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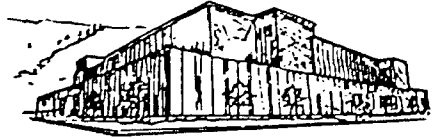
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THE WORLD SO SWEET  
ESSAYS ON THE NATURE OF FOOD

by

Allison K. Clark

B.A. Whitman College, 2003

presented in partial fulfillment of the requirements


for the degree of

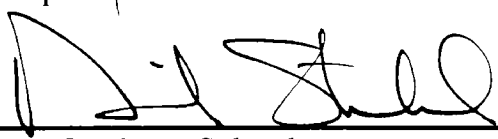
Master of Science

The University of Montana

May 2006

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The World So Sweet: Essays on the Nature of Food (123 pp.)

Chairperson: Phil Condon <sup>PC</sup>

The essays in this collection explore the complex and dynamic relationship between humans, the environment, and food. Food is one of the most basic ways humans interact with the environment. Everyday we consume dishes made from plants and animals, taking into our own bodies energy and nutrient wealth drawn from the world around us. Eating is inherently an environmental act, and one in which we must engage in for survival. At the same time, most Americans have little idea of where their food comes from, or how the foods we eat have shaped our environment and history, or of how the food we eat has been shaped by these forces in turn.

These nine essays employ a blend of science, history, personal observation, reflection, and narrative to explore the way we interact with the environment through the foods we eat. In a series of independent essays, I use potatoes, sugar, tomatoes, grapes, corn, oranges, and salmon to explore a variety of issues ranging from deforestation to genetically modified foods.

Food is one of the most powerful of human experiences, but one that is often taken for granted in our society. We all eat, everyday, and in so doing we interact with each other, with the plants and animals we consume, and with the soil, water, air and sunlight that produced our food. By encouraging readers to think about food new ways, these essays seek to encourage them to also think about the ways they enter the world, and about the kind of world they want to help shape for the future.

# Acknowledgements

I owe debts of gratitude to many wonderful people who helped to make this thesis possible:

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Thank you all. I couldn't have done it without you.

To my Mom and Dad  
For making me eat my vegetables  
And for so much more.



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# The Food We Eat:

## An Essay of Introduction

The best summer days are Saturdays. Sundays are great for being lazy, and Fridays are just right for dinner with friends. But Saturdays are best because all summer long, Saturday mornings are market mornings. It is on Saturday mornings that the parking lot a few blocks away from my former high school in Portland's Hollywood district transforms itself into a maze of awnings and tables piled with all manner of delightful things: fresh fruits and vegetables, cloves of spicy garlic and bunches of herbs, giant cookies and wild mushrooms. At our farmers' market you can buy eggs from chickens and eggs from ducks, handmade sausages and free range lamb. You can buy fresh cut flowers, or flower bulbs for planting. You can get fresh clams or smoked salmon, and several different kinds of goat cheese. In the far corner is the honey stall

with a section of a beehive behind glass so that you can watch the bees while buying your wax candles and clover honey.

You can trace the season's progress by what you can buy at the farmers' market each week. Asparagus and strawberries come first, the former good for roasting in olive oil, the latter best sliced over shortcake with a splash of milk. Next come peaches and cherries, sweet summer fruit for evening picnics and afternoon snacks. And when autumn comes watch for squash, apples, and the late summer corn that arrives just as the leaves are starting to turn.

Wandering through market, my mother and I discuss what to have for dinner. She has a list for the rest of the week, but what about tonight? The market is crowded with people and dogs, and we run into friends and neighbors as we shop. Dad drifts away to listen to the live music--this time a marimba band playing "In the Still of the Night." The air is sharp with the verdant smell of basil and we stop to buy some on our way out. In the next stall, a volunteer from the library helps a little girl with a blue butterfly painted on her cheek sign up for the summer reading program. When we leave, our money spent and our bags stuffed, we wave at the older couple from whom we buy our tomatoes. They wave back.

In the evening we come together in the kitchen. My father marinades the salmon while my mother makes fruit salad and I slice red tomatoes, yellow tomatoes, and fresh mozzarella. It is summer, and I am happy.

\*\*\*

Food is a biological necessity. Our hunger for food is one of the primal urges that govern our bodies, and one of the few urges we are compelled to satisfy. Our bodies

must have food, must have raw fuel and specialized nutrition, or we die. The act of eating is an act of necessity. It is also an act of profound intimacy: when we eat we bring another substance into our bodies where it is digested and built into the substance of our own flesh. Our relationship with food, like other intimate relationships, is complicated; it may begin as the simple satisfaction of a primitive urge, but its impacts go far beyond that.

Eating is an environmental act. We humans have an extraordinary capacity to manipulate our environments. We dam rivers, we drill wells, we level mountains and make gardens in the desert. But no matter how skilled we are at manipulating our environment, we can never free ourselves from it. We are dependent on it for our lives--for the air we breathe and the water we drink. And we are dependent on it for the food we eat.

Most Americans today have left behind the business of growing food. Many of them have even left behind the business of cooking it. Our shelves and refrigerators are full of pre-made, prepackaged foods. Their ingredients are sometimes unpronounceable, their nutritional value sometimes in question, but they represent the end of centuries--millennia--of environmental manipulation that started when the first hunter-gatherers cultivated grain and ends with acres of monocultural potatoes whose genes have been manipulated so that they will all be the perfect size and shape for the perfect uniform McDonald's french fry.

And yet, for all our mastery, for all our manipulation and our machines, for all that we have tried to divorce ourselves from the capricious whims of Mother Nature, we remain bound to the environment by our need for it. Every piece of food we put into our

mouths began as a living thing, and that thing lived *somewhere* on this Earth. No matter how many artificial colors, flavors, and preservatives we add, that living matter is what we need to live, and it is that living matter that binds us to sunlight and soil, to birth and sex and death and decay, to all the messy, unpredictable stuff of the living world.

Eating is an environmental act, too, because it brings into question the matter of sustainability. Are our current agricultural practices--heavily reliant on chemicals to kill, chemicals to nourish, and chemicals to run the machines needed for planting, harvesting, and taking to market--sustainable?

Our extraordinary ability to manipulate our environment, to bend it to our will, has made us cocky. But if the methods we use in our manipulations poison our air, our soils, our water, if they change the environment on which we depend, what happens? What happens if the consequences of our actions so alter our world that it can no longer sustain us? What happens if it can no longer sustain any life at all?

It is food, too, that has allowed us to become what we are, allowed us to build cities, to invent art and science and indoor plumbing. The human invention of agriculture has allowed our Population to grow far past what the environment would naturally support. But as we grew, as we developed, we grew greedy for other things as well. The food we grow today sustains a Population that is consuming the resources of the world far more rapidly than they can be replaced, with tragic consequences for humans and nature alike. It is a pattern we have seen many times before, but one we keep repeating, and each time we do the consequences grow more devastating for the world in which we live. But as I said before, our relationship with food, and our relationship to the

environment is more complicated. It isn't just about Population, manipulation, and sustainability. It's also about deeper forms of sustenance.

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One of the reasons I like to shop at the farmers' market is that the connections are clearer there. Through our food we are dependent on the environment, but dependency does not necessarily foster connection. At the farmers' market it is impossible not to know that my food comes from a place, that real people grew it and real land sustained it. Increasingly, the food we buy at the store is not just processed and prepackaged but entirely divorced from location and from season. We buy fresh summer produce shipped from South America in the dead of winter, and we buy pre-made meals whose ingredients have traveled thousands and thousands of miles before they even reach our shopping carts. In this increasingly global world, our food increasingly comes to us divorced from its contexts--from its place in space and time, from the labor and resources it takes to produce.

But of course, these are not the only contexts in which food exists.

What was the last thing you ate today? Can you remember it? Did you eat it alone, in secret, or at a table with many friends? Maybe it was a guilty pleasure--a spoonful of peanut butter, a square of chocolate, a handful of potato chips. Maybe it was a salad of fresh vegetables you grew yourself. Maybe it was soup your mother made you, or pancakes from your father's recipe. Did you eat because you were hungry, or bored, or sad, or happy? Did it taste good? Did it fill you with a sense of satisfaction, or did it just fill you?

The food we eat has meaning and importance to us that goes beyond its biological value or its ecological niche. What we eat, how and why we eat it, say something about our own identities, cuisine combining with dress and custom and language to help define the culture of an area or a people.

Within a culture, within a faith, food can have meaning that speaks not just to the body, but to the soul. Jewish kosher laws dictate what foods may be eaten and how they must be prepared according to the will of God. Many Buddhists eschew eating meat in an effort to avoid doing harm. Whether Aztec corn or Christian wine, the eating of--or refraining from--certain foods serves as a way to connect not just to the world, but to the soul, and to the divine.

Food connects us to each other, too, to our families, our friends, our memories of home. We cook for each other, we eat with each other, we come to the table and break bread together. I make my home in Montana now, but more often than not the dishes I make for dinner come from a cookbook of family recipes. Food connects me to my family, to my parents cooking in their own Oregon kitchen, to my grandparents, gone now, and to the next generation of Clarks and Simpsons just beginning to take shape in the world. And whenever I return home, for holidays and visits and vacations, food always plays a part, whether it is having brunch with old friends, or making pies for a Thanksgiving feast, or simply shopping for supper some lazy summer morning.

When I come home to visit, walk through the market and cook in the kitchen with my family, I am made happy by both the quality of our ingredients and the quality of the time we spend together as we shop for them, prepare them, and eat them for dinner. In a world of distance and disconnection, food has the power to bring us together again,

and its effects on our emotions are strong. In all of these ways, and many more, food is integral to our lives, whether through biological imperative, ecological capacity, cultural norm, religious law, or even social need.

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I've been thinking a lot about food. I'm not sure when it started. I think about it at the farmers' market with my family, surrounded by all the abundance of summer, and I think about it in winter eating soup in my own kitchen. Probably I have been thinking about it since the moment I was born, and probably I will go on thinking about it until I die. I like to cook, to plan menus and buy ingredients. I like to enjoy a good meal with friends, and I like, when I can, to buy fresh ingredients and cook meals from scratch in my own kitchen. These are things that nourish me, body, mind, and soul. If it were just that simple, I probably wouldn't spend so much time thinking about food. But food is anything but simple. So I thought about it, and I read about it, and I talked about it with friends over cups of coffee, over plates of pasta, and over the telephone.

After a while, I started to write about it.

The essays in this collection represent thoughts I've had on the nature of food. Each one meditates on the interplay between humans, the environment in which we live, and food on which we depend. Taken together, they reflect just a handful of the ways this multifaceted relationship drives our lives and our world. Every food has its own story, and every story, if we stop to listen, can deepen our own understanding of the world in which we live. There are stories here of how food and environment drive human history, both the larger history written of in textbooks and the smaller history of a single life. Some tell of the interdependence and interconnectedness we share with the



beings we consume, and some of the ways we try to disconnect ourselves from them. In the foods that make up the everyday stuff of life lie tales of finding and losing God, of feast and famine, of our global world and of our own bodies.

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“There are two spiritual dangers in not owning a farm,” Aldo Leopold wrote in *A Sand County Almanac*. “One is the danger of supposing that breakfast comes from the grocery, and the other that heat comes from the furnace.”<sup>1</sup> I first read those words many years ago, and they have stayed with me. Walking through the Hollywood Farmers’ Market in summer, surrounded by evidence of the earth’s bounty, I remember them. I look around and know myself to be lucky because in that market I am reminded of where my food does come from, that it comes to my kitchen from soil and wind and water, and from the labor of people who live not so far away. It is a good feeling.

I hope that you enjoy reading these essays, that you will find them informative, entertaining, and, perhaps, even graceful in their way. But more than that, I hope you will think differently about food, that you will remember that eating is an environmental act, and a radical one at that. I hope that these essays will help you escape the danger of which Leopold wrote, to remember that all food comes not from the store but from the earth, from the environment, from the living world. That no matter how it is packaged and presented, all food has history, and meaning, and values of all kinds.

In all the wide, sweet world, there is nothing so complex nor so essential as the food we eat.

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<sup>1</sup> Aldo Leopold, *A Sand County Almanac and Sketches Here and There* (New York: Oxford University Press, 1949) 6.

## Peeling Potatoes

In autumn I make soup from the best last offerings of the farmers' market and the backyard garden. When the sky turns deep and brilliant, I use the last of the beans, and the late summer corn, and the sweetest squash I can find, and dinner tastes equally of summer sunshine and autumn leaves. In winter, though, I make soup that warms, simple flavors that complement cold weather and deep silence. I make my father's favorite--mine too--a base of beef broth and tomato juice with slivered onion, thick egg noodles, and hearty chunks of potato.

One night this winter when the forecast called for snow and I was feeling homesick, I got out the soup pot and gathered my ingredients. I stood at the counter in my kitchen listening to the news and peeled the potatoes straight into the garbage can.

trying to keep my grip on the palm-sized tubers, feeling the cool, wet grittiness of their flesh under my fingers. I drew the peeler across them in short, swift slices, watching the way their red skins bled into the white meat I exposed, and breathing in the deep-earth scent that rose in the wake of the metal blade.

I am not the only person who turns to potatoes for comfort. I can't be. The average American eats roughly 140 pounds of potatoes a year, making the potato the most-consumed vegetable in the nation. (Tomato growers are apt to claim this distinction for themselves, but while it is marketed alongside things that go in salads and not things that go in pies, the tomato is, botanically, a fruit.) We eat them mashed, baked, fried, roasted, boiled, covered in cheese, topped with sour cream, and dunked in ketchup. We are a nation of potato lovers, though we probably eat most of our potatoes as french fries or potato chips, rendering a perfectly healthy vegetable nutritionally void. Even the potato's scientific name, *Solanum tuberosum*, loosely translated means "soothing tuber." Of course, Solanaceae has its troubled members, just like any other family. Soothing solanaceous species include potatoes, tomatoes, eggplants, and peppers, but another branch of the family tree is home to deadly nightshade and other toxic plants. The potato plant itself is poisonous; only the bulbous tubers it produces underground are safe.

No one is sure how long humans have been eating potatoes. Perhaps it has only been four millennia. Perhaps it has been seven. Potatoes come from the rarified altitudes of the Andes, cultivated somewhere in that long stretch of mountains that runs nearly the length of South America. I have never been to the Andes, so I can't tell you what the air tastes like, or what the world looks like from so high, or how the soil that first produced potatoes feels when you crumble it in your hand. But I do know something about

potatoes, and I can understand why they were so prized by those ancient Andean people. The wild potatoes from which our familiar, everyday spuds are descended are both bitter and toxic like so many of their relatives. But their benefits are hard to deny. Potatoes grow well at high altitudes, and they adapt easily to different kinds of climates. In a place where the landscape was more vertical than horizontal and each change in elevation meant a corresponding shift into a new micro climate, these were qualities too valuable to waste. Perhaps it is true, then, that necessity is the mother of invention. The people of the Andes needed a staple crop that would grow in the place where they lived, and so began what must have been a long and arduous period of trial and error until, at last, the edible potato was born.

However those ancient people came to pin their hopes on potatoes, they couldn't have made a better choice. Potatoes are very nearly the perfect food. They have good flavor (especially the skins) and as a bonus are rich in vitamins C and B6, copper, potassium, manganese, tryptophan, and fiber; ten people can feed themselves from a single acre of potatoes. And once the first crop of potatoes succeeded, its cultivators went on to develop spuds specifically suited to their various needs, their various tastes, and their various desires, culminating in a dizzying plethora of potatoes. Up out of the ground came tubers that were red, pink, yellow, blue, and orange. They came in different sizes, different shapes, different textures. Some of them did best on the highest, coldest, windiest peaks, while others burrowed in on lower slopes where the soil was deeper, softer, damper. While we try to shape the environment to grow the things we want it to, the Incas and their ancestors changed the potato plant to suit the different environments in which they lived. Monoculture was simply not a viable option. In its own time, Incan

agriculture was among the most sophisticated in the world. Crops, like friendships, are cultivated to improve quality of life. The people of the Andes looked past the potato's noxious relatives, appreciated its finer qualities, and made it a part of their lives. Their friendship continued until it was disrupted, like so much else in the Americas, by the arrival of the Spanish.

I know it will be difficult, but try for a moment to have some empathy for the Spanish. Imagine what it would have been like to be a conquistador. Think of tramping across Mexico, Honduras, Peru. Think of the bewilderment of discovering that Noah's Ark must have been much bigger than you thought. Try to imagine being so impossibly far from home, a stranger in a very strange land where there is no wheat for bread, no grapes for wine, no olives for oil. Instead there is a strange plant the natives call *maize*, a mutant grain grown terrifyingly large. And in the terrible and beautiful mountains of South America there is a rather unremarkable little plant whose leaves are poisonous and whose edible tubers look much like clods of the soil from which they grew. You are probably not overly impressed. You cannot imagine that the potato will bring you fame or fortune.

By the time the Spanish first encountered the potato, probably around 1537, they had decades worth of more impressive botanical "discoveries" to their credit. Even after the initial encounter, Spanish explorers declined to bring potatoes back to Europe for years, opting for more dramatic species instead. The potato lived, until that time, in benign obscurity in the mountains of South America. It was years before the conquistadors--running low on new natural wonders--bothered to carry the potato out of

the Andes. It is no more native to North America than the Spanish themselves, or, for that matter, than all the European settlers who would follow.

I, like most other Americans, am a hybrid, and a hybrid of nonnative invasives at that. Though I was born in Oregon and am, as an individual, native to that ground, the roots of my family tree are sunk deep into the soil of England, Germany, Scotland, Holland, and Switzerland. Some of the branches of my family tree also bear the names Scully, Casey, and Doyle; in addition to my other nonnative ancestors, I have been heavily cross-pollinated with the domestic *Immigrantia hibernia*--I am the descendant of Irish immigrants.

Standing in my Montana kitchen I take a knife to the newly nude tubers. The potatoes make the same sound as apples upon being sliced. I cube them, careful to cut the pieces neither so large that they will not cook through the middle nor so small that they will disintegrate before the noodles soften. Adding the potato cubes to my soup pot, I am living the latest chapter in the history of my family, a history shaped profoundly by some unknown man, bearded perhaps, homesick certainly, who carried potatoes out of the Peruvian Andes, on to a ship and across the wide Atlantic to Spain where they spread slowly through the rest of Europe. I owe that man a great debt; without him, I would never have been born.

We forget, living as we do in a world built on human achievement and human artifice, that we are always at the mercy of nature, and that while nature is neither cruel nor capricious, it is unpredictable, and it is unfeeling. In his own discussion of potatoes, Michael Pollan wrote "As long as humans need to eat, we can never completely insulate

ourselves from the vicissitudes of nature[.]”<sup>2</sup> It is easy to forget this at the grocery store, or standing, as I do, in a kitchen with a full refrigerator and well-stocked cupboards. It is easy to forget the power of nature over human life, but nature has a way of reminding us. Few events recorded in history books are named for vegetables, but the Irish Potato Famine is one of them. I find the name misleading; as a child, I imagined that “potato famine” referred to a time when there was nothing to eat but potatoes, which seemed an awful enough fate to me; just imagine, having to eat nothing but potatoes, day after day, week after week, month after month! I had not yet heard about the coffin ships.

The potato arrived in Ireland in a roundabout way. Initially it was ignored in Europe. The nobility deemed it peasant food, and beneath notice. The peasants regarded it with suspicion--not only did they hold its poisonous relatives against it, but, even more damning, the Bible makes no reference to potatoes. Not only that, but the potato came from the wild, uncivilized savages of the New World; who knew what its effects might be on decent, hardworking people? The potato was even charged with causing leprosy and immorality in those unfortunate enough to taste its flesh. How exactly it accomplished these awful deeds is unclear, but the rumors were enough to keep the potato out of wider circulation. The tubers were, however, Popular with sailors. Cheap and easy to grow, potatoes kept well for long periods of time in darkened holds, and, best of all, furnished an excellent way to ward off scurvy.

As the potato’s merits became more well known, it attracted other admirers, especially among the aristocracy who saw it as a good way for the peasantry to feed itself. Monarchs tried to encourage their subjects to plant potatoes in a number of ways:

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<sup>2</sup> Michael Pollan, *The Botany of Desire: A Plant’s-Eye View of the World* (New York: Random House, 2001) 205.

Frederick the Great of Germany threatened to cut off the nose of anyone who refused to grow potatoes; Louis XVI of France planted potatoes in the royal gardens and posted guards around them to encourage the belief that they were valuable. Sure enough, the tubers were soon stolen. Marie Antoinette, better remembered for her unfortunate remarks about bread and cake, wore potato flowers in her hair.

In time, the potato's Popularity increased. In time, it came to Ireland, a place impoverished by British rule where most of the countryside was devoted to producing crops for English overlords. We cannot be certain how the potato first came to Ireland. Was its arrival accidental or deliberate? Did it come from a shipwrecked Spaniard or a progressive Englishman? Did it come dressed up as a novelty, or quietly as an evening meal?

Anyone who has grown potatoes knows himself to be wealthy. To dig a tuber out of the dark confines of the soil, brush it clean, and pile it with its brothers is to take all the nutritional wealth of the soil and hold it in your hand. It is nutritional wealth, or its lack, that can determine the fate of whole societies. What is the value of a mountain full of gold if you have nothing to eat while you dig? It is this nutritional wealth that the potato brought to Ireland. The Irish themselves had very little land, and very little food. Ireland is not particularly well suited for growing cereal crops like wheat. The Irish did grow corn, but not for themselves; corn was an export crop that profited the English landowners that ruled Ireland when the potato first appeared there. The arrival of the potato proved a miracle. A diet of potatoes and milk, while not, perhaps, the most interesting, is nutritionally complete. Widespread Irish cultivation of potatoes began around 1780; not only did this mean the Irish could feed themselves, they could also



produce extra food. With a ready supply of food, more children survived into adulthood. Young men could afford to support families sooner. Families grew and multiplied.

Ask a room of academic experts from different fields what the presence of a food surplus means, and they will all tell you something different. An anthropologist will probably tell you that the ability to produce surplus food allows for specialization, as those not needed for food production are freed to become artists, craftsmen, and, unfortunately, politicians, allowing civilizations to advance. An economist will probably tell you that food surplus means that some food can now be sold or traded for profit, encouraging the expansion of commerce and giving rise to the desire for luxuries. But an ecologist will probably tell you about carrying capacity. A biologist will tell you that every environment can support a Population of a certain size, and that the availability of food is one of the key factors of any carrying capacity. A biologist will also tell you that when the carrying capacity is raised, even temporarily, and surplus food becomes available, that a Population will increase until it reaches the limit of the new carrying capacity. Which is exactly what happened in Ireland. The Irish grew cash crops for the English and potatoes for themselves, their families grew, their health improved, and the Population boomed. If this were the end of the story, my ancestors would not have needed to leave Ireland, and I would not now find myself making soup in Montana. But this is not the end of the story.

I have never known real hunger. I have never depended entirely on my own skills to feed myself. I have never had to choose between feeding my son or feeding my daughter. I have never woken in the morning to find that while I lay dreaming, the entire crop that I planted to feed my family has rotted away. In 1845 the island that had become

so dependent on the potato for survival suffered an attack by *Phytophthora infestans*, potato blight. Usually referred to as a fungus, potato blight is actually a member of the phylum Oomycetes, closer to kelp and brown algae. It, like the potato, is a native to the New World, and probably hitched a ride across the ocean on a ship like so many other unwanted biological stowaways.

While in the Andes the Incas had planted a plethora of different potatoes, potatoes that constantly acquired new qualities and new immunities by crossing with their wild relatives, the Irish had by and large planted a single kind of potato. More than that, potatoes do not grow from seed. The “seed potatoes” we plant in our gardens are simply the sprouted tubers of the parent plant, and the new potato plant that grows from these seed potatoes is genetically identical to the original. The Irish had not only planted a single species, each patch of potatoes was full of clones. They watched in horror as their crops died, unable to stop the disease’s progress through their fields. Only a generation before, potatoes had provided the nutritional promise needed to let the Irish multiply fruitfully.

Potato blight broke that promise.

Blight also claimed the potato crops elsewhere in Europe where the potato had been adopted, but nowhere else on the continent did the potato so exclusively provide for the caloric and nutritional needs of the people; other countries turned to alternative crops. In Ireland, the other crops belonged to the English; as the potatoes rotted in the field, ships full of corn left the ports every day. Even “natural disasters” are helped along by human hands. Close to one million Irish starved to death between 1845 and 1850. Millions gave up their land, prevented by law from qualifying for aid if they owned more

than a quarter acre. The fisheries around the island were exhausted, and even the rocks along the shore were denuded of algae as the starving and the displaced crowded around the coast trying to survive. Thousands of Irish, deprived of their only source of vitamins, went blind or insane. And, of course, hundreds of thousands more fled Ireland and poured into the United States. Some of them carried the names Scully, Casey, and Doyle.

What does it mean to be the descendant of Irish immigrants, standing in a cold Missoula kitchen, peeling potatoes for comfort? Over the centuries, the potato has been cultivated again and again, new farmers creating new varieties--German Butterball, Irish Cobbler, Dakota Pearl. Conversely, in my family *Immigrantia hibernia* has crossed with *Immigrantia caledonia*, *Immigrantia germania*, *Immigrantia anglia* and others until, not that long ago, the daughter of a Simpson and a Doyle met and married the son of a Kienzle and a Clark. Ten years later, I was born. Whatever mingling of breath and blood and seed and love over the long reach of human history has led to my eventual conception and birth, it would not have come to pass without the help of a Spanish conquistador, a vegetable from South America, or a crop infestation. Through the branches of my family tree twines a potato vine.

The most Popular American vegetable has a lot in common with the modern American him--or her--self. Neither, for the most part, is a native of this American soil. Both come in all shapes, all sizes, all colors. Of course, both are trying to conform to a certain ideal as much as possible--we try our hardest to look just like everyone else, especially the people on TV, while we plant potatoes in great monocultural fields searching for the perfect, french fry worthy spuds. In the space of generations, the potato changed forever the culture, the history, the lives of thousands of people on two

continents. That's after it helped to build the most powerful civilization in South America. But we have short memories, and remain convinced of our own abilities to circumvent the processes of nature. We forget that nature is harsh and unforgiving, and we forget that our abilities can make things worse as often as they make them better. An Irishman from the nineteenth century could tell you that. So could a Dust Bowl farmer or, I would imagine, anyone alive today who lives with famine. The potato has changed us as much as we have changed it, but we forget, time and time again, the lessons it has taught us. Still, it seems likely that the potato is not done with us yet; certainly, it is not done with me.

A few weeks ago, home on vacation, I went to Garden Fever with my father so that he could buy some seed potatoes. He is trying a new method this year, one he read about in the paper, or maybe a magazine. He planted his seed potatoes in a large plastic tub, just covering them with dirt. Once the vines have grown out six inches, he will add another layer of dirt. He will repeat this process all summer, allowing only six inches of vine to show each time. This way, the plant will continue to produce tubers, growing new ones in each stratum of soil.

Assuming the plants are watered neither too much nor too little, assuming the seed potatoes are not disturbed by curious crows or suspicious squirrels, we are hoping for a bumper crop. I plan to bring some back with me to Missoula. They keep well, as any good sailor could tell you. I will put them aside, someplace dark and cool. Later, when the forecast calls for snow and I am feeling homesick, I will take out those potatoes grown by my father in our backyard in Portland. I will peel them, chop them, and add them to a pot with tomato juice, beef broth, onion and noodles, and turn them into soup. I

will eat it slowly, careful not to burn my tongue. and savor the rich broth, infused with family history and brimming with bits of a tuber whose very name means comfort.

## Bittersweet

I used to spend an inordinate amount of time thinking about sugar. Most of my senior year in college, in fact. Once I started thinking about it, it was hard to stop; sugar was everywhere. It was in the peach and strawberry smoothie I drank on my way to class, in the cherry cola I chugged for a midday caffeine boost. It was in the dressing I poured over my salad at dinner, and in the pints of Ben and Jerry's my friends and I ate straight out of the carton. Even my care packages from home were filled with love and sugar in almost equal amounts.

At its most basic level, sugar is nothing more than the energy of the sun transformed, transmuted by photosynthesis into a chemical equation. Its production is what makes plants producers, and its consumption is what makes the rest of us consumers. It is the thing that makes fruit sweet, and sap sticky.

We come by our deeply seated desire for sugar honestly. The human tongue with its ten thousand taste buds can detect five primary tastes. It can taste things that are salty, things that are sour, things that are bitter. It can taste a flavor called umami, which is the reason that the flavor enhancer MSG makes things taste, not necessarily different, but better. And, of course, it can taste sweetness.

These five tastes, in various combinations, make up the breadth and depth of flavor as we experience it, and each of them has played a role in the survival of the individual and of the species. Our distant ancestors' dislike for bitter things kept them from eating poisonous plants (and poisonous plants are bitter to discourage things from eating them.) We like salty things because salt is vital to our bodily functions and without it we would die. And we crave the sweetness of sugar because sugar, those tiny grains of crystallized sunshine, is the currency of life on our planet. Sweetness means, "Yes, eat this! This will give you energy!" A craving for sugar is a craving for life.

But that's not why I started thinking about sugar.

In college, I was fascinated by almost everything. I took classes in literature, biology, politics, and even math (though that didn't turn out so well.) My discovery of sugar's place in history came by accident, a foundation of facts encountered incidental to other pursuits. Collateral research. In my senior year I'd begun investigating the environmental consequences of colonization across three continents for my senior project. I expected to spend the year reading about plague and extinction, mine pollution and timber harvest and the steady drain of resources that characterizes a colonial economy. I didn't go looking for sugar, but sugar found me all the same.

After one particularly long and captivating day in the library. I accosted my best friend at work. “Did you know,” I asked him, flushed with amazement and curiosity. “Did you know that sugar was one of the most important crops in colonial Latin America? Did you know that it may have been introduced by Christopher Columbus himself? Did you know that sugar plantations caused more forest destruction in the Caribbean than anything else until the advent of fossil-fueled factories?”

“We don’t talk about sugar much in the Psych department,” he replied. He was used to me, and used to such interrogations. He was subjected to many more of them as the semester passed and I learned, unexpectedly, more about the story of sugar in the New World.

Part of the story is familiar: in 1492, an Italian with the patronage of the Spanish crown set off with three ships to find a new route to the Orient. Instead, he bumped into a strange New World, and because of his “discovery” became one of the most famous men in history. The fact that his original mission was an utter failure is more or less forgotten, or at least, forgiven. He had not found a new passage to India, but he had found something different, something better. He had found Eden.

I tried to imagine what it would have been like to be on those ships, even though a historian is not supposed to indulge in speculation. Historians deal in documents and facts and reasoned deduction and conclusions based on evidence, at least on paper. When they daydream, they keep it to themselves. I did not want to fall into the trap of dreaming, of projecting my own expectations or desires on the landscape of the past. But I couldn’t stop myself from wondering, as I read journal entries centuries old, wondering what it was like.



I have never been to a tropical zone, though I am familiar with them from photos and *National Geographic* specials. I have never set out on a voyage so long, so uncertain, or so dangerous as that of Columbus and his crew, and I have never found myself in a place so totally alien to all my knowledge and all my expectations. So although I tried to imagine how I would have felt and what I would have thought, I failed. It is easy enough, though, to understand what Columbus and his crew did report thinking when they came to the New World. It is easy enough to understand why they thought they had found the lost Garden.

When the Columbian expedition sailed into the Caribbean (utterly lost and completely confused) they were amazed by what they found. These tropical islands, lush and green, caused deep wonderment after so many days staring into the vast, unchanging horizon of the sea. The weather was perfection, the landscape beautiful and filled with strange new creatures. And then there were the people, who lived in such idyllic surroundings. They wore little more than loin clothes, unselfconscious of their nakedness and untouched by the knowledge of sin. Innocent as children, and living with such beauty and such bounty. Surely, Columbus thought, surely this is a garden. Surely I have found Paradise on Earth.

But Paradise is fleeting. With European contact came European diseases, and within a few decades of Columbus' arrival, the native Population of the Caribbean had been decimated. The native peoples were displaced by boatloads of new arrivals from Spain, young men, for the most part, middle and younger sons eager to distinguish themselves and build fortunes unavailable to them at home. Expeditions set off into the interior of the mainland. And on the islands of the Caribbean, so conveniently empty

now, the new colonists created plantations and began growing cash crops for export back home. The most important of these crops was sugar.

The relationship between sugar cane and the human race is an old one. Our craving for sweetness is, after all, deep and instinctual, and sugar cane, even unprocessed and unrefined, satisfies that craving. Sugar may have originated in New Guinea, although it's hard to tell. Some scholars argue for Polynesia, and some argue for neither. Wherever its origins lie, sugar cane made its way (or, more likely, was carried) through South East Asia and into India, where the technique for extracting sugar from the juice of the cane and refining it first developed. That was several centuries before the birth of Christ.

The Persian army invaded India in 510 BC and took sugar back with them. It wasn't until the Middle Ages, until the Crusades in fact, that sugar found its way to Europe, one of the "spices" Crusaders brought back with them from the Holy Land. Sugar spread through Europe then, and how could it not? While the common people had to assuage their natural sweet tooth with fruit and honey, for the nobility sugar became a sign of great wealth and luxury. It's hardly surprising that when presented with the opportunity, the Spanish set about growing as much of it as possible.

Sugar, as I had told my best friend, was one of the first crops brought to the New World. It was a tropical crop, known to do well in warm, wet places. Places like the islands that would someday become Cuba, Hispaniola, and Puerto Rico. The Italians and Portuguese had had some success in the years just prior to Columbus' first voyage with growing it at Madeira and the Canary Islands. It seemed logical to the Spanish, now in possession of tropical islands of their own, to try sugar cane as well.

Sugar cane is a crop that must be harvested when it is ripe. Left too long and a whole season's growth will be no good. Once harvested, it must be processed immediately by being cut up and boiled down. Boiling sugar cane is a lengthy process, and one that requires vast quantities of fuel to feed the fires that heat the cane juice. In a time before electricity and fossil fuels, this meant wood. Sugar cane is a tropical plant, and one of the reasons there was so little sugar to be had in Europe was that there were few places on the continent that would support its growth. Now the Spaniards had found a place where sugar would grow well, but there still remained the issue of extracting it from the fibrous canes. How were they to feed the fires of the refineries? The answer was obvious: the tropical forests of the islands were so lush, so vibrant, so vast. Here was the all the wood the Spanish could ever need for the boiling of sugar cane. This new and glorious paradise had provided an unending supply of fuel--surely, God must have intended for the Spanish to have them and use them to grow sugar, for why else would He have created such a place for them to find? They could clear acres upon acres to plant sugar, and still have more trees than they would ever need.

I tried to imagine that too--a time when it seemed the trees would last forever. It was almost inconceivable to my twenty-first-century mind: for the whole of my life I had been constantly reminded that nothing lasts forever. I knew that the rain forests of the Amazon were shrinking, as were the old growth forests closer to home. We were running out of water, we were running out of oil, we were running out of time. As a child I learned to separate recyclables by number, to turn off the water when I brushed my teeth, to turn out the lights when I left the room. So I tried to imagine what it was like to be the

Spanish, to believe--to *know*--that the trees would last forever and there was no need to conserve them against future need. I tried to imagine it, but as before, I think I failed.

It's sometimes called the myth of tropical abundance. It is a myth deeply rooted in the earliest colonial experiences, deeply informed by biblical images of an ever-blooming Garden, and founded on a basic misunderstanding of the way a tropical ecosystem works. The Spanish looked around and saw a lush landscape where the trees grew quickly, and grew tall. Tropical forests appear bountiful in the extreme. Based on the evidence of their eyes, the Spanish believed that whatever they cut down would grow back again, and quickly.

But tropical forests are deceiving. Tropical soils are thin, fragile, and easily exhausted. Rain falls so frequently there that nutrients leach quickly from the ground. The nutrient wealth of tropical zones resides not in the soil but in the plants themselves. Trees draw nutrients quickly up through their roots and deposit them in their leaves, banking them for further use. Leaves fall constantly in these forests, not just during a single season but year-round, continuously replenishing and refreshing the soil. In temperate forests, like those in North America and in Europe, fallen leaves decay into deep soils into which plants send long roots, but in the tropics roots grow shallow and trees grow large and rapidly to bank as much of the earth's sustenance as possible.

The apparent lushness of tropical forests reflects not bounty but an adaptation for survival, and disguises the inherent fragility of such places. When the Spanish harvested these trees in great quantity, all the mineral wealth contained within their leaves was lost to the forest; the soil quickly became exhausted; the forests shrank. Sometimes they were

replaced with cane fields. The plantations grew bigger and bigger. The trees fell faster and faster. And the sugar flowed out of the New World and across the Atlantic.

Of course, the Spaniards were not doing all of this work themselves. In the days before the industrial revolution the work was backbreaking: harvesting sugar cane, processing it into sugar, molasses, and rum.

At first, the Spanish tried to put the native peoples of the Caribbean to work on their plantations. But the native Populations of the islands, decimated by disease, could not accommodate the demands of the sugar plantations, and anyway, the Spanish found the native peoples had a distressing tendency to die quickly when pressed into service. Clearly, the natives were unsuited to the rigors of plantation life. Where then could a sufficient workforce be found?

This a part of the story I had heard before, the story of slavery, of the Atlantic trade network that sent rum to Africa, slaves to the Americas, and goods, especially sugar, back to Europe. As the Spanish had introduced themselves, their diseases, and their sugar cane into the Americas, they now introduced slaves from Africa, known to be able to withstand tropical climates and European diseases both.

The slaves imported from Africa by force were nearly all men; it was more cost effective for the Spanish to work them into the ground and replace them every few years than to allow a resident Population of women and children who could not work in the cane fields. To these men fell the arduous tasks of planting and harvesting the cane, and the dangerous tasks of crushing the cane to extract the juice and boiling it down. The mortality rate was high. Sugar plantations in the islands became so vast and required so much labor that in some places Africans outnumbered Europeans, terrifying the Spanish

overlords who feared that one rebellion could trigger a massacre. But the danger seemed to be worth the risk, and any hint of uprising or resistance among the slaves was brutally repressed by the Spanish.

When sugar became so easily available in such vast quantities, the demand for it soared, both in Europe and in the new colonies of the American mainland. Sugar was perhaps the most important, and certainly the most lucrative, product of the New World before gold and silver were discovered. So the forests were cut, the sugar was harvested and distilled into rum. The rum was shipped to Africa in exchange for more slaves to come to the Americas, to cut down more forests, to distill more rum to be shipped to Africa. This was the great and mighty trade network of the Atlantic, all built on the basic human desire for sweetness.

Of course, our desire for sweetness is not confined to our sense of taste. Out of our biological knowledge that sweet is good has grown a whole suite of associated desires. We want friends with sweet dispositions, and mates with sweet hearts. A moment can be sweet, though often fleeting. Baby clothes can be sweet, and also precious. And we are all seeking *la dolce vita*--the sweet life. The demand for sugar was guided by a desire for the taste of sweetness, it's true, but the production of sugar was guided by the desire for profit. Money, it seems, was the sweetest thing of all. So the Paradise Columbus found succored the twin sins of greed and gluttony, and the price for both was paid in terms of lost forests and human lives.

I didn't know how to feel about what I had learned. It had never occurred to me that the sugar all around me, innocent, innocuous, *sweet* sugar, could have such a sordid past. The sugar that left the Americas was no simple sweetener. In each spoonful was

the energy of the sun, captured and retained by a species of plant brought to a new place, no more a native than the humans who transported it. In each spoonful was the nutrient wealth of fleetingly fertile tropical soils, extracted and shipped abroad for foreign consumption. In each spoonful was the blood and bone, muscle and sinew of men who, like the sugar cane, were nonnative, and brought against their will to the New World that was supposed to be the lost Garden of Eden, and in each spoonful was the ghostly spirit of the native peoples all but exterminated in the pursuit of profit. All the abundant wealth of the tropics boiled down and eaten by men and women who would never set foot on American soil.

Sugar didn't stay confined to the Caribbean. Flush with such early success, the Spanish began sugar plantations in Mexico. The Portuguese planted sugar in Brazil, where it became the cornerstone of the colony's economy. The destructive and extractive nature of sugar is not unique in the Americas. I might as easily have become captivated by the horrors of mining in Mexico, or of tobacco in Virginia. The parallels are inescapable, the consequences just as terrible. But the story of sugar seems somehow to be perfect in metaphor as well as in fact: what did we do when we found what we believed to be Paradise? We tried our hardest to extract every bit of sweetness we could from it.

In clearing the land and cutting the trees, the Spanish didn't just cause the forests to shrink. They also killed off native species and native people, destroyed the fertility of the soil, increased the rate of evaporation, and even affected rainfall across the region. On the islands where sugar reigned, most of the forests were gone by the nineteenth century. In our continual search for the sweet life, we destroyed Paradise. And it didn't

stop with sugar. Over the course of centuries, through shifts of power and politics, the cycle of destruction begun with sugar has happened again and again throughout Latin America, with coffee, with bananas, with a whole host of foods extracted from the land at high cost to the land itself and to the people who work it.

“How do people imagine the landscapes they find themselves in?” Barry Lopez asks. “How does the land shape the imaginations of the people who dwell in it? How does the desire itself, the desire to comprehend, shape knowledge?”<sup>3</sup> Columbus and his crew imagined the Caribbean as Paradise on Earth; those who followed imagined it as a land of abundance that would last forever. Our most recent search for sweetness in the Caribbean comes in the form of tourism. We go now to extract an experience, a few photos, a sweet memory. Tourism may seem a more benign activity, but it can be just as destructive to the environment as anything else when people come to a new place, take what they want, and leave again without putting anything of substance back. And because the craving for sweetness is one that will never go away, it seems likely that the cycle will continue as it has been for the last five centuries. When I imagine the landscape of the Caribbean now, I imagine it both now, in the present, as a landscape forever altered and always imperiled, and I imagine it as it might have been five hundred years ago, before sugar, before slavery, before colonization. Sometimes, though rarely, I even try to imagine what those islands might be like today if sugar had never happened.

In the end, sugar had only a minor part to play in my final project. I had a big topic that covered three continents and five hundred years, and no matter how fascinating I found sugar I had other places and other peoples and other types of environmental

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<sup>3</sup> Barry Lopez, *Arctic Dreams: Imagination and Desire in a Northern Landscape* (Toronto and New York: Bantam books, 1986) xxvii.



change to discuss. When it came to formal research conducted for my degree, I thought it best to stick to documents and facts and reasoned deduction and conclusions based on evidence. When it came to formal academics, I kept my daydreams to myself.

But somehow the story of sugar stayed with me as other stories did not. Long after my academic requirements had been fulfilled, I still felt conflicted about sugar. How could I eat something that had been the cause of so much suffering and destruction? On the other hand, how could I not eat something that I sometimes craved with unsettling intensity, something that my body had devoted a whole squadron of taste buds to? And, more immediately, how could I not eat something that was so prevalent in the world around me? Americans eat somewhere between forty and seventy pounds of sugar a year. It accounts for close to sixteen percent of the American diet. And for all the talk about obesity and diabetes and the health crisis in America, our desire for sweetness is still as strong as ever. Certainly mine was.

One night, close to graduation, I related my dilemma to my best friend as we were leaving a bar. I was feeling guilty about the rum and coke I'd indulged in--not only the sugar in the cola, but the rum too! Shocking!

"I can't drink rum anymore without thinking of forest destruction and the slave trade," I told him.

"You think too much," he told me. Then, after a minute, he said, "But at least conversations with you are never boring."

In the end, I didn't give up sugar. It seemed a pointless affectation. I could almost hear myself announcing "Oh, I never eat *sugar*," in much the same tone I had heard certain people declare, "Oh, I never drink *tap water*." And the simple truth is that I

like sugar. I always have. I like it in my smoothies, in my cherry cola, in my salad dressing, in my ice cream, and especially in my care packages. My desire for sweetness, it seems, is just as strong as everyone else's.

But I know that if we do not remember the lessons of history, we are doomed to repeat the same mistakes over and over again. For all our celebrated intelligence, we humans are surprisingly slow to learn. We have treated oil, coal, water, and yes, we have treated forests all over the world the same way the Spanish treated the forests of the Caribbean. We have treated them as if they were there for us to use, as if they would last forever. It's only now, when they begin to run out, that we realize they won't.

I do not blame the Spanish. They acted according to the knowledge they had. I can't claim I would do better, in their place. But I would also not want to be responsible for the destruction of paradise, should I ever be so fortunate as to find it. So I try to remember the lessons of sugar, and I try to be mindful. When I'm putting sugar in my coffee in the morning, I stop sometimes, for a moment, and reflect that each granule is a little bit of sunshine, held captive for awhile by a plant; that in each lies desire millions of years in the making; that in each lies the potential for destruction.

## Love Apples and the Fruit of Knowledge

I am a self-confessed fact junkie. I love finding things out. My brain is a warehouse for random bits of largely useless information, such as the date of the Boston Massacre (March 5, 1770), the name of the last Anglo-Saxon king of England (Harold), and the title of Leonard Nimoy's favorite episode of *Star Trek* ("City on the Edge of Forever.") This is helpful for playing Trivial Pursuit and doing crossword puzzles, but very little else. I find deep satisfaction in *finding things out*. As a child I loved school, primarily because it fed my habit, and I became a voracious reader at an early age.

Knowledge, as the saying goes, is power, but for me it has always been about the simple pleasure of *knowing*. And I'm not stingy with what I know; in fact, I have the unfortunate tendency to become overexcited and hurl bits of information at those around me, whether they want them or not, out of sheer exuberance for the topic at hand. My

friends and family, thankfully, seem to have decided that this trait is more often endearing than annoying, but strangers sometimes find me a little scary. possibly because I am apt to recite Shakespearian soliloquies or A.A. Milne poems with no prompting whatsoever. I am fascinated by knowledge, by its acquisition, by its construction, by the fine line between *knowing* a thing and *believing* it.

Because knowledge is not the solid constant it appears. Knowledge is tricky, slippery, dancing on the divide between fact and fiction. What we know and how we know it is as much a product of our place and time as it is a reflection of the “truth” of the matter. The vast arsenal of facts I have amassed over the last twenty five years are all subject to change. We don’t always know what we think we know. Take tomatoes, for instance. We know that they grow on plants, that they are more or less round, and that when paired with bacon and lettuce they make a damn fine sandwich. These things are truth. These things are facts. But there are other facts about tomatoes, facts we have forgotten.

One of those forgotten facts is this: *Tomatoes are poisonous.*

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Knowledge of the tomato’s toxicity was once widespread, both in Europe and in America. The tomato was part of the great and wondrous menagerie of plants and animals “discovered” in the New World by the European explorers who flocked there in Columbus’ wake. These strange, exotic creatures were sources of great fascination and frustration for the keepers of the well-ordered world of knowledge who had to fit them, somehow, into their own understanding of the world. The exact reason for the belief that

tomatoes were poisonous is obscure; most likely, it was a conclusion reached from a preponderance of evidence.

To begin with, many people found the scent of the tomato plant itself to be unpleasant. Descriptions range from mild dislike to a feeling of nausea. Some even believed that the smell of the tomato plant could drive a man insane. A plant that produced such noxious odors could hardly be expected to produce wholesome fruit. Tomatoes are acidic, another mark against them. The tomato, like the potato and a number of other New World crops, is botanically related to deadly nightshade, which was hardly an inducement to include it on the dinner table. And, if nothing else, the tomato came from a strange and far away land, a land of mystery and danger, a land of heathen savages, monstrous creatures, and, it seems, poisonous plants.

The sum of these facts was more than enough to convince the average person that it was better to be safe than sorry. It took a hundred years or so for Europeans to begin to accept the tomato as something good to eat, and even then that acceptance was slow and limited, in the beginning, to Italy and Spain. The tomato had mysterious origins, dangerous relatives, and unpleasant aesthetics. That was enough to condemn it. Of course, the men who first encountered the tomato and brought it back to Europe must have, at the very least, observed the tomato being safely eaten by the New World's natives; this does not seem to have held much reassurance for their fellow Europeans.

The wild tomato is native to South America, evolving somewhere in the coastal highlands in the western part of the continent. It still grows there, in Peru, Ecuador, and Chile. Strangely, the native peoples of the region do not appear to have cultivated the tomato, or even eaten the wild specimens growing around them.

Their rebuff didn't hinder the tomato, however. It managed to migrate to the Galapagos, probably by hitching a ride in the stomach of a few hungry sea turtles. Its jump to Central America is a bit more mysterious, but that is where the tomato was first cultivated by humans, and at the time Columbus and his crew first left Spain, it was the only place where cultivated tomatoes could be found.

Wild tomatoes, unlike the tomatoes we find at the grocery store, have only two seed-filled chambers. The tomatoes we know, veritable labyrinths by comparison, most likely began as a genetic mutation. Central American farmers for some reason preferred the fruit that resulted, probably because they were larger than their wild cousins. For whatever reason, they encouraged this mutation, breeding it into the new crop they were creating. From their large, lumpy mutants the first tomato, as we would know it, was born.

It was Europeans, the Spanish in particular, who are responsible for bringing the modern tomato to the rest of the world. Tomatoes gained acceptance in Spain earlier than anywhere else, and the Spanish spread them throughout their empire. They brought them to Europe, of course, but they also imported them to the Philippines; from there tomatoes jumped to Southeast Asia, and from there to the rest of the continent. The Spanish brought the tomato to North America, too, planting it in Florida. But the Spanish were not the only Europeans to introduce the Central American native to the north. Colonists arriving in New England and the Mid-Atlantic also brought tomatoes with them. Some brought the tomato as an edible crop, but mostly the tomato was introduced as an ornamental plant. Few people ate tomatoes. After all, everyone knew they were poisonous.

According to legend, Robert Gibbon Johnson, resident of Salem, New Jersey, was the first man to eat a tomato in America. Supposedly, he did this on the steps of the town's courthouse in 1820 in order to prove to those assembled that the tomato was not poisonous. As he took his famous bite, several women in the crowd are said to have fainted.

This is the most famous tale of the first American tomato-eater, but there are a number of others, all along similar lines. One Popular story even names Thomas Jefferson as the brave soul in question. However it happened, belief about the tomato's toxicity began to dissipate. The truth shifted. Facts changed. The tall tale of Robert Johnson reflected a world in which tomatoes *were* being eaten, and probably had been for some time. By the beginning of the Civil War, both the North and the South were feeding their armies on tomatoes. Of course, tomatoes are dangerous for other reasons. After all, as everyone knows, *tomatoes are aphrodisiacs*.

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The biological explosion occasioned by the Old World crashing into the New caused no end of headaches for scholars whose chosen field was the taxonomy and classification of the biological world. As the Age of Exploration continued, pressing farther into not only the Americas, but into unknown reaches of Africa and Asia as well, those learned gentlemen were inundated with new plants and animals that had to be, somehow, put in the proper contexts and the proper classifications. They plumbed the depths of mythology, medicine, and theology for clues as to how this new configuration of the world was supposed to fit together.

The easiest way for these exhausted scholars to classify new arrivals was to group them with other, known quantities. Linking the new to the old was easy in the case of the tomato. Tomatoes, it develops, resemble the fruit of the mandrake, a plant long known to Europe. The problem with this method of classification is that it tended to confer the qualities of one plant upon the other. Which is how the tomato came to be known as the “love apple.”

Belief in the mandrake root’s powers is ancient. It is mentioned in the Bible as an aphrodisiac. More than that, legends say that the mandrake was the result of God’s first attempt to create human beings, a myth probably drawn from the fact that a mandrake’s gnarled root resembles the human body. In fact, these roots can often appear like a man and woman twined together; it’s hardly surprising that powers of love and lust were ascribed to it. The mandrake was believed to have come from the Garden of Eden. When the tomato, visually similar to the mandrake, was discovered in the Americas, a place that was at first believed to be lost Eden itself, the comparison was inescapable and the conclusion forgone. The tomato was quickly christened with one of the Popular names for the mandrake: *poma amoris*. Love apple.

Upon close examination, it’s easy to see why one might associate the tomato with sensuality, sexuality, or fertility. The skin is soft, smooth, supple. Tomatoes yield with pressure, no hard shell or protective rind. Slicing a tomato open reveals its glistening innards, welter of slick seeds tucked into the many hollows of the tomato’s flesh. It is an almost obscene display of fecundity. Forget the apple, here is the fruit of temptation.

Wild tomatoes are incapable of self-pollination, depending on birds and insects to ensure that pollen is carried to the tomato flower’s pistil and fertilizes the ova contained



there. But the domesticated tomato is more than capable of taking care of itself; the slightest movement of the flower is enough for the self-pollinating modern tomato. Indeed, ninety five percent of the seeds in a domestic tomato are born of self-pollination. And the number of seeds tomatoes contain is an impressive indication that this system works well for them--every single tomato seed found within every single tomato is the end result of one grain of pollen meeting one ova inside a tomato flower. Humans have nothing on tomatoes when it comes to being fruitful and multiplying.

Ultimately, “love apple” is not the name that stuck--those who tried it discovered that it didn’t quite live up to its reputation. The tomato’s scientific name is *Lycopersicon esculantum*, which means edible wolf’s peach. By blending the word *lyco*, which means wolf, and the word *perscion*, which means peach, the tomato’s namers implied both its dangerous origins in the wild unknown and the sweet delight of its fruit.

Though tomatoes retain a bit of the aura of their early sexual associations in Popular culture (“tomato” having been slang for a good-looking woman not all that long ago), belief in the tomato’s powers of seduction has, for the most part, passed. Which is good, because it leaves us free to concentrate on the truth, which is that *tomatoes can cure any disease*.

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As unlikely as it seems, in a few short centuries tomatoes made the leap from being a poison to being a miracle cure. The tomato had come a long way by the early nineteenth century. No longer known to be dangerous, the tomato had been integrated into the diets of many cultures on multiple continents.

In America tomatoes were all the rage. Sale of tomato seeds, both to gardeners and to farms, skyrocketed; by the middle of the century more than a thousand pounds of seeds could be sold in a single city each year. The tomato's versatility made it every chef's dream. The tomato could be served at any time of day, and as part of almost any dish. Tomatoes could go into soups and salads, sauces and accompaniments, be eaten cooked or raw as part of sweets or savories. It would grow well in a kitchen garden and required little fuss. And if there were too many tomatoes to be sold or eaten, the extras could simply be fed to livestock. Practical, economical, versatile and delicious, the tomato's Popularity reached new heights. But in the 1830s the tomato was not only food for the hungry, it was medicine for the sick as well.

The tomato had curative and restorative properties that could be used to treat almost any ailment. Dr. John Cook Bennett, championing the tomato's healthful properties, declared in 1834 that tomatoes were "the most healthy article of the Materia Alimentaria," and urged all Americans to take up tomatoes as a remedy for such illnesses as diarrhea, dyspepsia, and Cholera. In other words, there was nothing in the world so healthy as the tomato.

Soon after Bennett made his claims, others began coming forward with tomato pills and tomato tonics which were purported to encapsulate the medicinal benefits of the tomato. Competition between the makers of tomato cures was fierce, resulting in commercial treachery and scurrilous advertisements denouncing one brand in favor of another. At the height of this tomato mania, tomato pills were big business for their manufacturers.

Dr. Bennett was right about tomatoes. Sort of. While the tomato is not *quite* the miracle cure Bennett claimed, tomatoes are, in general, good for us. In terms of nutritional value, the tomato ranks sixteenth out of all known fruits and vegetables, coming in behind such heavyweight contenders as spinach, asparagus, carrots and potatoes. One hundred milligrams of raw tomatoes (raw tomatoes being, in general, healthier than cooked tomatoes) holds forty percent of our daily recommended vitamin C and thirty percent of our vitamin A, as well as various amounts of potassium, calcium, iron, sodium, thiamin, and riboflavin.

The diet of most Americans in the mid nineteenth century was deficient in vegetables, and many people suffered from vitamin deficiencies. Vitamin deficiency may not sound particularly serious, but deficiencies in vitamins A and C can, among other things, weaken the immune system, leaving a person far more susceptible to disease. Lack of vitamin A can disrupt the function of both the gastrointestinal and respiratory tracts, while lack of vitamin C can lead to hemorrhaging, anemia, and, in extreme cases, scurvy. When tomatoes, rich in the nutrients Americans were missing, became such a Popular part of the American diet, they no doubt had some positive effect on the health of the nation. But the miraculous reports of tomato cures are, at best, exaggerated, at worst, total lies. And anyway, there's some doubt as to whether tomato pills really contained any tomato at all.

Strangely, a few years after the Civil War, some doctors reneged on the general medical consensus, claiming that tomatoes were known to cause cancer. It is a belief that lingered in some places until the 1930s. In fact, it now appears that the opposite is true. More recent research has demonstrated that individuals with higher levels of lycopene.

the substance that makes red tomatoes red, also have lower rates of cancer. Of all the many and varied things incorporated into the omnivorous diet of the human race, the tomato is practically the only source of lycopene we have.

And really, it shouldn't surprise us to learn that tomatoes are part of a healthy diet. We all know that vegetables are good for us, and, after all, *tomatoes are vegetables*.

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If you choose to lump all things on earth into the categories of animal, vegetable, or mineral, then the tomato is unquestionably a vegetable. It is certainly neither animal nor mineral, so the classification of vegetable is correct by default. Beyond that, however, the tomato is not a vegetable, it is a fruit. The difference between fruits and vegetables is one of botany, of reproductive biology. A fruit is the part of a plant that holds the seeds, the reproductive organ that, when ripe, falls away from the plant to scatter the next generation. Vegetables, by contrast, are any other part of a plant that is eaten, whether the roots (as with the carrot), the leaves (as with lettuce), or the flower (as with broccoli). Scientifically, the tomato is unquestionably a fruit: it is the seed-bearing ovary of a flowering plant. But in terms of everyday usage, the distinction can become lost. The issue can become clouded, confused.

Sometimes, it takes a good dose of judicial clarity to set things right.

In 1883, Congress passed an act which levied a ten percent duty on all imported vegetables. The act was meant to protect American farmers from cheap foreign produce (a struggle, it must be noted, that continues today). Several years after the act's passage, a New Yorker named John Nix who imported tomatoes from the Bahamas protested. The

act, Nix claimed, very clearly pertained to *vegetables*, and as his tomatoes were *fruits*. he should not be expected to pay the tariff.

The case dragged out for years, eventually making its way to the Supreme Court. In what has to be one of the most obscure and entertaining opinions ever handed down. Justice Horace Gray outlined the tomato's legal definition: "Botanically speaking," he wrote. "Tomatoes are the fruit of the vine, just as are cucumbers, squashes, beans and peas. But in the common language of the people, whether sellers or consumers of provisions, all these are vegetables which are grown in kitchen gardens, and which, whether eaten cooked or raw, are, like potatoes, carrots, parsnips, turnips, beets, cauliflower, cabbage, celery and lettuce, usually served at dinner in, with, or after the soup, fish or meats which constitute the principal part of the repast, and not, like fruits generally, as dessert."

Legally, the court declared, the tomato was a vegetable. But even as it declared the tomato to be a vegetable, the Court acknowledged it to be a fruit. No wonder many people find it confusing. The tomato's identity shifts back and forth--fruit, vegetable, fruit, vegetable--the truth of the matter depending entirely on the context in which we ask the question. Luckily the distinction does not actually matter a great deal, fruits and vegetables having been lumped together into one food group in our consciousness for decades.

Whatever else they are, tomatoes are food. And, after all, *food has nothing to do with the way we see the world.*

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There is a man named Ken Dunn who grows a couple of acres of tomatoes in the middle of the city of Chicago. Many people, my family included, grow tomatoes in cities. Ken Dunn's tomatoes, however, go far beyond an urban backyard garden. His tomatoes perch in vacant lots leased from the city. When a lease expires, Ken must move his entire urban farm to a new lot.

Most of the time, the "empty" spaces he finds are in less desirable neighborhoods, available because they lie in places where more normal economic development is unlikely. The compost he uses to nourish his tomatoes is comprised of the city's garbage, uneaten and spoiled food thrown out by restaurants for the most part. Out of this urban waste Ken produces prize-winning heirloom tomatoes which the same restaurants that provide his compost are more than happy to buy.

But even with this steady demand, Ken always saves some of his tomatoes to sell to the community in which his acres are located. Some of the neighborhoods in which he finds himself have no grocery stores; Ken's tomatoes may be the only fresh produce in the neighborhood.

Most Americans live in urban areas, and for the last few decades most urban residents have been disconnected from the people who grow their food. Food is something that is grown in the great empty spaces between cities by people who were unlucky enough to be born there. And, increasingly, food is something that comes from far away. It is something grown in a global market where grower, seller, and consumer are faceless strangers to one another, tied together economically but not culturally, not socially, and not emotionally.

In such a system, it's hardly surprising that there are poorer neighborhoods in cities like Chicago where residents can't buy fresh food. or that Americans buying inexpensive produce fail to understand that the price of their tomatoes is paid by the people and environments of other countries. Out of sight, out of mind, out of context. Out of care.

But that attitude is beginning to change. Farmers' markets are bringing the people who grow food in direct contact with the people who eat it, and urban farmers like Ken Dunn are showing us that our food is not something that comes to us from "out there." Community Supported Agriculture does the same, letting families and individuals pay a farmer upfront for a share in the season's crop. A kind of subscription service for fresh produce. And some cities have begun to look at the issue of community food security, of how to ensure that all their citizens have access to healthy food. The combination of these efforts is changing the way we look at food, and it's changing the way we look at each other.

Food is grown in real places by real people, and that can happen in a vacant lot down the street or in a field outside of town. And in fostering a sense of connection between people, food, and environment, there is always the potential for a greater spirit of community, a greater degree of care and concern for others that can help bring fresh food back to neighborhoods long abandoned for lack of economic potential.

These things change the way we see the world. They change the things we know.

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The problem with knowledge is that it can change. Just as the forces of nature can cause even the most solid bedrock to shift, knowledge can change in an instant. Even

scientific knowledge, the thing we most often fall back on to reveal the truth, is, at best, based on information that has not been *disproved*. At least, not yet. So what we *know* can change. We used to *know* that the sun moved around the earth, we used to *know* that the world was flat, and we used to *know* that the tomato was a poisonous aphrodisiac. It is easy to laugh at outdated knowledge, to think that we, so much more sophisticated than those who came before us, are smart enough not to be led astray by such nonsense. Should you feel the urge to do so, by all means, go ahead. Just remember that it was not so long ago that we *knew* that cigarette smoking was safe, and we *knew* that tanning was good for us, and we *knew* that pesticides like DDT had no harmful consequences.

Recognizing the fact that facts can change doesn't stop us from making decisions. It can't, and it shouldn't. We can't spend our lives in endless indecision; we have the truth as we know it, and we have to do the best we can with that. But when we make decisions about things like what level of toxic chemicals we can safely pump into the atmosphere, or whether or not we can get away with draining a wetland, or how many members of a species must be protected for the species to survive, it might be a good idea to be cautious. We are limited, as always, to the best knowledge available at the time. But it is also worth remembering that we might be wrong, and in situations with irrevocable consequences, it is worth erring on the side of caution.

In fifty years--or a hundred, or a thousand--what will they think of us? What will they know that we don't? Knowledge is always evolving, always changing. You can ask anyone. And if you meet someone who doesn't agree, you can tell them the facts I've related here. You can tell them all about the tomato, a poisonous aphrodisiac fruit and possible cure for cancer that is now one of the most Popular vegetables in America.



## The Blood of the Vine

A glass of wine is a balancing act. Several balancing acts, in fact. The pH content of the soil in which the grapes grow must be balanced, as must the minerals in the soil. Rain and sun must balance, and heat and cold. The vintner must balance time, harvesting the grapes at the right moment, blending their juices in just the right proportions. In the final product, flavor must be balanced with scent (or bouquet, if you prefer). And when we drink wine, we must balance its allure with our own caution; wine, like other things that require balance, has two aspects, and the line between conviviality and intoxication can be finer than we think.

Perhaps it is this need for balance, this duality, which makes wine so attractive to us. We love duality. We love opposites, and we love pairs: night and day, sun and moon, man and woman, heaven and hell. A man's nature, or a woman's, is composed of

such balanced dualities. In each person lies the potential to be happy or sad, kind or callous, generous or stingy. In each person lies the potential to do good or to do evil. Is it any wonder, then, that we so enjoy wine? The good and the bad. The light and the dark. Wine is a mirror, and in it we can see the reflection of our world, and, sometimes, of ourselves.

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There are one hundred and forty references to wine in the Bible.

I confess, I found that statistic in a book, and I have never taken the time to sift through the original text and count for myself. But I did once enter the term “wine” into the search engine of an online version of the Bible. The list of results was sufficiently long for me to believe the statistic. Some of the references are presented as factual details, some as symbols of something greater.

In the Old Testament, Yahweh is sometimes described as a vintner. His love for humanity compared in metaphor to the love of the vintner for his vineyard. When Moses sent some of the Israelites to scout the land of Canaan, they returned bearing great clusters of grapes as proof of the land’s fertility. Grapes, and wine, are even mentioned in the story of Noah and the flood. When the waters of the great flood receded, the first thing Noah did was to build an altar and make sacrifices to God. The second thing he did was to plant a grapevine. It was the first thing planted in the new world Noah and his family found when they left the confines of the ark. Not wheat, not barley, not rye. A grapevine.

Why is it that wine finds such a place of prominence in the Bible? God is a king, God is a shepherd, but why should God be a vintner? One answer, of course, is that wine

and vineyards were known to the writers of those passages. Wine has been around for a very long time. Longer than the Bible. Longer, in all likelihood, than the written word itself. Many scholars believe that wine was discovered by accident when a band of Paleolithic people came across some wild grape vines and stored the fruit they could not eat in bags made from animal skins. Substances left in the animal skins caused the fruit to ferment, and wine was born. Things would never be quite the same again.

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Once, the range of the wild grape was enormous. It grew from central Asia to Spain, from the Crimea to northwest Africa. It grew throughout the temperate zones of North America, though it seems never to have been cultivated there, and once covered the Holy Land, though today it is found there only along the coast of Lebanon. But the wine grape, the domesticated grape, was first cultivated from its wild cousins in Transcaucasia, a region that birthed a huge variety of the fruits and nuts we enjoy today. Some areas of Transcaucasia show signs that they have been inhabited, more or less continuously, since the Stone Age. Archeologists working at one of the earliest known settlements in the region found six grape seeds. The seeds have been dated, roughly, to 6000 B.C. Almost all of the world's wine grapes are descended from this one species of Eurasian grape. Some scientists, hoping for an even more exact lineage, are attempting to use DNA to find a single progenitor vine, the first vine from which all our modern grapes are descended. Remembering that "first" vine planted after the flood, they call their search the Noah Hypothesis.

Wine, then, is indeed ancient in its origins. Cultivated grapes and the wine produced from their juices spread out from Transcaucasia. By 3500 B.C. they had

arrived in Egypt and Lower Mesopotamia. Wine infused the basic fabric of life in the ancient world. Could that be the reason for its presence in the Bible? Is it simply that wine, like grain, like meat, was a common thing that lent itself well to metaphor and symbolism because everyone knew of wine, and everyone would understand?

But the role of wine in religion seems to have been more important than that. Libations of wine accompanied sacrifices, and wine accompanied religious feasts and festivals. Of course, wine was known to other cultures of the ancient world, incorporated into other religions and associated with other gods.

Among those gods was one whose life was tied intimately to the yearly cycle of the vine and whose gift of wine was at once a blessing and a curse. His name was Dionysus, and I first met him when I was nine years old.

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I checked the books out of the library on a hot summer afternoon. My mother had suggested that, as I was fond of fairy tales, I might give mythology a try. One book was slim, with a green cover, the other thick, with fancy illustrations. I took them into the cool, dim confines of our basement and began to read. In those pages I found a whole new world, a world of gods who cast lots for the world, monsters with snakes for hair, doomed princes and women turned into trees. Among the descriptions of the gods, I found one called Dionysus, the last-born of the great gods of Mt. Olympus, whose mortal mother perished in a blaze of heavenly fire while he still lay in her womb. I found the theology confusing, the story fascinating. I was hooked.

There is a sequence in Disney's *Fantasia* in which the god Bacchus, Dionysus' Roman incarnation, joins the revels of mythological creatures. He is a jolly, inebriated,

slightly bufoonish figure. A harmless lecher. A happy drunken fool. It makes for a very entertaining cartoon, but hardly resembles Dionysus as the ancient Greeks knew him. The books I read that summer as a child referred to Dionysus as the god of wine. In truth, it is a little more complicated than that. Dionysus is one of the great gods of the earth, a god of fertility, of nature. Wine was his gift, but it was not his purpose. Dionysus could revel in the celebratory joys of wine when he chose, but he was no simple drunken oaf. He was a god of extraordinary power, and his gifts, wine among them, were always two-edged.

Most of the Greek gods, like the Greeks themselves, loved structure and order. They loved temples, and cities, and the civilization they had built. But not Dionysus. Dionysus and his followers kept to the wilderness, and he was anything but civilized. He was part of the wild, untamed nature the Greeks had sought to conquer in their cities, a constant reminder to them that nature could sometimes be subdued, but never vanquished.

Sometimes Dionysus, like nature, could be gentle, beneficent. Under his influence the women who followed him, the Maenads, left behind the civilized world of man and returned to nature, suckling wolf cubs, sleeping peacefully in the open, drinking wine and milk and honey that gushed forth from the ground for the asking. But in an instant they could become savage, falling upon helpless victims in violent ecstasy. The Greeks saw in Dionysus the duality of nature, that tenderness and savagery, pleasure and pain, life and death, are a part of the same whole. It is a duality the Greeks also found in Dionysus' great gift to man--wine.

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Like nature, wine also has the power to bring pleasure or pain, to invite celebration or disaster. Alcohol is poisonous to the body; taken in small quantities it is intoxicating, but taken in greater quantities it is simply toxic. But intoxication is a powerful lure. Humans are not the only creatures who are susceptible. Many animals, among them birds, fruit flies, and elephants, have been observed seeking out and feasting on fermented fruit and, presumably, enjoying its effects. And intoxication is pleasant. A little intoxication can make us bolder. It can awaken the senses and inspire a flow of good ideas, or of good conversation. The Greeks knew that. Wine, even today, can represent the height of sophistication and of civilization. *The Symposium*, written by the great Greek philosopher Plato, describes a drinking party at which the participants engage in an intellectual and philosophical discussion on the nature of love. The wine at Plato's party fit within the world of logic and of order. It was a boon to those who imbibed it. This is the gentle, warming side of wine. But wine, like Dionysus, like nature, has another side as well.

Too much wine, and a person can turn violent. The Greeks saw the positive potential in a glass of wine, but they understood its darkness as well. Drunkenness can cause one friend to turn on another, and cause quarrels between total strangers. Wine weakens the control we hold over our emotions, allowing them to run freely to the surface. When we lose the hard-won control of civilized conduct, anything can happen.

Wine was supposed to have been one of the things that cause Dionysus' followers to run mad. To lose control, to partake in the frenzied violence of the Maenads, or of a drunken rage, is to remember what it is like to be wild. In that running wild there is danger--danger of causing harm to us, harm to others. There is danger of losing

ourselves. But there is value in it as well. We humans will never belong wholly to the civilized worlds we create. Part of us will always belong to the untamed natural world. Repressing the wildness of nature, and the wildness within ourselves, is at best a temporary measure. The Greeks believed that wine, the gift of Dionysus, provides the release we need to function as civilized creatures. Everyone needs to let loose now and then. So we use wine to celebrate, to party, to go a little wild. But we must be careful; wine is a two edged sword that cuts both ways. Like Dionysus. Like nature.

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I learned to drink wine in the apartment of a visiting professor of American history during my junior year in college. Instead of meeting in an airless room with fluorescent lights for three hours every Wednesday night, my seminar class met in my professor's living room for potluck dinners once a week. We discussed the week's reading over bowls of black bean chili and plates of salad. And to go with dinner each week, Natalie, our professor, contributed a couple bottles of local red wine.

I'd had wine before of course, but I had never liked it much, never seen the point. But when it came at the end of a long day, bolstered by good food and better conversation, wine began to look different.

Everything about the class began to look different. In an environment balanced between academic rigor and social ease our discussions grew deeper and our debates more intense but the class itself energized us. We began arriving earlier and leaving later. I looked forward to those nights, when class was balanced perfectly between work and play, where work and play were two inextricable halves of the same whole. I looked

forward to those nights sitting on Natalie's floor, talking about history, with a glass of wine in my hand.

I remember those evenings often now when I pour myself a glass of wine at the end of the day. They were, I think, the best educational experience of my life--my very own symposium.

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As a god of nature, Dionysus was bound, inescapably, to the cycle of the seasons. He was bound, too, to the life of the grapevine. In the autumn, grapevines must be pruned back, almost ruthlessly so. What little remains of them looks dead, and lies dormant through the long winter. When spring comes these lifeless vines revive, sending forth new growth. Like the vine, Dionysus, too, died in the autumn. Like the vine pruned almost to nothingness, Dionysus was torn limb from limb and the pieces of his body scattered. Ancient authors disagree as to who exactly was responsible for his dismemberment, but they all agree that it was bloody, and it was painful. But when the seasons turned again and spring began to reawaken the world, Dionysus, too, was reborn, ready to wander the world and bestow his dangerous blessing on all he encountered.

In his cycle of death and resurrection, Dionysus embodied both the life cycle of his beloved vine and the timeless dance of the seasons. He also bears some resemblance to another divine figure, one who, like Dionysus, was born of a mortal mother and a heavenly father, who died and was reborn, and who was linked, in the most intimate way, with wine.

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Most of the time, I try to avoid discussing theology. I am something of a heathen, raised in no particular tradition and given no formal religious instruction. I have many beliefs, but few convictions, and am more familiar with hope than with faith. When I do think about God, I am looking for a way to balance what I know with what I feel and what I have been told, and I am more filled with questions than I am with answers.

One of my questions is this: What is the relationship of God to the natural world? The ancient Greeks had their pantheon of gods and goddesses, some of whom, like Dionysus, were literally gods of nature. But what if you believe in a single God, the biblical God of Judaism and Christianity? What then?

To draw parallels between Dionysus and Jesus is not to equate them. Jesus, for instance, was not a nature god, and he was not one god among many. The theology is too complex for me to fully grasp, but as I have always understood it, Jesus was at once both human and divine, the one God born and embodied in human flesh. His birth, his life, his death and resurrection served as a bridge between Heaven and humanity. His purpose was--is--to bring us closer to God, not nature.

And yet, Jesus, too, is strongly associated with wine. Some of those hundred and forty references to wine in the Bible come in the New Testament. The first miracle Jesus performs, according to the Gospel of John, is to turn water into wine at a wedding feast in Cana, and in the Gospel of Matthew, he relates parables concerning the workers and tenants of a vineyard. In John 15.1 Jesus himself declares "I am the true vine, and my Father is the vinegrower." But of course, the most famous link between Jesus and wine came at the Last Supper, when Jesus declared to his apostles that the bread they ate was

his body, and the wine they drank his blood. This is the basis for the Christian ceremony of communion.

And so I ask again, why wine? Why not water? Dionysus the nature god embodied the vine, but Jesus was a human incarnation of God, not of nature. Why then would he choose wine as the substance that would be transformed into his blood--a transformation that Christians believe to be literal? Is it because wine bears a visual similarity to blood? Is it simply because wine was the nearest thing to hand? Or did Jesus choose wine deliberately, with some other purpose in mind?

Theologians study the nature of God and religious truth. In their quest for understanding, they have pondered all aspects of religion, including, for those who study Christianity, the role and meaning of the bread and wine that make up the body and blood of Christ. I have no training in the field of theology, and I have received no instruction in the Christian faith. But I have been thinking about these questions I have asked, and I think I have arrived at one possible answer. At least, I have found an answer that I think I can believe.

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The Christian God is not a nature god in the style of Dionysus. But the Christian God is the God of all creation. He is not a nature god, but nature is still His. He created the world, the water, the rocks, the sun, the stars, the plants and the animals. All of the world is part of His creation. God is the architect of the world, its maker, its shaper, its parent. God is Father, and Mother too, to all of the world, not just to humankind.

We humans are part of this creation, but we are separated from it at the same time. We are separated by the lines we draw and the walls we build. We are separated because

God made us so, and we are separated because we ate of the tree and fell from grace, and we are separated because we are charged by God to care for the rest of creation. We are inescapably part of the world, but we are also its stewards and separated from it. Separated from nature, and separated from God. We have been cast from the Garden, both in Heaven and on Earth.

But Christians believe that Jesus was born as a way to heal the rift between humanity and its maker. God walked incarnated in human flesh and lived a mortal life and opened the way to redemption, to reconciliation with God. But it is not only God from whom humans have been separated. If the life and death and life again of Jesus Christ is meant to bring us closer to God, what is there to bring us closer to the natural world? If nature cannot be incarnated as well, what is there to heal the rift between humanity and the rest of God's creation?

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A glass of wine is a balancing act. A balance of soil alchemy and growing conditions, a balance of color and flavor, a balance of time and season. It is a balance of life affirming intoxication and uncontrollable, violent emotion. But wine is a balance of something else as well. Every glass of wine is balanced between the natural juice of the grapes and the human skill of the vintner. The grapes are part of God's creation, changed through human labor into something different, something new.

Each glass of wine is a balance, in perfect harmony, of the work of God and the work of man.

I cannot say for certain why Jesus chose wine to become his blood. Maybe it was pure chance. Maybe it was because, as a Jew, Jesus already associated wine with the

sacred. Maybe it was simply a matter of personal taste. But I like to think there was a reason, and I like to think that it could have been this balance between the natural and the human.

Maybe it is blasphemous to say so, and if it is, I hope I will be forgiven by those I have offended, both in Heaven and on Earth. But I would like to believe that when Jesus held aloft his cup of wine and declared “This is my blood,” he did so with full knowledge of what wine could mean, that he did it so that he could be a bridge not only between the human and the divine, but the between the human world and the natural world as well. I’d like to believe it was so that, if only for a moment, God and all of His creation could be brought together in harmony.

In balance.

## The Staff of Life

In the beginning, the gods came together to create humankind. They sought a race that could walk and talk, that could name its makers and make offerings to them, that could work in the world and follow the cycle of the calendar. They first tried using wood, then mud, but neither of these efforts matched their desires. At last four animals, the fox, the coyote, the parrot and the crow, brought ears of corn to the gods. Xumucane, the divine midwife, ground the corn nine times, and from this flour and from water the gods fashioned the first humans:

*After that they put it into words:*

*the making, the modeling of our first mother-father,*

*with yellow corn, white corn alone for the flesh,*

*food alone for the human legs and arms,*

*for our first fathers, the four human works.*

*It was staples alone that made up their flesh.*<sup>4</sup>

This is the story as it is written in the *Popol Vuh*, the great book of the Quiché Maya. In their version of the genesis of the world humans are not made from the dust of the earth but from good corn flour. Corn is the perfect medium from which human flesh was made, and it is corn in the Mayan culture that sustains life. The planting and harvesting of corn dictate the rhythms of the year, its feasts, its ceremonies, its cycles. Corn is sacred. Corn is holy.

Corn is the thing that connects nearly all of the native peoples of the Americas. Across barriers of geology and climate, language and cosmology, the growing of corn connected the people of South America to the people of Central America to the people of North America. Corn grew in the ranges of the Andes, in the valleys of Mexico, along the mighty artery of the Mississippi and in the woodlands of Ohio. As writer Betty Fussell put it, “Corn made the whole world kin.”<sup>5</sup>

But in the long years since the *Popol Vuh* was written, the world has changed.

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<sup>4</sup> *Popol Vuh: The Definitive Edition of the Mayan Book of the Dawn of Life and the Glories of Gods and Kings.* trans. by Dennis Tedlock. (New York: Touchstone, 1985) 164.

<sup>5</sup> Betty Fussell, *The Story of Corn.* (New York: North Point Press, 1992) 6.

Corn is no longer the sacred stuff from which human flesh is formed or the divine gift of Quetzalcoatl, the Plumed Serpent. Now it is the stuff of cheap snacks, an ingredient in not only some of the least healthy of all foods, but of pesticides and alternative fuels as well. It is animal feed. The people who once grew corn across the face of two continents remain, some of them, but their numbers are diminished, their sovereignty taken, and their empires gone. When Betty Fussell wrote of corn's powers of kinship, she did not refer to its primacy among the many varied native cultures of the Americas but to the farm families of her own corn belt heritage.

How can it be that in less than five centuries, the status of corn has fallen from the source of life to a source of cheap and vulgar things?

The cultivation of corn seems to have begun in Mexico some seven or eight thousand years ago. Corn's conversion from wild grass to domesticated grain is roughly contemporaneous with similar processes elsewhere in the ancient world, coming a thousand years or so after the cultivation of wheat in Mesopotamia and at nearly the same time as the cultivation of rice in Asia. The oldest corn we have has been dated to 5000 B.C. Once archeologists believed that this corn might in fact have been an example of wild corn, but now these ancient ears are known as the earliest forms of *cultivated* corn.

No examples of corn's wild ancestors have been found.

From its birthplace in Mexico corn spread across the American continents. As in other places where grain cultivation gave birth to civilization, the great civilizations of the Americas were built on foundations made of corn. Corn hybridizes easily and can thus be adapted quickly to different kinds of growing conditions, making it the perfect staple for a landscape of diverse climates and geography.

The Incas grew corn next to potatoes in their terraced fields. They developed some forty eight different varieties of corn, more than any other culture. to deal with the strange realities of agriculture in their varied landscapes. The planting and harvesting of corn was imbued with great reverence and ceremony, the emperor himself, the divine scion of gods and kings, digging the first hole with a shovel made of gold.

The Aztecs grew corn around Tenochtitlán, the center of their empire. Tenochtitlán, the ancient foundations upon which Mexico City is built, stood on a swampy lagoon. Like the city of Venice, built on similar terrain, Tenochtitlán required careful planning and sophisticated construction. The Aztecs built artificial islands called *chinampas* on which they grew corn year-round, fertilizing the soil with the human dung from the city. Before the Spanish arrived in the sixteenth century, the Population of Tenochtitlán was more than a million and half; three quarters of them were farmers, and all of them ate corn.

The Ancestral Pueblo Peoples (still known more commonly as the Anasazi) grew corn in the dry canyons of the Four Corners. There they developed a system of irrigation adapted to the flash floods occasioned by rainfall in the desert, a system that uses sophisticated engineering to channel brief torrents into a life-giving flow. By 400 A.D. they were growing corn, and by the time they suddenly abandoned their great cities some eight hundred years later, the Ancestral Puebloans had cultivated an area as large as Ireland in one of the least hospitable climates imaginable.

In some Native American faiths, sacred corn is a gift that comes to the people through the sacrifice of the Corn Mother. The Corn Mother is given different names by different tribes, but her story is always one of sacrifice--somehow the death of the Corn



Mother provides the means for her children to live. In one story, corn stalks grow from her breasts, providing nourishment and a means of escape from a subterranean cave. In another corn springs from soil that has been watered with her blood. The details differ, but the substance is the same. Sacred corn grows from the sacred body of the sacred mother. It is this relationship that some scholars point to when they discuss the sacred nature of the land for Native Americans. Mother Earth feeding her human children through the sacrifice of her own body.

Corn was a staple of the Sioux and the Cheyenne before the arrival of the horse made buffalo hunting easier, and in their stories corn and the buffalo are tied together as the dual gifts of the gods. Corn sustained the mound builders of the Mississippi and Ohio valleys, and Mondawmin, the Ojibway hero on whom Longfellow's Hiawatha is based, planted corn by the shores of Gitchi Gumee. For thousands of years on two continents, corn was the cornerstone of culture, of religion. Without horse or mule or plow, men and women armed with digging sticks brought forth corn from the soil, and where corn went, civilization followed. Then one day three ships with sails like clouds came sailing out of the East bearing the sons of wheat to corn-rich shores.

Nothing would ever be the same again.

Corn had traveled from Mexico to the islands of the Caribbean long before the Spanish arrived, and it was on those islands that the Spanish first saw corn. For the peoples to whom corn was a sacred gift, corn was a reflection of their own image-- graceful green stalks stood like men and women with arms outstretched, and the cobs with their silken tassels were faces crowned with silken hair. To the Spanish, accustomed to orderly fields of gently waving wheat, corn was a strange and terrible sight, an uppity.

monstrous thing that grew too tall and whose grains came in a bizarre range of sizes and colors. The Arawaks Columbus encountered called the strange stuff *mahiz*, which became *maize* in Spanish. Because the Arawaks appeared to grind it and use the resulting meal to make cakes, the Spanish also sometimes called it *panizo*, a generic term used to describe any number of grains with which they were acquainted.

The word “corn” derives not from a Native American dialect, but from Old English. In that language, “corn” can mean any cereal grain, anything that can be ground and used for flour. It is for this reason that corn is mentioned in the Bible and the Greek goddess Demeter is sometimes called the goddess of corn. But the corn of the Americas was something different entirely. To distinguish it from the grains of Europe, English colonists in the New World called it “Indian corn.”

For the Europeans the association between native corn and native people was both natural and inescapable. And both were seen as savage. The people who grew corn were imperiled souls who practiced cannibalism and made blood sacrifices to heathen gods. And corn, the staple of their lives, was not only monstrous in form but had close association with these strange pagan idols, with blood, and with death.

Little wonder they found corn dangerous.

Blood, sacrifice, and even cannibalism are indeed facets of many corn cultures. The Maya who wrote the *Popol Vuh* associated corn with blood. In religious rituals Mayan kings would draw blood from their own bodies and this blood, along with the blood of their enemies, was used to fertilize the cornfields. The Aztecs made sacrifices to corn gods and goddesses, and Europeans reported finding ceremonies of ritual cannibalism everywhere they went in the New World.

Doubtless, many such accounts were at the least sensationalized if not outright fiction. But there is truth in some of them, and given what we know of corn, it should not surprise us: human flesh is made of corn, after all. As corn is cut and sacrificed for human consumption, so must human life and lifeblood be sacrificed to ensure the growth of corn. What sacrifice could be more fitting? For these civilizations the life and death of corn and human are part of the same cycle, each dependent on the other. In an ancient and holy pact humans, gods, and corn remained locked together in the cyclical turning of the seasons and the cyclical turnings of life and death that accompanied them. Different parts of the same whole.

The missionaries who followed the first explorers across the Atlantic were horrified by such violent and bloody worship of a plant. They sought to replace it with a different kind of worship. In place of corn and blood sacrifice they brought bread and wine. It is bread and wine in the Christian rite of communion that are transubstantiated into the literal body and blood of Jesus Christ and consumed by the faithful. Since the Fourth Lateran Council in 1215, Christians have believed this transformation to be literal. The missionaries who sought to guide native peoples away from the “savage” worship of corn did so, without any apparent irony, by seeking to convert them to a holy cannibalism based, instead, on wheat.

No wonder many native peoples were confused.

Where Europeans went, wheat followed, and divine corn, giver of life, was relegated to last place, the least favored child of the grain family. This is not to say that corn did not have its uses. Its adaptability, its ability to grow quickly and feed many, these were all attractive qualities. New colonists seeking control and conformity

hybridized corn, rendering from the wild cornucopia a few varieties of more homogenous appearance. Corn traveled in the holds of ships to distant lands where it was deemed an excellent foodstuff for the poor. It was planted in Africa by slavers who needed a quick growing crop on which to feed their human cargo on the long journey to the land where corn was born. Across Europe it was adopted by peasants, the food of kings becoming central to the diets of the poorest people. For a time, it was heralded as a miracle.

Then sickness came.

All over the world, in the European colonies of the Americas, in the Old World villages where corn had become basic to survival, a strange sickness broke out. What little favor corn might have found was gone. Though it had become part of the cuisine in many places, from the polenta of Italy to the corn breads and corn chowders of Colonial America, its status as an inferior grain was confirmed. It was all right to feed it to your pigs, or to your slaves, but no man or woman would depend on corn alone unless there was no other choice; a diet too rich in corn was a sign of poverty.

How could corn, divine bringer of life, cause sickness in so many? Corn, unlike other grains, lacks both niacin and tryptophan, two amino acids the human body needs for survival. A diet based on corn alone will be a diet deficient in these two essential acids. But such deficiencies can be overcome. When corn is processed with alkali, its chemical balance is changed, compensating for the missing nutrients. Most Native Americans used some kind of alkali when they processed their corn, whether lime or wood ash or lye. European peasants and American colonials, however, saw corn as nothing more than a substitute and processed it as they would wheat which did nothing to aid its nutritional value. More than that, in most Native diets corn was accompanied by both squash and

beans, the Three Sisters, the sacred trinity of indigenous nutrition. The three together made a balanced diet; corn rarely had to stand alone.

But neither Europeans nor their descendants in the Americas knew that, nor were they interested in learning. Corn was a source of ill health, and fell even further in their estimation. Corn might find a place as a minor part of any diet, but it would never again be king.

Still, corn did not disappear, not from the Old World cuisine into which it had been incorporated, and not from the new cuisines emerging as colonists from many disparate cultures mingled in the landscape of the New World.

With the passing of time, the many landscapes of the world--physical, social, and technological--changed. European colonists revolted against their distant masters and new countries were born. Settlers from the new United States of America pushed out farther and farther from their colonial bases, using the carrot of diplomacy and the stick of violence to push Native Americans off their lands. As homesteaders replaced Native Americans, the plow replaced the digging stick, and the hybrid corn of science replaced the "Indian corn" of the past. Science and technology soon allowed the new American farmer to increase his efficiency, and the yield of his crops. Farmers tapped the Ogilala Aquifer, watering the grasslands of the prairies with ancient water pumped out of the ground. Men like John Deere built better plows, and productivity soared.

Industrialization and mechanization came to farming, as did droughts and world wars, chemical fertilizers and new pesticides. Farmers who adopted new technologies increased their yields, but found themselves on a technological treadmill--produce more to sell more, sell more to invest in new technologies, use new technology to produce

more, to sell more, to invest in new technology. The end result has been more corn than we can handle.

Which came first, contempt for native peoples or contempt for the corn they grew? Is the Indian a savage because he eats corn, or is corn savage because it is eaten by Indians? Perhaps contempt for both grew independently, the inferiority of each reinforcing the inferiority of the other in the minds of Old World colonists and their descendants. But contempt for corn continues. In China, where corn now forms more than twenty percent of the country's staple crops, corn is still food for the poor, a crop that grows where the preferred rice will not, but still the food of last resort.

But actual corn, itself, is not the only thing that has been devalued in the eyes of the world.

In places where agriculture has become a kind of living industry, the land itself can suffer. Huge fields of hybrid corn monocultures replace both the genetic diversity of native crops and the ecological communities of the natural landscape. Pesticides and fertilizers saturate soils that wash--or blow--away from intensive tillage. Land is just another input, another cog in the industrial machine, its value dependent on the cash value of the crops it produces.

And, of course, people suffer, too.

Central and South America, once home to powerful empires, have become part of the global Third World, their lands largely exploited, their people generally marginalized by more powerful nations. The people are looked down upon as poor and ignorant. Almost savage. In these places, where the descendants of the Maya, the Aztecs, the Incas still live, corn remains a central part of both diet and cuisine. And contempt for the

people and contempt for their food remain twined together; a Chicana woman living in Spain complained to a neighbor that she was having trouble finding corn. Her neighbor was astonished. “Why would you want corn?” she asked. “Corn is for Mexicans and pigs!”<sup>6</sup>

In North America, too, native peoples have been marginalized. War, disease, broken government promises and misplaced paternalism have pushed them off their lands, dispossessed them of their heritage, and shrunk their Populations to a fraction of their former numbers. And while they have been pushed onto reservations, their sacred corn has been appropriated and turned into a commodity for the consumption of the great American industrial machine.

Of course, most of the corn produced in this industrial machine *is* eaten, it just isn't eaten by humans. One of the primary uses of American corn is in livestock feed. The industrial model of agriculture hasn't been applied just to plant crops but to animal crops as well. Factory farms churn out thousands of pounds of animal products a year, both the beef, pork, and chicken we buy at the meat counter and the milk, eggs, and other animal products we pick up from the dairy case. At these facilities the animals live miserable lives, crammed together in crowded pens and cages, unable to move, unable, most often, to see the sky, and the waste they generate can contaminate both air and water. Their diet consists largely of feed made from corn. In parts of the Midwest the landscape of corn and soy monoculture is broken only by the factory farms that feed on them and the towns of the people who work in them. It is hard to imagine a more striking example

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<sup>6</sup> Theresa Meléndez. “Corn.” in *Rooted in America: Foodlore of Popular Fruits and Vegetables*. edited by David Scofield Wilson and Angus Kress Gillespie. (Knoxville: The University of Tennessee Press, 1999) 41.

of the esteem in which we hold corn, or why some of us would associate corn-eaters with animals. Food for Mexicans and pigs indeed.

But Native Americans are not the only corn eaters who have become devalued in our society. The South, where corn was grown and fed to slaves and where it remains a prominent part of the region's cuisine, is often viewed by the rest of the country with vague contempt; to many it is a backward place of poverty, superstition, and ignorance. And the farmer himself, working his acres in America's Midwestern corn belt, has become a figure of ridicule to the largely urban Population of the country. He (or she) is a hayseed, a hick, a redneck. He has become, like the crops he grows, corny.

Of course, corn remains sacred for many native peoples, particularly in Latin America. In the Andes where the Inca once worshipped the golden sun, golden metal, and golden corn, their descendants still conduct sacred ceremonies at dawn on the morning of the Solstice, fortified by sacred food and drink made from corn. In Central America, the descendants of the Maya participate in celebrations that blend the worship of the saints of the Christianity imposed on their cultures by the conquistadors with the honoring of the corn deities of their ancestors. And in many places in North America, tribes are trying to preserve and promote their traditional ways of growing, harvesting, and preparing corn as they attempt to regain control of lands that they believe to be sacred. The Corn Mother has not been forgotten by her children. But in mainstream US culture, corn is not just profane, it is, at times, reviled.

The term "corny" itself shows how far corn has fallen in estimation--it has become synonymous for the ridiculous and contemptuous. And the uses to which we put it, too, show a distinct lack of reverence. Less than one percent of the corn grown in



America is for the direct consumption of human beings. We have other uses for corn now. We use it to make corn syrup, the ancient life sustainer giving way to a substance that is at the center of the modern health crisis of obesity. Corn derivatives are found in margarine, mayonnaise, salad dressing, and candy. Corn can be found in a jar of pickles, or a bottle of ketchup, or a tub of ice cream. It is soap, insecticides, toothpaste, makeup, and charcoal. We have a thousand uses for corn, none of them glamorous, and none of them celebrated. We have devalued corn, and its growers, and its eaters, and even the land on which it grows.

What, then, does that say about how much we value ourselves?

Even if we avoid eating corn itself, it is impossible to avoid eating corn entirely. Americans have access to a wider variety of food than any other people on the planet, but much of the food we eat contains corn in one fashion or another. Especially if we eat meat--beef, pork, or chicken, favorites of the American diet, fattened on corn. From corn to animal flesh, from animal flesh to human flesh. Almost against our will, we are made, as is written in the *Popol Vuh*, of corn. When we devalue the people who eat corn, and the people who grow corn, and the land the corn comes from, and indeed when we devalue corn itself, we are also devaluing ourselves and our own bodies. All these things are connected. Corn makes the whole world kin.

## Oranges in Winter

The first thing we'd do on Christmas mornings, once Mom and Dad had their coffee, was to open stockings. While some families may fill stockings with gag gifts, or a token candy cane, or skip them all together, in our family stockings were serious business.

I'd reach in and pull out each small gift one at a time: a CD, a gift certificate, a stuffed frog, a glass sun catcher, a bag of gourmet jelly beans, a lottery ticket. The pile grew, and my stocking looked empty, but I knew there was one last treasure left. I put my hand back into the stocking, reaching all the way down into the toe. There my fingers touched a cool, leathery orb. Smiling, I pulled my hand back out and held it out in

triumph. There, cupped in my palm with a length of stem and a few leaves still attached, sat a mandarin orange.

Later, after stockings but before presents, we'd light a fire and gather around the table, eating homemade cinnamon rolls and the oranges that graced our stockings. Delicious.

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Once upon a time, oranges were the fruit of the gods. Or, at least, they might have been. Many scholars now believe that the “golden apples” so common, and so troublesome, in Greek and Roman mythology were actually oranges; it was an orange that Paris awarded to Aphrodite in exchange for Helen to begin the Trojan War. It was an orange tree that grew in the garden of the Hesperides, and oranges that Hercules was bound to bring from that garden as one of his labors. Indeed, the Romans believed that the Hesperides, the daughters of Atlas, carried oranges across the Mediterranean from North Africa themselves.

Actually, oranges arrived in Italy via India, and their origins lie even farther away.

The ancestral citrus plant evolved in the Malay Archipelago some twenty million years ago. From there it migrated to the Asian mainland, where it eventually developed into the fruit we know today. Oranges, as we would know them, first appeared in South East Asia about five thousand years ago. From there they spread through Asia, prized as much for the beauty of their blossoms and their evergreen foliage as for the flavor of their fruit.

In India, the first reference to oranges comes in a medical text written about two thousand years ago. The Sanskrit word for oranges is *naranga*, the first syllable of which

means scent. This is the name that stuck, for better or for worse, becoming *naranj* in Persia, *narantzion* in Byzantium, and, in succession, *arangium*, *arantium*, and *aurantium* to the Romans. The Latin in turn became *naranja* in Spanish, *laranja* in Portuguese, *arancia* in Italian, and *orange* in French.

The Moors discovered the orange in India during the sixth and seventh centuries, and eventually carried it with them into North Africa and Spain. Crusaders from the Christian kingdoms of Europe, attempting to wrest control of Jerusalem from the hands of the heathen Moors, were enchanted by the oranges they found growing in Syria. They returned from the wars with newfound knowledge of astronomy and medicine, with a new taste for spices, and with tales of orange groves throughout the Holy Land.

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Except for Christmas mornings, I didn't care much for oranges as a child. Apples were more dependable. Apples could be eaten with one hand, munched on while walking, or drawing, or reading in a patch of sunshine. Oranges required more attention, and more work. First they had to be peeled, and their sections pulled apart. Sometimes they were sweet, sometimes sour, but you could never tell by looking. Hard, wrinkled seeds the color of oatmeal clung tenaciously to the insides of some sections, needing to be spat out onto the grass, or a paper towel. Their juices stung scraps and hangnails, and left sticky fingerprints on the corners of pages.

No, all in all, apples were far superior to oranges. Apples were simple. Oranges were complicated.

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Botanically, citrus fruit is considered a berry, a special kind of berry called a hesperidium. Citrus trees, including oranges, are organisms of extraordinary and surprising versatility and complexity. The blossoms of citrus trees are monoecious-- both sexes are contained within a single flower. Sometimes such trees self-pollinate, sometimes, through the intervention of insects, they cross-pollinate with other trees. But oranges can also pull off the tricky miracle of virgin birth, setting fruit even when a flower has not been fertilized. Such fruit will be virtually seedless, and highly prized by consumers.

Though we associate the fruit of the orange with its namesake color, in truth the color of an orange has nothing to do with its flavor, or its ripeness. The fruit of an orange tree changes color in accordance with the temperature of its environment. The best overnight temperature to produce oranges of the perfect golden hue is forty degrees, but an orange can be perfectly ripe and perfectly green at the same time. In some parts of the world, the temperature never drops low enough to prompt the oranges to change, and the fruit is eaten while its peel is still bright emerald.

An orange's color is not the only thing affected by its environment. Flavor, too, depends on growing conditions. The closer oranges are grown to the equator, where the hours are divided more or less equally into light and dark, the less acid they will contain and the sweeter they will taste. The farther away they are grown, the higher their acid content and the more sour their flavor. Nor are temperature and latitude the only environmental factors that influence an orange's development. In North America the two great centers of orange production are California and Florida. Oranges grown in Florida, where humidity is high and moisture abundant, have thin skins and lots of juice. The

same variety of oranges grown in California, where growers are dependent on irrigation and the air is dry, will have thick skins and dryer flesh.

But perhaps the most remarkable thing about citrus trees is their biological willingness toward cooperation. Though oranges can be grown from seeds, most growers prefer to bud them--to graft the upper part of one tree onto the rootstock of another. Citrus trees bud willingly across species lines. In Florida, most oranges are grown on lemon rootstock. In California, the reverse is true. With skill and luck and determination a knowledgeable citrus grower could create a single tree whose branches bear oranges, lemons, limes, grapefruit, tangerines, and kumquats; it gives a whole new meaning to the idea of the "family tree."

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I may not have liked oranges themselves, but I loved the smell of oranges and, with the exception of popsicles, I loved things flavored with oranges. Orange flavored candy, orange flavored soda, orange flavored cold medicine. Orange sherbet. Orange juice. And the greatest delicacy of all, orange jello with sections of canned mandarin orange. I could satisfy my citrus craving a hundred ways without stooping to actually taking fresh fruit in hand. I found it puzzling that anyone would bother to keep fresh oranges around.

And yet we did. Oranges lay in piles in the grocery store--Valencias and Navels, Satsumas and Tangerines. Oranges, two or three at least, rolled around in the bottom of our refrigerator, waiting to be eaten. In addition to being tricky and unpredictable, oranges were always there. They were commonplace. They were common.

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After the Crusades, artists began using orange trees in paintings of religious subjects. The orange trees were meant to instruct the viewer that although the woman and child in the picture might be dressed in modern garb and seated in an Italian villa, the scene actually depicted the Madonna and Child in the Holy Land. Oranges had not reached the Middle East when Christ was born, but that did not matter; everyone knew the Holy Land was full of oranges, so oranges would do very well to symbolize the Holy Land. In time, the association became so strong that orange trees and orange blossoms could stand in as representatives for Mary herself.

Europeans developed not only an appreciation for the symbolic value of oranges, but for their culinary and medicinal value as well. The royals of France found a particular enthusiasm for oranges and began building huge greenhouses called orangeries to house their trees, protecting them from freezing in winter and keeping them at the perfect temperature to turn that perfect orange color. Orangeries became more and more elaborate, their architecture as beautiful and complex as that of castles and cathedrals. The French enthusiasm was catching. All over Europe, orangeries sprang up next to the homes and palaces of the nobility.

For many years, the only oranges grown in Western Europe were Bitter Oranges. These oranges were prized for their delightful aroma, and for their value as a seasoning, but they were rarely eaten alone. Sweet Oranges, meant for eating and less lucrative for trade, came later. When they finally arrived, they were a celebrated addition to the European table.

But the people who derived the greatest benefit from oranges may, ultimately have been sailors. Oranges, so full of vitamin C, kept sailors from developing the

dreaded scurvy on long voyages. As the great age of nautical exploration began, sailors carried orange seeds with them on their travels, creating living way stations to prevent scurvy on the islands they discovered. Such groves were planted in the Azores, along the West coast of Africa, and in the Madeira Islands. When Christopher Columbus set sail on his famous voyage, among the other supplies he carried was a stash of orange seeds.

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Once, oranges at Christmas were a favorite treat. Once, children who found oranges in the toe of a stocking, or tucked into a shoe, or sitting on a bedpost counted themselves lucky. Once, an orange was not the last touch, like the cherry on top of a sundae, but the main event itself.

I knew these things because I had been told them, but I'm not sure I really believed them. I was the only one of my childhood friends who got an orange in my stocking. I enjoyed the novelty of the oranges, with their shiny green leaves and loose skins. I liked finding the orange in my stocking because it was tradition, and tradition was comforting. But I didn't entirely believe that once children rejoiced in Christmas oranges, not because of tradition, but because they were as great a treat as candy canes and chocolate coins. I did not believe there was anything special about oranges.

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Columbus planted orange trees in the Caribbean, and the sailors who followed were glad of them. And the sailors that followed planted their own orange trees, first on the islands of the Caribbean, then on the mainland of the New World. Indeed, oranges were considered so important to Spain's expansion that all ships bound for the Americas were bound by law to carry a hundred orange seeds for each man onboard. Later, when it



was discovered that the seeds tended to dry out during the journey. the ships were loaded with young seedlings instead.

It was the Spanish who brought the orange to Florida, where they flourished. Sir Frances Drake tried to destroy the orange groves of St. Augustine when he sacked the city in 1586, but the oranges proved more resilient than he realized. The tree stumps he left behind sent out new shoots, and the groves recovered. Native Americans trading with the Spanish settlements carried oranges away with them. Today, the descendants of those oranges grow wild in the Everglades.

In 1763, the English took Florida from the Spanish. In 1776, as the American Revolution was beginning, and just a few years after the Franciscans began planting orange trees at their missions in California, the English began shipping Florida oranges back to the Old World. Once, long ago, oranges had been the exotic symbols of the distant East, but now they took on a new mystique as the fruit of a sun drenched New World.

When the United States acquired Florida in the early nineteenth century, it continued to ship oranges abroad. Indeed, commercial shipping increased, and not just across the ocean. Growers in Florida shipped their fruit north, tempting snowbound New Englanders with advertising that linked oranges to warmth and sunshine and the promise of winter's eventual end. As the twentieth century grew nearer, the railroads increased the Popularity of oranges even more as railroad companies sold land to prospective growers and new rail lines brought California and Florida oranges into direct competition for the imaginations and the pocketbooks of American consumers. By the twentieth

century, marketers had convinced the public that oranges were invaluable for health and well being, and that orange juice was the perfect start to any day.

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I could not understand the appeal of Christmas oranges because I had never known a world in which oranges were rare exotics from distant lands, but that was not the case for the children of the past. Jay Mechling put it thus: “[F]or other children in the Western world, the Christmas orange evoked the mysterious and the exotic; its sweet flesh and juice both fed the hungry child and stood for the paradox of the season--the ‘sunshine’ fruit in the midst of winter was as strange and wonderful as the birth of a Savior.”<sup>7</sup> I could not understand the allure of the fresh orange, its winter promise of spring’s return, because I had never been without oranges.

The advertisers of the nineteenth century, married with the technology of the twentieth century, had succeeded beyond their wildest dreams. Americans did adopt oranges as a necessary part of every day. We did decide that a glass of orange juice was the right way to start the morning. And once we did, oranges stopped being exotic treats reserved for special occasions. They became everyday and ordinary, and children who once longed for an orange in the middle of winter drank orange juice with breakfast and preferred apples for ease of eating.

The reason none of my childhood friends received oranges in their Christmas stockings is that oranges were no longer *special*. They no longer made worthy presents. After all, how many children will be glad of an orange when it lies beneath a pile of

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<sup>7</sup> Jay Mechling, “Oranges.” In *Rooted in America: Foodlore of Popular Fruits and Vegetables*, eds. David Sofield Wilson and Angus Kress Gillespie (Knoxville: University of Tennessee Press, 1999.) 120.

candy? Finding an orange in one's stocking today is about as exciting as finding a package of new underwear under the tree. And since the technology to create orange concentrate was discovered, not long after World War II, fresh oranges have fallen even farther from grace.

The have fallen so far, in fact, that when John McPhee traveled through Florida in the late sixties, he was unable to find a restaurant where he could get fresh orange juice in the morning; all the juice served in Florida came from concentrate.

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If I had known these things about oranges, about their history, about their botany, would I have valued them more? My disinterest in oranges stemmed, I think, from the fact that oranges failed to capture my imagination. They were so ubiquitous that my child-self took them for granted. Which leaves my adult-self wondering, as technology marches onward and we seek more and more to divorce ourselves from the constraints of seasons and geography: what happens to the foods we eat when they are no longer "special?"

If strawberries can be had cheaply enough from Mexico in winter, will the first fresh strawberry of spring inspire the same kind of anticipation and delight? Will my own children feel about peaches the way I felt about oranges? If peaches can be had in any season from any store, will my children delight in the sweet taste of summer fruit, or will they find peaches, with their dark, sticky pits, a little troublesome? Will they find them, after all, a little common?

There is danger in rendering the exotic into the everyday. When something is rare we give it reverence. When it is common, we hardly notice it at all. And then we forget

that each piece of food we put into our mouths began with water, with soil, with air. That someone grew it, someone picked it, someone carried it to market. We forget that though technology has made it easier, and cheaper, for us to stock our shelves with once exotic treats at almost any time and in almost any place, those treats still come from somewhere.

And in a world that is increasingly global, it is not only the crops we import that become less special, less unique. Where agricultural monoculture goes, cultural monoculture goes. If the foods we eat are no longer special, neither are the places they come from, especially as those places begin to conform to ease and expectation. It is now possible to travel almost anywhere in America and to many other cities in the world on a steady diet of McDonald's cheese burgers and Starbucks coffee, shopping at chain stores and staying at chain hotels. It is, in other words, possible to travel the world without experiencing anything new. Anything different. Anything special.

When people talk about how removed we have become from the food we eat, they will point out that in buying our meat prepackaged from an antiseptic meat counter at the grocery store, we avoid knowing the animals it comes from--their heat, their smell, their eyes, their life. But the same thing can be true for a bag of frozen corn, picked and shucked and cut from the cob, nothing left to remind us that this corn once grew on a tall green stalk with a tassel of golden silk.

And the same can be true for cans of frozen orange juice concentrate. Like the two that sit, at this moment, in the back of my own freezer. There is nothing about them to remind me that their contents were once part of a fruit whose ancestry lies in the Far East, whose roots might belong to a lemon tree, and whose skin was thin because of warm

sunshine and good rain. All the troubling implications of globalization rendered into a single glass of reconstituted juice.

Creatures of extraordinary complexity made simple, made easy.

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What it comes down to is this: I failed to really appreciate my Christmas oranges because I had been spoiled. I had never longed for an orange, never had a craving for one that could not be satisfied. Once upon a time, oranges were the fruit of the gods, but somewhere along the line they began to fall through the ranks of royalty, nobility, and wealth, until at last they were so common they could be scorned by the children of the masses.

Most of us in America have been spoiled, spoiled by grocery stores, and a global food system that provides us with unspoiled fruit anytime, anywhere, with no regard to season or distance. And in allowing ourselves to be spoiled, we have begun to forget the unique natures of the foods we eat. We forget that these foods come from real places, that they have meaning. We forget our sense of wonder. And once we forget our sense of wonder about the miraculous organisms we depend on for survival, we are one step closer to forgetting our sense of wonder about the miraculous world in which we live. We lose sight of the reasons we should love it, the reasons we should celebrate it, and the reasons we should care for it. We make it common. We, too, begin to fall from grace.

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On a shelf in a closet is the box in which my stocking lives eleven months out of the year. Next Christmas it will hang once more from the mantle above the fireplace in my family's home, weighed down by small treats and tiny treasures. In the toe will be an

orange. Next Christmas, when I eat my orange, I will try to remember the things I have learned about oranges since I was a child, about their history, their mythology, their botany. I will try to eat it with reverence. I will try to eat it with wonder.

## Fish Girls and Small Fry

All salmon are born orphans. By the time young salmon hatch out of the gravel beds and stream bottoms where their eggs were laid, their parents are long gone. Salmon die after they spawn, leaving their young to begin life alone. But the small fry don't need much in the way of parenting. They are born in freshwater, in cold, clear, empty waters where little can harm them. They feed on insects and grow larger, preparing, though they don't know it, for the long journey ahead of them.

Different species of salmon stay in their natal waters for different lengths of time: some of them spend only a few months in freshwater, while their cousins may linger there for years. But for each salmon, there comes a time when the call of the sea is impossible to resist. Along with its brothers and sisters it leaves its birthplace, moving

from stream to river, from river to sea, swept along, often backwards. compelled to follow currents too strong to fight as it is swept down rapids and over spillways.

As a salmon travels closer to the sea, its body begins to change. Salmon are anadromous--they are among the few creatures on Earth that can perform the amazing feat of traversing both fresh and salt water. Most creatures adapted for life in one cannot survive in the other, the process of osmosis that sustains the balance of fluid in their bodies unable to compensate for such a radically different environments. But a salmon has no choice. By the time it arrives in the coastal estuaries where river and ocean meet, dazed from its long, tumbling journey, the natural alchemy of a salmon's own body has already begun to transmute it from a freshwater creature into a saltwater creature. It is an entirely involuntary transformation, one written into the salmon's genetic code. The young fish will pause here for a time, the length depending on the salmon's particular species. It will rest in the transitory space of the estuary becoming used to its new environment, to its new body, and then it will move out of those protective confines and into the deep blue vault of the ocean.

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When it came, my own body's transformation was not unexpected, but it was sudden, it was disorienting, and it was involuntary. I knew what was coming. It had been explained to me several times, first by my parents, then by the school nurse. I had watched, giggling, a number of movies in which well-meaning actors looked seriously into the camera and said, "Becoming a young man or woman can be a very confusing time. Let's talk about what's happening with your body."



But nothing can fully prepare you for the way the landscape of your own body will suddenly betray you, becoming willful and unfamiliar. My body had been a good companion through childhood, but I had taken it for granted and now it was exacting its revenge, and its revenge was complete and irreversible. My first training bra made me cry with frustration: how could I live the rest of my life with this horribly uncomfortable thing strapped across my chest? And that, really, was the least of the changes. I adjusted to each of them as well as I could. I couldn't imagine a day when I would find this strange new body as familiar as my old one had been.

The key to it was this: my body was no longer my own.

As a child my body's only purpose was to keep me alive. Bones, muscles, tendons, blood, all had the sole agenda of growing on my behalf. But then my hormones got involved and convinced the rest of my body to rebel. Without consulting me, my body went about the mysterious process of turning itself into something better configured to facilitate the growth of another human life. It moved things around, laid in stores and supplies, and every month prepared the guest room, just in case I decided to invite someone new into the world. My body was telling me in no uncertain terms that it no longer belonged entirely to me. It also belonged to the children it expected me to have someday.

Such bodily changes are normal, of course. My adolescent transformation from child to adult is certainly less remarkable than a salmon's shift from river to ocean, or a butterfly's change from inching caterpillar to winged splendor, but that did not lessen the shock of it for me, swept suddenly from the cool, clear pools of childhood and into the

disorienting tumble of adolescence on the way to the vast, unknowable thing called adulthood.

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When a salmon enters the ocean, it enters a new and ancient world. The ocean is the original primordial ooze, the great stew of life from which we all emerged. Most of the life in the ocean is driven, like life on the surface, by the sun. The sun's energy, captured and stored by plants through photosynthesis, forges the first link in the food chain on land. In the ocean, most creatures live in the photic zone, the few hundred meters through which the sun's rays penetrate, but in that small photic zone is an incredibly rich soup of captured energy and recycled nutrition more ancient than anything I can imagine. Tiny phytoplankton, drifting passively along on the ocean's currents, are the sea's primary producers. They capture the energy of the sun and transform it. They are eaten by zooplankton, who are in turn eaten by other small creatures and on up the food chain to fish.

Fish like salmon.

In the ocean, a salmon completes its transformation from freshwater smolt to seafaring adult. It grows larger, swimming against deep, strong currents, and feasting on the abundant nutritional wealth all around it. In partaking of the feast, a salmon draws into its own body the timeless energy of the sun and stores it. The salmon may have been born in a small mountain stream in Oregon, but in its maturity all of the Pacific is there for the asking.

The young fish has years to itself to roam the waves, to travel, to taste the waters of Alaska, or California, or Japan if it has a mind to. But wherever the salmon swims, it

is always eating and always converting the sun's energy into the fat stores of its own body. Somewhere, written in the salmon's genetic code, is the knowledge that it will need that stored energy when the time comes for it to journey home and spawn.

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I have always believed that in most of the ways that really matter, there is no difference between men and women. I am a part of a generation of girls raised to assume we were every bit as good as boys. We took advanced math and science, we argued back in class, and we never surrendered being smart in favor of being nice. I still believe these things. That is not to say there are no differences at all between men and women. There are differences, but the most relevant of these are biological differences.

A woman's body, my body, is like a salmon's body. Both bank energy in stores of fat against the day that such energy is needed to help create the next generation. A woman's body begins this process in adolescence. Her hips round and her breasts grow, but she will not begin menstruating, will not achieve full biological maturity, until her body is satisfied that it has stored enough energy to support a developing fetus. This is why adolescent girls with eating disorders, or girls who are serious athletes--girls, in short, with lower than normal body fat--often do not begin menstruating until much later than their peers. A girl's body will not allow her to become a woman, to become a potential mother, unless it is sure it will be able to support the resulting child.

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A salmon's body stores such fats because every salmon has a destiny to fulfill. Salmon live in the ocean for years, an extended bachelorhood of swimming and eating and growing strong for the future. But for each salmon there comes a season when it

feels the urge to return home. Once it was the call of the ocean that lured the young fish from its freshwater birthplace; now it is the siren's call of home that the salmon cannot refuse to answer.

So the salmon begins to swim, first through the ocean, and then, retracing its steps, the salmon moves from the sea to the river, the river to the stream. It is joined in its journey by its siblings, its cousins, its neighbors, all struggling to find their way back home. No matter how far afield a salmon travels in the ocean, it always returns to its own birthplace to spawn. Guided by some uncanny internal map, a salmon will almost always find its way to its own dynastic stream, as its parents and grandparents have done before it. No one knows how a salmon is able to maintain such fidelity to its own birthplace. Surely, one stream is much like any other. But a salmon knows the difference, and a salmon finds its way. Some scientists have hypothesized that a salmon finds its way by smell, that the waters of different streams and rivers have different scents that a salmon uses like signposts. It is for this reason that water pollution can be such a problem for salmon: pollution changes the way the water smells, making it difficult for the salmon to navigate. Making it difficult for the salmon to find its way home.

A salmon's journey is not without difficulties, and not without dangers. Salmon stop eating when they reenter fresh water. Intent on reaching its destination, a salmon must live off the supply of energy its body has stored during its years at sea. The farther a salmon must travel, the more arduous the trip, the greater its fat stores must be. These fine, fat fish are too strong a temptation for other species to ignore.

Bears, for instance.

And, of course, humans.

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Along the great artery of the Columbia River and its tributaries are several falls and rapids where salmon, struggling upstream, are forced into a vulnerable place, swimming near the surface, even leaping out of the water at times to make it over particularly steep drops. And in these places, for as long as humans have lived along the Columbia, people have gathered to catch salmon. The importance of these sites, of these fish, to the peoples of the Columbia cannot be overestimated. Salmon were more than just a tasty treat. They represented survival.

The caloric energy of the salmon's bodies, harvested and stored from the ocean and carried inland and upriver, formed the cornerstone of life, of culture, and of trade. The lower Columbia River valley was one of the most densely populated places in North America before the arrival of Europeans, and all of the people who lived there depended on salmon. Nor were they the only ones. When the salmon ran, thousands of people traveled to the river from as far away as the Rockies to partake of the bounty. Celilo Falls, once one of these great centers of fish and people, is one of the most heavily named places in the Northwest, given different names by different peoples speaking different languages.

At the Dalles, the small, permanent village of six hundred swelled to three thousand during salmon season. But for all that abundant caloric wealth, the peoples of the Columbia did not take the salmon for granted. They had rituals centered on salmon, rituals emphasizing respect for the fish, and the delicate balance between predator and prey. The people recognized their own dependence on the salmon, and their customs and rituals embodied this recognition, culturally codifying the knowledge that the bodies of

the fishermen and their families depended on the bodies of the salmon swimming upstream, and recognizing, as well, that some salmon must be allowed to survive if there are to be salmon in the future. But when so many salmon flood the rivers every year, it is easy enough to take what is needed and leave what is not. Some of the salmon were eaten fresh, but most of them were smoked and dried, the energy of their bodies stored away for the long seasons ahead.

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Upon completing its long, arduous, exhausting struggle homeward, a salmon fulfills its biological imperative to spawn. Females lay their eggs in gravel nests called redds, and the males fertilize them. Once it has completed its reproductive destiny, the salmon dies. A salmon's life is a single round trip ticket, from stream to ocean, from ocean to stream.

The alchemical transformation that changed it from freshwater fish to saltwater denizen cannot be reversed. Once a salmon makes its way back into the river's mouth, its death is assured. It will not even live to see its offspring hatch; as it has lived the entirety of its life as an orphan, so, too, will its own young. But a salmon's death might, in a certain light, be seen as the ultimate act of parenthood. The freshwater streams where salmon are born are all but barren by nature. This means they are relatively free of predators, a distinct advantage; but they are also free of prey for the young salmon. When the adult salmon die, their bodies begin to decay, releasing the last of the oceanic nutrition stored in their flesh into the ecosystem. Insects are attracted to the sudden bounty the salmon's bodies provided. They congregate around the dying fish, feast, and lay their own eggs. When the small salmon emerge from the gravel redds, it is these

insects that they will eat while they grow large enough to survive their journey downstream. This cycle, this migration through the waters of the world, this parental sacrifice, this is what it means to be a salmon.

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Although they often change their minds about nutritional matters, scientists, in general, agree that fish is good for us. In fact, fish is excellent for us. Fish, especially salmon, are high in omega-3 fatty acids, the kinds of fat, unlike the fat found in beef and pork, that is healthy for the human body. Fish is literally brain food: Omega-3s are necessary for the development of the human nervous system, which is one of the reasons pregnant women are often urged to eat more fish.

Fish are in some ways the best source of protein: Delicious and nutritious without some of the health drawbacks of other meats, fish can also be easily obtained even by people with little money, either in cheap cans from the grocery store or from an obliging stream or river. But, these days, fish can also be hazardous to our health, though for that we have no one to blame but ourselves.

When toxins find their way into a fish's body, whether through the food it eats or through the environment in which it swims, they become stored in its flesh. In its fats. When a human eats such a fish, taking its flesh into her own body, those toxins move from the fish's body to hers, becoming stored in her own deposits of fat. These fat stores, as we know, are important to the body, and in a woman's body they are imperative to reproduction and the survival of the species. But these same fat stores, so necessary, also make women particularly vulnerable to toxins in the environment. Once they become stored in her body, such toxins stay there, accumulating, sometimes for years.

Methylmercury, a heavy metal often found in fish, will stay in a woman's body for as long as a year. PCBs, also of concern, will lodge there for six. Experts recommend that pregnant women avoid certain kinds of fish, and limit their intake of others, but because of the longevity of these toxins, at the time of conception a woman's body may still be storing traces of a meal eaten five years ago. The problem is compounded for poorer women, who eat more fish than their sisters in higher economic brackets and pay the price for cheap protein in the chemicals banked in their bodies.

These embodied toxins can cause devastating damage to the developing brain of a fetus, or an infant. But a woman must also eat enough omega-3s to support the developing brain of the child in her womb, and the developing brain of the newborn dependent on her breast milk. Many kinds of fresh seafood are potentially hazardous--fresh tuna, red snapper, orange roughy, halibut, lobster, marlin, wild trout--but there are some kinds that scientists say are low in toxins, and safe to eat. Canned tuna, cod, and whitefish are all considered relatively safe--as long as they are eaten only once a week. And there are others that are both high in omega-3s and are low enough in toxins to be eaten more than once a week. These include oysters, shrimp, flounder, and clams. And salmon. Salmon are safe to eat.

So far, at least.

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If a salmon does not migrate, is it still a salmon? If a salmon lives its life in tanks and pens, if it is never washed over waterfalls, if it never swims in deep ocean currents, if it never struggles over rocks and past nets to spawn and die, is it still a salmon?



In the past, it's true that the Columbia was all but choked with salmon during parts of the year, and that thousands of people feasted on the bounty of their flesh without causing substantial damage. But those days are gone. The Columbia and its tributaries have been dammed. Many times, in fact. Celilo Falls has disappeared behind the Dalles Dam; driving along 1-84, it is impossible to tell, looking at the surface of the river, that the falls ever existed.

Some of the dams kill smolts during their migration to the sea. Some of them hinder returning salmon in their efforts to reach the waters of their births. Some of the dams have blocked salmon from moving upstream entirely, whole dynasties ended by a wall of rock and water. Runs of wild Pacific salmon are slowly being worn away.

Our appetite for salmon remains unabated. Salmon are good for us, and they taste delicious. To solve the problem of increasing demand and decreasing supply, some people have become aquaculturalists. Salmon farmers. They hatch Atlantic salmon in carefully monitored tanks, and when they are old enough they move them to nets in the ocean along the Pacific coast. Farmed salmon live in these pens, swimming, I would imagine, more or less in circles until they grow large enough to be profitable. Then they are harvested, like any other crop. They are killed and gutted and sliced into steaks and fillets and shipped to supermarkets and restaurants and enjoyed by millions.

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Our bodies are entirely dependent on the bodies of others for our survival. First we are dependent on our parents' bodies, on our mothers' wombs and milk, on the strength of our fathers' arms. As we grow older, we retain our dependence on the bodies of our fellow humans for shelter, for comfort, for affection, but we also become

dependent on the bodies of other organisms. We rely on the bodies of plants and of animals for the energy to keep our hearts beating.

We cannot separate ourselves from this need to consume other bodies to live. “The body,” writes Wendell Berry, “cannot be whole alone. People cannot be whole alone.”<sup>8</sup>

And we know this. We have known for millennia that we depend on other bodies. The cavemen with their spears knew that, and so did the fisherman with his net. Our bodies are connected to other bodies, and through those other bodies we are connected to the Earth itself. That does not mean we have not tried to break those bonds, even when it means altering our own bodies. Or, more often, altering the bodies that sustain us.

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The body of a farmed salmon is not quite like that of its wild cousin. Some people worry about the practice of keeping farmed Atlantic salmon in the Pacific ocean where they might someday succeed in escaping their confinement and interbreed with wild Pacific genetic stock. But genetic differences between the species are not the only differences. Raw salmon, as you know, is red. Cooked, salmon becomes, well, *salmon*. We expect the salmon we eat to fall somewhere on this color spectrum from red to pink, or maybe orange. But a salmon’s flesh is not this color from birth. During its years at sea, a wild salmon feeds on massive amounts of krill, the same tiny, shrimp-like creatures that give flamingos their coloring; without a steady diet of krill, pink flamingos would not be pink.

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<sup>8</sup> Wendell Berry, *The Unsettling of America* (San Francisco: Sierra Club Books, 1977) 103

Neither would salmon. Farmed fish do not swim the open ocean, and they have no opportunity to gorge themselves on krill. Their flesh does not naturally attain the distinct salmon hue we all expect. Pink farmed salmon has been dyed before it was offered for sale, a practice that has caused consternation among some consumers.

Are these farmed salmon really salmon? Their genetic code says they are, but they don't act like salmon, and they don't look like salmon. If in our quest for an unending feast of salmon we have changed the fish's behavior, appearance, and lifestyle so radically that we no longer recognize it as the food we crave, what else can we do to it?

Well, of course, we can always change its genes.

A few years ago, a biotechnology company in Massachusetts announced that it had successfully created the AquaAdvantage Salmon™. Scientists had manipulated salmon DNA, altering it so that, instead of releasing growth hormones during certain times of year when food is likely to be plentiful, the salmon's body will produce a constant supply of growth hormone. This means that an AquaAdvantage Salmon™ grows at four or six times the rate of normal salmon. The faster they grow, the sooner they can be sold, the sooner they can arrive, poached, grilled, or steamed, on a dinner table near you.

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We live, whether we like it or not, in the world of the body. We depend on our bodies, our bodies depend on other bodies, and all bodies depend on the Earth. The connections are profound and inescapable. "It is hardly surprising, then," Wendell Berry also wrote, "that there should be some profound resemblance between our treatment of

our bodies and our treatment of the earth.”<sup>9</sup> What goes upstream must come downstream; what we put out into the world must eventually find its way back into our own bodies. We are all embodied creatures, and this embodiment and interdependence not only deserves our respect, but demands it.

It is of great importance, then, to ask the question: when is a salmon not a salmon? How far can we--dare we--manipulate the bodies of other living things to suit our own culinary and economic desires? If an AquaAdvantage Salmon™-- genetically altered, raised in tanks and pens without migrating or spawning and sprayed with red dye in preparation for supermarket shelves--is not a salmon, then what is it that we will be sitting down to at dinner?

Life is full of mysterious transformations. A fish moves from freshwater to saltwater. A girl becomes a woman. Egg and sperm combine to form new life. A plant changes sunlight into food. My body distills a salmon’s body into its component parts and knits them into my own flesh. Whatever we have done to the salmon’s body, it will be carried in our own. We are bound to each other, predator and prey, scientist and subject, fish and girl.

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<sup>9</sup> *ibid* 97.

## The World So Sweet

### Concluding Thoughts

There are two days in all the calendar on which I will willingly--even cheerfully--get up early. One of these days is Christmas. The other is Thanksgiving.

On the morning of Thanksgiving, despite the lingering effects of jet lag, I get up early, get myself a cup of coffee, and turn on the Macy's Thanksgiving Day parade. It is important to catch the parade as it starts because my favorite float, the blinking turkey, always comes at the very beginning. The sight of that tom turkey--bobbing head, jaunty pilgrim hat and improbable eyelashes--is the beginning of the ritual, the beginning of my favorite holiday of the year.

My duties on Thanksgiving are to assist with the turkey and to make the cranberry sauce, the green bean casserole and the pumpkin pie. It's the pie that's the most nerve-

racking. The casserole is a guilty pleasure--canned green beans, canned cream of mushroom soup, and canned french fried onions. The cranberries are easy--a bag of Bandon cranberries from the last farmers' market, kept safe in the freezer for a few weeks and boiled with sugar and water. But people have expectations for the pie. One of the proudest and most terrifying moments in my culinary life was the day my mother informed me that she had such confidence in me that she had not bothered to get a frozen pie crust as a backup. It was a rite of passage.

For the last decade and a half we have celebrated Thanksgiving with family friends who live around the corner. We trade hosting duties from year to year, and turkey duties, too. Their daughter and I have been friends since we were three. We rarely see each other now--we live in different states, work in different fields, and move in different circles. But both of us make a point to come back for Thanksgiving if we can, and the holiday provides a handy excuse to catch up and reconnect.

Over the years, the size of our celebration has waxed and waned as others have joined us. My aunt comes down from Seattle, and sometimes my cousin. My father's best friend usually joins us, and as we kids have grown up and moved away we have returned for the holidays trailing new friends behind us. This year the count stands at eighteen, and it has been decided there will be two turkeys to accommodate everyone. It's Thanksgiving, and no one at our table should go hungry.

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Of all the many ways in which we use food, surely the most enjoyable is the feast. We feast to commemorate special occasions--weddings, holidays, funerals and births. We use a special meal to mark a special occasion. Maybe it is the marrow-deep memory

of our days as hunter-gatherers, when the uncertainty of finding food made any sudden bounty cause for celebration--in other words, maybe we stuff ourselves in celebration in memory of a time when we celebrated because we could stuff ourselves.

Feasting is an ancient tradition, practiced by every culture on every continent through all of recorded history. The Romans brought the feast to new levels of excess, building vomitoriums where guests could relieve themselves of the earlier courses before staggering back to the table for more. Feasting can flirt with gluttony as the Romans did, or it can be simpler, quieter, just a few favorite dishes or luxurious delicacies shared between friends. When food enters our celebrations, as it enters all the other aspects of our lives, it does so as a feast.

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The parade is still winding its way toward Herald Square when the turkey goes into the oven. As the turkey goes in, my pie comes out. My luck remains intact--the crust did not crack, and the edges have turned the perfect shade of golden brown. The pie goes on the counter to cool and the giblets go into a pot to simmer. Now that the messy tasks of washing and stuffing the turkey are over, Mom and I have a bit of a break. I settle on the couch to watch the end of the parade and read the comics. After Santa finally rolls into view, ending the parade and opening the holiday season, I head off to clean up. When I emerge from the shower I hear the telephone ring. The first of the out of town relatives has made contact. Even through the shampoo-scented steam that fills the bathroom, I can smell the turkey roasting in the oven.

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We feast for many reasons. Some of them are specific to certain cultures, but there are others that seem to cross cultural boundaries. There is the midwinter feast. In America this usually means Christmas, a feast in defiance of the long cold dark of winter and in celebration of the birth of the child that brought new light into the world. For Christians, Easter comes in springtime, celebrating the miraculous rebirth of the Savior as the world is reborn around us. But other cultures and religions, both ancient and modern, have their own feasts to celebrate the changing of the seasons.

Thanksgiving is our celebration of the harvest. We come together in the autumn and feast to celebrate the harvest of summer's bounty. We decorate with ripe pumpkins and dried cornstalks, and we celebrate the passing of the season, the passing of the year. America is no longer a land of yeoman farmers; few Americans actually make their living on the land, and even fewer are bound by the limitations of seasonal cycles when it comes to getting food. But Thanksgiving is still at heart a harvest festival with no other purpose than what its name implies--a single day of the year devoted entirely to a celebration of gratitude.

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We stop midday and have some soup. I know many people who choose to fast until dinner on Thanksgiving, believing that abstaining from food all day long makes them appreciate the meal more. Makes them more thankful. I myself prefer to have a little something in my stomach--dinner will be rich, and I don't want to make myself sick.

The soup we eat is the same soup I myself make in winter when I am homesick. It is a simple soup from a family recipe. I eat mine standing in the kitchen while I cook



the cranberries. My aunt arrives from out of town and comes in to chat. We haven't seen each other for a few months, and it feels good to catch up.

The most entertaining moment of the day comes when my parents perform the ceremonial flipping of the bird. This does not, as one might think, involve obscene hand gestures of any kind. My mother's favored method of turkey roasting involves starting the bird in the oven breast down, then, part way through the cooking process, hauling it out and turning it over. This event is tinged with an aura of danger--forget failed pie crusts, *what if they drop the turkey?* But they never do.

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Food connects us in many different ways and with many different meanings. So does eating. When we feast we come together and share our food, an act that separates friend from foe. When we break bread together, we share sustenance and nourishment, and the intimate act of eating that ties us to the rest of the wide world. Food is life in its most basic sense, but it is also true that when we share our lives in networks of personal ties and deep affection, we often share our food. And when we share our food, we also share our lives.

Food itself can be an expression of love. You can see it in a box of cookies sent to a homesick child, in a birthday dinner cooked by a busy friend, in a secret family recipe bestowed upon a new daughter-in-law. Sharing food can be a medium through which we give and receive the love and affection that are as necessary for the sustenance and nourishment of our souls as food is to our bodies. There have been times when I have lived with people I did not like, but I never ate with them. I am willing to share my space without affection, but not my food.

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Just before our full gathering begins, we collect in the kitchen. My father pours himself a scotch, and we divide the liver. Most of my friends are disgusted by this tradition, but I love it. The giblet water will flavor the gravy, and the liver itself we eat seasoned with a dash of salt. I like the ceremony of it all. I like the texture and flavor of the liver on my tongue, and I like the fact that we are wasting a little less of the bird than we might. In fact, very little of the turkey we receive is wasted; the giblets go to flavor the gravy, and the wishbone is left to dry out on the windowsill. In a day or two, my mother will use the carcass to make broth for turkey noodle soup.

And then, almost before I know it, the day has passed, the guests have gathered, and it is time for dinner.

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Thanksgiving suffers, sadly, from historical inaccuracy, political incorrectness, and comparison with the gift-giving frenzy that is Christmas. The story we learn in grade school of a holiday handed down directly to us from our pilgrim forefathers is a myth really. The myth includes the tale of a feast of friendship and thanksgiving attended by both Indians and Pilgrims in perfect harmony. It is a myth that has come under fire recently for ignoring the historical realities of relations between Native Americans and European settlers, for painting a rosy picture of the past that does not include either violence or smallpox.

There are people, too, who find Thanksgiving redundant. Christmas comes just a few weeks later, and includes not just dinner but weeks of parties and piles of gifts. Many of these people, in my experience, resent spending time with their families and

cringe at the thought of so much *togetherness*, of having to make an effort to be so *nice* to their relatives for two whole months every year.

But I think Thanksgiving has value to us that goes beyond these things. Perhaps the story of the first Thanksgiving is a pretty piece of fiction, but surely there were some times when Native Americans and colonial Americans shared friendship, shared food, shared thanks and celebration. Even if there was no First Thanksgiving as we have heard it told, surely it is a good thing to have a reason to come together every November with the people we love and to celebrate.

Thanksgiving is about more than marking a historical date, and it is more than an excuse to indulge ourselves at the dinner table. It is not a bad idea, I think, to have a day dedicated to gratitude for the things we have, to share a meal and give thanks for each other, and thanks for the year that is gone, and thanks for the year to come. It is right that we celebrate together our thanks for the harvest and the fact that we do not hunger, and thanks for the earth that sustains us, and thanks for the food on the table before us.

There are worse reasons in the world to feast, but I can't think of any better.

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The food we eat shapes us in more ways than we can name. It determines the course of our histories, both great and small. It comes from the earth and binds us to our environment in intimate and unbreakable ways. It helps to sustain our bodies, and it helps to sustain our souls, to connect us to our fellow humans and to bring us closer to God.

An orange can protect a sailor from scurvy, or it can delight a child on Christmas morning. Wine can provide balance, and corn can illuminate the sacred. A salmon on its

journey from ocean to river can wind up in the body of a girl on her journey toward becoming a woman. A tomato is transformed from deadly poison to cancer cure, and from a dangerous aphrodisiac to a vehicle for social change. The story of sugar lends understanding to the history of two continents, and the story of the potato lends understanding to the history of a single person.

There is nutritional value in food, and spiritual value, historical value, and social value. All of these aspects of our complex relationship with food shape the way we relate to it, to each other, and to our world. It is a rich tapestry woven of bright threads, all of which come together at Thanksgiving when we feast.

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At my family's Thanksgiving, we do not, when we gather around the table, say grace. The meal itself is a kind of grace. But if I *were* asked to speak a prayer before the meal begins, I would offer this, the first one I ever learned, the simple verse I was taught in preschool:

*Thank you for the food we eat,*

*Thank you for the world so sweet.*

*Thank you for the birds that sing,*

*Thank you, God, for everything.*

# The Best Ingredients

## A Bibliographical Essay

In the course of researching and writing this thesis, I read a number of fascinating books and articles about food, the environment, the connection between the two and the meaning of both for human life. Although not all of them contributed directly to the essays in this collection, all of them have informed this project in one way or another. A full listing of all the sources consulted in the course of this project appears at the end of this essay. What follows here is a discussion, by chapter, of the works that comprised the major sources for each food. A full bibliographical citation for each appears in the Works Consulted.

### The Food We Eat: An Essay of Introduction

The inspiration for this essay, and for the collection in general, was the Aldo Leopold quote from *A Sand County Almanac and Sketches Here and There* that appears on page 8. The essay was also heavily informed by the works of Michael Ableman, Sallie Tisdale's *The Best Thing I Ever Tasted: The Secret of Food*, and the three-part series on PBS *The Meaning of Food*. But the greatest influences on this chapter are the many talks about food I've had with friends and family over the years, and the insightful discussions had in the Fall 2005 "Politics of Food" class at the University of Montana.

## Peeling Potatoes

The life history of the potato was helpfully illuminated in Michael Pollan's *The Botany of Desire: A Plant's-Eye View of the World*, as well as in two essays: "The Potato Connection" by Alfred W. Crosby, and "How the Potato Changed the World's History" by William H. McNeil. Thanks also to my father, for the soup recipe and for beginning the great potato project that inspired this essay.

## Bittersweet

This essay was a long time coming, and draws on a variety of sources. Peter Bakewells' *A History of Latin America* first exposed me to the story of sugar in the New World. Sidney W. Mintz's "A Bitter Sweet Tale" is an excellent overview of the environmental consequences of the sugar trade, and Alfred W. Crosby's "The Biological Consequences of 1492" provides a more general overview of the impacts of European colonization on the environment. For more on the human desire for sweetness see Michael Pollan's *The Botany of Desire*, and for a better understanding of the science of flavor and sugar production, see Robert L. Wolke's *What Einstein Told His Cook: Kitchen Science Explained*. For those interested in Columbus' impressions of the New World, some of his thoughts can be found in *The Four Voyages of Columbus: A History in Eight Documents Including Five by Christopher Columbus in the Original Spanish with English Translation*, edited and translated by Cecil Jane. Finally, Polly Pattullo's *Last Resorts: The Cost of Tourism in the Caribbean* gives a sobering view of what our search for the sweet life really costs.

## Love Apples and the Fruit of Knowledge

This essay owes a great debt to Andrew F. Smith's *The Tomato in America: Early History, Culture, and Cookery*, which includes not only the history of the tomato but historically accurate recipes as well. David Scofield Wilson's essay "Tomatoes" from the book *Rooted in America: Foodlore of Popular Fruits and Vegetables* was also enormously helpful in illuminating the "truth" about the tomato, and Stewart Lee Allen's *In the Devil's Garden: A Sinful History of Forbidden Food* served to deepen my understanding of the tomato as "love apple." The story of Ken Dunn and his urban tomatoes, along with many other stories of the many faces of modern farming, can be found in Michael Ableman's *Fields of Plenty: A Farmer's Journey in Search of Real Food and the People Who Grow It*, a wonderful book that I was lucky to find.

## The Blood of the Vine

On the matter of the history of wine and grapes in the ancient world, Warner H. Allen's *A History of Wine: Great Vintage Wines from the Homeric Age to the Present Day* and Patrick E. McGovern's *Ancient Wine: The Search for the Origins of Viniculture* provided an unexpected wealth of information on wine from its creation during the Paleolithic Age. *Ancient Wine* was also enormously helpful to me in understanding the cultivation and spread of the grape vine, and its religious implications for many different cultures. On the matter of the great god Dionysus, Edith Hamilton's *Mythology* remains for me the gold standard for all matters of Greek myth, but Euripedes' *The Bacchae* also informed my understanding of the connection between the grape and the god. My ponderings and conclusions about wine as a medium that

connects human, God, and Earth in the Christian tradition are my own, but they were greatly informed by Dan Spencer's Spring 2005 Greening of Religion course at the University of Montana.

### The Staff of Life

This essay owes a great debt to Betty Fussell's *The Story of Corn*, which is indeed, as its subtitle claims, *The Myths and History, the Culture and Agriculture, the Art and Science of America's Quintessential Crop*. Fussell's book was helpful on all aspects of the corn question, from biology, to history, to religious significance. It is a fascinating book that I cannot recommend too highly. For a perspective on coming from a corn culture and the many meanings of corn today, Theresa Meléndez's "Corn" in *Rooted in America: Foodlore of Popular Fruits and Vegetables* is a must-read. George E. Tinker's "Native Americans and the Land: 'The End of Living, and the Beginning of Survival'" deepened my understanding of the sacred nature of land to native peoples. Although I included a small portion of what the *Popol Vuh* has to say about corn in my essay, the full text contains a rich cosmology of corn that is well worth reading.

### Oranges in Winter

Nearly all of the factual information about the history and biology of oranges comes from John McPhee's wonderful *Oranges*, a book of such elegance and economy it made me wonder if any further attempts on the subject were really necessary. Jay Mechling's "Oranges" in *Rooted in America: Foodlore of Popular Fruits and Vegetables* was also of great assistance in understanding the meaning of the Christmas



orange and its and fall in America, and Stuart Lee Allen's *In the Devil's Garden: A Sinful History of Forbidden Food* helped me understand the orange's origin in myth.

## Fish Girls and Small Fry

The history of salmon in this chapter comes from Richard White's *The Organic Machine: The Remaking of the Columbia River*, one of the best books about salmon, humans, the Columbia and the environment that has ever been written. Robert L. Wolke's *What Einstein Told His Cook: Kitchen Science Explained* was helpful in many of the essays in this collection, but never more so than when it explained to me why salmon flesh is salmon colored. More about the AquaAdvantage™ Salmon and the potential pitfalls of genetic engineering in food can be found in *Engineering Trouble: Biotechnology and Its Discontents* edited by Rachel A. Schurman and Dennis Dolye Takahashi Kelso; for specifics on salmon, see Kelso's "The Migration of Salmon from Nature to Biotechnology" in that collection. Both the USDA and FDA websites were helpful to me in understanding issues of food safety. For those interested in more on the safety of the foods we consume, *Bitter Harvest: A Chef's Perspective on the Hidden Dangers in the Foods We Eat and What You can Do About It* by Ann Cooper with Lisa M. Holmes provides a look at what you didn't even know you were eating, and Mary O'Brien's *Making Better Environmental Decisions: An Alternative to Risk Assessment* suggests ways we might go about changing the ways we decide what is and is not safe when it comes to matters of health and environment. Finally, much of this collection was informed by Wendell Berry's *The Unsettling of America: Culture and Agriculture*, but this essay benefited from it more than any other.

## The World So Sweet: Concluding Thoughts

Although all of the many sources I consulted in the course of writing these essays influenced my final conclusions, it is the many meals I have shared with friends and family that have, in the end, been most educational, and most valued.

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