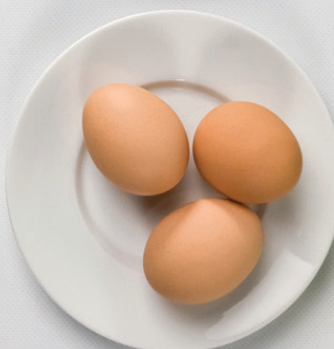


NOBEL CONFERENCE® 46 PREVIEW GUSTAVUS ADOLPHUS COLLEGE



making **FOOD GOOD** **OCTOBER 5 & 6, 2010**



greetings

FROM GUSTAVUS ADOLPHUS COLLEGE

The theme of Nobel 2010, “Making Food Good,” intentionally invites participants to think about the ways in which various meanings of the word “good” intertwine with each other, sometimes supporting, sometimes challenging each other. We’re all familiar with the fact that a food that tastes good may not be good for our health (hot fudge sundae, anyone?)—or that a food that is good for our health may not be equally good for the health of the ecosystem in which it’s grown (farmed salmon might be an example). In selecting speakers for the 46th Nobel Conference, we particularly sought researchers whose work could speak to one or more of these interrelated senses of goodness—sometimes in surprising ways, and sometimes in ways that deepen our existing suspicions about the ways that our notions of goodness overlap—or don’t overlap. What can we learn about what we mean by good food, by thinking about ecology, health, taste, economics, and public policy in interrelation?

Linger behind or beneath these questions is a larger philosophical question, namely, “Is there a sense of the good that is large enough, all-encompassing enough, and pervasive enough that it can account for or accommodate all these individual senses of goodness, can show the proper relations among these senses of good, and can provide us with a blueprint for how to make food choices—as individuals, as communities, as nations, and as the international community?”

The researchers who will present their work address food from multiple disciplinary perspectives—genetics, psychology, economics, philosophy, and nutrition. They focus on food as economic commodity, as agricultural product, as source of nutrients, and as social and cultural symbol. Some focus on food itself, while others focus on us as eaters.

We hope you can join us for “Making Food Good”!

Lisa Heldke, Chair
Nobel Conference 46

Chuck Niederriter, Director
Nobel Conference

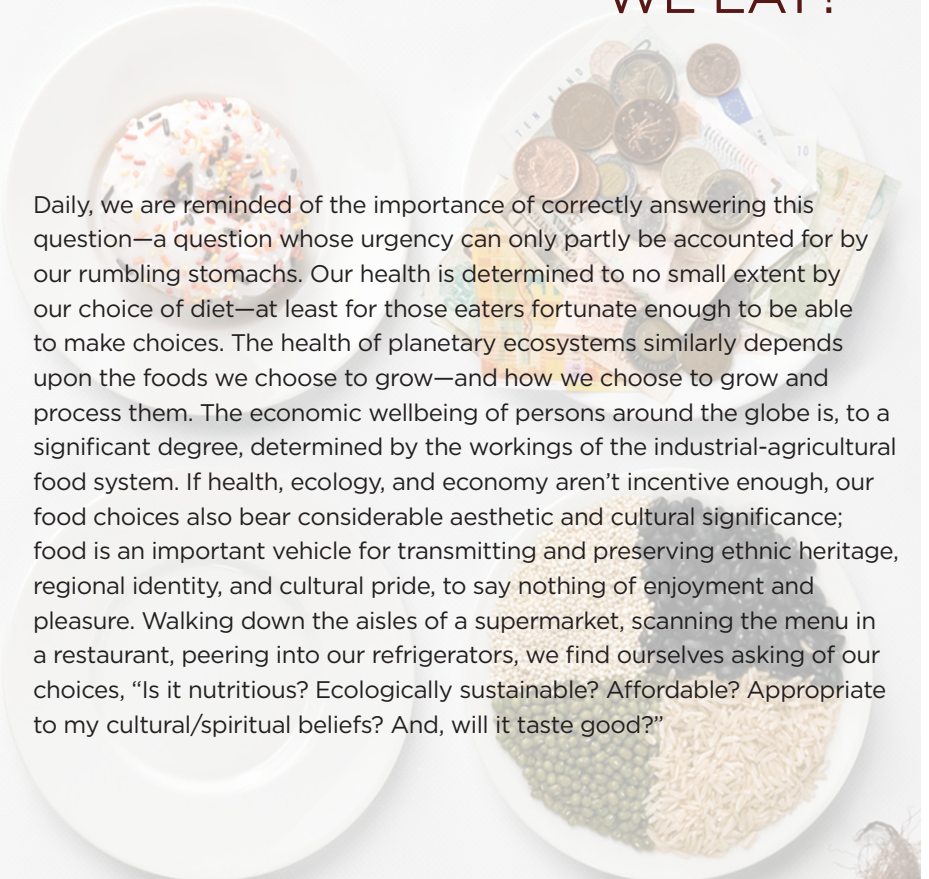
GUSTAVUS ADOLPHUS COLLEGE AND THE NOBEL CONFERENCE®

Established in 1862 by Swedish Lutheran immigrants, Gustavus Adolphus College is a private, liberal arts college that provides an undergraduate education of recognized excellence. The Alfred Nobel Hall of Science at the College was named as a memorial to the great Swedish inventor and philanthropist. Following its dedication in 1963—which was attended by Nobel Foundation officials and 26 Nobel laureates—the College sought endorsement from the Nobel Foundation for an annual science conference. Permission was granted and the conference, now in its fifth decade, continues to set a standard for timeliness, intellectual inquiry, and free debate of contemporary issues related to the natural and social sciences.

THE
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what should

WE EAT?



Daily, we are reminded of the importance of correctly answering this question—a question whose urgency can only partly be accounted for by our rumbling stomachs. Our health is determined to no small extent by our choice of diet—at least for those eaters fortunate enough to be able to make choices. The health of planetary ecosystems similarly depends upon the foods we choose to grow—and how we choose to grow and process them. The economic wellbeing of persons around the globe is, to a significant degree, determined by the workings of the industrial-agricultural food system. If health, ecology, and economy aren't incentive enough, our food choices also bear considerable aesthetic and cultural significance; food is an important vehicle for transmitting and preserving ethnic heritage, regional identity, and cultural pride, to say nothing of enjoyment and pleasure. Walking down the aisles of a supermarket, scanning the menu in a restaurant, peering into our refrigerators, we find ourselves asking of our choices, "Is it nutritious? Ecologically sustainable? Affordable? Appropriate to my cultural/spiritual beliefs? And, will it taste good?"

TENTATIVE SCHEDULE OF SPEAKERS

TUESDAY, OCTOBER 5

- 10 a.m. Nutritionist **Marion Nestle**, Ph.D., M.P.H.
- 1 p.m. Crop diversity conservator **Cary Fowler**, Ph.D.
- 3 p.m. Obesity researcher **Jeffrey M. Friedman**, M.D., Ph.D.
- 6:30 p.m. Minnesota Food Forum
- 8 p.m. Nobel Conference Concert

WEDNESDAY, OCTOBER 6

- 10 a.m. Psychophysicist **Linda Bartoshuk**, Ph.D.
- 1 p.m. Environmental economist **Bina Agarwal**, Ph.D.
- 3 p.m. Technology philosopher **Paul B. Thompson**, Ph.D.
- 6:30 p.m. Futurist and author **Frances Moore Lappé**
(banquet)

For more information,
visit [gustavus.edu/
nobelconference/2010](http://gustavus.edu/nobelconference/2010)



making FOOD GOOD

What makes food good? To ask the aesthetic, ecological, and economic to demand our attention so frequently

Nobel Conference 2010 crosses disciplinary boundaries as it considers the ways in which the multiple sources of “goodness” associated with food complement, complicate, and challenge each other. Does one of these senses of goodness trump all others? Can one sense incorporate and accommodate all the others? Is it possible to create food systems that preserve the goodness of food in many senses simultaneously: aesthetic and economic, ethical and physiological, cultural and ecological? What would such systems look like? Rather than seeking to simplify and narrow the ways in which they conceive of food’s goodness, the conference invites participants to complicate and broaden their answer to the question “what makes food good?” beyond the common dichotomy of obesity and hunger.

Conference presenters were chosen, in part, because their food research or activism is characterized by a recognition of the complex and multifaceted nature of this question. In fact, they have all chosen to work in this field because they enjoy the challenge of integrating ideas from a broad range of subject areas and experiences.

The work of **Linda Bartoshuk**, Ph.D., for instance, is uncovering some of the complex relationships that exist between gustatory pleasure—taste—and health. She studies the ways in which variations in the capacity to taste and smell affect people’s eating patterns. Her groundbreaking research on taste buds led to the discovery of so-called “supertasters,” persons with heightened sensory response to sweetness and bitterness. Subsequent research is beginning to reveal the significance of this heightened capacity. As Bartoshuk observes, “Psychophysical advances now let us see this variation is linked to behaviors—like dietary choices, smoking, drinking—that impact health.”

Geneticist **Jeffrey Friedman**, M.D., Ph.D., researches factors that influence food intake and body weight. He is known for the discovery of the hormone *leptin* and its receptors, which

balance caloric expenditure with critical brain signals. Defects in this mechanism, Friedman has found, can lead to a host of problems, including issues of weight control and a weakened immune response. Friedman’s burning question remains: “How can a single molecule influence a complex behavior?”—namely, our eating behavior, why we eat, what we eat, and when we eat.

Public discussions about biodiversity have often tended to focus on the environmental health impact of species extinction, the loss of what **Cary Fowler**, Ph.D., calls “charismatic megafauna—whales, tigers, gorillas, pandas.” Overlooked in such discussions is food plant diversity, a vital tool for safeguarding our food system and promoting human health. Fowler combines his expertise in genetics and food cultivation with his passion for social justice in a worldwide quest to save, collect, and manage the genetic diversity of our food crops. Such work promotes environmental health, contributes to the alleviation of food insecurity, and helps to preserve cultural diversity as well.

Food insecurity can usually be traced to entrenched inequities, according to **Bina Agarwal**, Ph.D., a self-described “scientist working against the grain.” Agarwal’s early research in economics led to the surprising finding that technological change in agriculture, including mechanization, had increased and not decreased the demand for women’s labor in India. Her subsequent research led to a radical shift in global debates on gender and economic inequality, from a focus on women’s employment to a focus on women’s access to property, especially land. This, she argued, was the single most important economic factor affecting women’s situation, and could go a long way in ensuring their and their family’s well-being and livelihood security. This research resulted in her award-winning book *A Field of One’s Own*. Its legal aspects also provided her material for an active involvement in the amendment of India’s inheritance laws toward gender equality. In recent writings, Agarwal has continued to examine how land-use policies, social



This question in contemporary society is to enter an arena in which scientific, ethical, and economic conceptions of the good intertwine, clash, and vie for our interest. Few issues seem so urgent, and on such visceral levels, as does our desire—our literal need—for good food.

norms and institutions, and environmental change can either perpetuate or redress the injustice that leads to widespread, systemic food insecurity. Her newest book, *Gender and Green Governance*, studies the paradox of “participatory exclusions,” wherein formally democratic institutions of forest governance can effectively exclude the poor, and especially women, from decision-making, and from access to essential needs such as fuelwood and fodder. Working within a political economy framework, she continues to challenge traditional approaches to food security, which often rely on individual family farming, by arguing for more collective approaches to small-farm enterprise, based on voluntary cooperation. She also emphasizes the need for greater cooperation between countries and more global responsibility for creating a hunger-free world.

The work of **Marion Nestle**, Ph.D., M.P.H., focuses on how science, economics, and politics interact to affect the food choices of individuals, and on how agriculture is linked to nutrition and public health. Nestle’s highly visible research on “food politics” highlights how corporate interests and food marketing affect health and nutrition. Her work on food and body size has emphasized the need to challenge the notion that obesity is simply a matter of personal responsibility and to replace it with a view that “obesity results from changes in the marketing environment that make it so difficult for people to make healthful food choices.” Nestle sees food as an excellent entrée into grassroots organizing; she encourages students to get involved in food issues as a means of exercising their rights as citizens in a democratic society.

Health, hunger, human rights, and environmentalism converge in **Frances Moore Lappé’s** work. Since the release of her 1971 blockbuster, *Diet for a Small Planet*, the author and activist has campaigned for sustainable food policies and ethical eating behaviors. “My work is the meeting place of philosophy, agriculture, and economics,” she says. “It is a values-based approach, using the concepts of basic fairness embedded in

everyday life.”

Philosopher **Paul Thompson**, Ph.D. is well positioned to conclude a conference on the topic “What makes food good?” having spent his career studying a range of issues at the intersection of agricultural ethics, philosophy of technology, and economics. Early in his career, he began to investigate emerging biotechnological aspects of agriculture, and found the relationships among cultural norms, moral identity, and food production a great deal more puzzling and harder to study than anything in his experience. Since then, Thompson has researched and published on ethical issues of genetic engineering and nanotechnology, as they emerge in agricultural production. Thompson’s latest book, *The Agrarian Vision*, embodies his view that “while science has breakthroughs, philosophy has enduring questions.” The book lays out the history of agrarianism to find in it some lessons for the sustainability of the future. With his background and many years of experience in these areas, Thompson will be able to help conference participants to explore the complex relationships between different aspects of “good.”

Given their broad and deep expertise, their wide travels and interactions, and their years of research and reflection, the presenters at this Nobel Conference will address a wide range of questions, issues, and ideas. These may include industrial agriculture and the local food movement; food crops and fuel crops; urban agriculture; food supply safety and bioterrorism; school lunches and nutrition; whole foods versus “neutraceuticals”; genetic modification of food plants and animals; protecting the genetic diversity of food plants and animals; *terroir* and authenticity; and molecular gastronomy and taste. Attendees should leave the two-day conference with a more complex understanding of what makes food good—and also with the desire to put this understanding to use in their daily food lives.

presenters

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BINA AGARWAL, Ph.D.



Persistence paid off for 11-year old Bina Agarwal when she persuaded a neighbor to save, rather than cut down, a tree she loved. Since then, her commitment and thoughtful integration of theory and action—of economics, politics, agriculture, and technology—have paid off for India.

As a person of wide interests and passions, Agarwal has always loved both science and literature—especially poetry. But she eventually gravitated toward economics, drawn to its scientific rigor and social relevance. She wanted to study issues that affect the more disadvantaged sections of the population, in particular women. This led her to focus a major part of her work on aspects such as poverty and inequality, property and land rights, agriculture, technology, and environmental change, typically from a gender perspective. She credits her parents, her father in particular, for being enormously supportive of her quest to find her own creative path in life.

Agarwal's most cited book, *A Field of One's Own: Gender and Land Rights in South Asia*, argues that the single most important economic factor affecting women's economic condition is the gender gap in command over property—not employment, as many would believe. In this book, as in all of her work, she challenges standard economic assumptions as well as traditional notions about gender inequities. A scientist to the core, she is skeptical unless there is persuasive evidence and empirical verification to substantiate the claims. Her “devil's advocate” approach gives her work rigor and a cutting edge. Very early in her career, for instance, it allowed her to determine the real effects of agricultural technology on output and employment, including the finding (contrary to that of others) that the introduction of tractors has little effect on farm yields, and although they displaced male labour, they did not displace women labourers. Agarwal is, however, far from a narrowly technical economist—she also pays attention to historical embeddedness and qualitative evidence, recognizing that not all that is significant for explaining social phenomenon is quantifiable.

Researching her newest book, *Gender and Green Governance*, she traveled across India and Nepal for long periods to study the effectiveness of villagers' efforts to protect government forests through community-based programs. Agarwal found that in most cases, although tree cover had improved, the social consequences of regeneration were mixed. Typically, for instance, local women were not allowed to collect the firewood they needed to cook the family's daily meal, but had no formal means of protesting this policy because they were excluded from the decision-making process. She coined the term “participatory exclusions” to describe this paradox. Going against the flow even of existing gender literature, which focused mainly on women's absence from environmental governance, Agarwal turned the question around and asked, “What would be the outcome if women were involved in management decisions?” The results of her systematic study of gender representation in forest management indicate that women's inclusion will not only improve equity but also forest conservation outcomes. Empirically, this work is located in India and Nepal, but the many insights it offers for effective environmental governance hold important lessons for regions around the world.

Alongside her academic preoccupations, Bina Agarwal continues to write poetry. When she was a young woman, an early volume of her work was published by the Writer's Workshop, Calcutta, under the title *Monsoon Poems*. Here is a short excerpt from “On the Passing of Age”:

*Age has no wisdom now, nor youth folly,
and more than what we need to know
is written in books.*

LINDA BARTOSHUK, Ph.D.



When asked by an interviewer, “What makes your work exciting?” Linda Bartoshuk countered with her own question: “What makes a 70-year old woman want to go to work every day?” Her answer? The excitement of her work in psychophysics, of course. Fascination with taste and its relationship to health, and the



challenge of evaluating the subjective experiences of pain and taste, keep Bartoshuk going.

Reared in the Depression-era Midwest and taking girls' obligatory secretarial courses in high school, Bartoshuk did not find science high on the list of her career options. Science fiction nevertheless stoked her interest, particularly in astronomy. She proved that she could handle math and science when she earned the highest grades in her high school trigonometry and chemistry courses and won a scholarship to Carleton College. She abandoned astronomy, however, when she learned that women weren't allowed to use the "big telescopes." However, her observations of the different ways her fellow students perceived distant stars led her to the field that would become the scientific love of her life: psychophysics, the study of how physical stimuli from the environment—chocolate on your tongue, music in your ear, heat on your skin—lead to subjective experience. Bartoshuk says that psychophysics has a lot in common with astronomy. Like the stars in a distant galaxy, the minds of other people are ultimately "untouchable," she says. The only way to bridge the gap is with rigorous experimental observation.

Bartoshuk's 1991 discovery of "supertasters"—people ultra-receptive to taste sensations—still ignites debate. She notes that some researchers who attempted—and failed—to replicate her results made use of faulty psychophysical tools for measuring intensity; they used a measuring scale that was subjective, and not the same for all subjects. The inadequacy of existing measures of taste experience inflames her latest passion to develop better scales for sensory perception. She calls for future research that would extend her insights on scaling into hedonic areas, like addiction and jealousy.

Some of Bartoshuk's most recent work explores the relationship between taste and health. For example, damage to the chorda tympani taste nerve (a not-uncommon result of severe childhood ear infections) can intensify sensations of touch coming from fats, like creaminess and oiliness. She says, "This, in turn, makes high-fat foods more palatable. Imagine doubling the creaminess of crême brûlée!" How could one possibly resist?

Her latest work in the area of taste and health finds her working with a plant biologist to develop a better tomato. Like many other fruits and vegetables, tomatoes have been

engineered in response to market pressures with little regard for taste. Improving people's diet by improving the taste of healthy foods is the aim of Bartoshuk's interdisciplinary study. "If you do the right kind of experiments, involving many subjects and a bit of regression analysis," she says, "you can design tomatoes that taste good to most people."

CARY FOWLER, Ph.D.



How will the world preserve crop diversity in perpetuity? This is the challenge Cary Fowler has addressed for more than 30 years. He hasn't become the farmer that his grandmother had hoped for, but his work on global crop diversity will safeguard the life's work of farmers across the globe. Fowler observes that such a job is never boring, as it involves science

(especially genetics), food security issues, and social justice, just to name a few areas of consideration. He credits his upbringing in the American South during the Civil Rights movement for his interest in social justice in particular.

Fowler's connections to family farms in his youth also sensitized him to agricultural concerns, and an article by the botanist and agronomist Jack Harlan on the extinction of older crops was the spark that ignited his passion for crop diversity more than 30 years ago. He has been involved in global agricultural issues ever since: overseeing a review of global food and agriculture for the United Nations Food and Agriculture Commission, developing a global seed vault at Norway University of Life Sciences, and serving as the executive director of the Global Crop Diversity Trust.

Fowler notes that some of the happiest days of his life have been spent in the Svalbard Global Seed Vault, an insulated freezer near the North Pole where he and colleagues are able to preserve some 400,000 samples. In addition, he keeps track of what is going on in more than 1,700 gene banks around the world and is attempting to coordinate their activities. For example, he collects input from global experts on various crops to determine which gene banks contain the

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gene pool for each crop and which traits are being preserved. With this information, he can determine whether other seeds need to be added to the system. A substantial amount of work has been done for 23 crops (including wheat, which itself includes many varieties), stored in at least 90 countries. Thanks to Fowler and his collaborators, this worldwide system will easily expand to include many more crops.

An important part of Cary Fowler's job, as he sees it, is to maintain steady funding for the global seed bank, which cost approximately \$9 million to build, and requires further support to reach its goal of storing 4 million crop varieties. "We need to endow crops so we can be assured that diversity of varieties will survive for an uncertain future," he maintains. "We can't say we have wheat endowed, but we know the cost and how to do it."

JEFFERY FRIEDMAN, M.D., Ph.D.



Why are we as a society getting fatter? Who, or what, is to blame, for example, when a child's weight tops 200 pounds? The child? His or her parents? The food industry? Genetics? Neural circuits in the body? Answers are beginning to emerge through Jeffery Friedman's work.

Friedman grew up in the suburbs of New York City and, like many kids, dreamed of being a professional athlete. In his family the highest level of achievement was to become a doctor, so he pursued medicine. As a medical resident, he participated in some modest research studies and, after completing work related to the effects of dietary salt on the regulation of blood pressure, he excitedly submitted a paper for publication. He can still remember one of the reviews verbatim: "This paper should not be published in the *Journal of Clinical Investigation* or anywhere else." Fortunately, a mentor recognized his aptitude for research and suggested that he go to The Rockefeller University to work in a basic science research laboratory.

At The Rockefeller, Friedman was intrigued by the idea that endogenous molecules, those that originate from within an organism, could alter behavior and emotional state. In the late '70s, it was shown in experiments that mice injected with cholecystokinin (CCK), a peptide hormone of the gastrointestinal system, reduced their food intake. Friedman set out to establish the possible role of CCK in the pathogenesis of weight gain in these animals, but first he needed additional training in basic research. He abandoned his medical training in gastroenterology and entered the Ph.D. program at The Rockefeller University. In 1994 his doctoral studies culminated with his identification of the *ob* (obesity) gene and its role in encoding the hormone *leptin*. Since then, studies have revealed that injections of leptin dramatically decrease the food intake of mice and other mammals.

Friedman describes the discovery of leptin as a singular, exhilarating, event in his life. "The realization that nature had happened upon such a simple and elegant solution for regulating weight was the closest thing I have ever had to a religious experience," he recalls. His current studies focus on how a biologic system controls body weight. "As we continue to learn more about feeding behavior," he says, "new treatments will emerge." They probably won't eliminate obesity, but they are sure to improve the health of people, including those who are overweight. Friedman's burning question remains: "How can a single molecule influence a complex behavior?" It's a question that makes science rewarding for Jeffrey Friedman, because the answer is sure to lead to more and better questions for future scientist

FRANCES MOORE LAPPÉ



Not everyone agrees that learning is exciting, particularly those still in school. But learning new things is one reason that Frances Moore Lappé is so passionate about her work. That, and the potential for changing the world. A self-described "perpetual learner," she synthesizes ideas from philosophy,





agriculture, economics, and other areas into a coherent way of looking toward the future.

Lappé recalls that, as a graduate student in social work, there was a moment when she realized that “I get to keep doing this the rest of my life.” She knew she was making the most important decision of her life in deciding her future career path. After giving it some careful thought, she decided that she would study the patterns in society. She wanted to understand why the world had to be the way it was, and this question led her to study the economic, social, and political thought patterns of its inhabitants. Ultimately, she focused on food because food is very basic. She asks, “If other species manage to feed themselves, why are humans starving?” Her pursuit of an answer to this question has led her away from academia as she attempts to reach a larger portion of the population with her writing.

Her initial plans to write a one-page pamphlet that could be posted in cafés summarizing information on global food supplies blossomed into her first book, *Diet for a Small Planet*, which has sold three million copies since its first appearance in 1971.

Following the success of *Diet for a Small Planet*, Lappé has maintained an active schedule of speaking, writing, and publishing. She is updating her recent book, *Liberation Ecology*, which looks at the environmental crisis by “reframing six disempowering ideas that keep us from aligning with nature—even our own.” She has received more than 70 pages of feedback from the many study groups and faculty that have used it in their classes. This input will be incorporated into the second edition before the book will be published widely. She hopes that this book will help people from all walks of life to reverse the spiral of despair by enabling them to see what is happening all around them but still invisible to most.

From her 40 years of perspective, Lappé can see the world moving in two directions. On the negative side, she says she is “profoundly amazed that some of us continue to have more food than we need to eat well, while other people on the earth are still hungry.” On the positive side, she observes that “there appears to be an awakening to alternative paths which are much more aligned with our nature.” She points to examples like African Organic, a re-greening solution by small farmers. She is happy that her new books appeal to young

people and that many alternative approaches being developed today offer hope of solving some of the world’s most serious food-related problems.

MARION NESTLE, Ph.D., M.P.H.



Most of us love particular foods, and have at least one cherished food memory, be it a lunch of fresh walleye at the shore, or chocolate mousse to celebrate a birthday. Marion Nestle loves everything about food, not only the personal experience of eating, but also the study of important public health issues related to obesity, domestic and world

hunger, and food safety. This passion developed back in the ’70s, when she was teaching cell biology to undergraduates at Brandeis University and a routine course rotation gave her the life-changing opportunity to teach nutrition. “It was like falling in love, and I’ve never looked back,” she says.

Nestle’s work focuses on how science, economics, and politics interact to affect the food choices of individuals, and on how agriculture is linked to nutrition and public health. “It is totally relevant to everyone’s daily life,” she says. “It is easy to connect with people around food issues, because everyone eats. People are not only interested in the issues that concern me most, but they are moved by them.” She teaches courses in food sociology, ethics, and policy that deal directly with the social, ethical, and political implications of food production, distribution, and consumption.

Nestle sees the biggest change in the area of food and nutrition as the shift from viewing obesity as a matter strictly of personal responsibility to the view that obesity results from changes in the marketing environment that make it difficult for people to make healthful food choices. Given current concerns about climate change and obesity, increasing attention is likely to be focused on the need for more sustainable food policies that better promote both human and ecological health. Fortunately, the most healthful and sustainable diets are those that are least harmful to the environment.

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Food is an excellent entry point into grass-roots political movements, Nestle says. She encourages students to get involved in food issues as a means of exercising their rights as citizens in a democratic society. “There are so many issues to choose from and so many ways to become engaged. Which issues they choose to become engaged in and how they choose to become engaged are important personal decisions.”

Nestle not only enjoys eating and studying food, she enjoys growing it as well. She has gardens at her home in upstate New York and on her 12th-floor Manhattan terrace. Most of us wouldn't think of going up to the 12th floor in Manhattan to pick blueberries, but she does.

PAUL THOMPSON, Ph.D.



What does one do with a degree in philosophy? Maybe not what you think. Paul Thompson receives funding from organizations like the National Science Foundation, the Venter Foundation, and the World Health Organization (WHO) to study the philosophy of technology and the environment and their relationship to agriculture. Philosophy of

technology is concerned with how technology affects our lives, while environmental philosophy is a new approach to the philosophy of nature that studies the effects of humans on the environment. The range of Thompson's work shows the broad philosophical implications of technological advances and environmental concerns.

In late May of this year, scientists announced the creation of synthetic life, paving the way for designer organisms or “custom creatures,” as some have called them. Some heralded the achievement as the dawn of a new era in which life forms are designed to benefit humanity. For example, custom genetic code in a new organism might allow it to churn out high-efficiency biofuels or manufacture a particular vaccine. But not everyone agrees that custom creatures are a good

idea. Thompson is exploring the ethical implications that will help scientists and non-scientists determine the best direction for this research.

The growing understanding of nanotechnology has led to a number of applications in agriculture, including biosensors, which can be used to detect bioterrorism agents or foreign animal disease agents. Thompson has funding from the National Science Foundation to study how biosensors might help address animal disease in particular. In another vein, Thompson is looking at ethical and regulatory issues surrounding the genetic engineering of mosquitoes to control malaria.

Thompson got his start in the philosophy of technology, specifically nuclear energy, singing songs with Pete Seeger to protest the construction of a nuclear reactor. When approached to develop a program in ethics and agriculture at Texas A&M, he thought it would be just as easy to work on pesticides as nuclear power. As he began to investigate emerging biotechnology aspects of agriculture, however, he found the relationships among cultural norms, moral identity, and food production a great deal more puzzling and harder to study than anything in his experience. He admits that he learned a lot from his students in the early years.

While science has breakthroughs, Thompson says, philosophy has enduring questions. The rediscovery of questions asked and forgotten by philosophers provides some insight into the history of philosophy, and hope for the future. In his new book, *The Agrarian Vision*, he explores how we can understand sustainability for the future by reminding ourselves how people thought of agriculture in the past.

contributors

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Tickets will be mailed as orders are received. Tickets ordered too late for mail delivery will be held at the Nobel Conference registration desk in Lund Center. For more information, contact the Office of Marketing and Communication at 507-933-7520, by fax 507-933-6147, or e-mail marketing@gustavus.edu.



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