

Cooked: A Natural History of Transformation

By Michael Pollan. 2013. The Penguin Press, New York, NY. 403 pages, paper, \$17.00, ISBN 978-0-14-312533-4.

Anyone who has read previous books by masterful storyteller Michael Pollan will not be disappointed with *Cooked: A Natural History of Transformation*. Using the four elemental sections of Fire, Water, Air, and Earth, the author weaves a history of the human development of processing and transforming raw materials from nature into the edible foods that we enjoy every day. The book is carefully researched and referenced, yet unlike academic texts is personal, thoughtfully written, and flows more like a well-crafted novel than a non-fiction book about something as basic as cooking. Welcome to *Cooked*.

The act of cooking preserves the intricate relationship humans have with nature. Cooking detoxifies many food sources, enhances their nutrient value, and provides a space for humans to share, listen, and eat together. However, this intimate relationship with food has been altered in the past few decades as more U.S. consumers leave their kitchens and let food industry provide their meals. The author explores both the historical significance of our intimate relationship with food, as well as recent changes in human consumption habits that are driven by a barely-regulated food industry that puts profit ahead of human wellness, contributes to untold human costs in medical bills and unusually early deaths, and in a dismaying turn of events becomes a model for much of the developed world. We follow Pollan in his journey into the origins of food preparations through literature searches and thoughtful documentation, as well as into his kitchen where he learns first hand how we transform nature and her ingredients into digestible delicacies using the four basic elements.

This journey through the elements begins in Ayden, North Carolina where he learns the history and culture surrounding authentic barbeque, the kind that involves long hours cooking a pig in a pit room over a slow fire. It is no coincidence that as humans we enjoy the flavors and smells of barbeque. As he describes the process, *"It may well be that (some) animals are pre-adapted to prefer the smells, tastes, and textures of cooked food, having evolved various sensory apparatus to steer them toward the richest sources of energy"* (p 61). In addition

to introducing us to the fabled competition among famed barbeque cooks and their curious idiosyncrasies, the author presents an unlikely myth about how the process was invented by tasting a roasted carcass pulled from a burned down barn. But rather than detract from the story, this enjoyable factoid adds to the mystique that surrounds a truly southern delicacy that has spread across this country and abroad.

Next Pollan moves to water and imagines the historical discovery of using fire and water to cook food, starting with heated stones in vessels made of animal skins before invention of pottery and metal cooking containers. He discusses the intricacies of blending vegetable and animal ingredients with proper spices to create new emergent properties of aroma and tastes in food. Integral to the story are the personalities associated with different cultural traditions and preparations, including a young friend from Iran who made weekly visits to the author's kitchen to introduce new ingredients and food preparations, along with the history of these in another country. Throughout the book we are introduced to special people who devote their lives to food and adding value to simple ingredients through cooking. The story of water and food is one part of the story of civilization.

One of the most intriguing sections of the book discusses the history of baking, with a suspected origin in the human search for a way to transform seed of grass species into something easily digestible. The author describes not only our growing capacity to process this vital food source into more edible products, but the accompanying co-evolution of enzymes in the human gut to catalyze the process. He goes on to describe the invention of white flour that began a societal norm of whole wheat bread for poor people versus white flour for those who were rich, to a flipped current behavior of white bread cheaply available to the poor while those with higher incomes and concern for nutrition now eat brown bread. Pollan documents how industry has changed wheat flour from something that was living (included the bran and germ), unpredictable, and perishable to white flour that is stable, has a longer shelf life, and is not living (bran and germ removed). This is not the only time that the food industry has transformed a beautiful natural substance into one that is easily digestible with low nutrient content. The story of flour portends the

emergence of a food industry intent on profits, often using the guise of nutrition as a marketing tool.

Lastly, the section on fermentation and brewing brings alive the history of this fascinating process, as told through the stories of current brewers and their artisan-like trade. Pollan discusses the paradox of our quest to create germ-free environments in our food processing, yet rely on probiotics in mothers' milk to give infants a good start on life, on microbes that help us produce cheese, yoghurt, kimchi, and beer, and on penicillin from soil organisms to keep us healthy by killing the bad bugs that cause infection. It may in fact be bacteria-free food that is making us sick and cultured foods that keep our gut microbes as well as ourselves healthy and safe. Again, the story is told through visits with unique personalities who have dedicated their lives to one of these processes, providing a rich narrative of people, process, and place to illustrate this part of our food and cultural environment.

Throughout this book, the reader is challenged to answer several key questions. How has food changed us? More importantly, how have we changed food through industrialization and mechanization? What can the serious student of food do to improve personal nutrition and what can society do to reverse the general trends toward obesity, diabetes, and heart disease through taking back control of our diets? There are serious messages here to the food industry as well.

Such serious questions are addressed through many personal stories, always enhanced by Michael Pollan's personal involvement with the preparations and evaluation of each product. The book reads like a novel, yet contains so many practical tidbits about cooking that one is left with hundreds of small suggestions on how to relate more effectively with our food. *Cooked* offers both a scientific and cultural interpretation of the history of *Homo sapiens* and food. The depth of research and practicality found here is revolutionary for those who have yet to read a book by Pollan. *Cooked* provides an exciting perspective on our relationship with food throughout time as well as our current intimate relationship with this critical resource. It explores topics from the evolutionary implications of cooking, baking techniques, vegetable ferments, and the human microbiome. And of overall importance is the way we have changed our relationship with food when outsourcing much of the preparation to industry, much to our own disadvantage as we lose the power of food to nourish and sustain us, and transfer this power to the insensitive and even brutal commercial economy. This is a wake up call, and a stimulus to actually wake up to savor the real value of food in history and in our lives and how we can choose a healthier food future.

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Agroecology: The Ecology of Sustainable Food Systems

By Stephen R. Gliessman. 2015. CRC Press, Boca Raton, Florida. Hardcover, 371 pages, \$79.95, ISBN 978-1-4398-9561-0.

Holistic education and research in agroecology are growing in importance in the U.S., and increasingly endorsed by FAO and other influential organizations. Emphasis has also broadened to include the entire process of food production from natural resources and purchased inputs through processing and marketing to consumption and nutrition, and will soon embrace conversion of waste to valuable resources that can cycle back into the production process. Agroecology is a key textbook for undergraduate education in this important field, and the new Third Edition by professor emeritus Stephen Gliessman from U.C. Santa Cruz will certainly not disappoint those already familiar with prior versions.

Our growing recognition and concern about food production and access by all to solve current nutrition challenges on a global scale has moved many of us from focus on agricultural practices and more efficient use of increasingly scarce non-renewable resources to a thoughtful study of total food systems. As stated in the foreword by Ricardo Salvador, "life is about understanding the times in which you live and therefore what you should do with your life" (p. ix), a concise summary of what education is all about. Dr. Gliessman challenges us to move beyond production details and put them in context within whole systems, and questions our current singular paradigm of domination of the environment. The author further urges us to consider social issues such as the need for adequate wages for farm workers, safe working conditions, and rational distribution of food and other benefits of the agricultural enterprise. This changes the educational scene, and the new edition of Gliessman's text helps in the transition.

In the first two chapters there is adequate evidence for the need for 'fundamental change in agriculture' (Ch. 1), and visiting the agroecosystem concept (Ch. 2), both similar to previous editions. The rest of the book follows an appropriate hierarchical framework, with sections on plants, soil and environmental factors; the next on complexity of biological systems followed by a section that focuses on system-level issues and especially the important interactions that make study of agroecology unique from other reductionist fields; a short section on transition from present systems to those more sustainable under changing climate and unpredictable weather; and finally a section on broad topics that deal with society, community, culture, and transformation to a long-term sustainable approach to food systems. It is this last section that clearly distinguishes the third edition from the prior two. This review will emphasize what is innovative in the last three chapters.

Dr. Gliessman expands on the sequence of steps proposed by Rod MacRae and colleagues in Canada, who suggested improving systems through 1) greater

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efficiency; 2) substitution of alternative practices; 3) redesign of systems by adding two new dimensions: creating local food systems through connecting farmers with consumers, and then linking these local systems on a larger scale to “*build a new global food system, based on equity, participation, and justice, that is not only sustainable but also helps restore and protect earth’s life support systems*” (p. 279). The challenge is to move researchers out of their disciplinary silos to consider broader issues in the food system, and to consider ethical issues such as distribution of benefits from our research and education.

There is a chapter on indicators, reporting on recent advances in “how to measure the unmeasurable” according to some critics, and now exploring soil health, crop productivity, ecological parameters and social dimensions of development. These are all important steps forward from the previous editions of the text. Lastly, the author tackles some of the seemingly intractable challenges facing any thoughtful and concerned student of farming and food systems: issues regarding long-term food security and food sovereignty, globalization and consolidation resulting in corporate control, political processes and power relations in policy determination, and general complacency of a population of consumers that seeks the cheapest food possible without attention to who grows it, how production is managed, and who benefits from the system. A series of steps is proposed for changing the food system, and here the book clearly takes a stance on advocacy and reflects the well-known quote from Nobel laureate René Dubos, who said that “Wherever humans are involved, trend is not destiny.”

Readers of prior editions will recognize the comprehensive glossary, the impressive collection of references that complements each chapter, and an index to key terms found throughout the book. There are thought-provoking questions concluding each chapter, as well as current web sites to enable a student to access timely new information. Since the first edition of *Agroecology: Ecological Processes in Sustainable Agriculture*, this undergraduate textbook has been one of the most widely used resources in this field in U.S. universities. The third edition now titled *Agroecology: The Ecology of Sustainable Food Systems*, promises to keep that place among the many publications and web sites that are coming out in this burgeoning field.

We can observe the expanded chapter on animals and crop/animal integrated systems, an improved emphasis on agroforestry but lack of attention to permaculture and perennial systems in general including potentials of prairie polycultures (there is a pull-out box on the Sunshine Farm Project from The Land Institute in Salina, Kansas), and still a preponderance of examples from California and Central America. But of course that is where the author’s competence is strongest. It is commendable that Dr. Gliessman continues to access current literature and provide our students with a comprehensive and accessible text on agroecology, a book that should be the first one to consider by anyone starting up an undergraduate course in this important and growing field.

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