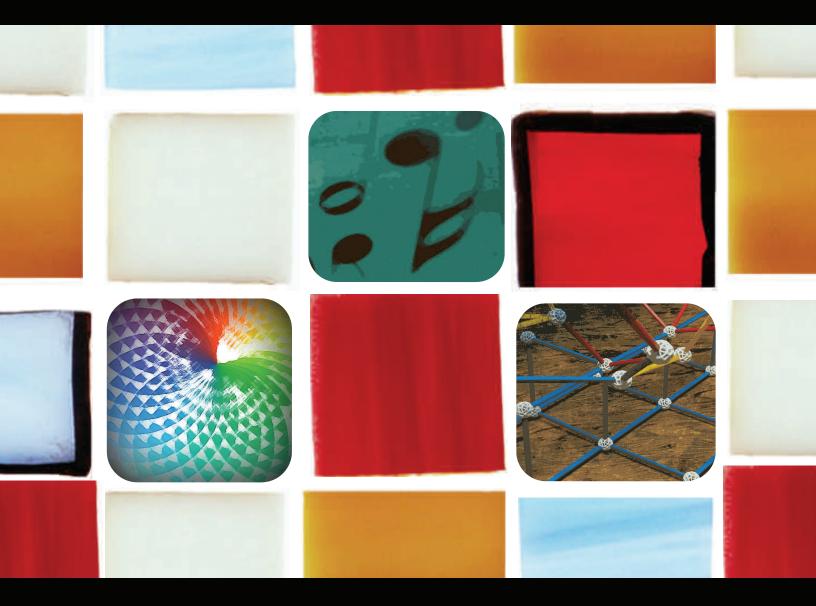
Impact

THE JOURNAL OF THE CENTER FOR INTERDISCIPLINARY TEACHING & LEARNING



Volume 4, Number 1, Winter 2015

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ABOUT US

ABOUT: *Impact: The Journal of the Center for Interdisciplinary Teaching & Learning* is a peer-reviewed, biannual online journal that publishes scholarly and creative non-fiction essays about the theory, practice and assessment of interdisciplinary education. *Impact* is produced by the Center for Interdisciplinary Teaching & Learning at the College of General Studies, Boston University (www.bu.edu/cgs/citl).

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EDITORIAL STATEMENT

A belated Happy New Year! The essays and reviews in our winter issue further suggest the contours of interdisciplinary research and compel us to think even harder about our students.

As participants in the College of General Studies' undergraduate research program, Professor Cheryl Boots and Boston University student Julia Katzman have been analyzing Civil Rights memoirs and music. Their interview with Civil Rights icon and Representative John Lewis underscores the significance of personal reflection and song for political protest. Boots and Katzman's essay also suggests the value of professor-undergraduate student collaboration. Among other things, in his essay "Abstract Reasoning in the Azores," Professor Sam Hammer reflects on how students negotiate the abstract world of natural phenomena and the more precise world of science. By encouraging observation, contemplation and play, Hammer allows students to become better interdisciplinary thinkers. Aaron Fine wants his line drawings and the intentional format of his essay to bring readers into his imagined dialogue between Newton and Goethe. Moving from Newton to Fine and then from Goethe and back to Fine, "Newton and Goethe: A Dialogue in Color" lends insight into the creative process. Substantive and provocative, this issue's review essays by Professors Corwin, Fiscella and Vail further map the terrain of interdisciplinary research and offer a comprehensive reading list for 2015.

Last year, in our 2014 winter issue of *Impact*, we published "Supercool Art: Drawing with Liquid Nitrogen in Provincetown" by Dan Jay. Since then, Jay's chemical drawings have been featured at various venues, and he has created art with students. Recently, BU Graduate student Christine Tannous <u>wrote</u> about Jay's work. We provide this link to Tannous's article for two reasons: to demonstrate what has grown out of Jay's initial essay for *Impact*, and to further acknowledge student work.

As always, we welcome your feedback and responses and encourage you to submit your research or other creative work for consideration to *Impact*.

With best wishes for a healthy, happy, and productive new year,

The Editors

ABOUT THIS ISSUE'S AUTHORS

Dr. Cheryl C. Boots is a senior lecturer at Boston University, where she has taught humanities to freshmen for the past 15 years. Her recent book, *Singing for Equality: Hymns and the American Antislavery and Indian Rights Movements, 1640-1855* examines the function of hymns in nineteenth-century civil rights efforts. She is a singer-songwriter and serves as worship leader for St. Stephen's United Methodist Church in Marblehead, Mass. Her essay for *Impact* is partially based on her Master's of Sacred Theology thesis and the research for her current book project on spirituals, freedom songs, and the civil rights movement from 1955-1968.

Lily Corwin has taught courses in academic and creative writing, literature, and literary theory at several colleges and universities and is currently lecturing at Quincy University. She holds a Ph.D. in English Language and Literature from Catholic University and publishes both creative and critical work. Recent publications have focused on her primary area of research, Jewish American Fiction, and have dealt with treatments of Shoah in the works of Paul Auster and Philip Roth.

Aaron Fine holds an MFA in Painting from Claremont Graduate University and a BFA in Painting, accompanied by a Philosophy honors thesis on Spinoza's Scientia Intuitiva, from Ohio University. In 1999, after working in non-profit arts administration for four years, he began teaching at Truman State University, where he is now Professor of Art and Gallery Director. He teaches in the Interdisciplinary Studies program in addition to providing instruction in Drawing, Painting, and History of Graphic Design. His recent creative non-fiction on subjects in visual culture has been presented at several Popular Culture and Asian Studies conferences and published in academic journals and arts zines including *AsiaNetwork Exchange*, *Blotterature*, and *8-1/2 x 11*. His book of essays and coloring book plates titled *Dialogues on Color* will be published by Are Not Books in early 2016. His paintings and drawings have been exhibited widely over the past 20 years.

Joan Fiscella, Ph.D, Philosophy, University of Notre Dame, taught in Wayne State University's interdisciplinary University Studies/Weekend College Program for working adults in the late 1970s. After receiving her AMLS (Library Science) at the University of Michigan, she worked in academic libraries as a reference librarian and in collections development. She retired from the University of Illinois at Chicago Library in 2010, as Associate Professor Emerita. She has been an active member of the Association for Interdisciplinary Studies since 1989.

ABOUT THIS ISSUE'S AUTHORS - CONTINUED

Sam Hammer earned his Ph.D in evolutionary biology from Harvard University in 1993 and joined the faculty of Boston University that year. He teaches urban ecology in addition to landscape studies, general biology, and botany. He also teaches design research methods in the Sustainable Design Program at the Boston Architectural College. He is the recipient of awards from the National Science Foundation (USA) and the National Geographic Society.

Julia Katzman is a proud 2014 graduate of Boston University's College of General Studies where she was member of the Dean's Advisory Board, a Dean's Host, and the Dean's List. She was a winner of the CGS Capstone Award for her group's paper entitled "BPA: A Global Issue Warranting Local Action." Currently, Julia is a History major in Boston University's College of Arts and Sciences with a concentration in 20th Century American History. She has a passion for civil rights issues and will return to Capitol Hill for her second summer as a Congressional Intern. She has worked as an Undergraduate Research Assistant with Prof. Boots for two semesters.

Jeffery W. Vail is senior lecturer in Humanities at Boston University. He is the editor of *The Unpublished Letters of Thomas Moore* and the author of *The Literary Relationship of Lord Byron and Thomas Moore*. He has published numerous articles on British and Irish Romanticism and has lectured on Byron and Moore around the world, including Austria, France, Ireland, the United Kingdom, and the United States.

ANNOUNCEMENTS

Northeast Regional Conference for Association of Authentic, Experiential & Evidence Based-Learning (AAEEBL)

"ePortfolios and Digital Technologies in the Post-Course Era: Fostering Reflective and Integrative Learning in College, Career, and Life"

March 12, 2015

Boston University, College of General Studies, Center for Interdisciplinary Teaching & Learning

To register or for additional information, contact jregan@bu.edu or trentbatson@mac.com, or visit https://aaeebl.site-ym.com/default.asp?page=2015 NE.

Center for Interdisciplinary Teaching & Learning Third Annual Conference

"Poles Apart, Melting Together: Science and the Humanities Confront the Anthropocene"

June 27, 2015

Boston University, College of General Studies, Center for Interdisciplinary Teaching & Learning

CITL's 3rd Annual Conference will explore the convergence of science and the humanities as we seek to understand the impact of current ecological and technological trends on the planet and humanity. The keynote address will be by Paul Robbins, director of the Nelson Institute for environmental Studies at the University of Wisconsin-Madison. Additional details on the agenda and speakers will be announced later this spring. Featured topics may include climate change, mass extinctions, synthetic biology, Artificial Intelligence, transhumanism and more.

We invite papers on interdisciplinary research and pedagogy addressing what has variously been termed "the end of Nature" and the "Anthropocene." We seek original papers that integrate topics from science and the humanities in order to confront those aspects of globalization that have compelled scholars to revise their conceptions of "nature" and "human nature" in the twenty-first century. Papers presented at this conference will be considered for publication as part of an ongoing series on Ecocritical Theory and Practice edited by Douglas Vakoch and published by Lexington Books (Rowman & Littlefield).

Send a curriculum vitae and a 200-250 word proposal by April 3, 2015 to R. Samuel Deese, rsdeese@bu.edu. For more information, please visit www.bu.edu/cgs/citl/annualconference.

ANNOUNCEMENTS - CONTINUED

Center for Interdisciplinary Teaching & Learning Fourth Annual Summer Institute "The History, Culture, and Science of Beer"

July 17-18, 2015

Boston University, College of General Studies, Center for Interdisciplinary Teaching & Learning

This year's summer institute will explore the history, culture, and science of beer. To complement the classroom learning experience, participants will visit and conduct taste tests at a Boston-based brewery. Faculty members from the CGS Social Science, Natural Sciences, and Humanities divisions will present the following lectures: "From Beer Street to Bud Man: Images of Beer Drinkers in Popular Culture"; "Beer – the Original Biotechnology; "99 Bottles of Beer on the Wall: Nationality, Gender and Beer Songs"; and "Beer and the Making of the Modern Nation-State." Attendees will also have the chance to meet a CGS alumni, who is now a successful, professional craft brewer. To register, contact dconnor@bu.edu or msullvan@bu.edu. Or, visit www.bu.edu/cgs/citl/summerinstitute.

The 12th Learning and Technology Conference

"Wearable Tech / Wearable Learning"

April 12-13, 2015

Jumada Al-Thani 23-24 1436 A.H.; Jeddah, Kingdom of Saudi Arabia

From mobile devices, iWatch, wristbands, and Google glasses, to the latest in sports, digital healthcare, and clinical diagnostics, wearable technology is one of the most prolific areas of innovation. Now, both businesses and consumers have increasingly vast mobile capabilities at their fingertips. And wearable technology can be integrated with other technologies to improve learning objectives, since students have quick and easy access to information. Wearable technology can also connect students in new ways by providing mobility for just about any classroom environment. The 12th Learning and Technology Conference, which is one of the first forums for wearable technology to emerge in the region, surveys cutting-edge research on wearable technology and mobile learning. It provides a unique opportunity for researchers, practitioners, and policy-makers to explore the future of this billion-dollar industry. Among the many topics addressed are the significant innovations and challenges ahead, and what can be expected in future permutations of wearable technology.

This year's conference will feature keynote presentations, intensive workshops, and provocative paper-presentation panels covering the latest in on-body and worn mobile technologies. Expect to come away feeling better prepared to embrace the rising culture of wearable technology. For any inquiries, please contact: LT@effatuniversity.edu.sa Dr. Akila Sarirete at +966 12 636 4300 x 2300 or Dr. Wadee Al-Halabi at +966 55 550 6232. Or. visit: http://www.effatuniversity.edu.sa/Events/LT/Pages/default.aspx

IMPACT ESSAY COMPETITION

Every December, the editors of *Impact: The Journal of the Center for Interdisciplinary Teaching & Learning* invite submissions of scholarly and creative non-fiction essays between 1,000 and 5,000 words on any aspect of interdisciplinary teaching or research. The author of the winning essay will receive a \$250 award and publication in *Impact*.

Essays should be readable to a general, educated audience, and they should follow the documentation style most prevalent in the author's disciplinary field. Essays for this contest should be submitted by the first Monday in December to http://CITL.submittable.com/submit.

CITL reserves the right to not publish a winner in any given year. Faculty and staff from the College of General Studies are not eligible to submit to this contest.

ESSAYS

"Civil Rights Activism, Singing, and the Beloved Community: An Interview with Representative John Lewis"

By Cheryl Boots and Julia Katzman, Boston University

A Bobby Kennedy campaign poster. A group photo of the March on Washington speakers in front of the Lincoln Memorial. A photograph of Mahatma Gandhi. Several prints of marchers: black men in suits with linked



arms or walking side by side. These and dozens of other framed images greet visitors to the honorable John Lewis's office on Capitol Hill. The pictures instantly immerse viewers into decades of activism and service in which Rep. Lewis has engaged on behalf of the "beloved community."

The phrase "beloved community" comes from the Civil Rights Movement of the 1950s. Influenced by the Social Gospel Movement in America as well as the teachings of Gandhi, Martin Luther King, Jr. brought the phrase into common parlance. As one of King's protégés, Rep. Lewis offered his definition in his memoir. Breaking it into parts he wrote, "'Beloved'— not hateful, not violent, not uncaring, not unkind. 'Community'— not separated, not polarized, not adversarial." Rep. Lewis's understanding of beloved community has fueled his lifelong passion for justice.

Despite his family's early warnings to "stay out of trouble," it did not take Rep. Lewis long to identify a trouble for which he was willing to die. Deeply inspired by the heroism of Rosa Parks and the moving rhetoric of Martin Luther King Jr., Rep. Lewis affiliated with civil rights activism during his student days in Nashville. As a member of the Southern Christian Leadership Council and the chairman for the Student Nonviolent Coordinating Committee (SNCC) during the turbulent years 1963- 1966, Rep. Lewis helped organize and run activities that were instrumental to the entire Civil Rights Movement. After many successes and failures— more than 40 arrests, and numerous beatings and injuries that brought Rep. Lewis very close to death— his allegiance to our nation and to the African American community has remained consistent.

A thirteen-term U.S. congressman and 2010 recipient of the Presidential Medal of Freedom, Rep. Lewis has come a long way since the days of sit-ins and freedom rides, yet his tactics and fervor persists. With linked arms to fellow members of his beloved community, Rep. Lewis' leadership style seems an anomaly

¹John Lewis, *Walking with the Wind: A memoir of the Movement*. With Michael D'Orso. New York: Simon & Schuster, 1998, 472. ²"2010 Presidential Medal of Freedom Recipient: Congressman John Lewis," mp4 video, 03:36, The White House, February 16, 2011, accessed December 31, 2014, http://www.whitehouse.gov/photos-and-video/video/2011/02/16/2010-presidential-medal-freedom-recipient-congressman-john-lewis.

in today's sensationalist media coverage. Instead of self-promotion, Rep. Lewis intently inspires young leaders to educate themselves and to harness their voice and action as the noblest vehicle for change.³ The Freedom Schools, which were classes designed to educate African American children and adults on African American history, and information to help pass state-imposed "literacy tests" required to vote in elections, began under Rep. Lewis's tenure at SNCC. Speaking at their training event this summer, Rep. Lewis encouraged youth to bring about "a nonviolent revolution, a revolution of values, and a revolution of ideas."4

The nature of racial inequalities may have changed over the past 50 years;, but the tactics employed by Rep. Lewis alongside his beloved community live as legacies of the Civil Rights Movement. At the ripe age of 74, Rep. Lewis continues to practice what he preaches. Rep. Lewis' recent involvement in demonstrations following the tragic deaths of Michael Brown and Eric Garner attests to the altruistic and unyielding nature of his activism. This past August, Rep. Lewis joined the Atlanta community in a rain-soaked march to stand in solidarity with the peaceful actions of the people of Ferguson. For Rep. Lewis, nonviolent action seeking to "wake up a sleeping nation, to educate and sensitize those who become awakened, and to ignite a sense of righteous indignation"⁵ is essential.

To learn more about Rep. Lewis's understanding of the beloved community, particularly in terms of singing during the Civil Rights Movement of the 1950s and 1960s, we traveled to Capitol Hill for a personal interview in his office. Gathered around a table beneath the framed photos, Rep. Lewis recalled how activists used music during the movement. At one point, he expanded upon the lunch counter integration efforts in Nashville that were organized by the Nashville Student Movement.

Singing was particularly important in the mass meetings where activists assembled before embarking on their planned action. Protesters and their supporters who would not join them on the front lines sang together. In a subdued voice, Rep. Lewis explained, "If we thought that something might happen [at a demonstration], someone might get arrested," then he paused "or worse, we would sing 'Will the Circle be Unbroken?' Not just once but over and over." Lifting his arms and crossing them in front of him, he continued, "At the end of the meeting we sang 'We Shall Overcome' holding hands."

However, at the lunch counter, the congressman pointed out, the highly trained students did not sing. When demonstrators took their places, they asked for "a sandwich or a cup of coffee." Then, they were silent. "We would read a book... or look straight ahead." He cupped his hands on the table in front of him, re-enacting the

³lbid.

⁴Mariah Wright Edelman, "Inspiring Initiative: John Lewis Urges Youth to Get into Necessary Trouble," Black Star News, June 9, 2014, accessed December 31, 2014, http:// www.blackstarnews.com/us-politics/justice/inspiring-initiative-john-lewis-urges-youth-to-get-in-necessary-trouble.html.

⁵John Lewis, "Michael Brown, Eric Gartner, and the 'Other America," The Atlantic (Washington, DC), December 15, 2015, accessed December 31, 2014, http:// www.theatlantic.com/politics/archive/2014/12/michael-brown-eric-garner-other-america-john-lewis/383750/.

⁶The interview was made possible through the efforts of Daniel Krivit, BU LAW 1957 and funding by Dean Natalie McKnight and the CITL undergraduate research assistant program. $^{'}$ Personal interview with Congressman John Lewis, Washington, DC. March 5, 2014.

scene as he lifted his eyes and looked into the distance. "But once we were arrested—," he stopped and smiled knowingly as he walked over to a neatly organized stack of framed photos similar to the ones on the wall above him. Sorting through them until he found the one he wanted and brought it back to the table, he resumed his story, "Then the singing would start." Pointing to the image of two police officers carrying him toward a police paddy wagon, he said, "I'm not singing here, but once we were in the paddy wagon, we made it rock! And the [protestors] outside [the stores] would be singing, too."

This brief vignette from our longer conversation offers a window for deeper analysis of singing as a means of developing and sustaining the beloved community. Singing together provided protesters and their supporters a precious time of participation as equals while they sang and listened to music. These moments of "egalitarian resonance" microcosmically enacted the larger interracial society that they envisioned. In singing, they found empathy with each other, integrity as individuals, and hope for the future, all personal characteristics that form the bedrock of an ethical community and ethical leadership.

Empathy for each other is apparent in the words of "Will the Circle be Unbroken?". Written in 1907 for the international revivalist Charles A. Alexander, Ada R. Habershon's lyric speaks to the desire of loved ones to be together after death.

Will the circle be unbroken By and by, by and by? Is a better home awaitin' In the sky, Lord, in the sky?¹¹

As Rep. Lewis said, activists knew they could be hurt, "or worse." They had seen their comrades maimed and they had seen their dead bodies exhumed from graves and riverbeds. A sense of hope also infuses these words. Their repetition "not just once, but over and over" imprinted the protesters feelings for each other and their desire for justice in a time to come.

A similar sense of hope is distilled from the words of "We Shall Overcome."

We shall overcome.

We shall overcome.

We shall overcome someday.

⁸lbid.

⁹Cheryl C. Boots, Singing for Equality: Hymns in the American Antislavery and Indian Rights Movements, 1640-1855. Jefferson, NC and London: McFarland & Company, Inc. 2013, 4.

¹⁰Walter Earl Fluker, Ethical Leadership: The Quest for Character, Civility, and Community. Minneapolis: Fortress Press, 2009, 130.

¹¹http://www.cyberhymnal.org/bio/h/a/b/habershon_ar.htm. accessed December 26, 2014. The Carter Family recorded "Can the Circle Be Unbroken By and By?" in 1928. Now part of public domain, the song lyrics have been modified by various performers. Singers associated with the Civil Rights movement including Joan Baez and Bob Dylan performed and recorded it

Oh, deep in my heart, I do believe We shall overcome someday. 12

Resilience and determination in the lyrics fire the hope for overcoming the known barriers and the unknown trials before a future, a "someday," of peace and equality.

The distinctive physical linking of hands in a chain— different from the way singers held their hands to sing, "Will the Circle Be Unbroken?" — added a ritualized connection through physical touch. Singing together created egalitarian resonance which contributed to the beloved community that the activists hoped to create for themselves and succeeding generations.

Singing spirituals and freedom songs during the Civil Rights Movement of the 1950s and 1960s provided a vital impetus to the labors of those who sought to change American society. Singing helped create and sustain the beloved community then; it continues to be a work in progress now. Rep. Lewis provides a living link with the past as he speaks, walks, and lobbies for a peaceful, kind, and caring American society that lives together without being polarized and adversarial: a contemporary beloved community.

¹²Sing for Freedom: The Story of the Civil Rights Movement Through Its Songs. Guy and Candie Carawan, eds. Montgomery and Louisville: NewSouth Books, 2007, 8-9.

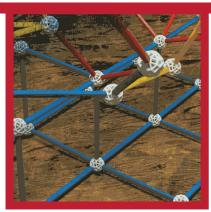
"Abstract Reasoning in the Azores: Contributing and Contemplating at the Second International Interdisciplinary Conference"

By Sam Hammer, Boston University

I was invited to speak at the Second International Interdisciplinary Conference, which brings together researchers from around the world to bridge different cultures, scientific attitudes, and academic stages. It was held at the University of Azores, Portugal, and with limited flights from Boston, I took a flight that arrived in Ponta Delgada several days before the conference. I had plenty of time to refine my talk, and also had some time to explore the town and its scenic environs. The Azores are beautiful. Though they are islands at the margin of Europe, they are anything but isolated.

People from more than 20 countries were slated to attend the conference, which featured a wide-array of topics, spanning nutrition in rural India, landscape design in the Czech Republic, and teaching mathematics in Portugal. What could I possibly offer to connect these disparate themes? I came prepared to discuss connections between art, aesthetics, and science. Could I bridge the conceptual chasm between heat pumps in Slovenia, buzzard populations in Moldova, and women's issues in Nigeria?

These aren't exactly the questions I ask myself every day as a professor at the College of General Studies; but in a sense, our students do. How does a young person reconcile cognitively a semester that features the philosophy of Kant, the politics of modern China, and the intricacies of photosynthesis? What does all this mean to a second-year undergraduate seeking a degree in finance or communications? Abstract reasoning, our amazing ability to connect, contextualize, and create, holds the key.





Ponta Delgada and its magnificent setting. Photo provided by Sam Hammer

During a productive sabbatical in 2012-13, I thought a lot about how we make connections between disciplines. When I consider science and art, I see aesthetics as the diaphanous fiber that connects the two. By aesthetics I also mean abstract reasoning, and this reasoning allows us to think and behave differently and to problem solve. Ultimately, this way of thinking helps us translate seemingly abstract signals in our environment into coherent narratives.

At the conference, I presented these as "scientist-artist behaviors." As an artist and a scientist I have come to understand that the way artists and scientists get things done is not that much different. Artists and scientists both grapple with problems they perceive in their environment. Both scientists and artists spend long hours contemplating, reflecting, and curating ideas. And experimentation in the form of serious play is native to both art and science cultures.

As I returned to teaching in the fall of 2013 I experimented with bringing these ideas to my students. My goal was to help them bridge the abstract, irrational, seemingly random world of natural phenomena with a cognitive-rational narrative we call "science." I developed a set of laboratory experiences in which students had the opportunity to observe, contemplate, and play on a weekly basis.

These are not trivial expectations. Students prefer to perform the rote tasks they need to fulfill during a lab, and they like to do this as fast as possible. To observe and reflect means we have to slow down. Such reflection and observation also threatens to take us out of our comfort zone. We may be experts at contemplating a pair of shoes on Newbury Street, but it's different when we're asked to evaluate a landscape or a series of organismic forms and reflect on our visual preferences.

And "play" is something our students left behind as they took on the mantle of young adulthood, honing their achievements in high-impact educational environments as they prepared for college. Common wisdom refutes play. Don't our students have enough facts and figures to learn? But increasingly, contemplation and play are seen as the heart of learning. John Dewey understood this. RISD's John Maeda is a champion of STEAM



Students play as they explore complexity at the molecular level. Photo by Lauren Pappalardo

(science, technology, engineering, art, and math) education, and the Media Lab at MIT is leading the way exploring this kind of interdisciplinary learning. Now we're playing at BU.

I presented these ideas during my talk at the Second International Interdisciplinary Conference, illustrated with photos of my students' creations: human-sized enzymes and discrete phenomena that join together to create a larger scientific narrative of our water experiments. And the many tweets that my students use to communicate their findings, often in strikingly accurate scientific language, punctuated my talk. Seeing students at work and play sparked the imagination and enthusiasm of my audience, most of whom also work as teachers.

Our young people are our future. We can't teach them how to solve the problems that they will face in 20 years. Individually, no single disciplinary "content" we offer will take them where they need to go. The world they face is unpredictable, random, and abstract. The tools they'll need to face

it go beyond technology, beyond our books, beyond the disciplines we have struggled to master (and which we naturally but perhaps misguidedly want to pass down). Our students face a world that requires real-time human agency. They will need to think and act quickly, collaboratively, and creatively. Our job as educators is to help them develop their innate ability to connect disparate ideas, which will expand their horizons through interdisciplinary work. Helping our students approach and solve problems through abstract reasoning is our contribution to their future.

Newton and Goethe: A Dialogue on Color Sir Isaac Newton (1643 – 1727) and Johann Wolfgang von Goethe (1749 – 1832)

By Aaron Fine, Truman State University

People think I unlocked the prism, but the prism is a key, not a lock. Once I had it in my hands the secrets slipped out one after another like sheep from a pen. Even so, I stayed in that attic for weeks and months more while the plague ran loose in London. Shutting out the light, I came to know the swelter and stink of the world as a blind man knows it. I was Descartes in his bread oven; darkness the scourge that strengthened my mind against the deceiving demon.

"I am not speaking of a colour of the eye or mind." I spoke it to the darkness and to the colours that churned in it. I spoke it to the burning sparks when the probe touched the back of my eye's socket. I spoke it to the sweet succubi who came with the opium.

I made the seven colours fly around my chamber – pulling them apart and putting them back together. The levers of the mechanism are bits of glass – prisms, mirrors, and lenses. The gears of the machinery lie beneath vision. Even these true colours are a mere slick of oil on top of the deep waters of reality.

A plague of questions distracted me. They asked, "Where is the organizing principal?" while vermin ate my bread. Time wound faster as they mocked, "With what tongues can this machine be described?" and I forgot again to rest. At last the servants found me unconscious and carried me down into the blinding light.

They say octave to mean eight. But sing "Do, re, mi..." and there are only seven notes. It is merely 'Do' at both ends and so the straight line becomes a circle. It woke me the night before the fever broke. Rising above the river, the wheel burned; red, orange, yellow, green, blue, indigo, violet... and red again. I did not invent the colour wheel. It discovered me.





Coloring book plate "Color in Newton's Attic" by Aaron Fine

To a certain degree, Newton and Goethe were talking past each other. Because each man defined the problem of color differently, each sought out different tools and achieved different results. Most commentary on their differing views on the nature of color ends report Goethe is wrong due to incorrect physics. This, of course, is correct, but only if you are willing to grant that the nature of color can be accounted for in terms of physics and by means of objective observation.

Newton's reputation for achieving a divine simplicity— as he composed the laws of physics by which both planets in the heavens and apples here on Earth are governed, when he discovered or invented the calculus, and when he divined the nature of light – is well earned. In the case of *The Opticks*, he created a tour de force not just on his subject but also on the scientific method. And though we now can identify many scientific flaws, and many unscientific leaps of faith, the central insight of his work was right and it was revolutionary.

White light (light that renders a white page white) is made up of many different colors of light. Today we consider this axiomatic. But in its day, it was as counter-intuitive, as anti-axiomatic as a conclusion could be.

White and light to the medieval mind were not complex things; they were simple, pure things. The moral sense of their purity, of their simplicity, went hand in hand with their metaphorical connection with truth, with understanding, and with God. Getting the world to accept otherwise, perhaps even bringing himself to it was one of Newton's great challenges.

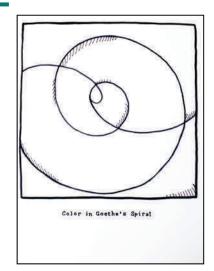
His invention of seven primary colors (ROYGBIV) and of the color wheel allowed Newton to make use of another abiding matter of faith held by scholars throughout the Christian world. This was a conviction that had been cherished ever since Pythagoras plucked a string and then cut it in half and plucked it again to demonstrate the mathematical nature of sound. Everyone knew that the wonders of light in God's creation, once they were revealed, would operate as sound was shown to operate.

The color wheel is a musical wheel.

The color pyramid was revealed to me in a time of doubt. As the last century was dying my plans for a new color theory seemed to add up to less than their parts. I had always considered myself an artist, but I feared Sir Isaac had bested me with his seminal creative act, the invention of the color wheel.

Hoping to induce that abstraction of mind that precedes inspiration, I walked the streets of Weimar at dusk, when only young people and cutpurses are afoot, their shadows long and furtive in the sanguinary light. Carriages dashed past me in the gloom, their great iron shod wheels spinning so fast their spokes disappeared.

At my desk I recalled those wheels and drew upon my parchment a spiral inscribed inside a circle. In that moment I felt a shiver, my soul's recognition of the active nature of color — always changing and self-renewing. I placed a teardrop of purple-red hue in the center of the spiral and fell asleep in all my street attire. I was awakened by cool breezes from the southern mountains. In that morning's buttery light my spiral seemed to me... almost good.



Coloring book plate "Color in Goethe's Spiral" by Aaron Fine

Waking again two weeks later in the arms of those mountains, with the sun below the horizon, was my rebirth into color. The dawn probed the blackness drawing forth a blue infinity. Gold licked the tops of the western range and in a moment the full

color of the valley sprang forth. By late morning we had walked to a point where we could look down upon a waterfall. We drained a bottle of Riesling to honor the rainbow that danced beneath us: a complete circle of color, not a mere arch.

But it was the sunset that gave me my pyramid. As the orb dropped, its hue intensified from white, to yellow, to orange. Skiing across a frozen plane, with a triangular peak on my left and the sun on my right, I watched the snow become the shameless pink of a tulip's petal. I gazed at my shadow – an arrow stretched across a league of pink snow, pointing to the mountaintop. That line was not black as painters might depict but a brilliant glowing peacock green. Then night's horizon swept that field away and slid up the mountain's face. The last image the sun gave me was the triangular peak soaked in blood.

It was Newton's assertion "I am not speaking of a color of the eye or mind," that should have given Goethe all the ammunition he needed. To this he might have responded "Then you are not speaking of color at all." To some degree he did do that. But just as Newton was rather more inventive and inspired by his own cultural conditioning and faith in the divine order than his scientific treatises might suggest; Goethe was duly

influenced by his own conviction that if Newton were wrong philosophically, then his science would prove flawed as well. Thus did Goethe provide us with numerous perfectly good but beside-the-point demonstrations of color phenomena in his effort to prove that Aristotle's 2,000 year old color theory was correct.

But Goethe was a philosopher who understood the drift of thought in 19th century Europe. He was a romantic who had grasped an important flaw of empiricism: the impossibility of objectivity. His stance was this: The sun was not made for the eye— it was not made by the eye or of the eye. The eye was made for the sun; it is of the sun. This stuff is so romantic, I frequently urge my students to use it in their love letters. But it also stands true. The light that bathes creation was the precondition that caused our eyes to be as they are. When we see color it is not out there in the world— painted onto tulips and snow banks— it is formed in our eye and mind. Our perceptual apparatus creates color within us— tweaked and filtered by our emotional state and cultural biases. And while knowing the physics of color is useful for manufacturing paint chips for the paint store, it is the other side of perception where most of the meaning lies for us.

Color is only of the eye and mind.

BOOK REVIEWS

Hinnov, Emily M., Laurel Harris, and Lauren M. Rosenblum. *Communal Modernisms: Teaching Twentieth-Century Literature and Culture in the Twenty-First-Century Classroom*. New York: Palgrave Macmillan, 2013. 203 pp. Hardback ISBN: 978-1-137-27490-8.

Reviewed by Lily Corwin, Quincy University

Too often, professors segregate teaching and research and forget that they are meant to be in conversation with one another. The editors of *Communal Modernisms* attempt to bring these two sides of the professorial coin back together in a volume comprising an introduction, eleven essays, and an afterword. Each scholarly essay focuses on a different aspect of literary modernism and concludes with sample lesson plans and assignments proceeding from the research they follow. Some of these pedagogical tools are more useful than others— the best provide links to concrete resources available to professors and students— but the attempt to consider the practical classroom application of scholarly thought and research is welcome and, overall, helpful and enlightening.

Editors Emily M. Hinnov, Laurel Harris, and Lauren M. Rosenblum, however, had several other goals in compiling these essays, and not all are as clear or as successful as the first. The introduction, penned by the three, attempts to explain the collection's direction. Literary modernism, they argue, is nearly synonymous for most students of the period with texts that explore an "alienated white man's epiphany," so names like Eliot, Pound, and Joyce, along with their most famous works, have become synecdochical for the whole mid-war period (3). *Communal Modernisms*, then, seeks to focus not on these well-studied male figures, but on their female counterparts. Each essay interrogates the work of a female modernist writer; authors as well-known as Virginia Woolf and Djuna Barnes are considered alongside more seldom treated artists such as Sylvia Townsend Warner and Lola Ridge.

In addition to the focuses on pedagogy and feminism, the collection also seeks to treat the role of communities in modernist literature. This idea is less than adequately defined throughout. The introduction tells us that Woolf's concept of "the world as a pulsating work of art in which the wider audience must play an integral part" and Walter Benjamin's theory that "the dialectical image afforded by the lately egalitarian place of art in modern society offers a veritable constellation of interpretations" have helped the authors form their vision of "communal modernisms as a twentieth-century aesthetic... which creates the opportunity, through cooperative (re)action, to rebuild community" (2). What do they mean by this, precisely? After reading the collection, I am not entirely sure. Yes, the essays all consider some aspect of life outside the literature being treated, whether material, historical, or otherwise, which is, in itself, at odds with the traditional perception of modernism as the literature of alienation from the world. However, there is little attempt, after the introduction, to reinforce or to clarify exactly to what "communal modernisms" refers. The editors acknowledge that community is defined very differently in each essay— from the "community" of a mother and child connection to the "community" between creators and consumers of art— and as I read through the essays, I found myself forgetting that this was supposed to be a common thread. The introduction tells us that the collection's editors were mindful of modernist scholar Andrew Thacker's recent call for more interdisciplinary approaches to the field and believe that these approaches work well in the classroom, allowing students "to bring their own interests to the study of modernism" while offering a "rigorous and engaging entry to the period" (8). Ultimately, this interdisciplinarity may be all that "communal modernisms" really means, as the essays seek to place their literary subjects into the contexts of various facets of the worlds in which they were created.

The volume is divided into three sections: "The Influence of Photography and Film on Literary Communal Modernisms," "The Politics of Communal Modernisms," and "Reinvention within Communal Modernisms." Most of the essays in each section tackle the theme from a decidedly interdisciplinary stance, considering literary works beside material or historical evidence. Rosenblum discusses magazine images and their role in Nella Larsen's *Quicksand*; Kirsten Bartholomew Ortega places Lola Ridge's long poem about poverty alongside Jacob Riis' famous contemporary photographs of the impoverished and demonstrates how they enrich our understanding of one another and their time. Other essays, like Judy Suh's excellent work on Jean Rhys' *Voyage in the Dark* and the roles of race, gender, and class in the British Empire, or Rita Kondrath's look at Sylvia Townsend Warner's *Opus 7* and non-combatant trauma, consider how the historical moment of a literary work, with all of its tensions, should inform how we read and understand it.

Altogether, then, the collection is flawed, but successful. For the teacher of women's literature or literary modernism, it merits a full read, as it will provide some worthwhile insight into well- and lesser-known works penned or edited by women in the mid-war period, as well as some fresh ideas on how to present them effectively to students. For the teacher or student of the time period, too, it is at least worth a look for its exploration of how history and culture inform and are informed by the considered literary pieces. Most of the essays themselves, along with the pedagogical approaches they suggest, embrace interdisciplinary thinking and offer concrete ways to introduce students to how literature interacts with the world it comes from, and this, ultimately, is the strength of the volume.

Hansen, Regina, ed. *Roman Catholicism in Fantastic Film: Essays on Belief, Spectacle, Ritual and Imagery*. Jefferson: McFarland, 2011. 304 pp. ISBN: 978-0-7864-6474-6.

Reviewed by Jeffery W. Vail, Boston University

Hansen's wide-ranging and eminently readable collection of essays is a trove of information and insight about fantastic films that feature Roman Catholic themes, characters, and imagery. Among its chief strengths are the large number and rich variety of films examined: there are twenty-one essays examining fantastic films as varied as *Gone Baby Gone*, *The Lord of the Rings* trilogy, *Cat People*, *The Exorcist*, and the Soviet cult science fiction fantasy *Kin Dza Dza!*, as well as works by Hitchcock, George Romero, Terry Gilliam, and Fellini, among many others. Many Catholic-inflected horror traditions are discussed, such as those of the vampire, zombie, devil/demon, and "killer priest." Students and scholars of the history of Gothic literature will trace in many of these films a fascinating cinematic continuation of anti-Catholic themes dating back to classic eighteenth- and nineteenth-century Protestant British horror and terror novels such as M.G. Lewis's *The Monk* (1795), Ann Radcliffe's *The Italian, or the Confessional of the Black Penitents* (1797), and *Zofloya* (1806) by Charlotte Dacre. The centuries-old trope of the sexually perverted, homicidal and Satanic priest as it manifests itself in film is the subject of several insightful essays, including "Killer Priests: The Last Taboo?" by Shelley F. O'Brien, "'Dark Imperative': Kant, Sade and Catholicism in Jess Franco's *Exorcism*" by David Annandale, "Mad Drunken Exorcists: The Decline of the Hero Priest" by Regina Hansen, and Christa Jones's "The Satanic Saint in Maurice Pialat's *Sous le soleil de Satan*."

Inveterate fans of fantastic (and Catholic-themed) cinema who read through this book will find their Netflix queues and Amazon carts filling up with intriguing films they have never heard of before. Likewise, those interested in theoretical, critical and philosophical works on horror film will find in the essays' notes and works cited lists many new avenues to explore. Very valuable, especially to non-Catholic readers, are the many

helpful explanations of various important aspects of Catholic doctrine, ritual, and ethics. In general, this volume features relatively concise essays written in refreshingly pellucid and commonsense prose, unencumbered by theoretical abstrusity or obscurity. Many are very clearly written and straight to the point, which will make the collection as interesting and entertaining an experience for casual readers and cinephiles as it will be for academics.

Taking her cue from Tzvetan Todorov's classic study The Fantastic: A Structural Approach to a Literary Genre (1973), editor Regina Hansen divides the essays and the films they analyze into three groups: "Marvelous Catholicism" (in which the "fantastic" events and forces associated with the religion are as accepted as real); "Uncanny Catholicism" (in which the occurrences depicted are not outside the realm of possibility, but are nonetheless amazing, shocking, and or extraordinary); and "Ridiculous and Monstrous Catholicism" (featuring anti- and faux-Catholic themes, images and characters). One of the most well-written and informative essays in the volume is Hansen's Preface, which draws upon Todorov, Freud, film history, theology, and the Gothic literary tradition of the late Enlightenment, British Romantic and Victorian eras in order to carefully situate the numerous films discussed in the essays within clear and helpful conceptual frameworks. Hansen also confronts the relatively recent revelations of widespread child sexual abuses and cover-ups perpetrated by Catholic ecclesiastical authorities, and the ways in which such horrors have "fed into, and often justified, newly Gothicized representations of Catholics and Catholicism" in film (9). The influence of Todorov makes itself felt in several of the essays that follow, particularly in John Regan's "'When the Saints Go Marching In': Saints, Money and the Global Marketplace in Danny Boyle's Millions" and Victoria Surliuga's "The 'Fantastic' Roman Catholic Church in Italian Cinema," the former a stimulating close reading of a film in the "Marvelous Catholic" mode and the latter an analysis of filmic attacks on and criticisms of the Church by Fellini, Pasolini, Marco Bellochio and Ermanno Olmi.

Roman Catholicism in Fantastic Film is a thought-provoking, delightfully eclectic collection, which has much to offer fans as well as students and scholars of cinema, horror, and fantasy, and much to teach those who are interested in the modern, multifaceted cultural legacy of the Roman Catholic religion.

Foshay, Raphael, ed. *Valences of Interdisciplinarity: Theory, Practice, Pedagogy*. Edmonton: Athabasca University Press, 2011. x + 395 pp. Paperback ISBN: 978-1-9268-3646-1.

Reviewed by Joan B. Fiscella, University of Illinois at Chicago

Raphael Foshay's collection of essays is based on a 2008 Athabasca University symposium, *The Scope of Interdisciplinarity*, which brought together scholars of interdisciplinarity from humanities and social sciences to examine the ways interdisciplinarity may function in teaching and research. We learn at the end of the volume, the symposium was to help provide a way for Athabasca University to assess its purpose for and accomplishments of the Master of Arts in Integrated Studies. The speakers' contributions are organized in three parts: theory, practice and pedagogy.

Foshay sets his introduction by reflecting on "interdisciplinarity, for what?" He takes what first appear to be two perspectives, that of academic life and that external to academic life, but he immediately challenges the dichotomy (p. 2). Instead, he argues, that the two have to interact. He traces the tension between academic and non-academic perspectives from the Enlightenment, noting that the development of disciplines was ongoing both within the academy and outside (for example, in professional associations).

The essays grouped as theory offer a wide variety of discussions. Among the authors are Martin Jay, Julie Thompson Klein, Rick Szostak, and Diana Brydon. In "The Menace of Consilience: Keeping the Disciplines Unreconciled" historian Martin Jay takes on Edward O. Wilson's notion of bringing the disciplines together (in a move he calls, following Wilson, "consilience"). Jay argues instead that any attempt to take away the boundaries between disciplines must attend to the contexts of the disciplines, in particular local and regional contexts; that in his own work across boundaries, he cannot leave behind his own professional identity as a historian; and that removing all disciplinary boundaries may in fact open the humanities in particular to a takeover by one or another science discipline and to "intellectual incoherence." Jay makes his argument by reviewing scholars, journals, and theories whose language has shaped both sides of the argument about disciplinary boundaries: Clifford Geertz's "blurred genres" (p. 33) and associated journals such as Critical Inquiry, Representations, Daedalus, and Common Knowledge; Timothy Lenoir's discussion of disciplines as "political institutions" (p. 34); the growth of "cultural studies"; and the interpretation of disciplines as "turns" (e.g., "linguistic turn", etc.). Jay proposes an approach that views disciplines "as relational networks of elements" which are continuous rather than divided (p. 38). He concludes, however, that no one of these metaphors is the final answer to what the disciplines are today. In fact, the negotiation will continue as scholars and practitioners continue to make sense of the disciplines.

Julie Thompson Klein's contribution, "Interdisciplinarity, Humanities, and the Terministic Screens of Definition," gives a brief overview of other symposium presentations as a jumping off point to illustrate change in the humanities since the late nineteenth century, and then analyzes interdisciplinary study, teaching and organizational structures. Klein, too, is attuned to changes in the language of disciplines. She borrows Kenneth Burke's notion of "terministic screens" to filter the language of disciplines and interdisciplines. By extensively cataloging terminology and pointing out evolving usage, changes in meaning, and relations to societal changes, she gives a rich map of the development of interdisciplinarity and its relatives in research, education, and practice.

Rick Szostak, in "Integrating Interdisciplinary Studies across the Humanities and Social Sciences," approaches the question of interdisciplinarity beginning with the field of history. Instead of using the disciplinary group names, he prefers to refer to "Apollonian" and "Dionysian" traditions. Here as elsewhere in the essay, he describes sets of alternative approaches and then suggests ways in which they can be combined as complementary. Szostak identifies some attributes and questions that arise in studies of history: the need for clarity in use of terminology, emphasis, interpretation; the relation between a focus on generalization or on the particular; the use of metaphor to describe an historical period; attention to various types of causation; and the narrative. Szostak notes that the humanities work more in the area of theory, and he recommends interdisciplinary work, drawing on various methods. Interspersed throughout the essay Szostak has placed bullet points leading readers through the issues he has set up in his discussion. He concludes by encouraging disciplinary and interdisciplinary groups to learn from each other and to contribute to the scholarship that links them.

Diana Brydon, in "Globalization and Higher Education: Working Toward Cognitive Justice," looks at three major divides in education: the break between global north and global south that prevents solving global problems; the division between humanists and social scientists that prevents taking advantage of the strengths of each; and the need for universities to share their research and teaching to benefit other public and private organizations that also produce knowledge. She draws on the work of other presenters at this forum, and concludes with a recommendation for the work of Jan Aart Scholte as a good insight into the state of current thought. Rationalism continues to be a strong influence on the social construction of knowledge. At the same time there is a growth in anti-rationalist knowledge; and cross-world relations have led to some changes in ontology, methodology and aesthetics (pp. 111–12). She, on the other hand, argues that there are alternative approaches to knowledge production in lesser-known centers that can support cognitive justice.

The essay subjects that illustrate the practice (rather than theory) of interdisciplinarity include ecological thinking; journal publishing; film; and the relation among gender, women's rights and religion. Specific presentations are examples of the range of work in interdisciplinary practice, often the perspective of work outside academic life.

Lorraine Code's essay "Ecological Thinking as Interdisciplinary Practice" draws on Rachel Carson's work as a model, specifically alternating between field studies or scientific research and analysis. The turnaround of Tanzania's health system is a telling example of the power of seemingly interdisciplinary practice. Key features included studying the individual characteristics of specific regions to determine the different needs for financial support and individualized drug packages. Instead of carrying out generally accepted evidenced-based studies, the researchers relied on the knowledge of local people. Results of these local studies included providing accessible health care tailored to the people of specific regions. Code concludes that the work of ecological thinking does not confine itself to objective standards of a discipline, and in fact, it challenges those artificial boundaries. As boundary crossing, it may be thought of as interdisciplinary. Yet Code is somewhat reluctant to use the label "interdisciplinary" since to engage in ecological thinking and work, the researcher must move in multiple realms without concern for the accepted disciplines.

The aim of Gary Genosko's "Transdisciplinarity and Journal Publishing" is to show what journal publishing can tell us about transdisciplinarity. He offers publishing as a technically complex "microinstitution" and describes transdisciplinarity as "undisciplinable" to the extent that it organizes itself around the problem of how to build a microinstitution" (p. 231). Genosko's notion of journal publishing is certainly not limited to regular issues of a print (in the 1970s) group of articles on subjects fitting the mission of the journal. Instead he shows the history of one or another journal and how it often arises out of groups around a center, a group of editors, a pool of graduate students, funding issues, and infrastructure. Among his extended examples are *Canadian Journal of Political and Social Theory (CJPST)* and *Telos*, both of which teach the importance of the project as a living organism instead of a product standing apart from a creative source.

Morny Joy's purpose, in "Gender, Women's Rights and Religion: An Interdisciplinary Case Study," is to propose the contribution religious studies can make to interdisciplinary work. Joy bases her study on examples of violence against Aboriginal women of Canada. One example is a woman who married a non-Indian man, thus removing her from her status as Indian; she later divorced this man, but was unable to rejoin her reservation. (A man of the tribe who marries a white woman does not lose his status.) The woman made the case for reinstatement, including her "religious status of parity" (p. 255), as a human rights issue and a women's rights issue. Joy details the conflicts among and criticisms of using "rights" as the basis for negotiating social problems, including not only human rights and women's rights, but also tribal and ethnic rights, and religious parity, all of which are often argued either alone or in combination. Joy concludes with a call for "nuanced" discussion and appreciation of diversity, stating that interdisciplinary religious studies can contribute to the conversation.

Among the essays in the pedagogy section are a discussion of an approach to doing interdisciplinarity through computer games and an integrated approach to embodied learning. Suzanne de Castell's "One code to rule them all ..." addresses the use of digital code to do interdisciplinary work that bridges methods, fields, clusters of disciplines and dichotomies such as work and play. The background is a project developed for Toronto's Tafelmusik baroque orchestra as a way to connect with younger people. The project consisted of several computer games that set up the historical situation with a quest that would eventually open replayable music recordings. Two of the games involved musical inscription and baroque dancing. A major question of the project is how knowledge is represented in a digital context. The project used a software program, MAP (Multimodal Analysis Program), which allows analysis and multiple interpretations of multimodal communications. This tool opens up comparison of diverse interpretations of data for qualitative

research, particularly in interdisciplinary research.

Roxana Ng's "Decolonizing Teaching and Learning through Embodied Learning: Toward an Integrated Approach" argues the need for an embodied pedagogy, which she holds is interdisciplinary. Ng writes that she became aware of the need to bring together body, mind, and spirit in teaching, first from health issues she experienced as a graduate student, and later, as a minority faculty member in Canada. As a minority faculty member she experienced power relations among groups in the classroom and the overall university; between the teacher and students; and among students. Reflecting on her own experiences led her to incorporate her insights both in the subject of courses and in her pedagogy. For example, in one course she has asked her students to practice a mindfulness exercise and also write in a journal about their reading assignments and their own practice of the exercises. With their permission, she has included excerpts from three students' reflections. She posits these approaches as interdisciplinary in the sense of crossing boundaries, although she makes no attempt in this piece to further analyze the term.

Derek Briton, in "From Integrated to Interstitial Studies," examines the terminology in the context of the 2001 origin of Athabasca University's (AU) Master of Arts degree, named Integrated Studies. The purpose of the program is to use various means of inquiry to develop "new interpretive frameworks and new objects of knowledge" (p. 368). Briton notes, however, that in spite of its value, it has not produced "a new object that belongs to no one," in Roland Barthes' words.

Since its beginning in 1970, AU has had a policy of removing barriers that hinder students from getting an education. Almost three-quarters of the students are first in their families to earn a degree. The Master of Arts in Integrated Studies had a potential for growth; it kept disciplinary departments from competing; and gave an opportunity for the students to attain a graduate degree. Given its relatively recent launch, there has been little time to assess the program; thus the symposium was developed to help reassess the program's purpose and its achievement. One proposal coming out of this assessment of interdisciplinary issues is a new model called "interstitial studies." "Interstitial" refers to a state of betweenness with potential for transformation. An "Interstitial," rather than "interdisciplinary," study puts students in positions to construct new knowledge.

This volume of essays could be of interest to faculty and administrators of graduate interdisciplinary programs or those contemplating developing such programs, because it shows the complexity of clarifying what such a program would be, the value of such programs and the challenges in gaining acceptance for them. The essays vary in their accessibility; without some familiarity with specific recent philosophical thought it may be difficult to follow certain arguments. The presenters are highly respected scholars. Given the origin of the symposium as a contribution to assessment of Athabasca's Master of Arts in Integrated Studies, it would be useful to know in what ways the program benefitted from it: whether it confirmed the program's content and structure, or if it encouraged rethinking any aspects of the program.

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Center for Interdisciplinary Teaching & Learning College of General Studies, Boston University 871 Commonwealth Avenue Boston, MA 02215 617-353-2861

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