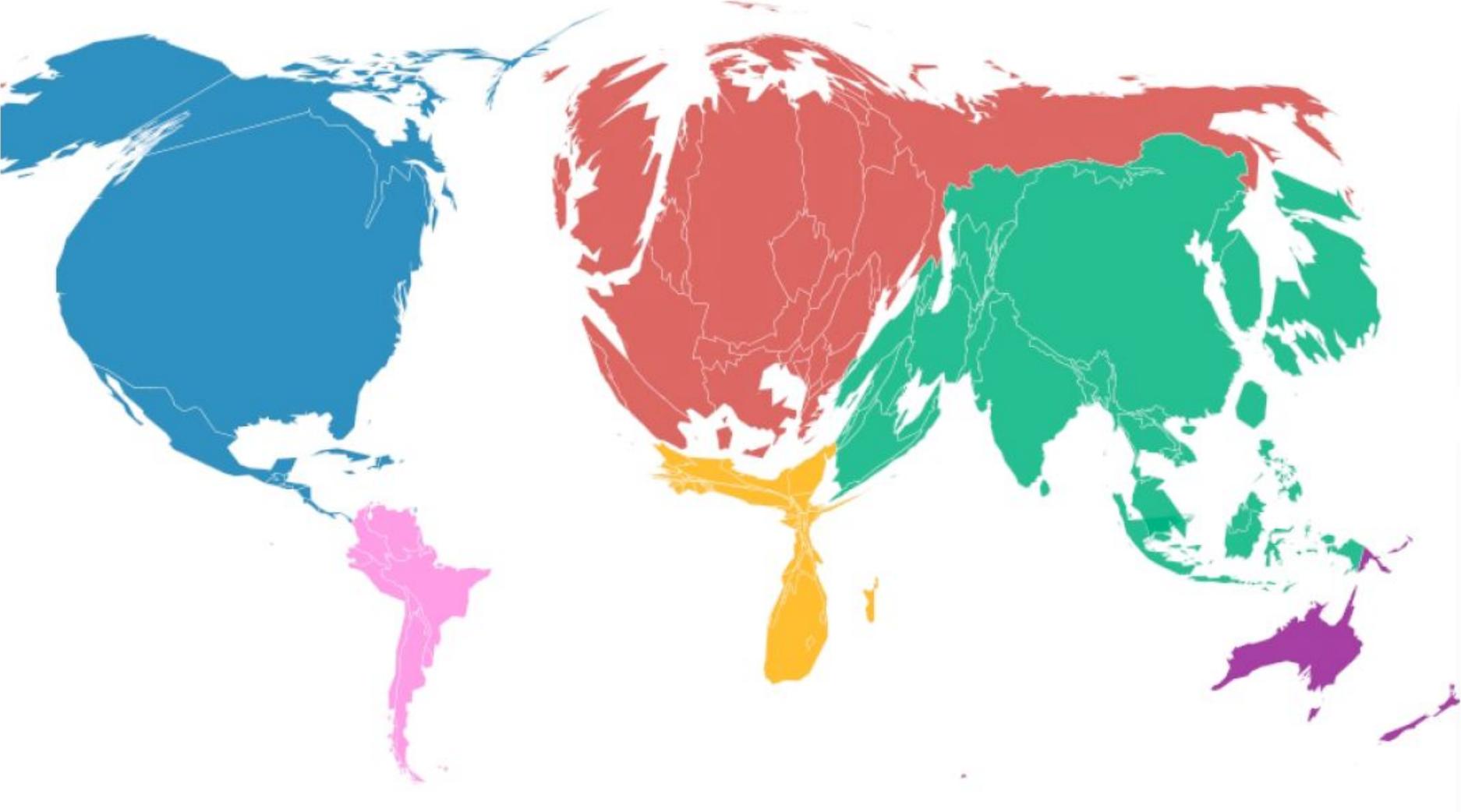


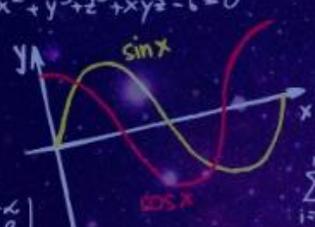
To survive the Borderlands you
must live sin fronteras be a
crossroads.

— *Gloria E. Anzaldúa* —

AZ QUOTES

Figure 2: Historic CO₂ emissions from energy use 1850–2011



$x^3 + x^2 + y^3 + z^3 + xyz - c = 0$
 $\text{grad} f = \left(\frac{\partial f}{\partial x}, \frac{\partial f}{\partial y} \right)$
 $\text{tg} x \cdot \text{cotg} x = 1$
 $2x^2 y y' + y^2 = 2$
 $x_1 = -11p, x_2 = -p, x_3 = 7p, p \in \mathbb{R}$
 $Y_{i+1} = Y_i + b \cdot k_2$
 $B = \begin{pmatrix} 2 & 1 & -1 & 0 \\ 3 & 0 & 1 & 2 \end{pmatrix}$
 $a^2 = b^2 + c^2 - 2bc \cos \alpha$
 $\text{tg} \frac{x}{2} = \frac{1 - \cos x}{\sin x} = \frac{\sin x}{1 + \cos x}$
 $\sum_{i=0}^n (P_2(x_i) - y_i)^2$
 $\text{tg} 2x = \frac{2 \text{tg} x}{1 - \text{tg}^2 x}$
 $\text{tg} x = \frac{\sin x}{\cos x}$
 $\lambda x - y + z = 1$
 $x + \lambda y + z = \lambda$
 $x + y + \lambda z = \lambda^2$
 $F_z = 2xyz - 1 = 1$
 $X_1 = \begin{pmatrix} 2p \\ -p \\ 0 \end{pmatrix}$
 $\lim_{n \rightarrow \infty} \frac{\sqrt{n^3 + 1} + n}{\sqrt[3]{3n^2 + 2n - 1}}$
 $\frac{a}{\sin \alpha} = \frac{b}{\sin \beta} = \frac{c}{\sin \gamma}$
 $\int \int \int_{\Omega} z \, dx \, dy \, dz = \int_0^{\pi} \left(\int_b^2 \left(\int_{\frac{1}{2}}^1 r \, dr \right) d\lambda \right) d\varphi$
 $X_2 = \begin{pmatrix} -c \\ b \\ -p \\ -a \end{pmatrix}$
 $2 \arctg x - x = 0, I = (1, 10)$


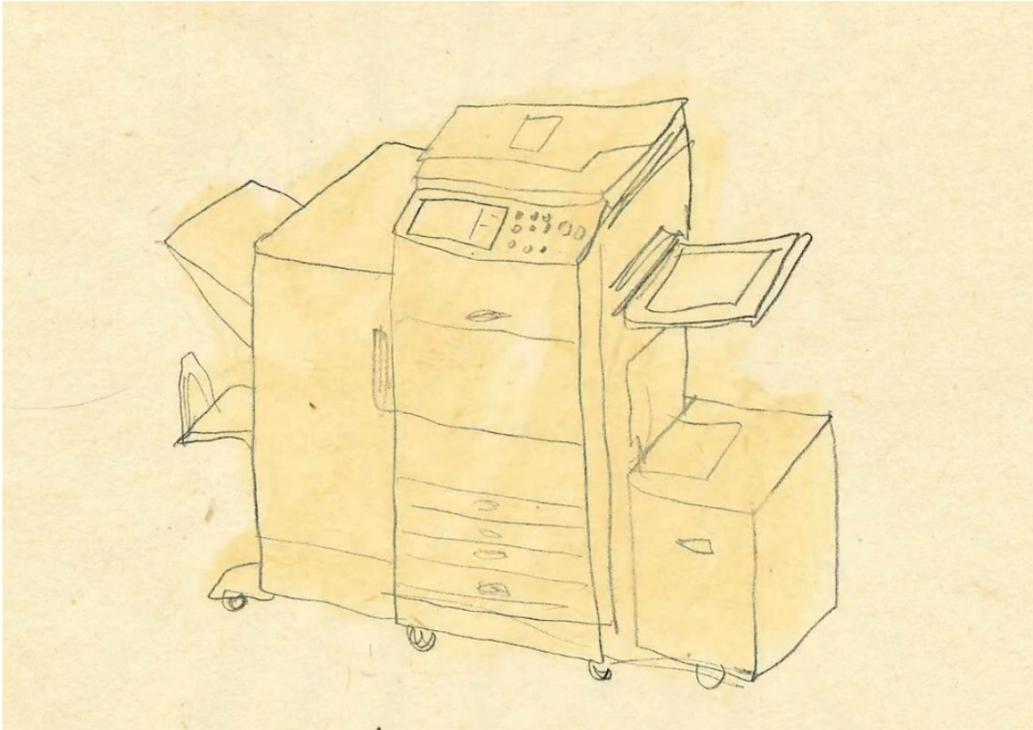


"Mathematics directs the flow of the universe, lurks behind its shapes and curves and holds the reins of everything from tiny atoms, to the biggest stars."

- Edward Frenkel

$\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 0$
 $\sin 2x = 2 \sin x \cdot \cos x$
 $f(x) = 2^{-x} + 1, \epsilon = 0.005$
 $\lambda_2 = i \sqrt{14}$
 $e^z - xy = z = e, A[0, e, 1]$
 $\lim_{x \rightarrow 0} \frac{e^{2x} - 1}{5x} = \frac{2}{5}$
 $\frac{2x}{x^2 + 2y^2} = 2, z = \frac{1}{x} \text{ arctg} \frac{\sqrt{2}}{2}$
 $\eta_1 = \lambda_1^2 - 3\lambda_1 + 1 = 0$
 $|z| = \sqrt{a^2 + b^2}$
 $x \left(\frac{\partial f}{\partial x} \right) = 16 - x^2 + 16y^2 - 4z > 0$
 $A = \begin{pmatrix} x_1 & 1 + x_1^2 & 1 \\ y_1 & 1 + y_1^2 & 1 \\ z_1 & 1 + z_1^2 & 1 \end{pmatrix}, x=0, y=1, z=2$
 $y' - \frac{y}{x+2} = 0, y(0) = 1$
 $\int 3x^2 + 166x^{-0.17} \, dx \lim_{n \rightarrow \infty} \left(1 + \frac{2}{n}\right)^n$
 $A = [1, 0, 3]$
 $\cos p = \frac{(1, 0) \cdot \left(\frac{1}{2\sqrt{3}}, \frac{1}{4\sqrt{3}}\right)}{\sqrt{\frac{1}{12} + \frac{1}{48}}}$



Immature poets imitate;
mature poets steal; bad poets
deface what they take, and
good poets make it into
something better, or at least
something different. [...]
A good poet will usually borrow
from authors remote in time,
or alien in language, or diverse
in interest.

T. S. ELIOT, *THE SACRED WOOD*, 1921

INDIA BEFORE AND AFTER PARTITION





1 of 7

In 2014, an Argentina court ruled that Sandra was a sentient being with thoughts and feelings, and that she was a “non-human person” who had been wrongfully deprived of her freedom in the zoo. See → . This photo was used to illustrate Brandon Keim’s article “An Orangutan Has (Some) Human Rights, Argentine Court Rules,” *Wired* , December 22, 2014. Many of the advocates were inspired by Peter Singer, *Animal Liberation* (1975). Photo: Roger Schultz/Flickr.

Brainstorm: Borders, Boundaries, and Edges

- Cluster with a group of 3-6 people nearby
- Reflect; write on sticky notes; share
- How would you connect your interest and expertise to the theme “Borders, Boundaries, and Edges?”
- We’ll reconnect in about 5 min for informal sharing

Extension: KPS Faculty Workshop (June 15, 2017)

- Goal: Provide example of PLC use and support others in crafting their own experience.
- Structure: Brainstormed on theme by department and made organic connections across disciplines.

ENGLISH

Geographical
Cultural
Borders

Boundaries
due to lack
of experience

Boundaries
we don't
talk about
KL/AP
DMC

Gender
expectations
in home/space

Boundaries
between
skills

Boundaries

literary
genres

Class & Economic
Inequality

Literacy, access to
to education

Standards of
Language

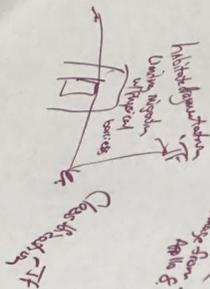
English

Boundaries
created by
publishing norms
- Obscurity

SCIENCE

Matter is mostly empty space !!

- RCC (chem)
- JF
- LW



Earthrise
Energy flow
Appl. & IT

Evolution
- when does something become a SPP.
- "manmade" barriers

- APS
- LW
- RCC

- JF
- LW
- RCC

Quantum Theory
↳ Cont. Space

Classification
- color
- SPP
- what is "alive" >
- planet vs. dwarf planet

Ecotone
- where two comm. meet

Activation Energy
- overcoming barriers to start a rxn
- "Quantum Tunneling"

- JF
- LW
- RCC

Classroom Applications

- Spanish V and AP Environmental Science
 - Students explored immigration from multiple angles and reconciled with media portrayals.
 - Students took pride and saw their teachers engage in collaboration and problem solving.

- Women's Studies and Calculus
 - "Class and Economic inequality"
 - Collaboration across disciplines to produce research-based, action-oriented work

Next Steps: New Challenges

- What could the next iteration of this idea look like?
- What are other ways faculty can act on their learning?
- How do we inspire authentic interest by faculty?
- What other themes excite or interest you?
- Use sticky notes to suggest approaches
- Reconvene for share out

Closing thoughts for different stakeholders:

- For teachers
 - Make time to grow intellectually
- For administrators
 - Tap into the talent of your teachers
- For students
 - Recognize connections and bridges between subjects
- For parents
 - Teacher collaboration and communication strengthens learning experiences for all students

Works Cited

- Anzaldúa, Gloria E. "The Homeland, Aztlán/ El Otro México." *Borderlands/La Frontera: The New Mestiza*, San Francisco, Aunt Lute Books, 1987, pp. 23-35.
- Faiz, Faiz Ahmed. "The Dawn of Freedom (August 1947)." Translated by Agha Shahid Ali, *Annual of Urdu Studies*, vol. 11, 1996, <http://digital.library.wisc.edu/1793/11923>.
- Lawrence, Shirley Blackwell. *The Secret Science of Numerology : The Hidden Meaning of Numbers and Letters*. Franklin Lakes, Career Press, 2001, pp. 55-60, 157-67.
- Manto, S. & Naqvi, T. "Toba Tek Singh." *Manoa*, vol. 19 no. 1, 2007, pp. 14-19. *Project MUSE*, doi:10.1353/man.2007.0041.
- Marrazzo, Sue. *Blurred Boundaries*. 13 Jan 2014.<http://suemarrazzo.blogspot.com/2015/01/day-13-by-sue-marrazzo.html?m=0>. Accessed 1 June 2017.
- Posner, Richard A. *The Little Book of Plagiarism*. New York, Random House, 2007, pp. 47-74.
- Weiss, Kenneth R. "The Making of a Climate Refugee." *Foreign Policy*, Jan.-Feb. 2015, foreignpolicy.com/2015/01/28/the-making-of-a-climate-refugee-kiribati-tarawa-teitiota/. Accessed 24 May 2017.
- Weizman, Eyal. "Are They Human?" *3rd Istanbul Design Biennial*, 2016. *e-Flux Architecture*, www.e-flux.com/architecture/superhumanity/68645/are-they-human/. Accessed 24 May 2017.