

THE FOOD ISSUE: WHAT WE GROW • WHAT WE EAT • WHAT WE SEEK

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FOOD
STOP AND THINK



Saving Our Lunch

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Déjà vu all over again.

That might be Yogi Berra's response to the current concerns about food security. If you are old enough, you may remember Paul Ehrlich's book *The Population Bomb* that forecast widespread famine due to population growth. Hundreds of millions of people would die of starvation. In 1967, the U.S. President's Science Advisory Committee wrote, "The scale, severity and duration of the world food problem are so great that a massive, long-range, innovative effort unprecedented in human history will be required to master it."

The Rockefeller and Ford foundations took on this challenge and established an international agricultural research system. Norman Borlaug, "Father of the Green Revolution," developed new, high-yield, disease-resistant varieties of wheat. (High-yield rice was developed as well.) These new varieties, along with improvements in agricultural sciences, led to remarkable increases in grain production. For example, wheat yields increased from 2 to 6 metric tons per hectare in only 40 years. In contrast, it had taken over 1,000 years for wheat production to increase from 0.5 to 2 metric tons per hectare. Borlaug is credited with saving a billion lives and won the Nobel Peace Prize, the Presidential Medal of Freedom and the Congressional Gold Medal for his work.

The population surge happened, but the global famine did not—a technological *deus ex machina* literally saved our lunch!

Fast forward to 2014. We find that the world today is even more complex than it was back in the late 1960s. Undernutrition is still a major concern in poor countries, and the challenge of feeding 10 billion or so people by the end of this century is daunting. Agricultural productivity has not increased everywhere, notably Africa. The Green Revolution, dependent on use of inorganic fertilizers and modern pesticides produced with fossil fuels, would not now be called "green." As income levels rise, economic disparities grow. Those at the top of the economic ladder adopt a Western, high-meat diet, often delivered through fast-food outlets. Overnutrition is leading to epidemics of obesity. Diabetes is, paradoxically, an issue in many countries where undernutrition is common. More than half of the world's population now lives in cities, removed from the farms that produce food. The impact of separating production from consumption was brought home by a former executive chef of the Baltimore City school system who once told me, "I have 80,000 kids who think that fruit is a flavor." Worsening this gulf are "food deserts" in many U.S. cities where people never see fresh foods and have access only to calorie-dense, nutrient-poor foods. A few years ago, I was visiting City Hall

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in Baltimore and noticed a bountiful urban garden outside. As I surveyed the unfenced plot of peppers, beans and tomatoes, I asked the gardener whether theft was a problem. She said unfortunately not, people did not even understand that the vegetables were food. Instead visitors continually asked her the names of the plants. Americans have forgotten what real food is.

In the U.S., food is cheaper now than ever before. In 1929, for example, Americans spent 20 percent of their disposable income on food at home, compared to 6 percent in 2012. Overweight and obesity are now the new norm. Concentrated animal feeding operations mean that we have achieved new levels of efficiency in food production, but they come

with the unintended consequences of environmental degradation and human consumption of pesticides and antibiotics (used to increase fruit and vegetable production and weight gain in animals). These external costs are not reflected in the record-low food prices.

E.V. McCollum, who discovered vitamins A and D, and was a professor at our School from 1917 to 1946, taught us that what we eat and when we eat it over the life course is a major determinant of the health of individuals and populations. Forty years after the Green Revolution began, today's public health agenda is clear. We need to develop more sustainable ways of producing food, continue to improve nutrition in undernourished populations, and make diets healthier for those at the top of the economic pyramid. Young children must get the calories and nutrients that they need for optimal development but not be force-fed into obesity. Societies with unfettered access to calories have to relearn what to eat.

However, changing what we eat is more complex than it sounds. It involves not just personal choice but also changing methods of food production and delivery systems so that the right choice becomes the default choice. A new "Green Revolution" that relies on sustainable methods of food production will require partnerships of farmers, agronomists, development agencies and policymakers. Interventions to change the norms of what we eat must be culturally appropriate, and take into account the context of nutritional needs within the population. Such interventions will require partners who understand human and plant biology, behavior, economics and policy. This type of multidisciplinary, population-based effort is a centerpiece of public health, and public health has led the way in raising and solving challenges to food security.

Forty years ago, the Green Revolution did the impossible. Now we must do it again. ♣

A Cog in the Dark Heart



Here's one of my secrets: I was once a fry cook at Popeye's Fried Chicken.

I was 16 and eager to earn some money. Mostly the work involved dumping plastic tubs of chicken into flour and then dumping the legs, thighs and breasts into the fryer. I would dump french fries in the fry vat, too.

As you might imagine, the job was dismal. I worked until 2 a.m. and came home reeking of grease. Every night we had to filter the fryer's grease, then scrape out the muck so the grease could be reused. In my second week there, the assistant manager pointed out a co-worker and told me bluntly that I should work harder because that guy wanted my job. I quit after a month, and I still thank God every day that I never had to go back. I know I'm lucky; many people don't have the opportunities that I had.

I wasn't educated enough then to realize that I was one of many cogs working in the dark heart of the vast agro-industrial complex. The whole system has to move with assembly-line precision: from the raising of chickens to proper weight to their processing and properly timed delivery to fry vat.

With efficiency and massive economies of scale, we get cheap food. But, as Bob Lawrence, director of the Johns Hopkins Center for a Livable Future, and others point out in this issue, the true costs to the environment and human health are hidden.

The average consumer doesn't consider those costs. But people like Terry Spence do. The Missouri farmer's life changed irrevocably when a concentrated animal feeding operation set up next door. (See his powerful essay on page 7.) I first heard Terry share his story in a food systems course that Bob teaches. Terry's lecture and others in the course helped me see the big picture of food: where it comes from, how it's made and how it connects to human health. (A version of this course is available for free on Coursera. I highly recommend it.)

The course made me stop and think. I hope this issue does the same for you.

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Letters to the Editor

Shedding Light on Lyme

Thank you for "Two Takes on Lyme," [Fall 2013]. It is refreshing to read an accurate description of the Lyme disease controversy in a publication bearing the name of a respected academic research center.

The groundbreaking work of professors Ying Zhang and Valeria Culotta deserves wide coverage. It reflects well on you and Johns Hopkins for encouraging this important work.

Sherrill Franklin
West Grove, Pennsylvania

Targeting Fake Drugs

I congratulate Gaurvika Nayyar for a lovely article in *The Lancet* and the nice follow-up by *Johns Hopkins Public Health* ["A Plague of Fake Meds," Fall 2013].

She has really helped to bring this seedy issue to the fore, and it is now recognized as a global problem of huge proportions—not just in malaria drugs but other medications as well. This could be the beginning of greater global surveillance for drug quality that is clearly needed.

Roger I. Glass, MD, PhD
Director, Fogarty International Center, NIH
via Magazine Comments

A Fitting Tribute

The Wendy Klag Center for Autism and Developmental Disabilities ["Open Mike," Fall 2013] is a superb and timely multidisciplinary effort, suited well to the Hopkins tradition. What a great way to honor the memory of Wendy!

Jorge F. Trejo, MD, MHS
Jacksonville, Florida
via Magazine Comments

Surgery and Public Health, Part II

Dr. David Bishai's response ["Letters to the Editor," Fall 2013] to the article "Operation Health" [Spring 2013] is alarming and represents a significant denigration of the important advancements that have recently been made in marrying surgery and public health.

Only in the last few years have we begun to recognize and appreciate the important role that surgery and surgeons play in public health. Surgical public health has involved reducing racial, gender and geographic disparity in surgical care, providing safe and effective surgical care in low-resource environments, addressing the surgical workforce shortage through innovative solutions such as task-shifting, and advocating for important public health policy measures that affect surgical patients.

Furthermore, traumatic injury now accounts for more deaths in the developing world than tuberculosis, malaria and HIV combined. Trauma surgeons have the important task of identifying risk factors, advocating for safety measures, developing evidence-based interventions, improving outcomes ... under increasingly stretched economic circumstances. These actions are essential to global public health.

Surgery (and surgeons) are crucial to the public health effort at home, where disparity in surgical care is on the rise, and abroad, where surgery can save the lives and improve the well-being of pregnant women, postpartum mothers, survivors of trauma, and many others.

Lily DiGiacomo, MD, MPH '11
Surgical Critical Care Fellow
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David Bishai, MD, PhD, MPH, responds: There is no disagreement about whether the practice and progress of surgery is essential to the health of people. Dr. DiGiacomo and I are in full agreement here. However, the article blurred boundaries between the terms "practicing surgery" and "practicing public health regarding surgical issues." Both are wonderful things, but they are not the same.