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College of Arts and Sciences

e-News Issue 36: April 2016

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Mallinsons receive top MSTA award

Olga Bonfiglio

College of Arts and Sciences staff writer

Dr. Jacqueline Buck Mallinson and the late Dr. George G. Mallinson received the Lifetime Achievement Award of the Michigan Science Teachers Association at its 63rd annual conference held in Lansing in March.

It is the highest award bestowed on practitioners who have made significant contributions to science education. The award was originally named after George G. Mallinson, who with his wife, was instrumental in starting and nurturing the MSTA 63 years ago.

Jacqueline “Jackie” Mallinson established a national reputation in her field by participating in the original design and evaluation of tests for the Educational Testing Service and by serving as co-director, instructor and evaluator for more than 30 National Science Foundation institutes and programs. She reviewed and edited hundreds of papers for the Journal of School Science and Mathematics, helping to propel that publication to national prominence. Her peers recognized her in 1962 by electing her as a Fellow of the American Association for the

Advancement of Science. The author of more than 300 professional articles and reviews and co-author of 12 textbooks, she taught at WMU for 21 years as an associate professor of science education.

George G. Mallinson, distinguished professor of science education emeritus, began his career at WMU in 1948 as associate professor of psychology and science education. He became WMU’s first dean of the Graduate College in 1955 and served until his retirement in 1977. During his tenure as dean, he was very instrumental in developing and sustaining the science education curriculum and the doctoral program in science education through external funding. He published more than 650 journal articles, monographs, reviews and books. Mallinson led the formation of WMU’s Center for Science Education, which was later named the George G. Mallinson Institute for Science Education, has played a significant role in both



state and national efforts to improve the scientific capacity of students and teachers. Mallinson died in 1994.

The Institute is a research-oriented unit that is devoted to science education and to the study and improvement of how people teach and learn science. The Institute teaches undergraduate sciences courses for elementary education majors and offers two graduate degree programs. The Master's in Science Education and Doctor of Philosophy in Science Education degrees are offered for teachers of science at both K-12 and college levels. The graduate programs are science content focused with attention to effective pedagogy. The Institute offers a unique program of concurrent-enrollment between the Institute and five science departments at WMU. Students concurrently enroll in one of five master's programs in science along with doctoral enrollment at the Institute in science education. This program is ideal preparation for college level science teaching and for research in science education.

Reimagining food, reimagining community

Olga Bonfiglio

College of Arts and Sciences staff writer

The WMU Center for the Humanities sponsored a talk by Dr. Kami Pothukuchi, associate professor and chair of the [Department of Urban Studies and Planning](#) at Wayne State University. She spoke to a group of 150 recently about the urban agriculture movement in Detroit and how ideas about community are created through the practice of urban agriculture and local food systems.

Pothukuchi pointed out that big ideas, such as food justice, sustainability and sovereignty matter because they inspire us and inform work on the ground. However, groups translate these ideas differently within their varied contexts and draw on a repertoire of strategies familiar to their communities. Thus, community is both an outcome of and a resource for rebuilding food systems that are better than today's industrial system.



Notions of community are especially challenged in Detroit given its recent history of abandonment. Population estimates from 2014 count 680,000 and show a dramatic decline from nearly 2 million during the city's heyday in the 1950s. The city's Land Bank has more than 90,000 properties or roughly 30 percent of the city's properties that have come into its ownership due to tax foreclosure. Four out of five the city's residents are African-American and 36 percent of the people live in poverty. Three out of ten households are food insecure, according to definition used by the US Department of Agriculture. One in three adults is obese and according to a study done by the Centers for Disease Control and Prevention in 2009, one of five children and youth ages 9 to 18 are obese. The city restructured \$18 billion of debt as it came out of emergency management in 2014.

It would seem a hopeless venture even to think of building community in such a seemingly devastated place and yet since 1997 a groundswell of neighbors and friends has been steadily coming together to grow gardens on vacant lots near their homes. In so doing, they imagine a new future for the city. One by one people have planted over 1,500 community, school and backyard gardens. Some are even growing food for the city's 10 community markets in a cooperative that reaped \$80,000 in revenues last year.

As major grocery stores left the city, gardens are an increasingly important resource in providing fresh fruits and vegetables even though they don't provide all the population's needs. Over the past couple years, however, Meijers and Whole Foods opened stores in Detroit. Together with community markets and farm stands in many neighborhoods, several corner stores have also added a fruit and vegetable section to their business. Food, in other words, has become a key ingredient in engendering a new spirit of community in Detroit.

The [Detroit Food Policy Council](#) formed in 2009 following the adoption by Detroit's City Council of the City of Detroit Food Security Plan and spearheaded by the [Detroit Black Community Food Security Network](#), to address problems related to food access in the city. This networking body comprises of representatives from the food system, youth and government all committed to nurturing the development and maintenance of a sustainable, localized food system so that all residents may be hunger-free, healthy and benefit economically from the local food system. The values of **justice, respect, integrity, inclusion and transparency** guide its work.

Although some city leaders are ambivalent about urban agriculture, grassroots people keep moving forward. Part of the problem is a common perception is that development is the "highest and best use" of urban land. Another obstacle is the belief that agriculture is antithetical to development and that urban farmers want to take over all vacant land. In fact, urban agriculture advocates led by [Keep Growing Detroit](#) take pains to emphasize that 5,000 acres—or about one-third of the parcels now in land bank control—are all that are needed to create a food-sovereign Detroit, as they define it: a city that grows most of the fruits and vegetables that are consumed by its residents.

"Instead of this contest of development versus agriculture that has emerged in some corners, let's reimagine urban neighborhoods that are better, more vibrant because they have a community garden or a small farm," said Pothukuchi. "They offer many benefits such as nutrition, physical activity, safety, sociability, and even higher property values, and the gardens can take different forms depending on if the neighborhood is a dense, tightly woven one or if it has significant amount of vacant land in it."

Urban agriculture is providing much more than food, continued Pothukuchi. It is opening the way for "food justice" where African Americans and ethnic minority groups are growing healthy, nutritious food for their community and cultivating leadership in the food system. Such a system offers an alternative vision to the industrial food system, which fails to treat people of color with respect and instead extracts resources from their communities.

“The [Detroit Black Community Food Security Network](#)—or DBCFSN—calls on fellow African-American members to take on leadership roles in food system work and invites white people and others with anti-racist commitments to join as allies,” said Pothukuchi.

Meanwhile, farms like [D-Town](#), located on seven acres in Rouge Park, include programs in youth leadership and education, a farm stand, and cooperative buying. [DBCFSN](#) also is developing a grocery cooperative—the [People’s Food Co-op](#). A stalwart presence in its Eastside neighborhood, [Earthworks Urban Farm](#)—the city’s only certified organic farm—supplies the neighborhood through its farm stand and through incorporation of meals served by the [Capuchin Soup Kitchen](#). It has a nearly 4,000 sq. ft. passive solar greenhouse across the street from the Soup Kitchen.

In addition to her professorial role, Pothukuchi is founding director of [SEED Wayne](#), a campus-community collaborative dedicated to building sustainable food systems at Wayne State and in Detroit by nurturing student leadership.

The students of SEED Wayne plant three gardens on campus and sometimes sell their harvests at the [Wayne State Wednesday Farmers Market](#), which is located on Cass Avenue, WSU’s main drag, from June to October and features 12-14 growers each week. The market generates between \$200,000 and \$250,000 in sales each year. It also offers up to \$20 of matching [Double Up Food Bucks](#) each market day, to shoppers who use their [SNAP](#) benefits at the market. And, in exchange for \$5, students get \$10 in vouchers to buy fruits and vegetables. Chefs provide cooking demonstrations and healthy eating ideas, and youth entertainers provide a welcome break for shoppers and passersby.

SEED Wayne sponsors outreach programs and partnerships with local institutions to engage people in various conversations about food, health, nutrition and community. It even trains students to offer structured nutrition and healthy eating workshops and healthy food demos.

“SEED Wayne is shaped and maintained by students,” said Pothukuchi. “It has a flat hierarchy and word of mouth is its best recruiting tool. People collaborate in different ways through interdisciplinary opportunities, academic and non-academic venues, storytelling and more formal data collection. Also, all participants learn to take time to reflect on what they’re doing as well as to analyze the outcomes of their work and develop better strategies.”

SEED Wayne tries to be mindful of what it is doing and at one point even turned down the opportunity to renew a significant grant because it didn’t match its mission and purpose. However, mindful also of the need to get off the grant treadmill, it has established an endowment to support SEED Wayne students into the future.

SEED Wayne approaches its activities from a definition of sustainability that commonly involves integrating the social, economic and environmental sectors. To this, they have added a fourth, democratic engagement. Thus, the four essential “Es” guide their work in developing food systems that are:

- Ecologically regenerative

- Economically vibrant
- Socially equitable
- Engaging of community members in a democratic process

“SEED Wayne is helping forge connections to the national and the local food movements,” said Pothukuchi. “It is a contextualization of big ideas about food that is helping us build a community here on Wayne State’s campus and to enact a new vision of a food system that helps community to take root.”

“Reimagining Community” is the theme for this year's Humanities Center speaker series, which is designed to help people reflect on a global culture of war, social injustice, environmental calamity and the nation's stark racial and political divisions, and then to reimagine the idea of community by putting an emphasis on healthcare, racial and gender equity, feeding the hungry and fostering community.

Team seeks to develop ExpeRT-Earth program model

Elena Hines

College of Arts and Sciences staff writer

An Experiencing Research for Teaching Earth Science (ExpeRT-Earth) grant planning workshop will be held Thursday, May 5 from 8 a.m. to 1 p.m.

Funded through a Western Michigan University College of Arts and Sciences Interdisciplinary Research Award, the workshop will help participants develop a collaborative vision for the ExpeRT-Earth program, and organizers’ goal is to leave with a draft program model that will be competitive for National Science Foundation funding.

WMU developed the ExpeRTS (Experiencing Research for Teaching Science) program following receipt of a \$1 million grant from the Howard Hughes Medical Institute in 2010. ExpeRTS created cohorts of prospective middle and high school teachers who gained first-hand experience in scientific research and translating that research into classroom lessons.



However, funding for the program ended in 2015, and the group now seeks to develop ExpERT-Earth, a program that builds on the success of the ExpeRTS program, but focuses specifically on earth, environmental and climate science. In addition, the reach of the program would expand to WMU's feeder community colleges—primarily Kalamazoo Valley Community College, Kellogg Community College and Lake Michigan College.

The original program had four cohorts of 12 students each; while some are still at WMU, many have graduated and gone on to teaching positions.

“From the feedback we’re receiving, they feel really well prepared for the teaching program,” said Dr. Heather Petcovic, an associate professor of earth science education who holds a joint appointment in the Department of Geosciences and the [Mallinson Institute for Science Education](#) and who is one of the recipients of the Interdisciplinary Research Award.

Extensive data in the form of surveys, classroom observations and interviews have been collected from the participating students. What students perceived as the main strengths of the program, as well as where they thought improvements could be made, will be shared at the May workshop.

Teaching has a very high attrition rate in the first five years, Petcovic noted, saying they wanted to do “anything we can do to help students get a teaching job and get over that hurdle.”

The project team includes Petcovic, Steve Bertman, Todd Ellis, and Cathy Northcutt. The original program was under the direction of Sue Stapleton, who has been instrumental in planning and data collection as the group seeks to move forward.

Sustainable brewing program up and running

Olga Bonfiglio
College of Arts and Sciences staff writer

He’s not a brewer or a businessman, but Dr. Steven Bertman knows how to collaborate with others in order to develop a new, vital and forward-thinking science degree program.

The professor of chemistry is one of the principals involved in developing the nation’s first sustainable craft brewing degree program through a WMU-Kalamazoo Valley Community College partnership.



Students earn a certificate at KVCC, which then transfers to WMU as part of a Bachelor of Science degree in sustainable brewing. One possibility is a "two-plus-two" program where students transfer an Associates of Science degree from KVCC that includes the brewing certificate.

Brewing is a process that involves knowledge of chemistry, biology and technical knowledge in order to control a range of parameters. Consequently, the curriculum entails the craft of brewing science, hands-on techniques and practice and microbiology. The KVCC certificate also covers the legal aspects of brewing as well as quality control and business management skills and knowledge.

When a student moves from KVCC to WMU, s/he will work toward a bachelor of science degree taking courses in mathematics, physics, chemistry and biology. Students will learn sustainability methods, environmental systems and the culture and role of brewing.

“Sustainable brewing is not a watered down science major,” said Bertman. “It is as rigorous and intense as any of our science or pre-med tracks.”

As part of the curriculum planning process, Michigan brewers were asked if there were enough need for a trained workforce in sustainable brewing.

“We were met with a resounding ‘yes,’” said Bertman.

An advisory board was created for the new curriculum. It includes **Mike Babb**, a former Coors master brewer who now teaches at the 130-year-old Siebel Institute of Technology in Chicago, and many of Michigan's top craft brewers from Bell's Brewery, Short's Brewing, Paw Paw Brewing, Arbor Brewing, Gonzo's Biggdogg, Arcadia Brewing, Tapisstry, Dark Horse Brewing and Brewery Vivant. Ed Martini, WMU associate dean for Extended University Programs, and Dean McCurdy, KVCC associate vice president for Food and Sustainability, are also part of the curriculum planning team.

The vision for the program is to build a presence for education and development as well as a place for research in brewing technology beyond traditional careers like more varied tracks in business, engineering, analytical services, research, study abroad. There is some investigation into programs dealing with other fermentation products like wine and cheese.

The program's overall goals are threefold:

- To support local breweries with trained and educated people.
- To encourage students to enroll in the sciences.
- To provide students with career opportunities in the sciences.

“Working with this diverse team has been one of the most enjoyable jobs I've ever done,” said Bertman at a recent Mercantile Bank of Michigan Breakfast Speaker Series hosted by WMU's Haworth College of Business. “It was a joy working with them. Partnership was the hallmark of our success.”

Beer has been part of human civilization since the beginning of civilization 9,000 years ago in Mesopotamia when farmers began planting barley. There is also evidence of fermented rice, grapes, honey and hawthorn berry residue on ancient jugs in southern China from 7,000 BCE—3,000 years before humans baked bread!

Early farmers learned that wet grain ferments into “liquid bread.” Early science gradually improved the brewing process over the centuries through experimentation with grains, processes and additives.

In 1516 the German Purity Laws for beer were drawn up to establish beer as we now know it, which has only three ingredients: water, barley and hops with yeast added for fermentation.

The Discovery Channel discusses this brewing history in detail through a documentary on “[How Beer Saved the World.](#)”

“Brewing is an art form,” said Bertman. “Like any food, it’s ephemeral, and when its ingredients are mixed in different ways, they create a variety of flavors, colors and textures.”

Today, however, water quality and controls over the brewing process are also considered. Consequently, students learn that brewing beer doesn’t start at the brewery but at the farm, and it doesn’t end at the restaurant/pub but with the management of the waste products from both production and consumption.

This is the reason sustainability was built into the program: to foster profitability and to pay attention to the environmental footprint by minimizing energy use, water consumption and waste and preserving water quality.

“It can take up to 10 to 12 liters of water to produce one liter of beer, so we are teaching students sustainability from the very beginning of their program as a natural matter of course,” said Bertman.

Michigan has become the Great Beer State and fifth largest in the nation with 229 craft breweries in fall 2015 and an economic impact of \$2 billion each year. The Kalamazoo area alone has over a dozen breweries. Nationally, craft beer accounts for nearly 8 percent of beer sales. West Michigan is developing a strong reputation for craft brewing. In 2013, Grand Rapids was named Beer City USA, and Kalamazoo came in second.

Brewing has had an up and down history over the past 138 years. In 1878 there were 2,600 breweries in the United States. This number decreased with Prohibition (1920-33) and then dipped further after World War II (1945) when breweries merged into bigger companies. By 1978 there were only 89 American breweries. However, craft brewing has made a comeback starting in the 1980s with Bell’s Beer as one of the leaders. By 2014, breweries had had a 30-fold increase with over 3,500 breweries across the country and a new one opening every 12-16 hours.

“We saw this coming,” said Bertman. “Americans have developed more sophisticated palates for beer and their expectations are higher. That and local food products are the draw for this industry.”

WMU wanted to take advantage of these trends by looking into a sustainable brewing program, and it discovered there were relatively few formal programs in brewing. KVCC was having similar conversations with brewers and decided to include space for a brewery in its new Bronson Healthy Living Campus near Bronson Methodist Hospital. A new custom-built brewery built in Germany by Esau and Hueber was commissioned for the new building.

Since the program began last fall, KVCC has enrolled approximately 85 students and WMU has netted 30 declared majors.

"We're learning how to help sustainably grow an industry that is part of the overall health and sustainability of Michigan's economy," said Bertman.

As an added benefit, the brewing industry can also strengthen the local community socially.

“Beer brings people together again in the way that used to be so common,” said Bertman. “iPhones turn people inward whereas beer turns them outward.”

Craft beer drinkers are not aiming for drunkenness, but rather for socializing. They tend to be responsible in their consumption, loyal to local products and producers, supportive of local agriculture and interested in preserving farmland and healthy lifestyles of the community, said Bertman.

WMU prof takes tax help to indigenous villages in Alaska

by Mark Schwerin

March 8, 2016 | WMU News

KALAMAZOO, Mich.—They might be off the grid and off the road system. But rural Alaskans are getting some much-needed help preparing their taxes thanks to a Western Michigan University professor and a group of accounting students.

This is the second year **Dr. Fritz Allhoff**, associate professor of philosophy, has led a tax-assistance delegation to remote villages in western



Alaska. The program is supported by the Internal Revenue Service, an Anchorage-based nonprofit and various tribal associations, as well as a partnership with WMU's Haworth College of Business.

Four villages over eight days

Allhoff and the four-student entourage recently visited four villages over eight days—Goodnews Bay, Kongiganak, Kwigillingok and Platinum—filing approximately 400 tax returns. They rode around on snow machines, ate whale and walrus, and took steam baths with tribal elders.

Kinsey Staver, an accounting graduate student from Lawrenceville, Illinois, noted that "while temperatures were cold, the villagers kept us warm with their hospitality." Other students involved in the excursion were **Jill Clark** of Battle Creek, **Andrea Gentile** of Livonia, and **Madelyn Olsen** of Fraser.

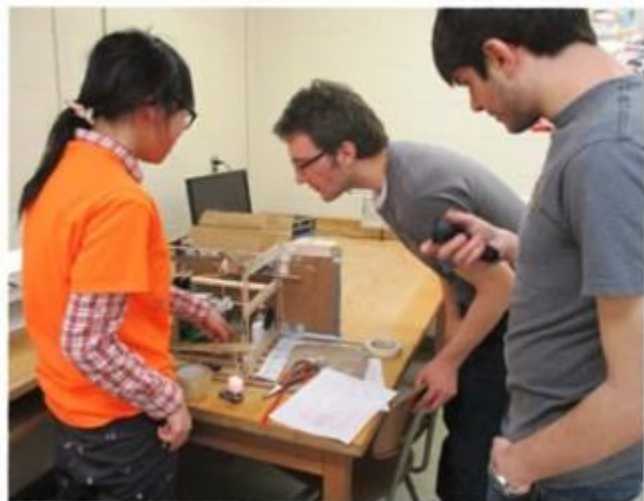
The collaboration will continue in future years. Anyone interested in participating is invited to contact Allhoff for more details at (269) 387-4503 or fritz.allhoff@wmich.edu.

For more news, arts and events, visit wmich.edu/news.



Physics hosts Science Olympiad

In recent years, the Department of Physics' staff and students have been heavily involved in the Region 10 Science Olympiad held at WMU and brings more than 400 students from Allegan, Barry, Branch, Calhoun and Kalamazoo Counties to campus each March to compete in middle school and high school divisions.



These young scientists participate in dozens of events that test their knowledge of physical, applied and health science areas.

Events are rotated to reflect the ever-changing nature of genetics, earth science, chemistry, anatomy, physics, geology, mechanical engineering and technology.

Emphasis is placed on active, hands-on group participation toward the goal of sparking interest in scientific inquiry. Just as teamwork is a required skill in most science careers today, the Science Olympiad encourages group learning with events that forge alliances.

Science Olympiad is a national nonprofit organization that promotes scientific literacy for all students—a goal shared by education, business, industry and government.

Every year, undergraduate students from the WMU Physics Club help run hands-on events in Rood Hall including the “Mission Impossible” and “Simple Machine” challenges pictured here, which required students to fabricate machines that performed a predetermined task—like measuring mass or transferring energy—within a set timeframe.

Special thanks for this event go to Dr. Manuel Bautista, Dr. Paul Pancella and Dr. Zbigniew Chajeci; laboratory manager Chris Hoffmann; and our dedicated students: Kenwood Hoben, Jared Foote, Enrique Gamez, Liz Creager, Gene Kopf, Ioannis Nearchou, Mady Higinbotham, Kyle Simpson, Mike Pirkola and Adam Newton.