Urban Homesteading

Heirloom Skills for Sustainable Living

RACHEL KAPLAN WITH K. RUBY BLUME



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This book is dedicated to the children who follow after us.

May they inherit a fertile and abundant world filled with people who honor the diversity of life teeming around us: from the tiniest microbe, to the wondrous chicken, to the beauty of human community.

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Autumn, 2010





Why We're Here

e've been friends for nearly twenty-five years, sharing a life as community artists and activists in San Francisco's Mission District, and finding ourselves evolving toward the same urban homesteading lifestyle grounded in the urgency of the moment and the need to create real cultural change. We're neither partners nor roommates; we don't even live in the same city. But we share a love of the earth and a creative spirit, as well as our practices as body-centered healers, teachers, and activists.

Ruby created the Institute for Urban Homesteading in 2008 in Oakland, California, as a venue for sharing the homegrown wisdom she's gathered over the years. Rachel lives in Sonoma County with her partner and daughter, works as a somatic psychotherapist, and teaches homesteading skills. She also helps coordinate a group of homesteaders and backyard gardeners into the Homegrown Guild, an action-oriented project of Daily Acts, a nonprofit with a mission to transform communities through inspired action and education.

We wanted this book to represent voices other than our own because we find ourselves part of an outpouring of energy toward a diversified, healthy ecosystem in the midst of crowded urban intensity. We are part of an urban homesteading *movement*. All the people we interviewed live in the urban or suburban Bay Area. Our choice to restrict our interviews to homesteaders in our area reflects our lack of a travel stipend and not the reach of urban homesteading in this country, which is growing rapidly and expressing itself in diverse ways in different places, meeting the requirements of bioregion, economic necessity, and local sensibility. Each person or family we interviewed inspired us, and represented a foray into some part of the homesteading lifestyle we think is important. We chose homesteads that were small enough in scale to apply to a diversity of cities across the country, and captivated us with their creativity, beauty, or verve. We are grateful to everyone we spoke with for the generosity of their time, and for their ongoing and embodied commitment to birthing a regenerative culture.

As we interviewed different homesteaders, we found that no one has a handle on every aspect of homegrown sustainability. Each place is marked by the limits of space and time and skill and affinity. Some people focus on growing food and learning how to preserve it. Others have a leaning toward water, or compost, or recycling the waste stream. Some people have fully devoted themselves to permaculture as a way of making a living. We are landscapers, nonprofit workers, students, teachers, greywater experts, architects, stonemasons, mothers, and fathers. These homesteaders are all homegrown urban farmers, busy experimenting with the space they have, and building their toolbox of sustainable living skills.

City people grow and butcher animals for food, milk the goats, and gather the honey, just like homesteaders everywhere. Everyone is trying to grow as much food, save as many resources, and connect as much with their neighbors as possible. We are all motivated by concern for our cultural moment and a desire to live the change we want to see, to be part of crafting a solution rather than perpetuating the problem. As you will see, there are some limits to our success, and some spectacular unfolding social experiments.

Throughout the book, unless otherwise noted, all photographs are by K. Ruby Blume, who also created the original art for the section headings and maps, and was the visual wizard for the entire book. Drawings throughout are by Marco Aidala.

A note on the inclusion of wise words, and on pronouns: Sometimes, the stories of these homesteaders are represented directly in the interviews we did with them. Sometimes we represent their voices by simply saying, "Trathen said," or "Jane said" because their words were the wisest ones we could find. Sometimes when we say "we," it means Rachel and Ruby. Sometimes, it means Rachel and her family of three. Sometimes "we" refers to the movement of urban homesteaders. We have done our best to clarify the use of this ubiquitous pronoun throughout the text. Whenever the "I" pronoun is used and no one else is credited, this is Rachel's voice. We've avoided the gendered pronouns "he" and "she" out of long years of practice in the gender-blendy west coast, and instead chosen the more inclusive "you" whenever possible. Please take this as our personal invitation for your own participation in the practices offered in this book.

Living in the garden of earthly delights, demonstration garden of the Institute of Urban Homesteading, Oakland, California.

Start Where You Are



Knit It Up

My heart is moved by all I cannot save So much has been destroyed I have cast my lot with those Who, age after age, perversely With no extraordinary power Reconstitute the world

—Adrienne Rich¹

The weed growing up through the cracks in a city sidewalk—that sharp green shard of life persisting against all odds—reflects nature's resilience. It's also a metaphor for the uprising earth consciousness growing in our cities—small, surprising, commonplace. Spreading. Across the country, citizens are looking for solutions to the seemingly intractable problems of our time, and evolving new ways to live. Picking up the shovel and the hoe, turning their closets and roofs and backyard decks into places to grow food and their yards into chicken coops, urban farmers are reclaiming heirloom agrarian practices as strategies for artful living. This book tells the story of this grassroots do-it-yourself cultural explosion rooted in the urban earth, a homegrown guild of people generating resilient, local culture in response to the urgency of the moment and a collective awareness of our need to be the change we want to see.

The more I know, the less I sleep. There is something decidedly brinkish about our era. We are bombarded by desperate stories—collapse of the Arctic ice, clear-cutting of the forests, massive oil spills, catastrophic droughts and floods, volatile nation states, dangerous levels of CO_2 in the air, the depletion of oil, and the overwhelming power of corporations to devour the world at will—all conspiring to create fear and dread. We are told we are powerless until we begin to believe it. The convergence of the seemingly unstoppable forces of climate change, the savagery of global corporate capitalism, and the downward spiral of our predatory economy all lead to an inevitable conclusion: We are coming undone. We are unraveling.

Knitters know all about unraveling. You knit along for a while, until you drop a stitch or add a stitch or do something else peculiar that just doesn't work. If you want it right, you have to unravel, and knit it up again. Or sometimes you unravel by choice because it's just not coming out quite the way you planned. Re-knitting always takes less time than you think, A family of strangers travels along the city streets, seeking the heart of people and place. A circle is drawn on the pavement in flowers. The world is an altar. Our actions are sacred. (Blume Family ritual procession, collaboration between Keith Hennessy and K. Ruby Blume, 1992.)

and there you are again at the place you left off, with a piece of fabric that looks and feels right.

This homegrown metaphor takes us only so far; we can't unravel back to the beginning of our disastrous misalignments with people and place that, in our country, permitted the genocide of the first peoples; the dispossession, oppression, and slavery of others; and the short-sighted desecration of natural resources leading up to our current environmental and economic predicaments. Unlike strands of wool on our needles, we are people who have to work from where we are. But there are lessons about process and outcome in the knitting metaphor and operating instructions for how to proceed—when we make mistakes, it's best to go back, sort out what's worth



saving from what needs to be let go, and get back to the work of stitching together again. The urban earth has been shattered by hundreds of years of neglect and abuse; our relationships are fractured and deformed by long stories of hate and race and class. We've made something lopsided and misshapen, and it is time to weave another tapestry, tell another story about how we can live together with this planet.

Urban homesteading is happening in small and large cities across the country, a homegrown response to this potent need for a new, life-giving story. Urban homesteaders are relearning heirloom skills that have been abandoned in the relentless march toward convenience; valuing thrift and community self-reliance; and tending to our home places in an intentional repudiation of the cultural forces of speed, need, and greed. Urban homesteading is also part of a global movement for change rooted in respect for indigenous peoples and values, a cadre of environmental first responders and a network of progressive social change organizations seeking peace and reconciliation at every level. All of these together forge an opportunity to rewrite the story of our relationship to the earth and the possibility of remaking culture around an ethic of care and stewardship for this place that is our shared home.

This is a David and Goliath story—backyard gardens competing with Monsanto's patents on the gene pool, rain barrels and greywater versus the worldwide privatization of natural resources, bicycles against the power of Big Oil. Garden by garden, block by block, neighborhood by neighborhood, each partial effort is a step in the right direction, our participation in the human immunological response to our diseased world.² Will it work? The outcome is uncertain. Is it worth trying? Without a doubt. The tragedy of living in a "Christian" country that repeatedly rapes God's creation can be combated only by learning to cherish and tend the kingdom of God,



Battles like this have been won before—the tobacco industry once ruled the roost, and now it's the chicken no one wants in their backyard coop. Despite what politicians and commercials teach us at every turn, our daily actions can remake the world. Urban homesteading is a story of the

Bringing up our children to respect life is central to the homesteading way. *Photo by Lauren Elder*





Photo by Dafna Kory.

power of community and the joy in following an artful course of living in a time of contraction and fear. This is a book about action, about things we can do to reweave the web by living in place, but it's also a book about how we think about our actions during this time of unraveling. It's a hopeful vision in a hopeless time. Urban homesteading is a proactive response, a series of earth-based actions that make an immediate difference in the places we call home.

When we speak of a system being unsustainable, what we're really saying is: This cannot last. Sustainability is the ability to exist over time. We have to get real about our current lack of sustainability as we face the end of many systems in the twenty-first century, and take up the good work of re-imagining ones that can endure. The urban earth practices in this book show how we can radically reduce consumption and maximally increase community self-reliance and joy in living, both of which are necessary for positive social change and progressive human evolution. They will help ground you in the reality and freedom of limits. Some say this is an "old" way, and it is. But it's also a new way of relating based on reciprocity and cooperation, of living in partnership with the earth rather than treating it like our personal garbage can.

Now is the time to answer the call. You've probably picked up this book because you hear it, and because you want to answer in your own way and bring your best offering forward at this time of unraveling. Ultimately, this is a book about reverence and our love for our beautiful world, about our grief in seeing her die and our complicity in her dying.

This book weaves in the voices of many people who live an urban homesteading lifestyle. While there are differences between us all, everyone feels creatively motivated and spiritually connected on our urban farms, and in the midst of breakdowns of all kinds we write to remind you that the force of necessity motivating these practices is beautiful, raw, and vivid, and that god is in the broccoli. Our work reflects a commitment toward a regenerative, living culture, rather than the consumptive consumerism our country has refined to a sick art. We opt out by digging in.

And so we find ourselves in our backyards fighting gophers, pulling carrots, harvesting rabbits and eggs, tending bees, and gathering raspberries, grapes, broccoli, and kale. We save our seeds. We pee in a bucket and dump it on the compost bin. We harvest our rainwater and drain our bathtubs into the garden. On hot summer afternoons you'll find us preserving jars of peaches, plums, and nectarines that have fallen from the trees. We bring people together to learn how to can, make yogurt, hold a meeting, or turn a lawn into a garden. We experience our practices in the urban earth with the bees and the animals and the things we make with our hands as spiritual, a prayer to the life force and a vehicle for our own connectivity and sense of purpose.

We are here to say: there is a life in the earth for you. There is birth and abundance and death and

regeneration and joy. We are on the side of the seed, growing through the cracks of our profound and tragic mistakes, the particulate scaffolding of the natural world still calling to us, teaching us the true order of things. We are sitting. We are listening. Knitting, unraveling, and knitting again.

A family tends their garden plot at the La Tercera Community Garden, Petaluma, California. Photo courtesy of Terry Hankins/Petaluma Argus Courier.



The Empire Has No Clothes

The only recognizable feature of hope is action.

 $-Grace Paley^{3}$

It the systems that sustain us—food, water, shelter, medicine, family, and community—are at risk from the ongoing disintegration of life brought about by global capitalism's profound disrespect for natural limits. In this past decade alone, the decay of basic support systems has been staggering. With corporate control of our government becoming more entrenched, it is hard to imagine a future that will hold the processes of life and the needs of humans and other living creatures as its guide. It's past time for us to redesign our cities and our lives with an ethic of care at its core, remaking local systems based on the model of the earth itself—adaptive, lush with diversity, and fertile with possibility. Rather than continuing to direct our life energies toward a system that is degenerate on every level—personal, social, and environmental—we advocate the relearning of skills and strategies to maximize interdependence, community resilience, and a sense of sufficiency in living locally.

The dangers we face are large and undeniable. Our situation is urgent—and growing more so—but it is not too late to change direction. Escalating climate instability, along with peak oil and its relationship to the current economic redistribution of wealth, underscore the urgency of our situation. The processes of recovery and change, localism, and the empowerment of do-it-yourself culture support the practices of urban homesteading, which are a direct response to the cultural challenges we face.

Climate Change and Peak Oil

Climate change and global warming are finally front and center in mainstream consciousness as emergencies warranting immediate attention. It is no longer debated by any reputable source whether human activity is the culprit, specifically the use of nonrenewable fossil fuels, industrial agriculture, and the ongoing devastation of the earth's forests and waters. Yet despite The patterns of nature reflect resilience, cooperation, integration, and beauty.

the clear and present danger, global carbon emissions per capita continue to rise, increasing the likelihood of large-scale climate catastrophe and putting our lives and the lives of other beings at risk.

There is an immediate need for citizens, especially in countries that consume the vast majority of resources, to sharply limit the carbon in the environment by



employing conservation strategies and curtailing energy use wherever possible.⁴ Global industry, the prime culprit in generating carbon emissions, has a huge role to play, but enforcing systemic change is remarkably difficult as long as industry controls the mechanisms of political power and a majority of resources. So although change is needed at all levels and should be fought for, actions taken by individuals and local communities are more immediate and will show more tangible consequences in our lives. It seems clear that change in this arena will have to come from the grassroots, or not at all.

"Peak oil" refers to a point in time when the maximum rate of global extraction of the nonrenewable resource of fossil fuel is reached. H. King Hubbard predicted in the 1970s that we would shortly reach the point of peak oil in the United States. He was laughed out of the room, but had the last laugh himself as his predictions proved correct. Evidence suggests that global oil production has already peaked and begun its inevitable decline. Many former oil-producing nations, including our own, reached peak oil production decades ago. Others are approaching peak oil while our global needs for this nonrenewable resource continue to increase unabated. While there is still plenty of oil to be pulled from the earth, extraction is becoming more difficult and costly, making inevitable further disasters like the Gulf of Mexico oil spill of 2010. Unless we wean ourselves from oil, the decline in extraction will lead to a precipitous rise in oil prices and the fuel that runs our entire economy will become more and more scarce. It is easy to see how this combination of factors is a disaster in the making for individuals and communities, particularly marginalized and impoverished ones.

The significance of peak oil is not that fossil fuel is going to "run out" tomorrow or next year or even in ten years. The significance lies in the fact that as fossil fuel gets more difficult to extract (already happening), prices rise (already happening), political instability arises (already happening), the gap between rich and poor widens (already happening), and our ability to continue with business as usual is compromised (already happening). Compounding the environmental impacts of global warming, we face a potential cascade of economic and political catastrophes. This is the story of apocalypse that our fear and habituation feeds.

But we have a choice about whether or not to contribute our life force energy to this story or to direct our will to the world we want to bring into being. This is nothing short of an initiatory moment for humanity: Will we grow up out of our need to consume whatever we want when we want it (like a child or an adolescent) or learn to care for the earth, the source of all nourishment (like an adult)? It's time to stop pretending that each of us doesn't have a role to play, and to tend the piece of earth we've been given.

The contraction of energy availability and its ramifications throughout our world are referred to as "energy descent." Understanding the impact of energy descent leads to four important conclusions.

- The future is local. Reduced fossil fuel and a reversion to a renewable energy lifestyle will radically change our systems of food production and distribution, transport, communication, energy, medicine, and government, bringing them closer to home. The sooner we get a handle on how to generate equitable resource production and distribution at the local level the better.
- 2. If we wait for government action before jumping on board, it will be too late. Change like this has to begin. In Congress. In the boardroom. In your home. You only have control over one of those things. Exert it.
- 3. Our actions are more powerful close to home. Thinking locally and acting locally works.
- 4. Working with others toward shared goals is more effective than working alone.

Climate change and peak oil together should be a profound wake-up call compelling the need to redesign our human systems toward resilience (our ability to recover) rather than toward our current mode of addiction (our tendency to do the same thing over and over again, even if it kills us). Each of us needs to embody true change at the level of our beliefs, our attitudes, and our actions. This is a process that can be learned, and is available to all of us.



Original silkscreen by K. Ruby Blume. Bee courtesy of Evan Barbour.

Resilience and Recovery

Resilience is the ability of a system to recover from shock, trauma, or change. The more resilient a system, the more shocks and impacts it can withstand and still recover. As systems—cultural or ecological—lose the strength of diversity, they become vulnerable to disruption or collapse. Nature is the ultimate example of resilience, with its systems of multiple planned redundancies and complex relationships between organisms responding in different ways to threat. Fungi have the ability to begin the regenerative processes within a landscape after fire, paving the way for other microorganisms and animals to return to the devastated area and continue the repair work. Animals contain population through the checks and balances of the food chain. Nature grows through an

understanding of limits and through the conservation and recycling of resources. We must learn to do the same. Inevitably, nature will be our strongest teacher in the process of change, or the agent of our harshest consequences. To quote Paul Hawken, "There are no economies of scale; there is only nature's economy."⁵

While individuals and sometimes communities possess resiliency in the face of difficulties, the more common human reaction to threat is a frozen or traumatized state of fight, flight, or freeze. People (and cultures) in this state can't make good choices or think clearly through a problem or creatively get out of a box. This frozen reactivity keeps us repeating the nightmares of the past, unable to see what is really happening in front of us, doing the same things and imagining a different future. Yet the imperative is clear. We need to find a way beyond our terrifying possibility—the collapse of our environment and our civilization—and we need our thinking to be crystal clear, creative, and responsive to the challenge facing us.

Can We Change?

Even as global consciousness about our situation rises, it remains difficult to harness our energies toward cultural regeneration. We see this especially when we look at our social institutions, but also when we look at ourselves. What is it that makes it so hard to change, especially when the problems we face are so serious, and have been so well articulated? Part of our limitation is our understanding of change as something that just "happens," as opposed to a process that requires our participation, awareness, and agreement. Denial, addiction,

and a lifestyle of affluence also insulate people from the need (or desire) to change. And finally, a pervasive sense of pessimism about the powerlessness of our actions immobilizes many of us. If we are to make sense of the situation we are in, each of us has to go through our own individual process, confronting our habitual mechanisms of avoidance and denial to overcome our fear and conditioned cynicism. This process can only happen in stages, and will require patience, cooperation, and a little bit of humor.⁶

The Stages of Change, highly successful with addicts in recovery, seems particularly apt for our relationship to fossil fuels and our inflated sense of planetary entitlement. ⁷ The Stages include *recognition of a problem, a willingness to contemplate change, planning for possible new behaviors,* and a time for both *activating a plan* and *integrating the changes*. Within the process lies the inevitability of relapses and cycling back again. This model requires a shift in awareness and a personal desire to participate in making change



The Stages of Change, a spiral journey. People progress through different stages at their own pace, which might include relapsing, on their way to making successful change. (From Prochaska and DiClemente.)

happen. It works best within a context of community support, over time. An awareness of the cyclical nature of the process helps us keep renewing our commitment toward new behaviors, which cannot happen overnight. Change really is two steps forward, one step back.

In terms of the ecological and cultural problems we face, *pre-contemplation* on a social level began about forty years ago with the publication of Rachel Carson's *Silent Spring* and the emergence of a broader ecological movement. *Contemplation* of the problem followed, and beginning steps toward change were enacted: early attempts to reduce our dependence on fossil fuel, the back-to-the-land movement, and the inevitable pushback from industry. The cyclical and recursive nature of the process is evident in the progression of these cultural movements.

Our culture is growing now into the next level of *change*, evidenced by social movements addressing the environmental crisis with direct actions toward revising how we live today. Urban homesteading is just one of many creative approaches to this problem. The Transition Town movement is another, as are the growing numbers of young people from all strata of society training to become organic farmers, solar installers, and water conservation experts. There will undoubtedly be setbacks along the path, but as the diagram illustrates, this kind of change is cyclical and continues to ripple outward, especially as new habits are created and main-



Gleaning for apples in a neighbor's backyard. *Photo by Petaluma Bounty*

tained. Engaging in the cycle of change with compassion for oneself and acknowledging the magnitude of the problem will be necessary to successfully take on an urban homesteading lifestyle. No one can do all of this, but everyone can do something. Don't worry about how or where to start. Just pick something you love, and do it.

In the wake of recent natural and man-made disasters like Hurricane Katrina and 9/11, research has been done on human resilience that reveals interesting trends for recovery. Dr. Alicia Lieberman's studies on the brain development of young people who witnessed trauma or violence show that their experiences of spirituality, animals, nature, and creativity were instrumental in sparking their recovery.⁸ Judith Lewis Herman's research into trauma reveals the following resilience factors: the ability to help someone else during the trauma (taking action, rather than fleeing or freezing); the ability to make meaning and purpose out of the experience, to understand its history and context; and the ability to stay connected to at least one other person.⁹ Recent studies of resilient people reveal some additional working strategies for recovery, including optimism, a sense of playfulness and generosity, the ability to "pick your battle," and the ability to focus on things over which you have some influence. Staying healthy is important, as is the skill of finding a silver lining. In a recent article on resilience, Beth Howard writes, "Resilient people convert misfortune into good luck and gain strength from adversity. They see negative events as opportunities for change and growth."¹⁰

These strategies mirror basic homesteading practices as steps toward healing and change: our renewed relationship to animals and the earth; our sense of meaning and purpose in the work we do; our connections to one another in community; and a spiritual understanding of our actions. A sense of creativity, play, generosity, and optimism are all activated as well. Urban homesteading is a battle that can be picked—actions bearing on our local economies and our homes have real influence, and are a wonderful example of converting adversity into possibility.

Grow It Local

Restructuring local economies to protect the earth and evolve our culture is central to the homesteading path. We are currently enmeshed in what has been called the extractive economy, where corporate wealth is regarded as the foundation for economic health; where mining our earth's resources and exploiting our citizens and international neighbors is accepted as the cost of doing business. The urban homesteading way seeks a local life-serving economy that creates, as David Korten artfully said, "a living for all, rather than a killing for a few." These practices protect our common inheritance of clean water, breathable air, and a life of joy and meaning for our families.¹¹

BIOREGIONAL QUIZ: WHERE ARE YOU?

Urban homesteading is grounded in place. How familiar are you with the place you call home? Get curious. If you don't have all the answers, take some time to find them. Knowing these things is fundamental to everything that follows. It will help you become a better steward of the place where you live.

- 1. Can you trace the water you drink from precipitation to tap?
- 2. How many days from today until the moon is full and/or new?
- 3. Describe the soil around your house.
- 4. What were the primary subsistence techniques of the cultures(s) that lived in your area before you?
- 5. Name five edible plants in your bioregion and their seasons of availability.
- 6. From what direction do winter storms generally come?
- 7. Where does your garbage go?
- 8. Where does your sewage go?
- 9. How long is your growing season?
- 10. Name five resident and migratory birds in your area.
- 11. Name five resident and migratory human beings in your area.
- 12. What is the land use history by humans in your bioregion in the past century?
- 13. What primary geological events and processes influenced the landforms of your bioregion?
- 14. What animal or plant species have become extinct in your region?
- 15. From where you are, point to the north.
- 16. Name one of the first spring wildflowers to bloom in your area.
- 17. What kinds of rocks and minerals are found in your area?
- 18. Were the stars out last night?
- 19. Name some non-human being with whom you share your space.
- 20. Do you celebrate the turning of the winter and summer solstice?
- 21. How many people live next door to you? What are their names?
- 22. How much gasoline do you use, on average, in a week?
- 23. What form of energy costs you the most money?
- 24. What is the largest wilderness area in your bioregion?
- 25. What are the greatest threats to the integrity of the ecosystem in your bioregion?
- 26. What is the name of the creek or river that defines your watershed?
- 27. What geographic and/or biotic features define your bioregion?
- 28. What particular place or places have special meaning for you?

The best way to participate in changing the world is to change our own personal practices, including how we live, how we eat, how we travel, and how we relate to others. Re-inventing our relationship to the places we call home can significantly impact change. The home has been moved from the center of culture by the force of the marketplace. This devolutionary move has robbed us of the means of production, and the ability to care in simple, basic ways for ourselves, our families, our communities, and the earth. Bringing the home back to the center of culture where it belongs will create a meaningful path toward a regenerative future.

One of the central ethics of homesteading is a sense of bioregionalism, our awareness of, and commitment to, the place where we live. Bioregionalism teaches us about the specific ecological and cultural relationships happening around us, engaging a process of asking simple questions about moonrise and moonset, about soil, about air and wind, about where our water comes from and where our waste goes. This way of becoming native to place, of living within nature's limits and gifts, is a way of creating a life that can be shared by all and passed on to future generations. As Paul Hawken said, "We must know our place in a biological and cultural sense, and reclaim our role as engaged agents of our continued existence... Concern for the well-being of others is bred in the bone. We became human by working together and helping one another, and what it takes to arrest our descent into chaos is one person after another remembering who and where they really are."¹²

Bioregionalism values home above all else because home is where values and behaviors are learned before they move out into the world. In the home, alternatives can root and flourish and become deeply embedded in our way of being. The word *ecology* points us in this direction: *oikos*, the Greek root of "eco," means home. Hearth and home provide the theater of our human ecology, the place where we can relearn how to think with our hearts, to embody what we know to be true: that tending to our environment is the same as tending to ourselves, and we ignore this true work at our peril.

The Homegrown Guild

One of the great losses to culture in the last sixty years has been the ability of people to be even modestly self-sufficient at home. Homesteading in the city is a land-based, action-oriented *YES!* to the possibility of remaking culture with people and planet in mind, bringing back some of this lost power of doing it ourselves. We make no claims toward self-sufficiency: we can bake our own bread, but we cannot grow the wheat. But self-sufficiency, like independence, isn't a true goal. Our greatest need at this time is to learn to work together, to form guilds of differently abled farmers, blacksmiths, renegade plumbers, solar installers, beekeepers, mycologists, fermenting fetishists, somatic healers, technology wizards, performance artists, alternative educators, and herbal potion–brewers to remake our cities.

A guild is an alliance of craftspeople or artisans from a more traditional time. An early form of the union, its primary benefit was camaraderie and support for best practices, as well as a source for learning more skills and expanding support for the profession. Guilds also had the conservative function of slowing down the processes of innovation generated by industrialization that often resulted in a loss of quality and right livelihood. We need homegrown guilds today, as we relearn skills we have forgotten and redesign our cities toward sustainability.

Here's an example of what that can look like. In 2009, six households in Daily Acts' Homegrown Guild produced more than 3,000 pounds of food; foraged another ton of local fruit; harvested more than 4,000 pounds

of urban waste to be composted and mulched; planted more than 185 fruit trees and hundreds of varieties of edible and habitat plants; installed five greywater and rainwater catchment systems that saved and recycled tens of thousands of gallons of water; tended to bees, chickens, quail, ducks, and rabbits; and worked toward reducing energy use and

Grow it local: bounty from the birds. Chicken, duck, and quail eggs.





Fused glass art by K. Ruby Blume.

enhancing commuting and transportation goals. All this from *six* households! Imagine a city where a majority of people tended to many of their daily needs in this way— the amount of food and water and energy and waste that could be managed sustainably is incredible.

Our small daily actions toward the things that nourish us have an enormous impact. We have to shake off the trance that tells us this is not so. Now is the time to experiment, maybe fail, but always learn some more. We cannot remake the world in whole, only in part. We have at hand old and new technologies we can harness in remaking the world. Resourceful participation in the big work of repositioning ourselves in a swiftly changing world, learning skills we can use at home, is the way of the future. We offer these technologies as spiritual practices in an incredibly challenging time and are here to report that in many ways that are good for planet and people, they work.

Urban farming is nothing new; in many parts of the world, it's a way of life. Cuba has an active urban farming movement, initiated when the USSR collapsed

and precipitously stopped oil exports to the country. In Shanghai, residents produce 85 percent of their vegetables within city limits. The government of Tanzania encourages the cultivation of every piece of land in Dar es Salaam. Homesteaders around this country are engaged with the differing realities that their watersheds, climates, and history demand. Austin, Philadelphia, Newark, Brooklyn, Oakland, Portland, Los Angeles, and Detroit are all centers of rapid agricultural growth and production, each with their own place-based expression and local, evolving economies.

Some of the central urban homesteading practices are the same as homesteading practices everywhere growing and preserving food, caring for and harvesting animals, foraging, making medicine, tending to the resources of water and waste and energy. But a city's unique and abundant resource is human energy—the intelligence, creativity, needs, hurts, history, and future of a city's people converging in exciting and sometimes destructive ways. Learning to harvest this energy and direct it toward community projects is a central survival strategy of the twenty-first century. The land frontiers have been conquered. The final frontier is learning how to live in harmony with one another and the world around us. Rebuilding a network of relationships between the earth and its inhabitants will be key to human evolution and survival.

Do-It-Yourself (DIY) Culture

DIY is an alternative culture strategy that helps us thrive outside the confines of the capitalist machine. It is an ethic of curiosity, exploration, and empowerment that can be applied to many aspects of our lives—growing food, sewing clothes, creating homegrown entertainment, writing books, fermenting vegetables, educating children. It feels good to do it yourself. This is a sane way to reorient our living toward a more just and equitable distribution of limited natural resources, and it supports the goal of sustainability through a maximum reduction in consumption and an expansion of creativity, and personal and community empowerment.

It's important for each of us to have a physical skill that is satisfying as well as sustaining—knitting or sewing or blacksmithing or canning or gardening. A "can do" attitude about all the activities people mastered as a matter of course in the past is required. It's important to remember how to be resourceful and figure out how to do something yourself. Collapsing at the mere thought of failure is no longer an option. Standing up and doing it yourself is a core homesteading way, something to relearn in our buy-it-yourself culture.

Many of the solutions in this book are simple, affordable, transportable, and good to do with others. Homesteading practices are not about austerity or apocalypse; they're about living a simpler, more joyful, more effective life. Homesteading is not a replay of a Depression-era mentality. It is a series of skills and practices that lift us out of a culture of inaction and cynicism and into a culture of abundance, care, and possibility. So this isn't a book about canning or making a nice pie out of foraged apples, at least not directly. It's about shifting consciousness toward a conservation and care-based ethic, which will undoubtedly manifest in many creative ways in your own life. In the name of limiting consumption and finding ways to break our addiction to needing and buying, many of the how-tos are a bit more intangible (like finding a Sit Spot in nature, or creating a community tool shed, or planning a potluck). When we do share a how-to of a more material nature, it will almost always include instructions on how to do it yourself on the cheap.

The Territory Ahead

This book is a map to the territory of urban homesteading. There are many awesome, time-honored practices in the art of living, which we have mostly forgotten and collectively need to remember: organic gardening, tending an orchard, beekeeping, fermenting, jamming, herbalism, self-care, community relations, and land, energy, and water stewardship. These all deserve (and have) many specific volumes dedicated to the intricacies of their art and this one book cannot do each of these arts justice. We can be definitive perhaps in only one sense—the necessity of reclaiming these heirloom skills for living in the twenty-first century. The resource list in the back of the book will point you toward other excellent books specific to the different practices highlighted here, so as you read and track your own interests, you can find your path through the woods. We also recommend, whenever possible, the practice of finding an experienced teacher to take you on the journey.

As you read, remember that one practice leads to another, and that having one skill will always lead you to someone with another. Perhaps you choose to become a beekeeper. Soon you have more honey and beeswax than you need, and something to trade with your neighbor, that fantastic tomato grower. Your fantastic tomato-growing friend trades with her greywater plumber, who trades her time for fresh goat milk. Perhaps your small beekeeping experiment grows into a cottage industry, further evolving your community network and economic center. These are all strands in a growing web of local culture happening all around the country, an alternative, restorative economy existing beyond and separate from the economic mudslide of dominant culture. It is this cultural growth—from the one to the many, from our homes to our communities—that this book and this movement is really all about.

When visiting and speaking with people about their choices for living, we noticed a few themes that may be some evolving principles of urban homesteading. Embodying these principles will take time and commitment and, for some of us, represents a big change in lifestyle. For others, they are already second nature. If they are new to you, remember that lifestyle changes can be challenging but are reinforced over time through practice and support from others.

Simplify. Our lives are complex, over-consumptive, harried. Choosing a path of voluntary simplicity *is* possible, and feels good.

Use Less. We consume more than we need. Curb the habit. Break the addiction.

Share More. Many of us have more than we need, and some not enough. Give it away. Share it with friends, neighbors, and strangers.

Localize. Commit your time and energy to businesses, gardens, organizations, and people in your community to strengthen the financial, biological, and social economy of your place.

Diversify. Ecologically diverse systems that include multiple plants, solutions, and people create more security for all. Apply the metaphor to the ecology of the city where you live.



Pump up the local economy: Biofuels Oasis in Berkeley, California sells biodiesel and urban farm supplies.

Do It Yourself. If you want it, make it happen. If you can do it yourself, do it.

Indigenate. Belong to your place.

Embody. Let your body's wisdom motivate and inform your actions.

Relate. Making connections between people and things in our environments makes us stronger and more effective.

Forgive. Clear your body of old anger and hurt so you can do your best work today. Forgiveness is an individual and communal act.

Listen and Observe. We are in constant conversation with life. Slow down and pay attention.

Create and Renew. Our planetary culture is calling for renewal. Use your creativity to find a way to participate in answering the call.

Begin. Start where you are. Make mistakes. Begin again.

Permaculture— Peace with Creation

All aspects of our current crisis reflect the same mistake, setting ourselves apart, and using others for our gain. So to heal one aspect helps the others to heal as well. Just find what you love to work on and take joy in that.

-Joanna Macy¹³

earning to live within the limits of nature and reconnecting to its rhythms is key to resolving some of our dilemmas. Permaculture is a cultural design method that offers a set of principles and practices for creating stable agricultural and human settlements within nature's limits. One aspect of permaculture design is the creation of regenerative and productive designs that attempt to mimic the wisdom and diversity of the natural world as the ultimate model for sustainable living. Permaculture applies nature's principles to address human needs in a way that renews the earth rather than depleting it. The word combines two roots, "permanent" and "culture," suggesting a practice that sustains itself over time. Permaculture in an urban setting can be applied to creating strong communities, as well as strategies for small-scale and ongoing production and management of food, energy, water, and waste.

The term "permanent agriculture" was coined in 1911 by Franklin Hiram King in his classic book, *Farmers of Forty Centuries: Or Permanent Agriculture in China, Korea and Japan,* and was understood as agriculture that can be sustained indefinitely.¹⁴ In 1929, Joseph Russell Smith took up the term as the subtitle for *Tree Crops: A Permanent Agriculture*. He saw the world as an inter-related whole and suggested mixed systems of trees and under-story crops.¹⁵ The work of Howard T. Odum was another early influence with its focus on systems ecology.¹⁶



Playing with plaster during an earthen plastering workshop. Natural building made from cob, earthen plaster, and recycled glass. *Photo by Sasha Rabin/Vertical Clay*

Other influences include the work of Esther Deans, who pioneered the No-Dig Gardening method, and Masanobu Fukuoka, who began advocating no-till orchards and gardens in Japan in the late 1930s. His classic work, *The One Straw Revolution*, describing this method, is still timely today. His understanding of the intrinsic power of agriculture to create and be created by culture is summed up in this beloved quote: "The ultimate goal of farming is not the growing of crops but the cultivation and perfection of human beings."¹⁷

In the mid-1970s, Australians Bill Mollison and David Holmgren began developing strategies for stable agricultural systems in response to

the rapid growth of destructive industrial-agricultural methods in their country. They saw these methods poisoning the land and water, reducing biodiversity, and removing billions of tons of topsoil from previously fertile landscapes. They announced their approach with the publication of *Permaculture One* in 1978. The term permaculture initially meant "permanent agriculture" but was quickly expanded to also mean "permanent culture" when it became clear that social aspects were integral to a truly sustainable system. By the early 1980s, the concept had broadened from agricultural systems design towards complete, sustainable human habitats, and by the mid-1980s, many of Mollison and Holmgren's students had become successful practitioners and began teaching the techniques they had learned. In a short period of time permaculture groups, projects, associations, and institutes were established in more than one hundred countries.

While permaculture began developing among Westerners in the beginning of the twentieth century, many of its core ideas root back to indigenous land-based practices around the world. Indigenous people tended the "wild" for millennia so that it remained healthy and yielded plentiful food and habitats for a diversity of living creatures. California's first peoples were experts at managing the water-challenged landscape, selecting some plants and removing others through fire and hand seeding, taking no more than they needed, and thanking the spirits for what they received. They experienced the land and its creatures as living relations, and themselves within the circle of that family.¹⁸ Explorers who "discovered" this land noted its wild beauty, but were unable to perceive the land-nurturing patterns of care the first peoples had developed over thousands of years.

Some of the foundational ethics of permaculture are rooted in this indigenous awareness of the earth as an animate, sacred world upon whom we depend. The premise of Ecology 101—the intrinsic connections between all parts of a system, implying that "we are all connected"—is indigenous wisdom translated into modern scientific language. From this native way, we learn to think like a tree and work for the long term, the seventh generation, rather than always satisfying our personal needs in the moment. We cultivate right relationship to all the creatures around us to honor the life force. We acknowledge that the wisdom of nature's intricacies is greater than our own, and that our biggest mistake lies in our separation from the earth's wisdom.

The aboriginal ways are long gone on the North American continent, but permaculture practices bow toward this sense of relatedness and care that, in its duration and flexibility, served the land and its people so well for so long. Urban homesteading, in its evolutionary, fragmentary way, gestures toward this kind of sustainability and seeks to relearn the skills of listening, observing, and responding to nature's ways as the means for creating healthy, enduring human settlements.

Permaculture Ethics

Permaculture is based on three ethical principles:

Earth care—recognizing that the earth is the source of all life (and is itself a living entity). We are a part of the earth, not apart from it.

People care—supporting and helping each other change to ways of living that do not harm us or the planet, including developing healthy societies that prioritize the first principle, earth care.

Fair share—placing limits on consumption of the earth's limited resources, ensuring they are used in ways that are equitable and wise. Acknowledging the history of oppression and genocide that has distorted all the systems of our culture, fair share seeks a just outcome.

Reading this book you will encounter these themes again and again—caring for the earth, caring for people,



There is a synergistic relationship among the three permaculture ethics. Each one feeds the other and can't exist without the third.

and creating systems that limit consumption and ensure the fair distribution of the earth's resources. Our practices at home are based on the unique needs and resources of each location, but the basic ethics are the same. Some people focus on reworking policy at the local level; others are installing greywater systems wherever they can; still others are fantastic beekeepers or teach gardening to elementary school children. The goal in every case is a renewed home for all beings, a life lived in peace with creation, and there is more than enough work for us all.

ON THE GROUND: PRINCIPLES APPLIED

Kevin Bayuk is a permaculture teacher and activist living in San Francisco's Haight Ashbury district in a small rental unit with his wife and daughter. He shares his backyard food forest with the residents of a twelve-unit apartment building. Kevin seems to simply live the values of permaculture in his teaching and thinking and his daily actions. Our conversation circled around permaculture ethics and values, and how he understands their application to contemporary living.

"I am really inspired by the ethics shared by permaculture—earth care, fair share, and people care," Kevin explained. "There's a lot of waste in the industrial agriculture system, both in production and distribution. I know what it does to the watershed and what it does to the topsoil, so I know that buying industrial food is not providing any earth care. When I am a primary producer of food in a way that builds soil, increases its carbon content, and increases the life of the soil as I create an abundant delicious yield, that's an expression of earth care. Similarly, when I think about water both from a food perspective and the water we use at home, any little bit I can conserve or source from a sustainable supply is a way to take better care of the earth than being dependent on the industrial system.

"How do we know we're doing people care? If I have enough health, ease, leisure, joy, play, I imagine I am engaging in this ethic. And this needs to be focused not just on some people, but everybody, which is what really ties it into the third ethic. When we're doing people care, it's a natural thing to do to conserve energy and materials wherever possible. When we become food producers, we have a direct, intimate relationship with our nutrition. But my family's security and joy in life is interdependent with the security and joy of all beings, so when we have a surplus, we share it. When we recognize how taking care of people has to extend to making sure everyone is cared for, we can see how the second and the third ethic are connected to one another.



Photo by Daniel Miller/Spiral Gardens

"What I love about permaculture is that it's one thing to know about how to get a low flow showerhead and how to install a small greywater system or how to put in compact fluorescent light bulbs or plug strips for all your appliances, but the thought that goes behind it, the question of why you do those things and what you look for and how to look for it, is what's important. The ethics and principles give us the lens or the perspective on how to see: Produce no waste. Observe and interact. Use and value renewable energy. Accept feedback. How many people look at their energy bill and know how many kilowatt-hours they used last month? If you don't know what you're doing, how can you change the habit?

"I tend to hear feedback from people that when they think about a lifestyle that is in harmony with the living systems around them, they think of it as less, that they will have to give something up. For me, it goes the other way—when I have less stuff there is still the possibility of more. There may be fewer iPods, but more live music or more music making with friends. Instead of eating out less often, we get more quality time cooking with friends. I advocate for finding the 'more' of whatever you have a 'less' thought about. I like to think of the cultural shift as not moving back to the Stone Age or moving back at all, but actually moving toward more quality connection, more tolerance, more peace of mind, more acceptance, more leisure, more peace, more wonder, more good food, more community. . .

"I've seen people approach this type of lifestyle or message as something they must do. Climate change, species extinction! Do something now! We must! I've had those feelings of urgency, but when people approach this kind of lifestyle with a sense of mustness, it's just a few years before burnout. That type of energy leads

directly to failure; it doesn't fit with the ecology of a healthy system. I advocate for a different metaphor for why you'd live like this. I remember a story that comes from science that says the G-type star we're flying around on is five or six billion years old, and it might live another twelve billion years. If humanity makes it, twelve billion years down the road all the hydrogen will have fused into helium in that star and it's going to erupt and expand and envelop the Earth and all the life on it will be gone. In this story, you can't save the Earth or humanity, so there's no must about it. The story's written; it's just a matter of time. Is it twelve billion years from now, fifteen years from now, 100 years from now? It doesn't matter to me; I just know the story of trying to 'save' the Earth is foolish.

"If you have the perspective that life is going to end, it seems there would be a natural sense of hedonism. But if you go deeply into what you want for yourself, you might find that your ultimate expression of happiness is totally interdependent with the happiness of all life. If you go all the way to the edge of seeing that there's no point in trying to save anything, it leads you into service to everyone else's satisfaction. It's natural to the point of being spontaneous to want to conserve energy, grow your own food, or have good relations with others. It's spontaneous in the way a hand heals itself, and scabs over. It's just what you do.

"There's a tendency to prognosticate in the permaculture movement. As soon as anyone learns about peak oil, it's all about the future. When is it going to happen? The food system is going to fail! Tomorrow? Ten years? Five days? Everything is about the future, and the tragedy of that is we forget about right now. As much as we can bring ourselves to right now, to get focused and not worry about what's going to happen when, we're on a pathway to another way of being."

Practical Designs

Permaculture is a way of looking at a whole system or problem; observing how the parts relate; mending sick structures by applying ideas learned from long-term sustainable working ones; and maximizing connections between key parts. Practitioners observe and imitate the working systems of nature to mend the damaged land-scapes of human agriculture and cities. This same thinking can be applied to the design of your backyard, the organization of your kitchen, getting around town, relating to people at home or work, or managing the water that falls on your house.

Here's an example: On a small urban lot, it's simple enough to start growing food by digging up the soil, tossing out some seeds, and seeing what grows. But without observing and tending the soil first, you run the risk of further depleting it. Applying permaculture principles, you would investigate the soil first, and replenish it with any missing nutrients. You might recycle food scraps as compost, urine as a nitrogen rich fertilizer for the garden, and if you have barnyard animals, enrich the soil with their manure as well. In this way you begin to create a closed loop, regenerative system where food production can be enhanced by the "waste" you put into the soil, thereby creating more food. This is how the earth works—no waste, every by-product a source of nourishment somewhere else along the line. Animal and human manure contribute to the healthy soil we need to grow the healthy food we want to eat to restore the world we want to leave to our children, who will teach their children about regenerating the soil and the processes of food production all over again.

Permaculture design attempts to replicate nature by developing edible ecosystems closely resembling their wild counterparts. The prime example of this is the food forest, a seven-level perennial planting design closely mimicking the intelligence of the forest ecology. Starting at the root level and rising to the tree canopy level, this design works well for the rural home site in temperate and tropical regions and has been widely documented. We can plant a modified food forest in our smaller urban places, but the application more unique to urban centers is a redesign of city space using these ecological principles.

Efficient design systems based on the resilient model of the forest ecology can be developed for city infrastructure, food distribution, and human interactions. This means looking at the different elements that make up the city's landscape and beginning to forge new relationships among them. A city is made up of streets, and



buildings, and a sewage system, and various laws and regulations and governmental entities. It is also made up of communities of people who have different alliances, histories, and cultural traditions. Cities house people's dreams, their economy, their children's education, their entertainment, and their health. What are the seven levels of the urban ecology?

Local license plate of the urban dirt farmer.



Brooklyn Grange—two rooftop acres of productive farmland—in Queens, part of the biggest metropolis in the United States. If it can happen here, it can happen anywhere. *Photo by Cyrus Dowlatshahi*

Urban permaculture design asks: How can we bring each of these elements into better working relationships with one another? How can we bring each element of what makes up a city—the visible and invisible structures that make up our lives—into a synergistic working alignment? Each element in the redesign of our cities can be looked at in terms of the input of energy and resource, and possible return, just as we do when we look at the forest ecology and notice the closed loop system of nature's design.

Community gardens exemplify a system with balanced input and output (with maybe a bit more on the output side.) The resources of soil, fertilizer, seed, time, and labor go into building these gardens. The output is nourishing food, a network of relationships, educational opportunities for children and adults, and the creation of a commons where people return again and again to enrich their lives.

We can assess our personal relationships in the same way. In order to flourish, a relationship requires attention, time, and a certain level of communication, as well as opportunities for play and relaxation. The output is a sense of connectivity, camaraderie, support, security, pleasure, and joy. If the input in a relationship is greater than the output—too much processing, no pleasure—the relationship is probably ready for a redesign, or for the compost bin.

Although urban density is sometimes hard to endure, it does have some ecological advantages. Human beings living in clustered settlements do less damage to our remaining wild lands; cities, with their already developed infrastructure, are prime targets for intelligent redesign; and because of people's proximity in cities, energy output, especially in the realms of transportation and home heating, can be significantly reduced.

Cities have a vital resource that is less abundant in rural environments: the engines of human creativity, ingenuity, and diversity, resulting in an increased possibility of evolving different solutions to problems that affect us all. The city is where most of us are and will continue to be in the twenty-first century. We obviously have a lot of work to do if we are to re-create our cities on nature's model. Permaculture design is one tool for regenerating urban systems toward greater integration and productivity, reduced waste, and a finding a place for everyone at the table.

The Principles

One of the most important things about permaculture is that it is founded on a series of principles that can be applied to any circumstance—agriculture, urban design, or the art of living. The core of the principles is the working relationships and connections between all things. The focus is on small-scale, energy- and labor-efficient intensive systems that use biological resources instead of fossil fuels. Designs stress ecological connections and closed energy and material loops. A key to efficient design is observation and the replication of natural ecosystems.



Observe and interact. Photo by Rachel Kaplan

In the city, permaculture also makes much use of the

synergy of human energies, and works to create generative connections between people. Both Mollison and Holmgren articulated underlying principles for permaculture in their own ways; Holmgren's are outlined here. The title and connected aphorisms are Holmgren's; the descriptions are our own understanding of the principles. Although humorously stated, they provide simple yet profound guidance for people interested in changing their actions and their lives with an eye toward regeneration.¹⁹

- 1. Observe and Interact (Beauty Is in the Eye of the Beholder). Taking time to observe nature makes it possible to design made-to-fit solutions. An example is the gardener who allows a season to pass before planting her garden, taking the time to observe the arc of the sun and the moon, the direction of the wind, the flow of water, and the impact of neighbors on her garden. While our timing is urgent, it is more urgent to make intelligent choices within the limits of the ecological systems that sustain life through difficult and abundant times. Within the problem lies the solution; observing and interacting slows down the action enough to allow us to meet a problem on its own terms, and gives rise to out-of-the-box thinking.
- 2. Catch and Store Energy (Make Hay While the Sun Shines). Develop systems that collect resources at times of peak abundance for use in times of need. For example, a solar array catches and stores the sun's energy for later use. Or a composting toilet, which, rather than flushing our excrement into the sea, composts it and provides fertilizer for our garden. Contemplative practices (yoga and meditation) catch personal energetic resources and store them up for another time.
- 3. Obtain a Yield (You Can't Work On an Empty Stomach). Good work yields rewards. A garden is an excellent example: we till the soil, sow the seeds, pull the weeds, manage the pests, and harvest the food. The yield is good food, good work, beauty, and a sense of knowledge and relaxation in the environment. Children gain skillful means in the garden for later production of their own food. Another example of practical yield is in our relationships. When we build communities where we rely upon one another to help raise the children, the food, and the management of resources, the yield is in dynamic, interdependent relationships that can sustain us throughout life and up to our deaths.
- 4. Apply Self-Regulation and Accept Feedback (The Sins of the Father Are Visited on the Children unto the Seventh Generation). Modify behaviors that do not work. Enhance behaviors that support the functioning of the system. This reflects the maturation of consciousness from adolescence to adulthood: our actions have consequences. The homeostasis of the earth as a single, self-regulating system is the best example of self-regulation and feedback.



Nature's patterns are the best models for intelligent design. The gills of this mushroom flowing outward from the center tell a unified story of energy stored, recycled, and used again.

5. Use and Value Renewable Resources and Services (Let Nature Take Its Course). Access the resources of nature to reduce excessive consumption and dependence on nonrenewable resources. Solar power, wind power, and intellectual power are all examples of renewable resources.

6. Produce No Waste (Waste Not Want Not). Nature produces no waste—everything is food for someone. Value and make use of all the resources available. Nature's best example of this principle is the earthworm that lives by consuming plant "wastes" and converting them into valuable soil. A compost pile is the garden's best example.

7. Design from Patterns to Details (Can't See the Woods for the Trees). The patterns in society and nature can form the backbone of our designs. Details

arise from patterns. Consider the spider web—each one designed to serve a specific function, yet each unique to its location. The human body is another example of this principle—we're all built on the same model, but have individual differences related to experience, family life, and culture. With design solutions, as with people, one size does not fit all.

8. Integrate Rather than Segregate (Many Hands Make Light Work). Don't leave anyone behind. Put elements in the right place, and relationships of support will arise between them. In human communities, we can see how segregation hurts everyone, but most often places the burden on the least powerful member of the equation. Co-housing communities show how much can be accomplished when more people participate, and how much richer our human gardens are when populated by different kinds of people. The segregation of cities, on the other hand, reflects a poverty of design, and the waste of human resource and potential.

Another crucial concept embedded in this principle is that of *stacking functions*, every element in a design doing more than one thing at a time. Take the ubiquitous chicken, which provides eggs, meat, and feathers, while she turns our kitchen scraps into nitrogen-rich fertilizer for our gardens. The chicken is popular because she does so many things at once. Some plants have stacking functions, offering pollination opportunities, and providing food, medicine, and beauty. Built structures can have multiple functions— greenhouses along the south side of a home can access and store passive solar energy, thereby serving as food-growing zones as well as places to share meals. This is an important concept when there is no time to waste.

- 9. Use Small and Slow Solutions (Slow and Steady Wins the Race). Small and slow systems are easier to maintain than big ones, make better use of local resources, and produce more sustainable outcomes. The snail is nature's exemplar of this principle. Slow and steady, carrying its home wherever it goes, the snail is amazingly versatile and adaptable in a wide range of environments and, as any gardener can tell you, a remarkably powerful creature in the garden.
- 10. Use and Value Diversity (Don't Put All Your Eggs in One Basket). Diversity provides insurance from the vagaries of nature and everyday life. Diversity reduces vulnerability and utilizes the unique nature of its environment. Diversity maintains and evolves culture and horticulture. Different foods and crops arise in different regions as an expression of cultural, aesthetic, spiritual, and sentimental needs. This diversity brings quality and texture to living and shapes the way people come to understand themselves.

An aligned concept is that each function is supported by many elements, which is a fancy way of talking about planned redundancy. Different plants that have the same function provide security for one another. If any one of them fails we still have access to the benefits of the other plants serving that same function. Nature employs planned redundancy as a strategy all the time; the designs of our gardens and our cities should do the same.

- Use Edges and Value the Marginal (Don't Think You Are On the Right Track Just Because It's a Well-Beaten 11. Path). The interface between things is where the most interesting events take place. These are often the most valuable, diverse, and productive elements in the system. "Marginal" subcultures are often the places where the most inventive, ingenious, and creative innovations take place. The long fight for food and environmental justice in impoverished communities of color that predates the current urban homesteading movement by decades is an example of this principle.
- 12. Creatively Use and Respond to Change (Vision Is Not Seeing Things as They Are, But as They Will Be). Change is inevitable; we can have a positive impact on it by carefully observing and intervening at the right time. Evolutionary change impacts stability. While we need to create durable natural living situations, durability paradoxically depends on our capacity to be flexible and to change. This idea is reflected in science and spirituality. Within the center of stillness is a vast, unending motion. We must learn to ride the rapids of change in our little paper canoes, together.

Zones and Sectors in an Urban Setting

Zonation is an important concept in permaculture. It is a way of understanding and organizing the objects, plants, and animals you have most interaction with closest to the center of your life. "Zones are a way to manage energies available on site: people, machines, wastes, and fuels of the family or society," wrote Bill Mollison in Permaculture.²⁰ His model delineated different areas in the homestead itself as Zones 1–5, with Zone 1 being the area right outside your door. Zone 2 moves farther from the home to an area you might visit once a day. Perhaps you place a vegetable garden and your chicken coop in this area. Zone 3 might be where you place the part of the garden that doesn't need daily maintenance, Zone 4 holds the orchard or other parts of your homestead that need less of your daily time, and Zone 5 is for the woodlot, or the windbreak—the outlying areas of your farm.

For Mollison, the golden rule is to develop the nearest area first. We can work with this rule in our small city homesteads, but it is likely that everything will be pretty close in, as space is at a premium, and we will be left to source many of the things we need from beyond our property line (for example, food from the farmers' market, or materials from local businesses). We can focus on zones when we plan our gardens and figure out the best place for

Zonation in the city starts with the body and maps the source of all inputs and influences in our designs. In the city, we gather resources from near and far, and cannot expect to produce everything we need on one site. City zones include all spheres of influence, those closest to home, and those furthest away.





Transit Zones map elements in the city by proximity and the energy it takes to get to each zone. Fill out the map with the different things you do each day or week or month. It will provide information about how much renewable and nonrenewable energy you use to power your life.

our chickens and bees, but another way to think about zones in the city is to start with the territory closest in—the body. The body becomes Zone 00, the place where you are always at home. Beyond the body, zones spread in concentric circles to include your house or apartment, your garden, the street where you live, your neighborhood, your communities of necessity and affinity, your city, local government, watershed, bioregion, and so on. Delineating these zones can give us a sense

of where resources come from, and how we might make new choices to localize our living.

All of these areas offer us different resources—the comfort of home, the diversity of the marketplace, the proximity of parks and recreational areas, the availability of wild land. Notice that as the forces *increase* in scale and distance, our power to influence them *decreases*. With its emphasis on living a local life, permaculture focuses on the zones we can most easily touch and influence, but it is also important to understand how the larger circles of influence affect the choices we make in our intimate spaces.

Because a conversation about zones is always about conserving energy, another way to think about zones in a city has to do with the amount of fossil fuel energy it takes to get to a certain place.²¹ Walking then becomes the center of the concentric circles, with cycling, public transit, automobile travel, and air travel as the outer zone.

When we see how much space we occupy in each of these zones, we learn something about our own participation in the fossil fuel debacle. Make your own map by placing the different things you do over the course of a day, week, or month in relationship to the energy it takes to access these resources. For example, a home garden will be in a walking zone; a visit to a national park is likely to be a car ride, unless you live adjacent to one. Can you walk to your grocery store? Work? School? In this way, you will begin to understand how much fossil fuel energy you are using, and how you might begin to curtail your use.

Zones help us understand how to manage on-site energy; sectors are a way to look at natural or wild energy as it flows across the land. In a classic permaculture analysis, we observe wind, water, fire, sun, and weather as they affect our site. In an urban sector analysis, these natural elements are observed, but we also assess the cultural and economic forces and flows affecting our lives. Urban zone and sector analysis reflects the interplay between small personal spaces and communities and the larger social networks that impact us all.

Private property is one of the biggest socioeconomic forces defining sectors in a city. We can delineate seven sectors defined by different types of ownership:

Personal: the household-rent or own.

Family and friends: informal but strong relationships.

Associations: clubs, churches, volunteer groups, etc.

Community: neighborhood, city, county, state, federal.

Local businesses: retailers, professionals, farmers, and craftspeople.

Mega-corporations: conglomerates, chain stores, the Fortune 500.

Undefined: land without clear ownership, such as vacant lots, underpasses, abandoned houses.

Using this new model, map the fossil fuel-based zones as they are influenced by these cultural sectors. Fill in this map for yourself. Where do your resources come from? What kind of energy do you need to access them? What do you notice about your energy and resource use that could change to meet the values of earth care, people care, and fair share? Hopefully, your map demonstrates that there are many ways to meet your needs other than through personal ownership. For example, if you don't have the space to grow your own food at home, you can get nutritious food from a community garden plot or the farmers' market. Use these maps to assess how you might begin to streamline and localize your lifestyle.



This diagram shows the overlap of city zones and sectors, divided by distance and lines of property. Fill it in for yourself to map your own urban experience.

Getting familiar with permaculture principles will help you embody a set of practices that can powerfully direct you toward sustainability. In so doing, you'll be able to evolve strategies that place you in deeper relationship to your own piece of urban earth. Permaculture offers a template for action and a decision-making protocol, whether we are designing gardens, relationships, community actions, spiritual practice, work, or the space and time for freedom and relaxation in our lives. Practicing these principles within your sphere of influence will help you articulate your own art-in-living, and your personal contribution to the change our culture so clearly needs.

Creating a Personal Sustainability Plan

Living within the biological constraints of the earth may be the most civilized activity a person can pursue, because it enables our successors to do the same. You cannot live within the carrying capacity of a region if you don't know where you are. Most of the developed world lacks this knowledge. We have little understanding of where our water and food comes from, the impacts of our cars and homes, the activities undertaken by others around the globe to support our lifestyle, and the effects we have on the environment and its people.... We will never know ourselves until we know where we are on this land.

-Paul Hawken²²

ne of the central strategies for ecological living is to reduce consumption (or our "resource footprint") as much as possible in every sector of our lives. To do this you must first understand how much you're using. Just as we assess different elements in the design of our homestead and how they relate to one another, a personal sustainability plan with guidelines for conserving resources can grow out of a true assessment of our needs, our inputs, and our impact.

At present, most of us use the whole world as our resource base and feel entitled to access resources from anywhere, whenever we want. This is an untenable position that needs to be examined. Whenever possible, we need to reduce consumption and localize our resource base. The way to change the world is to change our own practices—in our homes, at work, with how we eat, how we travel, and how we relate to our communities. We should continue to work for institutional change, but such efforts cannot succeed unless we examine how we act in our own lives. Taking matters into our own hands. The first step in building a new home is to gather and shape the soil that makes it. *Photo by Miguel Micah Elliott*

With a personal sustainability plan we can track inefficiencies of use and begin to remove them, step by step, from our lives. There is energy embedded in everything we do—from the toilets we flush to the beer bottles we recycle to the showers we take and the cars we drive. The clothing and products we buy have embedded energy, or an "energy signature." When making choices about



how to reduce consumption, considering the embedded energy is an important, often missing, part of the calculation. This is something we can learn to do as we construct a personal sustainability plan.

When we really start to inquire into the impact of our actions, we are following the first permaculture principle: observe and interact. As we gather information from observation, we can begin to make new choices about how we want to live that are in alignment with our values and needs. This application of the principles is a way of looking honestly at how we live, an opportunity to really consider every aspect of your life and whether or not that process aligns with our ethics.²³ Each of us must decide how specific and detailed and rigorous we want our personal sustainability plan to be.

It is best to set reasonable goals rather than extreme and hard-to-achieve ones. Bite-size changes to maximize your success are simply more efficient than committing to a total change makeover, since success inspires more of the same and failure is discouraging and inhibiting. New habits and styles of living take time to assimilate, and change is most likely to establish itself as a new habit when done in moderation. This sounds contradictory because the house *is* burning, but walk, don't run, to get yourself out of there for good. Remember: use small and slow solutions. Once you've assimilated a new habit, you can raise the bar and challenge yourself to the next level of ecological awareness and living.

Sometimes a sustainability plan is best made in cooperation with others. You can organize a neighborhood group committed to performing block-by-block audits of energy and water use, recycling and garbage patterns, land availability, and food production possibilities. Working together on benchmarks for your neighborhood to use less and grow more will enhance community spirit while lessening the group's total impact on the environment. Doing it together is often the key to making things happen.

Sustainability assessments include an inquiry into both the visible/built structures of our lives—energy use, water use, waste production, food needs, healthy soil—and the invisible structures, including our needs and inputs to culture, community, family, economy, health, and spirit. Our impact on the built environment—how much energy and water we use, how much waste we produce, how much food we eat—can be measured in pounds of waste recycled or number of kilowatt hours of electricity used. Objective measurements like these help us track our progress. Measuring the invisible structures is more subjective, and varies according to individual needs.



Visible and invisible structures shape our lives and our choices.

The Carbon Calculator

Tracking our own carbon output is useful for understanding our participation in climate change as well as the complexity of extricating ourselves from it. City dwellers are firmly enmeshed within the systems that exploit carbon-spewing emissions: most of us drive cars, use a refrigerator, turn on the heat, and take a hot shower, all simple everyday activities with carbon impact. While rural home-

steads can create an off-the-grid setup (sometimes still relying on nonrenewable resources), going off grid in the city is challenging.

To track your carbon output in relation to averages for the country, as well as averages around the world, check out the carbon calculator online at www.empowermentinstitute.net. The calculator assesses how much energy you use in home and transportation. There are also carbon calculators that track the embedded energy in the food you eat, the clothing you wear, the furniture you buy, the water you use, and the buildings you build. These can be found at www.cleanmetrics.com. More about this in Chapter 15, Powering Down.

How Much Garbage Do You Make?

The noble calling of waste management can begin by tracking your own waste cycle. Analyze your output with simple questions: How many pounds of garbage or recycling do I take to the curb each week? How much organic matter do I compost? What will I do with that old toy or bookshelf or book or piece of clothing I don't need? How many times a day do I flush the toilet? Tracking specific waste outputs is a necessary first step in a waste reduction plan. Easily adopted practices can be structured like a game that even children can understand and appreciate. More about this in Chapter 17, Zero Waste, and Chapter 14, From the Ground Up.

Home Energy Audit

The United States far surpasses every other country on the planet in its per capita consumption of fossil fuel. We use an annual 11.4 kW of power per person, compared to 6 kW/person in Japan and Germany, 1.6 kW/ person in China, and 0.2 kW/person in Bangladesh.²⁴ Even though fossil fuel use is rising alarmingly in parts of the developing world (and people in the United States sometimes use this as an excuse for not changing their own consumptive behavior), we can see that reducing our personal use can make a quantifiable difference. No matter what people in other countries are doing, United States citizens continue to use 25 percent of the world's energy to support only 5 percent of the human population. No amount of math makes that equation work.

If everyone consumed at this level, we would need no fewer than three Earths to support our insatiable appetites.²⁵ But even the world average isn't compatible with a stable climate. Earth's natural systems can remove only about a third of the excess carbon that humans are emitting daily. The earth simply cannot absorb the amount of pollution created by people. Despite the enormity of the problem, our individual actions taken together can shift the balance to recovery. Reduction of use is the best option we've got.

A useful tracker for understanding home energy efficiency can be found at www.energysavers.gov/your_home/energy_ audits. More on these kinds of ecological fixes in Chapter 15, Powering Down.

Travel

Transportation has a huge carbon impact. Assess yours by exploring your daily travel; air travel; and the ways you can increase your biking, walking, and use of public transport to get



The sacred beauty of water.

around. This aspect of our lives is often the biggest carbon culprit, and can be challenging to impact significantly, especially when there is no public transportation in the place where you live. More on this in Chapter 15, Powering Down.

Water Footprint

The water footprint is defined as the total volume of fresh water used to produce the goods and services consumed by an individual, community, or business. Just as fossil fuel energy is embedded in the products we use every day, so is water embedded in many of the things we take for granted in our daily lives. For example, 11 gallons of water are needed to irrigate and wash the fruit in one half-gallon container of orange juice. Behind that morning cup of coffee are 37 gallons of water consumed in growing, producing, packaging, and shipping the beans. Two hundred and sixty-four gallons of water are required to produce two pounds of beef. According to the EPA, the average American uses about 100 gallons of water daily, but this number does not factor in these hidden gallons embedded in the products we use.²⁶

One flush of a toilet in the developed world uses as much water as the average person in the developing world allocates for an entire day's cooking, washing, cleaning, and drinking. The annual American per capita water footprint is about 8,000 cubic feet—twice the global average. With water use increasing six-fold in the past century, our demands for fresh water are rapidly outstripping the planet's ability to replenish its watersheds. One comprehensive glance at our own physical makeup—70 percent water—gives a frightening reality check about how crucial water is for life. To check out your own water footprint, go to www.h2oconserve.org, or visit www. waterfootprint.org.²⁷ For more on water, see Chapter 16, Sourcing the River.



Fossil-Fuel Food

The food we eat also has a highenergy impact, especially when it comes from far away from home. Some foods are literally "drenched in oil"—anything that has traveled thousands of miles to reach our tables has embedded in it all the energy it took to get there. Additionally, certain kinds of foods (meat, dairy, and industrially

Backyard chickens are one link in the chain of a localized food system. *Photo by Dafna Kory*

produced vegetables) have higher carbon impacts stemming from intensive methods of production and their environmental impacts. Meat, for example, is the highest impact food when it comes to carbon, and accounts for about 18 percent of greenhouse gases overall.²⁸ Food grown in your backyard is nearly carbon neutral, saves water, renews the soil, and mitigates negative land use.

When assessing your carbon impact through the food you eat, look for how much of it is processed, out of season, or grown far from home. Assess your true capacity to grow a portion of your food yourself, or source from environmentally positive producers close to home. More on this in Chapter 10, Food Is a Verb.

Tracking the Invisible Structures

When it comes to measuring the invisible structures of your life, the questions you ask should reflect an understanding of your own needs. For example, what are your energy inputs into community? Do you volunteer your time or only work for money? How much time to you spend in community? What are your needs for community? Consider your family time in the same way. How much family time do you want to factor into your life? How much time do you now give to members of your family? How does that impact your resource use? (For example, driving your children to soccer practice has an energy impact, as well as a time impact for you and your child. Does this line up with your values and needs around sustainability? If not, what could be changed?)

Other invisible structures include health, spiritual life, and money. Here questions are again subjective. What do I consider to be good health? What are the elements of living that lead to good health? What are the inputs and outputs of creating a healthy lifestyle, or maintaining optimum health? For some people this will include an exercise regimen, or an understanding of how much money they need to visit an acupuncturist and herbalist once a month. Factoring in these personal needs is crucial in assessing the overall inputs and yields of your life, as well as what you might do to live more in alignment with your values.

Economic issues are also subjective. Some people choose to use their time working for an income to support an experience of material abundance. Others live more frugally and gain the advantage of time. Still others find they have neither enough time nor money. If you find yourself moving toward an urban homesteading lifestyle, now may be the time to sit down and really think about your priorities. Time? Money? Travel? What calls you? This question could yield highly inclusive results, like deciding to move somewhere with cheaper home prices in order to limit the amount of money you need to earn, or doing with less on the material plane to gain more time every day.

A personal assessment that helps us understand what we actually need and how to mitigate our impact will lead to an assessment of bioregion. What is my impact? What does it mean to live well? What can I provide for myself? What is produced close to home? What can I do without? What can I make or share with others? How much do I really need to feel satisfied? What can I source locally, at thrift, or through trade and barter? Can I provide for my food needs from local producers? What kind of time or interest do I have for food growing? How can I use less energy for transportation? What parts of my life can I streamline or localize?

Remember that everyone's going to come up with different answers to all these questions depending on many different factors, including stage of life, health, economic security or insecurity, etc. Homesteading and living a sustainable lifestyle doesn't offer a cookie-cutter approach to living—it's about finding your own way in the game of planetary restoration. For example, some people don't want to garden. That's okay. Buying from local farmers is a great way to support them while sourcing your food from your own bioregion rather than from thousands of miles away. Some people can replace three car rides a week with bicycle rides or public transport.

Others can commit to buying fewer new products in the stores, instead relying more on secondhand or barter for the things they need. There are many different solutions to the problems that face us. Understand what's true for you, and do it.

On Not Being a Martyr

An ecological lifestyle is often looked on as deprivation, a life without things or comfort or pleasure. Not so. Clearly, people who want to live ecologically out of a sense of fear or guilt often burn out on the feeling of *must* change, *must* act, *must* do more (or less) of whatever it is they are doing to hurt the planet. If this freaked out mantra were the story of our lives, we wouldn't be writing this book. We love our lives as homesteaders. It gives us a sense of personal connection and power and agency. Even though we can be cash poor, we are personally rich. We eat great food, have great relationships, and enjoy the opportunity to embody our values with our actions. We like the fact that we give less to an economy that is destroying the planet, and more to the earth, our friends, and our neighbors. Don't confuse this lifestyle with a fear-driven mentality of scarcity and lack. This kind of living is about the richness of the present moment and the joy in living a simpler, uncluttered life.

If you're feeling pressured to be part of the solution in your own life, find a way to engage comfortably within your personal experience of time, interest, and resources. Start small. Find something you love doing that brings you a sense of satisfaction and joy. We promise that this kind of success will lead to a greater desire and capacity to do more good things that will actualize your ecological values. Don't be a martyr. It won't help you, it won't help your family, and it won't help the world. This is no time to put on your hair shirt for the Earth. This

Is it beautiful?





Does it give back more than it takes?

is the time to imagine a better way, a time to throw your personal energy behind the world you want to create. Don't deprive yourself of a sense of wonder and joy in living.

Start with some simple questions about what you do. Bryan Welsh suggests these four: Is it beautiful? Could I do it easily again, or teach it to someone else? Does it give back more than it takes? Does it create abundance?29 We include this one as well: Does it honor my values of earth care and people care and fair share? If you're getting a solid yes, you're on the right track. If not, what changes can you make to get to yes? The point of living sustainably is not to use any particular technique or become an inflexible ideologue. Rather, a creative assessment and intelligent application of conservation principles can change our use of resources based on our ethics. Renewing the world is a series of small creative and political and spiritual acts that take place day by day.

Many of the DIY projects offered in this book will help you come up with your own solutions to reducing resource use. It's highly unlikely that you

will do every one of these projects. They are presented as options, as creative ways to bring your consumption levels in line with the closed-system reality of the earth. Follow your interests and your focus; this will help you find your own way.

Who's Got the Time?

Learning about our impact and all the different things we can do to change our lives can be enlivening, but it can also be intimidating. No one has the time to do everything in this book, and obviously, no one lives

impact-free. Luckily, doing it all ourselves isn't the goal. Each of us doing some of the work is what it's going to take to change things. And the more inspired we are to really step up our change, and inspire others, the more we can become leaders in changing our culture and our world.

Does it create abundance?





Joy in the spring garden—earth care, people care, fair share. *Photo courtesy of Argus Courier*

Some of the projects are one-time-only events—you set up a system to manage your greywater and it works for a long time, needing only some minor maintenance or tinkering. Some tasks are more ongoing and repetitive, like work in the garden and the kitchen. Some people will be inclined toward the one-time installation upgrades; others feel most comfortable engaging with the daily or seasonal rhythm brought into our homes through the garden. The best way to manage the demands of homesteading is to share them. In the agrarian past, a homestead wasn't self-sufficient, the community was.

Working toward that sense of camaraderie in the tasks of caring for the earth is a central survival strategy for the twenty-first century. There are so many opportunities to learn to work and create together, to gain skills not only in sufficiency but also in interdependence. If you focus on what you like and go about the task of gathering information and experience, we guarantee you will find a number of fine friends along the way who want to do the same thing.

One More Note on Time: Jumping Ship

The more you work outside the home, the less time you will have for living an ecological lifestyle. This is a trap for too many of us—we need money to live, but we want to live in a way that is better for ourselves and our families and the planet. It might be ridiculous to say, "Quit your job" as an answer to our ecological problems, but it also might not be so ridiculous. It is true that if we find ourselves wanting to live more ecologically, with a lower carbon footprint, or having better food for our family, or more leisure time, we need to start getting curious about different ways of living. At least ask yourself if the money you are paid for your job is "worth" the cost of your time and energy. And if it isn't, what can you do to bring these things into alignment?

Making friends while working in the garden.





What simple things feed me?

We often say, "It has to be this way," but does it, really? What would happen if you quit your job and found a lower-intensity one, closer to home? How can you lower your expenses and therefore work less out of the home at tasks that do not feed you? What can you do to add to the substance and texture of your life? In short, how can you redesign your life to maximize your participation in the values of earth care, people care, and fair share, and minimize the amount of time you give to a system that isn't working for you or your family or the planet?

If you find yourself currently un- or under-employed in the extractive economy, frame it as an opportunity, rather than a problem. Now you have more time to learn skills that will bring value to your life—skills in food growing and preserving, skills in water harvesting and waste reduction, skills in community building. Growing the "green economy" and finding viable productive ways to participate in it is an opportunity for each one of us.

On Learning New Skills

No one is born knowing how to can fruit or build a chicken coop or design a rainwater system. But all these skills are learnable. The only prerequisite is a can-do attitude. *I can get the information I need. I can find the teachers who know. I can study until I understand. I can practice until I learn. I can become a teacher to new homesteaders.* This positive, can-do attitude is perhaps the most important resource for a homesteading lifestyle.

We live in an information-rich world—books, websites, blogs, and other people embody a wealth of information. Many people who master a skill like to teach it to others who really want to learn. Learning from a live human is always best practice; always seek out people where you live who have the knowledge you want.

Everyone starts as a beginner. The important thing is to start where you are and keep going. You will make mistakes. Don't be discouraged. You're bound to do better next time. And before you know it, you'll be passing on your skills to the next wave of urban homesteaders while advising them to start where they are, and just keep going.

Gardening and Growing



The True Growth Economy

The real work of planet saving will be small, humble, and humbling and (insofar as it involves love) pleasing and rewarding. Its jobs will be too many to count, too many to report, too many to be publicly noticed or rewarded, too small to make anyone rich or famous.

-Wendell Berry³⁰

The garden is the holy center of the homestead. It's an altar to life and death, an improvisational theater of failure and success, moonrise and sunset, and the cycle of the seasons. In a deeply uncertain time, the garden is a sure bet: a timeless, calming place where your lineage as a human being in relation to the earth is affirmed again and again. Getting in touch with the sow-till-harvest cadence of life is the most satisfying act we know. And growing food is central to the path of stepping toward sustainability—it lowers our carbon footprint, grows us great food, and locates us in place, connected to other people and the complex reality of our human needs. Growing soil, sequestering carbon, providing habitat, sharing with our neighbors, and increasing the health and nutrition of our food supply is win-win on every level: personal, cultural, and political.

Organic gardening is a huge topic, from designing your garden, to growing healthy soil, to learning which plants grow best in your locale, to managing pests and recreating diversity in the fractured urban earth. This long chapter is a short description of a vast subject with an eye on turning small urban spaces into lavish food growing zones.

Start Small

One day you finally knew what you had to do, and began, though the voices around you kept shouting their bad advice. —Mary Oliver³¹

Here's our first simple idea: Start small. Start with one bed, or one large pot, and see what you can do as you begin. Don't expect to be living on an urban farm in one season. Look at your resources and limitations, and start by growing a few things you want to eat. If you love lettuce, get a big plastic bucket, put some holes in the bottom, fill it with soil, and plant some seeds. You'll love to watch them grow, and you'll love eating them, too. If you've had success with something small, then plan something bigger for your next gardening experiment. If you've made a mistake or lost a crop, learn from it. Maybe you didn't have enough sun; maybe you over-watered, or under-watered. Maybe you have predators you never knew existed before. Maybe you planted too late, or too early, or picked a variety that isn't really suited to your location. Mistakes are inevitable, and are great teachers

SEASON ONE

Easy to grow: Zucchini, squash, beans, potatoes, lettuce, turnip, radish, chard, kale, collards, parsley, strawberries, mint, tomatoes, herbs, broccoli, cucumber, leeks, peas, raspberries.

SEASON TWO

Harder to grow: Carrots, parsnips, corn, celery, yams, onions, garlic, bell peppers, cabbage, spinach, basil, eggplant, beets. too. Use them as opportunities to grow on.

Tools of the Trade: Don't Skimp, Don't Binge, Share

You need good tools to grow a good garden. Even though we're total advocates of the reuse ethic, when it comes to tools, we suggest you buy the best tool you can afford. If you can find it used, grab it. If not, buy it new. Good tools will last you for life, and with care, you'll never need to buy another.

When tooling up, buy what you need for the task at hand. Don't buy more than you need. For a garden, your most essential tools will be a fork, a trowel, and a bypass pruner. This will get you through many gardening seasons. As time goes on, you may need other tools—a spade, a flathead shovel, a hard rake, a soft rake, and a pruning saw—but if you don't need it right away, don't buy it until you do. In an urban space where you are gardening on a deck or in a small yard, you could use just the shovel, pruner, and trowel for years and be more than satisfied.

Another option is to share the tools you have with your neighbors. If you're in excellent communication with them, you can each buy certain tools you'll need and commit to sharing them around. That

cuts down on costs for all, and brings the level of neighborly collaboration up a notch. Does everyone really need to own a ladder? A group of gardening friends can also invest in tools that are too expensive to buy alone, and for which you only have sporadic need: chain saw, wood chipper, back hoe, and so on. If you can find a common shed in which to store tools, a community tool co-op is a great urban homesteading asset. Another great option is a tool lending library. Some cities sponsor such libraries that function just like regular libraries. People borrow tools for a short time for free and return them when done. Volunteers or nonprofit organizations often run these lending libraries. If your city doesn't have one, organizing such a valuable resource is great work.



- Loppers Double-cut pruners Pruning saw
- I. Hand Weeding Tool
- J. Trowel

F.

G.

Η.

K. Bypass Pruner

Tools of the Trade

Got Land?

Access to land is not a simple issue, and the widening gap between rich and poor will continue to reinforce the problem of access to private property in all of our cities. Owning or renting the place where you live impacts the kind of choices you'll make there. Ownership usually makes it easier for people to invest time and energy in a long-term project like a garden, and people tend to commit more fully to places where they feel they can stay for a long time, or where they imagine their energy, money, and time will not be wasted. Ideally, people make investments in the places they inhabit because it's how they live and not because they own it, but that's not how the renter's dilemma plays itself out for many people. And some landlords just don't want gardens in the backyard, or greywater systems alongside the house, or composting toilets anywhere at all, which can limit our ability to live ecologically. And for many people, it will mean finding ground to grow on that isn't necessarily where you live.

It takes a lot of time and love to make a commitment to a garden or to some of the other sustainable systems discussed in this book. But homesteading is about giving more than taking—nothing is lost in your commitment to loving the place where you live and rooting your life there for the duration of your stay. Cultivating this attitude of reverence toward the place where you live may give rise to a desire to grow food, or harvest rainwater, or conserve energy whether or not you own your home. It can be as simple as growing something in a small pot

outside your window, or learning to recycle your kitchen scraps, catching water in a bucket, or scattering seeds in the backyard. And for many people, it will mean finding ground to grow that isn't necessarily where you live. Much urban homesteading happens off-site, in community with others.

Create a garden in a bale of straw in the median between sidewalk and street. The straw bale will eventually compost, amending the soil, making this marginal space good for growing. *Photo by Trathen Heckman/Daily Acts*



A.

Β.

C.

D.

Ε.

Spade

Flathead Shovel

Garden Fork

Hard Rake

Soft Rake

Especially in marginalized and impoverished communities, many people do not have access to any kind of soil, or places for growing, and it can be challenging to remediate the soil in some inner city landscapes. In these places, available land is often used for community-based projects, including community gardens, food security projects, gleaning opportunities, youth leadership and job training programs, as well as school gardens.

Work within your limits and your means. Many urban dwellers are renters, and many renters want to be part of the solution, so many of the projects we discuss in this book are small enough to take with you when you go and affordable enough to invest in regardless of your ownership status. Gardens can be constructed in raised beds, or in moveable barrels and pots. You can even grow a garden in a bale of straw on the median between sidewalk and street. Small structures you build on your homestead can come with you when you go, especially if you build them on wheels. And sometimes it's okay to build something or plant something knowing you'll leave it behind for the next renter. Don't wait until you own your own home to get started. The energy you put in will not be wasted; it comes back to you as joy.

ON THE GROUND: THE BEAUTY WE LOVE

Jane lives alone in a 1,025-square-foot house, on a 5,700-square-foot lot within walking distance to downtown. She has been living and gardening there for more than thirty-two years, so her garden is beautiful, mature, and complex. Her orchard—like her garden—is an altar to her life, as well as the entrance to her pantry. Her garden has spread from the creek that marks the boundary at the back of her property to the front of the curb, which is planted in fava beans, strawberries, and potatoes. In recent years her garden has overflowed to a small plot in the community garden across the street. "My motivation to live this way is that absolutely any, any, anything I can do to help the earth, I'm going to do it," Jane says. "We all live badly in the States, and there's one person—me—in this enormous house, so every single thing I can do that might be helpful, I'm going to do it."

When Jane and her husband first purchased the home, they were swayed by the size of the lot (50' x 100') bordered in the back by a creek. They installed a woodstove for heat, and it remains the only heat source. Over the years, the garden has spread, but when her children were small, large parts of the yard were places for them to play and dig and do whatever they wished. At one time, a labyrinth took up space in the yard, and at another time, a giant eucalyptus tree was felled. This wood was bucked and stacked, and became the sole source of heat for the house for over fifteen years.

Jane is able to grow all of her produce—she buys no fruits or vegetables from the store. She buys grains in bulk and stores them in plastic bins. She cans and freezes her extra produce, dries some of the rest, and has a giant stash of squash sitting on her dryer in the laundry room. Her yard houses ducks and chickens and three beehives. She raises the chickens for eggs and for meat. Her ducks sometimes fall prey to animals that enter the yard from the creek—raccoons, deer, and possum are visitors, and occasionally, a four-foot otter has come and whisked off a duck or two. The drama of such nocturnal visits aside, Jane appreciates living in a place where wildlife sometimes comes to call.

Jane lives an amazingly frugal lifestyle in close proximity to her work, local stores, and public transportation. Jane's frugality extends to her minimal car use (she not only walks to work, but when she gathers coffee grounds from the local coffee shop for her compost pile, she walks the empty wheelbarrow to the café, and wheels it home quite full). She diverts grey-water from the bathtub and washing machine into the garden, and until recently, her systems were rudimentary—the bucket method prevailed. Garbage cans gather water under her downspouts, and she acknowledges that other than beekeeping and learning to harvest her chickens for food, her learning edge is how to catch and store more water for her garden.

Jane's homesteading successes and failures all relate to the garden—different crops succeed in different years, and fail in others. She's had a hard time learning to tend to the bees. Like many bee colonies in recent years, the hives in the yard are not surviving the winter. She can't grow enough tomatoes, or zucchini, despite their reputation for rapacious growth. Her cabbages often "suck," though this year they are "gorgeous and beautiful and plentiful," and the grapes get eaten every



Jane and a giant cabbage in the community garden.

year by the raccoons. But her three apple trees yield enough fruit to can 81 quarts of sauce each year, which supply her with the fruit she eats all winter (as well as some gifts to her children).

Living alone enables Jane to make choices that would be challenging for a family—her near-zero-waste lifestyle, as well as her ability to provide for all her fruit and vegetable needs, would be nearly impossible to achieve for a group of people, especially if they don't have access to this much space. Additionally, because she is making decisions solely for herself, she's not involved in the ongoing negotiations implicit in all family relationships. We recognize that this is not how everyone does (or even wants to) live.

Without trying, Jane is an inspiration to the neighbors—her extensive strawberry patch and lavish apricot tree in front always draw hungry children, and her yearly fava bean patch is epic. The sunflowers are resplendent in summer. Puttering around her yard in her straw hat and old blue jeans, she offers produce and advice to dog walkers and neighborhood residents who wander by. "Just do it and you'll learn," she advises. "There's no right way to

do it. It doesn't matter if you use raised beds. It doesn't matter how you do the compost. Just do it. You'll learn what works. So you plant lettuce here this year and it doesn't work. Next year you plant it somewhere else and you see what happens. And in another year, it could be different. It's just one big fat experiment and that's how you need to approach it. Just have fun. Start where you are and do what you can."

Where Can I Grow in the City?

People in cities often say, "I have no space for a garden. Where could I grow food?" Once you start looking around for it, you'll notice plenty of unused space that will work. The median in front of your house or the narrow strip between your place and your neighbors, empty lots, alleyways, rooftops, backyards, front yards, against a wall, and decks are all places where you can grow good food. Value the edges and the marginal: once your eyes are open to all the space that could be cultivated, you'll be amazed you didn't see it before.

If you don't have enough space at home, consider the options of community gardens, your neighbor's yard, and the wide variety of school gardening projects blossoming under the hands of children. The front lawns of municipal buildings, office parks, and other businesses might be ready for an upgrade, especially if you do it on the cheap and commit to taking care of it; the flat roof of your neighborhood movie theater or grocery store might be ready and waiting for a hive of bees and some raised beds.

COMMUNITY GARDENS

Community gardening and the victory garden have a long and venerable tradition in our country. When the United States entered World War I, Americans were encouraged to express their patriotism by growing food. During the Depression, victory gardens provided people with affordable food and a dignified means of support in a challenging time. Approximately one million people belong to the estimated 18,000 to 20,000 community gardens in the United States. Community gardens remain one of the most expressive pieces of the commons, Digging in the school garden—an opportunity to use the head, the heart and the hands to make something beautiful and useful. *Photo by Lauren Elder*

places where people from different cultures and backgrounds come together to share the practice of growing food.

Community gardens are popular—some have long wait lists for people to get a spot. If that's the case in your city or town, use it as an opportunity to start a new one. Often, municipalities hold unused lands that might be donated to people willing to tend it. Some are placed on available bits of city land, and some are placed on private lots that people are willing to lend or offer to the project. San Francisco recently passed legislation encouraging landowners who do not have the resources to build on their empty lots to open them to community gardening projects. Gardens, orchards, and small-scale animal husbandry projects are springing up in the empty places of the city—an excellent development strategy for a local homegrown economy.



FIRST STEPS IN STARTING A COMMUNITY GARDEN

A little bit of land, a group of interested people, dirt, tools, and a willingness to work is all it takes to start a community garden in your neighborhood.

- Gather a group of people interested in the project.
- Identify possible sites for a garden.
- Contact the owner of the land and negotiate a lease for the garden.
- Through dialogue with members of the project, forge an understanding about how the garden will run: land and water use, pesticide use, safety, responsibility for common areas, design issues, financial commitment, relationship to neighborhood and neighbors, dealing with vandalism, distributing extra produce, and managing conflict.
- Once land is secured, create a garden plan, including design of space, and a schedule for starting garden.
- Organize labor, organic materials, and tools, and schedule garden workdays.
- Dig in!



SCHOOL GARDENS

School gardens are another way urban children and their families are learning to grow their own food and connect to the earth. Many schools have gardening programs where kids are taught how to grow all the parts to their pizza, or make a salad, or which flowers are edible and how they taste. At the

A whole generation of urban farmers is being trained, getting ready to head out into the world, hoe in hand, to regenerate the world. *Photo by Lauren Elder*





Front lawns are a great place to plant fruit trees, sprawling squash, and tomato plants, inspiring your neighbors to indulge in their own food-growing fantasy.

Closest to home—the backyard garden.

Up on the roof: the Brooklyn Grange, a two-acre rooftop farm in New York. *Photo by Brooklyn Grange*



Vertical gardening in the city makes sense. These planters grow a prodigious amount of herbs, greens, squash, and other trailing vines.





Use sunlight where you find it. Lots of vegetable plants are happy and productive in a climbing habitat: beans, tomatoes, cucumbers, squashes, and vines like grapes and kiwis.



Once a home for cars, this driveway is prime growing area on this small city lot. Notice the use of vertical gardens, raised beds, and small pots and containers along the edges. luckier schools, these edible gardens become central to the curriculum, sharing valuable hands-on knowledge about the cycle of the seasons, the relationship of our labor to our food, and the value and joy of shared work.

ON THE GROUND: SPIRAL GARDENS

Daniel Miller runs Spiral Gardens Community Food Security Project in Berkeley, California. Growing out of his earlier social and environmental justice activism, Spiral Gardens supports itself in part by running a nursery, a farm stand, a community garden, and an educational project to teach people the skills they need for home food growing. Its central mission is to help local residents gain more control over their food supply by learning basic skills for gardening and food production. Getting the plants out there gets people the materials they need to be self-sufficient—berries, trees, and vegetable starts—are some of the urban farming supplies Spiral Gardens generates for local gardeners. It's also pushing for social change: "People who garden on their land are less likely to dump oil from their crankcase on it, because gardening changes consciousness about how to use land," Daniel points out. "People get healthier and start making better choices about upgrading their lives in all kinds of ways. It catalyzes people to all these beneficial effects."

Spiral Gardens is located on the edge of Berkeley, where residents often do not have access to fresh, healthy food, nor the ability to pay for it. "The idea for this project came because the census tract for the area around the garden has ten years earlier mortality than the rest of Berkeley, especially among people of color," Daniel says. "The number-one cause of death for a black man is heart attack and heart disease. All indicators leading to earlier projected mortality have to do with diet and exercise. If you overlay a map of food availability on the city grid, it exactly corresponds to health outcomes. . . . The folks in this demographic with the most poverty, the worst health outcomes, and the highest rate of unemployment are the folks who could most benefit from the skills and resources of urban homesteading."



8 GARDENING AND GROWING

There are no good sources of fresh food in the areas where people are dying earlier, but there are lots of liquor stores. Produce at Pak-n-Save is subsidized and still way cheaper than organic food. Projects like Spiral Gardens are up against the deadly leviathan of television and print advertising, but as more information becomes available about chronic disease and its relationship to food, more people come to Spiral Gardens. For Daniel, "This work is about being one small part of the reparations that are needed, because reparations toward people of color haven't happened in this country. Activist urban gardening where you are dealing with food and ecology also deals with social justice, wise city growth, better urban planning, job creation, waste recycling. Working like this inspires me and keeps me happy and proactive. When you're gardening and growing food, you're not avoiding pressing issues, you're addressing them directly in a way that feels good."

The social enterprise of the nursery relates directly to the garden's mission to provide food to the food insecure. "We have the nursery, the produce stand, the community farm, and the fourth component of education. The produce stand has been going on since we've been on the site, and for better or worse, it's the most popular thing we do. We order food at wholesale beforehand from farmers who attend the farmers' market, pick it up at the beginning of the market, and take it to the corner and sell it at cost. It's a volunteer-supported model of the lowest-priced organic food around."

The community farm runs on a model that isn't quite like a community garden which is usually "divided into plots, and people work side-by-side but not together. This is a social experiment, where everyone works on the same plot, together. You can't come in and just do your thing. You have to work with other people to make decisions and get things done. This makes the whole project harder. There's a whole skill set in how people work and organize together that's hard to learn. I'd like the farm to be our most popular offering, but it turns out to be the most challenging thing for people to do."





Sharing spaces: Rachel's Walking Gardens A. Home Garden B, Chickens & Bees C. Garden Shared with Friend D. Community Garden E. Bees

More Creative Land Use SHARECROPPING

One way around the space dilemma is to borrow some from your neighbors and garden in their backyard. I was lucky enough to be offered a goodsize bed in the backyard of an acquaintance. She was looking for someone to garden there in exchange for teaching her a few things. What began as a bare yard is now a flourishing garden with every available inch covered in green and growing things. I've been gardening there for three years, and that neighbor is now a friend. She went from "knowing nothing" to having lots of ideas

about what we should plant, expanding the garden wherever she could, and eating more kale than anyone I've even known. I might not have befriended her under ordinary circumstances, but her generosity of space and my willingness to teach her a few simple basics became the ground for a sweet, reciprocal friendship. Our family also keeps our bees in other people's yards, and we share our chickens with friends around the corner. This all makes for fine and friendly relations with the neighbors.

If you find yourself looking over the fence and lusting over your neighbor's unkempt yard, get down off that ladder, walk next door, and offer to turn it into a productive garden. You might get more than space for gardening.

ON THE GROUND: SHARING THE LAND

Patricia Algara is a landscape architect who practices urban agriculture on a double lot in Berkeley, California, that she borrows from a neighbor. Having come from a family of farmers in Mexico, working the land is instinctive to Patricia but when she came to this country, she felt overwhelmed by the difficulties of finding a place to farm. During a winter storm a fence was blown away, revealing an empty lot with perfect sun exposure two blocks from where she works. She met Giancarlo Muscardini, the neighbor to the right of the unused lot, and asked him about the empty space that was a huge contrast to his own lush, edible garden and orchard. He knew the neighbors and had dreamed of doing something on the next-door site for a long time.

"It drove him crazy to see the neighbors mowing the weeds every other week, so together we wrote a formal proposal for the use of the land," Patricia recalls. "We met with the neighbors. They were excited but had some issues. I had a lawyer draft an agreement so they wouldn't be liable if anyone got hurt. They didn't want an open community garden, so we fenced the property in a way that keeps it private for them and usable for us. I have keys and can bring people there; we have work parties and events, but always in collaboration with the owners' needs." Together, Patricia and Giancarlo designed and built and farmed the garden. During the first year, work was done on setting up infrastructure—putting in a greenhouse and garden beds, but mostly amending the hard clay soil so that things could grow. Water was piped into the garden from Giancarlo's place next door. "When we first started, it was all grass so we had a lot of work to do," Patricia says. "It's been two years and it's finally a working garden. We sheet mulched, and did compost, and used a chicken tractor and did what we could to build the soil. Everything here is done through permaculture principles and the soils are much better now. They can still improve, but now they are productive and there's a lot of food."

Patricia and Giancarlo get food from the garden, as do the owners of the land and people who live in the units below Giancarlo's house. To share the excess produce, Patricia hosts an informal Friday lunch where all the food is prepared using the fruits and vegetables from the garden. The food gets harvested the night before to assure the freshest and most ripe flavors. The menu changes every week depending on what's in season. The lunch is also an opportunity to show people how the vegetable plants look while they are growing, their benefits to the garden, and their nutritional value. The lunches are mostly a way to expose people to local, organic, fresh flavors and get them excited to grow their own food.

As this demonstration urban farm project keeps growing, Giancarlo is inspired to deepen the permaculture design of the garden, as well as his own garden on the other side of the fence. He's looking toward planting more fruit trees, trees that can be coppiced (cut back to encourage the growth of straight suckers which can be used for building and garden projects), a more evolved food forest, and planting biomass-producing trees that add further nutrients to the soil.

Patricia's success with this garden leads her to work on food security projects in Richmond, one of the most impoverished communities in the Bay Area. "The more I learn, the more I see how this needs to happen everywhere," she says. "It is so daunting at an environmental level to understand what is going on, and sometimes it feels like a huge thing I can't do anything about. But growing food is something I *can* do.

"The more research I do, the more I see what a big impact food production has on so many aspects of the environment. We can have an impact every time we eat, breaking away from industrial agriculture, the fuel to transport the food, and the toxins that are used to grow it. If everyone grew something, one little small thing, it would matter. Food is basic. We need it three times a day. At least! Even if you just have a little window, you can grow mint. And that's one less thing to buy at the store.

"Food is the gateway drug to a more sustainable lifestyle. You start to become aware of the cycles of nature, the cycle of the moon, what's happening with the seasons and the climate, and you start to pay attention to the world. And it has a trickle-down effect—just doing this changes your behavior. It happened to me. Seeing this garden and the changes it's brought me makes me want to work so that more people can see this and do this. And it's not that hard. It's this basic human thing. We should all be doing it."

GUERRILLA GARDENING

Sometimes a garden springs up illegally in an abandoned piece of land. This happens a lot in places like West Oakland, Detroit, Philadelphia, New York, and Austin, where there's a lot of abandoned land and not a lot of places for local people to get good healthy food. Guerrilla gardening—squatting a piece of abandoned land—is more unsteady than gardening in a sanctioned place. But there are benefits—access to unused land, the potential for community energy to catalyze around urban use issues, and the sheer joy of trumping the laws of private property with the laws of human need and love. Sometimes guerrilla gardening can be as simple as lobbing a seed ball over a fence in the autumn, and surreptitiously watching the flowers bloom in the spring. Guerrilla gardens can evolve into more legal land holdings, or remain as temporary installations in empty urban spaces.

HOW TO MAKE AND PLANT A SEED BALL

You'll need some wildflower, clover, or other annual seeds you want to sow. Terra cotta clay powder, a little compost, and water complete the simple recipe.

- Mix 1 part terra cotta clay powder with 1 part compost. Add seeds to the mixture.
- Add the water slowly and mix while adding water. The consistency should be easy-to-mold clay—not too wet, not too dry.
- Roll the clay mixture into a small ball.
- Let dry for 24 to 48 hours, and store them in a cool and dry place. Seed balls can be deployed in empty lots, backyards, highway medians, and other sites for guerrilla gardening in the beginning of your growing season. Surprise your friends and your neighbors with instant wildflower infusions.

LIBERATE THE STREETS—OR AT LEAST THE DRIVEWAY

When looking for space for gardening, you may find it necessary to take up the asphalt in a parking lot, driveway, backyard patio, or front yard area. De-paving your neighborhood is a great way to reclaim land for growing—it's liberation for the soil and land for you. Cities are covered in pavement, from sidewalks to back and front yards, to roads and streets exclusively for cars. Asphalt is impervious to water and organic matter, which is great for cars, but not so great for people. De-paving helps avoid toxic runoff from rainfalls—rather than running down the road and into the sewer, water stays where it lands, and seeps in to the ground. The more people localize their food sources in urban areas, the more necessary it will be to de-pave the city. And not a moment too soon!

It's easier than you think to jack up asphalt or concrete using a pickax and a rock bar (a heavy iron rod with one pointed end and one chisel-shaped end), a few people can take up a driveway in an afternoon. Asphalt tends to be about two inches thick and concrete is quite a bit thicker.

Start by making a hole with the pickax in the concrete or asphalt. With concrete, you may need to begin this project with a jackhammer to make a hole you can leverage as you begin to pry up the concrete. One person pries up the edge of the impervious material while the other pushes the rock bar as far under it as possible. Jack up the asphalt or concrete using the leverage of the rock bar. Keep using the rock bar to pry it up until you've liberated the street.

Underneath, you'll find road base, which is broken up rocks,

crushed stone, and granite. Some of this material can be reused in natural building projects, but first remove any road base contaminated by petroleum spills. Asphalt and road base should be landfilled, as they have no reliable reuse. Asphalt retains petroleum residues that leak out when heated and tends to get sticky when hot. It shouldn't be used for projects involving growing plants, and certainly not for plants you intend to eat.

If you are removing concrete, you can reuse that for different building projects, including the edges of raised beds and the foundations of natural building projects. Broken up concrete like this is called urbanite—so be an urbanite who reuses urbanite. Whatever you are jacking up, the soil underneath it will need plenty of amendments before it will be suitable for growing. You can aid the process by adding compost, mulch, and other organic matter to the area.

Containers, Raised Beds, and Barrels

Wherever you live in the city, you'll only have so much space, so much sunlight, and so much soil. Container gardening is a good way to maximize space when you don't have too much of it and containers can be placed in parts of the yard or deck or patio that have the most sun. Most fruiting plants, like tomatoes, cucumbers,

Once a driveway, the space has been de-paved, sheet mulched, and liberated to grow herbs, flowers, trees, and vegetables. or peppers, need at least six hours of direct sunlight to thrive and produce well, but many greens and herbs will get along with less. As well as the amount of sun, pot size, soil quality, and proper watering will determine the success of your container garden.

A raised bed is a wooden box placed on top of the soil itself and filled with compost and fresh soil. You can also put a raised bed that's at least twelve inches deep right on top of your driveway and garden without any problem. In places where irritants like gophers are a problem, line your raised bed with gopher wire, or else all your vegetables will go straight to the rodent population. A raised bed also gives you the opportunity to start out with good soil, which is something many city gardens don't have a lot of in the beginning. This will change as you begin to make compost and add it to the soil. In the beginning, use the best potting soil you can afford, and include 10 to 20 percent worm compost in your initial mix. For the most successful container gardening, tend to your container soil as you would your ground soil. Container soil can get compacted and tapped of its nutrients; loosen the soil between plantings, top dress with worm compost, and change out the soil completely every year or two.

Many vegetables and herbs will grow in small containers and don't need to be placed directly into the ground. You can grow a great amount of carrots, or leeks, or potatoes in a five-gallon bucket. Lettuce can spend its whole life in small pots. "Cut and come again" when you harvest your lettuce: trim the tops of the lettuces down once they are large enough to eat (don't pull out the whole plant) and let them grow out again for a few weeks. This will keep you supplied with lettuce for a long time without having to reseed and start another plant. Tomatoes and squash grow in pots, as do many of the leafy greens. Beets, beans, peas, lemon cucumber, tomato, lettuce, chard, zucchini, radish, spinach, kale, mint, oregano, thyme, basil, dill, and rosemary are all easily grown in pots.

Most vegetables need at least twelve to eighteen inches of root space, so a five-gallon pot is the minimum size for growing food successfully, though a dainty compact lettuce needs less depth than a wandering five-foot-high tomato. Herbs and some other plants may succeed in smaller containers. Plastic pots will retain the moisture better than clay pots, though they can deteriorate in the sunlight over time. Glazed clay pots are more expensive, especially the large ones, but they last and retain moisture well. Wood planters are also an option, but they may rot over time. Whatever container you choose, be sure there is plenty of drainage so the water can escape from the bottom.

Container gardens need more regular watering than in-ground gardens, especially if you live in a dry climate. If the soil in the container gets too dry, the water will run out along the sides and never get to the roots of your plants. One way to deal with this is to mulch around the plants with straw or bark. If the soil is kept from getting a hard, dry crust, watering will be more successful. Finally, container gardens do very well on drip irrigation systems.

A hot spot alongside the house is a great place to grow sun-loving plants like basil, peppers, and tomatoes in large containers. *Photo by Rachel Kaplan*

A series of raised beds placed right on the asphalt turns this area into a garden. Benches alongside the raised beds provide places to sit. The arbors will eventually hold vining plants, using vertical space and creating shade. *Photo by Lauren Elder*





Self-Watering Containers

Self-watering containers save on watering time and are useful throughout even the driest summers. Constructed out of stacking plastic boxes or buckets and a few other, easily sourced a materials, they swiftly turn a perch, deck, or back patio into an easy-to-maintain garden. Their water-saving capacities make it simple to grow a diversity of plants in small spaces.

Materials Needed

2 5-gallon buckets (or any other container that can stack)

1 lid

1 plastic tub OR drain gate approximately the same height as the gap between the two buckets when stacked

1 2-foot-long, 1-inch-diameter plastic pipe (longer than the height of the buckets when stacked)

1 mesh baggie (find them as packaging for fruit or veggies)

Drill with 1-inch bit and 1-inch masonry bit

Utility knife with extra blades

Rounded file

Saw

Permanent marker

1. Mark the buckets.

Hole for wicking basket: on the bottom of the first bucket, trace your drain grate or plastic tub and mark a circle on the bottom of the first bucket. Be sure your circle is smaller than the lip of the container. Hole for pipe: on the same bucket, mark a hole for the pipe, also one-half inch from the wall of the bucket. Side drainage holes: measure and mark drainage holes on the side of the second bucket. Just place the buckets one next to the other and figure out how much of a gap there is between them when they stack together. Mark two drainage holes, one on each side, just below that line.

Second hole for pipe: on the lid, mark a hole for the pipe (1/2 inch from the edge).

Holes for plants: next mark holes for the seedlings on the lid, or one big hole for an established plant.

Cut the holes in the buckets. Cutting plastic kicks up a lot of little plastic bits. Protect your eyes and nose and mouth accordingly. For the big holes on the first bucket and the lid, start them with a drill, using a 1-inch masonry bit. Use the utility knife to widen the holes. Cut drainage holes in the bottom of your first



bucket, using a ¼ inch-diameter drill bit. Next, cut the side drainage holes on the second bucket. Do not cut the side drainage holes in the bucket with the holes in the bottom.

3. Prepare the pipe. Cut an angled segment from the bottom of the pipe, using your hacksaw. The reason you're doing this is so that water can flow out of the pipe when it's at the bottom of the buckets.

A self-watering container consists of two stacking containers of any size. The top container has holes cut into it for a watering tube and a drain gate. The drain gate is lined with mesh or burlap and filled with dirt to wick up the water in the reservoir below. An overflow hole near the top of the reservoir ensures that the soil doesn't get overly soggy.

- 4. Assemble the wicking basket. Either line the drain with mesh or cut holes in your solid plastic container. You can also use food containers, as long as there is enough of a lip and they are the right height. The drain cover, though more expensive, seems sturdier and better for this project
- 5. Assemble the bucket. Place the assembled wicking basket in the bottom of the bucket. Push the pipe through the holes in the lid and the bottom of the inner bucket. Stack two buckets, with the basket hanging between the two. Place the top of the bucket underneath the whole set-up to catch extra water. Fill your buckets up with soil and you're ready to grow³²

More Projects for Maximum Production in Small Spaces

POTATO IN A BARREL—COMPACT AND PRODUCTIVE



Cutaway drawing of potatoes growing in a barrel. Potato plants grow up from the potato eye. Potatoes grow well in containers on a patio or deck.

- 1. Start with a large wine barrel or planting pot or even a regular-size garbage can. Make sure there is a drainage hole in the bottom.
- 2. Fill the barrel with about 4 inches of dirt.
- 3. Place a few potato eyes in the dirt and cover them up. (Potato eyes—those spots on the potato that often sprout when you don't eat your potatoes quickly enough—are the seeds of the potato. Take a potato and cut it in many pieces, each with its own eye, to start a new potato plant.)
- 4. Once the potato starts to grow, cover the plant with more soil, up to the leaves of the plant. The buried plant sends out spuds from its central shaft, and rather than fruiting from the top of the plant, fruits from its roots and stalk. You can continue to cover the growing plant three or four times over the growing season to encourage the growth of additional potatoes along its buried stalk.
- 5. After the potato flowers die back, it's time to harvest. Dig the potatoes out of the bin, or just dump the entire bin on its side. You'll be amazed at how many potatoes you'll harvest. If you have the space to do a few barrels like this, you can produce most of the potatoes you'll need for a full season.

KEYHOLE BED

Traditional gardens tend to fall into the pattern of rows, for the ease of cultivation and harvesting, and because the line defines our cultural relationship to the earth. But when you bend a line into a circle, you get more surface area in a smaller space. In a garden, bending the line of the bed gives you more planting space, and puts different plants into beneficial relationships with one another. The keyhole garden works on this principle. Also in a small garden, a keyhole form gives you both planting space and a garden path in between the rows.

Orient your keyhole bed to face south for maximum sunlight, and try planting larger plants on the outside of the bed, and smaller ones in the middle. The outer plants form a windbreak for the smaller plants, and the shape will hold a lot more plants than an ordinary straight-row bed. A keyhole bed optimizes edge to encourage biodiversity and makes space for more plants, and more opportunities for pollinators and beneficial insects. This form is used a lot in permaculture design because it exemplifies numerous principles—biodiversity, efficient use of space, maximizing the edge, and using least effort to greatest effect.

THE HERB SPIRAL

The herb spiral is a raised mound of earth that also maximizes space and can bring culinary and medicinal herbs closer to the kitchen where they are used. The mound creates more surface area than a flat garden bed, and

a denser, more diverse garden. It's easy to site in an urban setting, and harvesting and watering are simple. When creating the herb spiral, bank up the bottom with stones for good drainage, and mound dirt up into a peak. The pitch of the herb spiral will increase planting area and create a variety of microclimates (such as sun on the southern side, and cooler darker planting areas on the north "slope").

When planting, remember that some herbs spread disastrously like some thymes and most mint—so be judicious when choosing them. As with the vegetable garden, there's no sense in filling your herb spiral with rare and difficult to grow herbs you never use; plant it with plants you like. You can also fill up your "herb" spiral with other leafy plants, like lettuce and chicory, especially if you like them more than dill and basil and parsley. Like the keyhole bed, the herb spiral is often chosen in permaculture designs because it uses space so well, maximizes diversity through the creation of microclimates, and makes something beautiful while expressing the principle of working from patterns to details.

Start a Garden Wheel Project

Permaculture is not a back-to-the-land movement or a selfsufficiency movement. It's about permanent culture, which means creating community sufficiency and resilience through collaboration. If we're just applying these principles on an individual home-

stead, you could live a nice life, but you wouldn't get to the higher aspirations of regenerative community that may be a key to human survival. In that spirit, we encourage you to apply all of these space-making strategies to your entire neighborhood by starting a garden wheel project.

A garden wheel is a great way to get neighbors and friends to participate in the creation of local gardens. It's similar to an ongoing work party where people give and get support for their food-growing projects, a gathering of people who are willing to help one another in exchange for getting help themselves. Your garden wheel group can be made up of neighbors, or it can be an affinity group—parents whose children are in the same school, or associates from work or from a church. We advocate for the close neighborhood association as a way to strengthen local relationships and webs of resources and sharing.

Laying out the keyhole bed on a former front lawn. The circular shape allows for more planting space and leaves a pathway in between beds.





Planting the herb spiral with mint, sage, artemesia, and nigella.

The herb spiral maximizes space and creates a diversity of microclimates for culinary and



The keyhole beds in the first season, filled with an abundance of leafy greens, kale, and early spring vegetables.





Helping out at a garden wheel event. Photo by Trathen Heckman/Daily Acts

When starting the garden wheel, neighbors or friends who want to get involved can share with one another their interests and desires for gardening and establish equitable ways to support one another in reaching their goals. A fun and useful way to structure meetings for the garden wheel project is to plan potluck dinners with all the participants. These become opportunities for community and relationship building, as well as garden planning.

A garden wheel group will be able to share not only labor but also space. Once you've talked to your neighbors or friends about working together, you may find that there are innovative ways to share space with one another. For example, some yards have great sun and are ideal places to grow tomatoes and other heat-loving plants. Other yards have a lot of shade, and not

enough sun, so they'd be better places for growing tender greens, spinach, or lettuce, especially when it gets too hot out. Garden wheel members can become "specialists" based on their inclination, their growing conditions, the amount of time they have, and their ability to collaborate with their neighbors.

PLANNING THE POTLUCK

If planning a potluck is as far as you get, you won't be disappointed. Getting to know your neighbors is a crucial first step in building community resilience.

- 1. Invite your friends, associates, and neighbors to a gathering at your house. Put a note in a mailbox or talk to neighbors on the street. Call your friends or send them e-mails. Direct contact is always best. People like to be personally invited.
- 2. Encourage everyone to come and bring something delicious to eat. Don't worry that there won't be enough or that everyone will bring chips. It always works out.
- 3. Cook something delicious you love to eat.
- 4. Before starting the meal, have everyone introduce him or herself, or, if they already know each other, have them share one small thing they are excited about.
- 5. Eat and be merry.

MEETING AFTER EATING

- 1. Before you serve dessert, convene a short meeting with the following agenda:
 - Check-in—everyone goes around the circle and shares their name and the inspiration that brings them to the potluck.
 - Dialogue about projects that could be shared in the neighborhood. Sense where the collective interest is, what the opportunities and needs are, and make sure everyone gets a chance to speak.
 - Talk about schedules, available tools, and materials.
 - Set a date for the first garden wheel event.
 - Close meeting with a brief checkout.
- 2. Make sure you set up a time for the next potluck before people disperse. Have it at someone else's house.
- 3. Everyone help clean up.

A garden wheel project will help you get to know your neighbors, efficiently establish your garden, share space and produce and labor and friendship with the people around you, and in general, grow your neighborhood connectivity and resilience. These kinds of projects can evolve into dialogues about common concerns and additional projects that will generate community resilience.