

systems thinking and sustainability activity book

This book is based on Thinking in Systems by Donella Meadows. It is intended to provide an interactive approach to self-teaching systems thinking - the foundation of understanding sustainability beyond environmentalism. If you find this book entertaining and thought provoking, come to the Office of Sustainability to connect with people and resources that can teach you more and help you get hands-on experience and skills training in the field of sustainability.

“I perch the Slinky on one upturned palm. With the fingers of the other hand, I grasp it from the top, partway down its coils. Then I pull the bottom hand away. The lower end of the Slinky drops, bounces back up again, yo-yos up and down, suspended from my fingers above.

‘What made the Slinky bounce up and down like that?’ I ask students.

‘Your hand. You took away your hand,’ they say.

So I pick up the box the Slinky came in and hold it the same way, poised on a flattened palm, held from above by the fingers of the other hand. With as much dramatic flourish as I can muster, I pull the lower hand away.

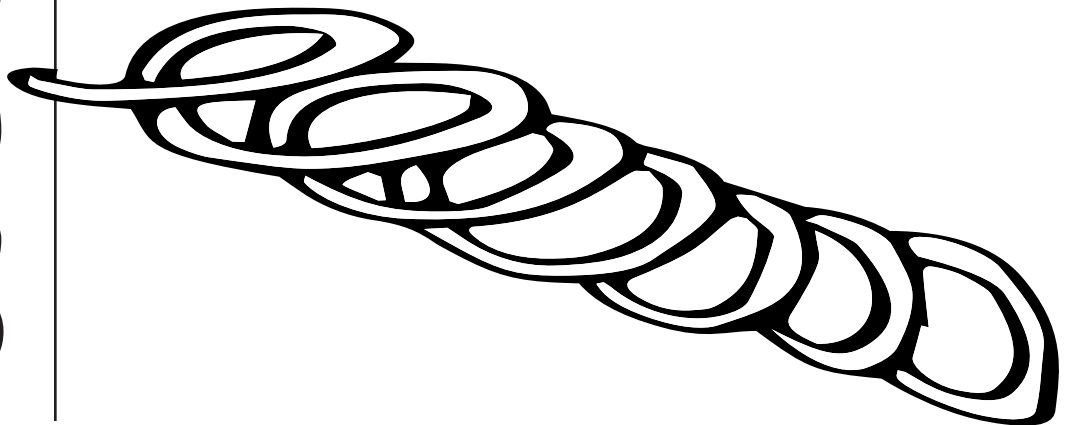
Nothing happens. The box just hangs there, of course.

‘Now once again. What made the Slinky bounce up and down?’

The answer clearly lies within the Slinky itself. The hands that manipulate it suppress or release some behavior that is latent within the structure of the spring.

That is a central insight of systems theory.”

-Thinking in Systems



MATCH the QUOTE with the FOOD JUSTICE ADVOCATE

a. Raj Patel

b. Bill Mollison

c. Vandana Shiva

d. Wangari Maathai

e. Brandon Hoover and
Mahbubur Meenar

1. You cannot protect the environment unless you empower people, you inform them, and you help them understand that these resources are their own, that they must protect them.

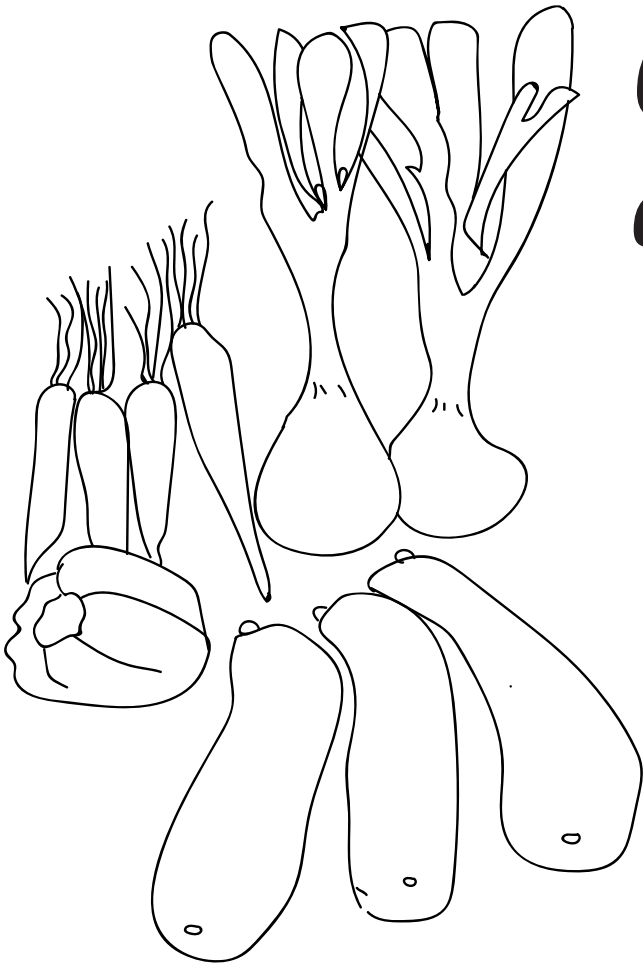
2. An organic farmer is the best peacemaker today, because there is more violence, more death, more destruction, more wars, through a violent industrial agricultural system. And to shift away from that into an agriculture of peace is what organic farming is doing.

3. Agricultural sustainability doesn't depend on agritechnology. To believe it does is to put the emphasis on the wrong bit of 'agriculture.' What sustainability depends on isn't agri- so much as culture.

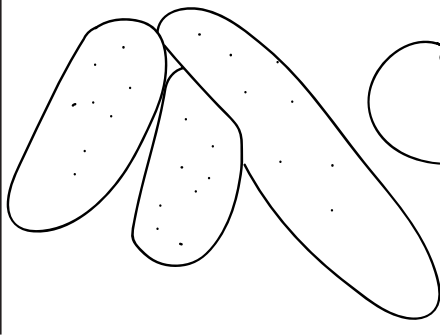
4. We can teach philosophy by teaching gardening, but we cannot teach gardening by teaching philosophy.

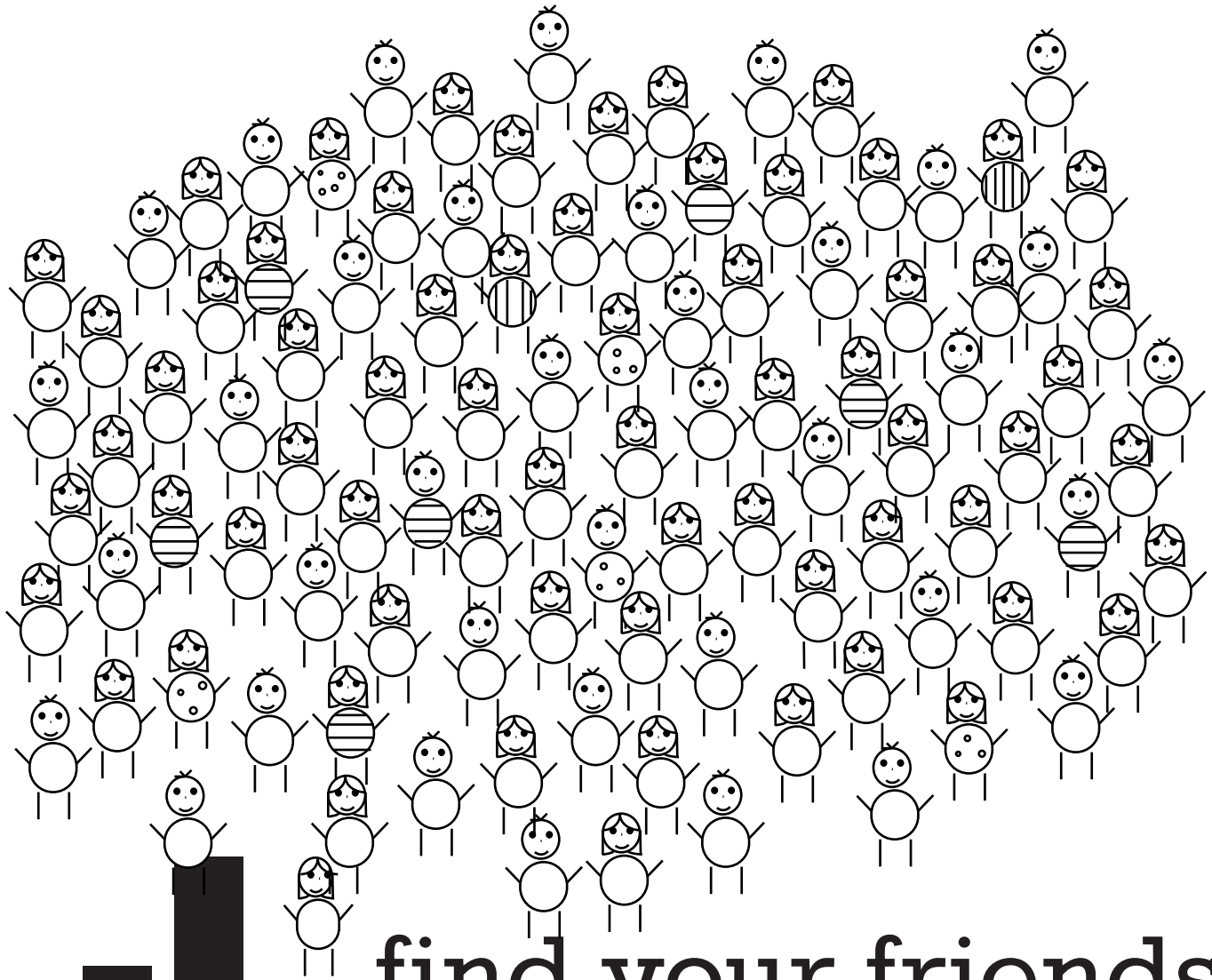
5. Despite the various models and different outcomes, one aspect persists throughout the recent surge in urban agriculture: it is a white-dominated practice primarily occurring in neighborhoods with high concentrations of African American and Latino communities, with little participation from those communities.

*Color the bounty
of your harvest!*

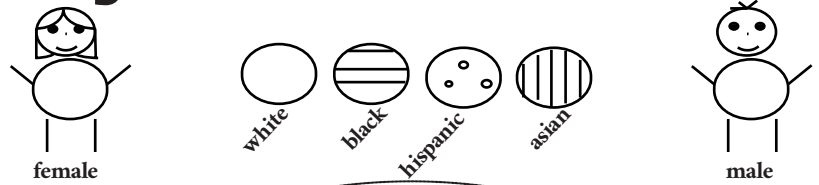
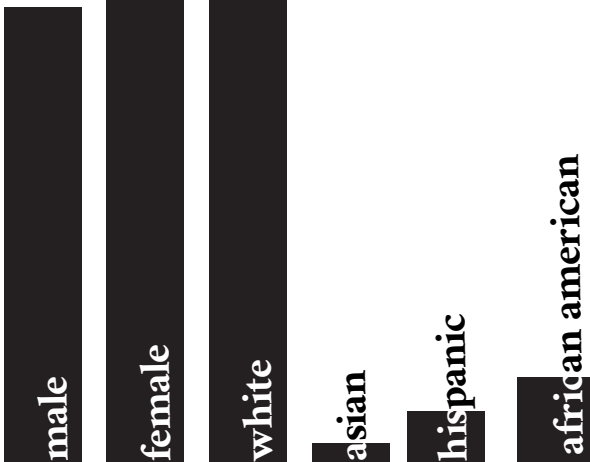


Restorative
Agriculture
Grows Good
FOOD





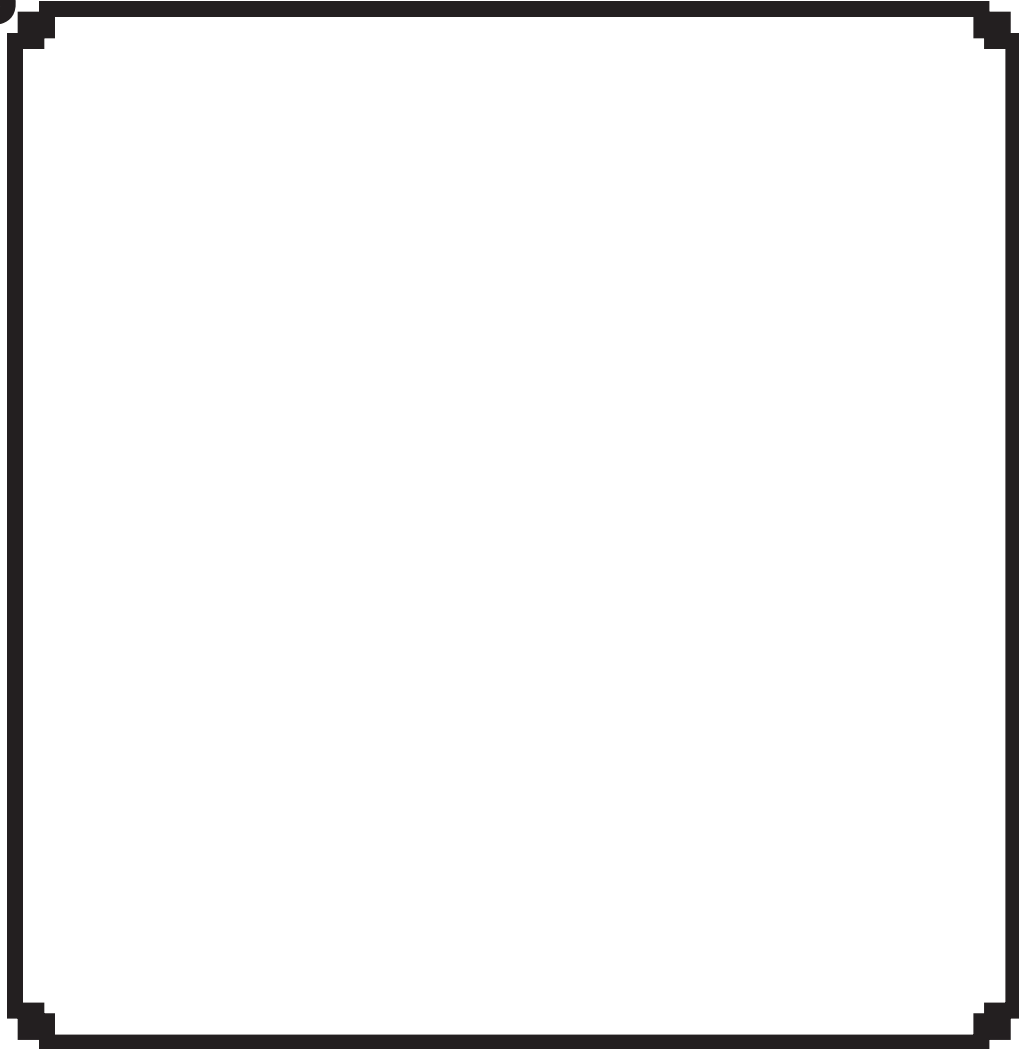
find your friends!



“Insistence on a single culture shuts down learning and cuts back resilience. Any system, biological, economic, or social, that gets so encrusted that it cannot self-evolve, a system that systematically scorns experimentation and wipes out the raw material of innovation, is doomed over the long term on this highly variable planet.”

- Thinking in Systems

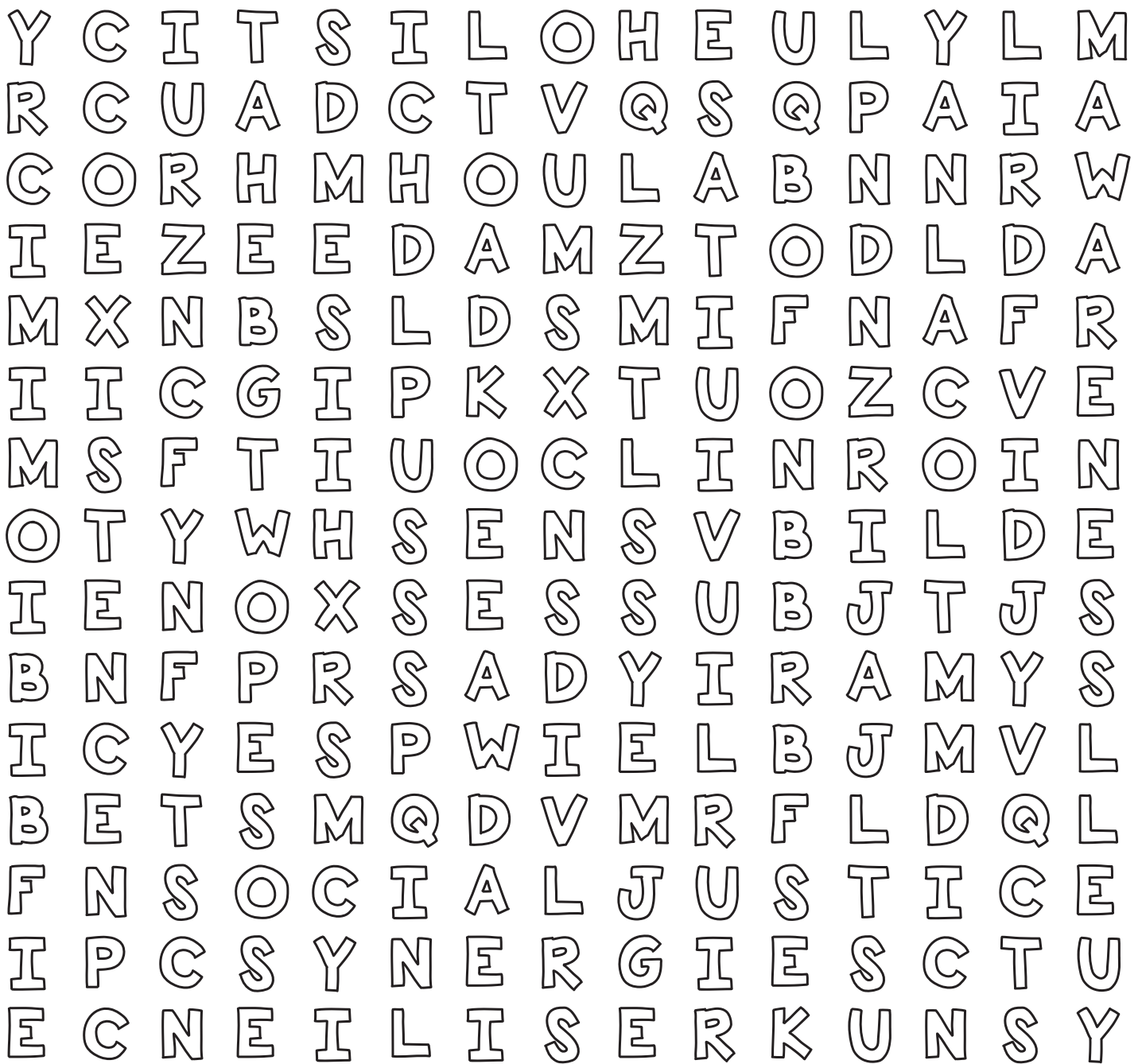
draw your own leader!



“Changing just one leader at the top...may or may not turn an entire nation in a new direction, though its land, factories, and hundreds of millions of people remain exactly the same. A leader can make that land and those factories and people play a different game with new rules, or can direct the play toward a new purpose. And conversely, because land, factories, and people are long-lived, slowly changing, physical elements of the system, there is a limit to the rate at which any leader can turn the direction of a nation.”

- Thinking in Systems

Can you find them all?



social justice

coexistence

intersectional

community

equality

resilience

diy

awareness

responsibility

synergies

mindfulness

redesign

holistic

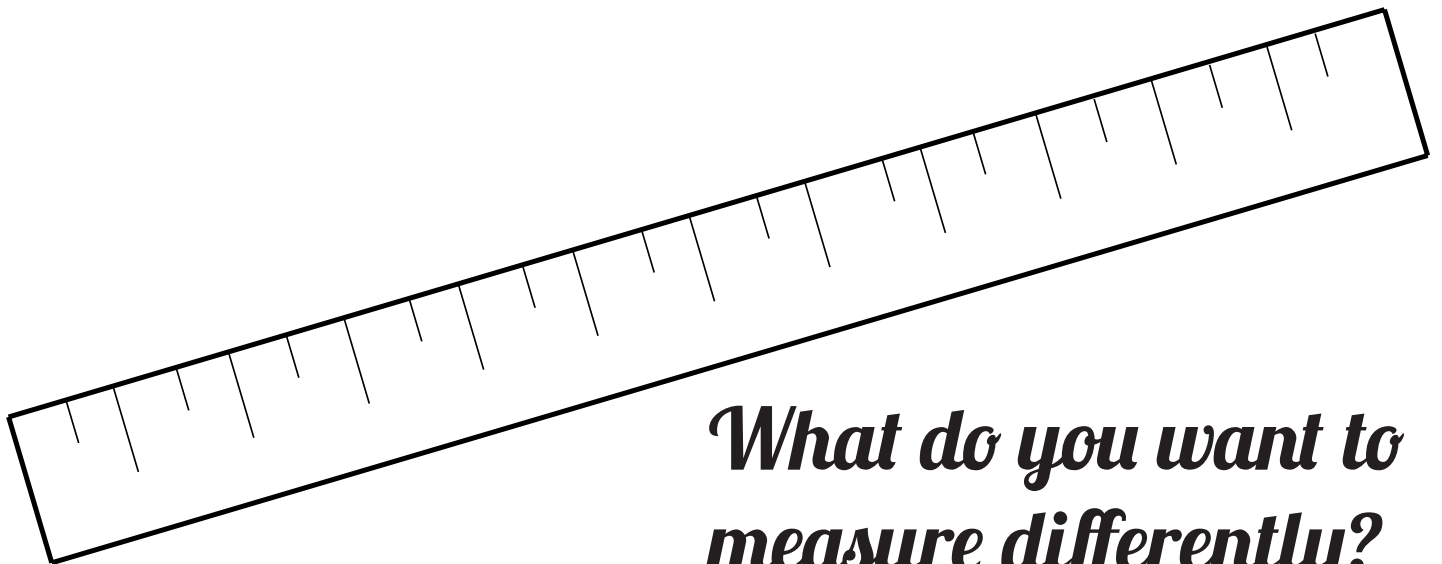
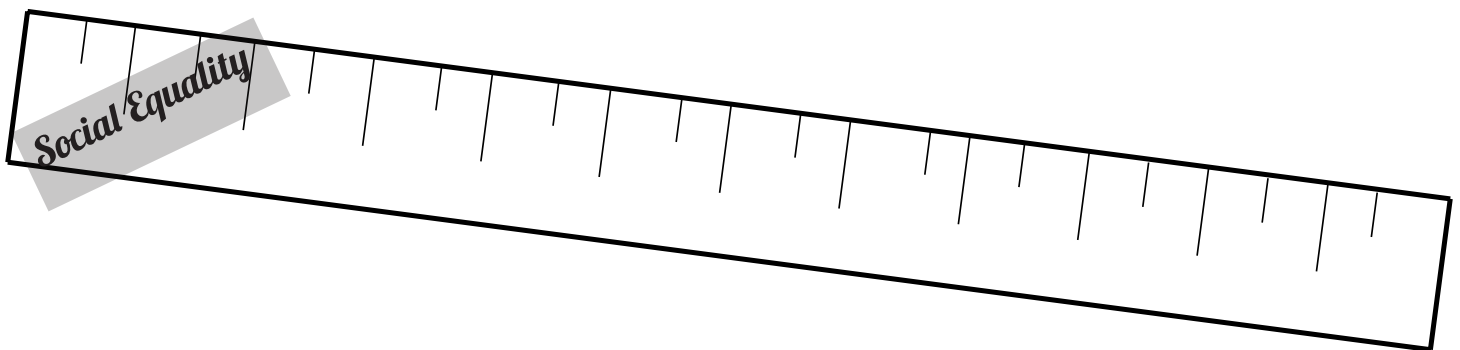
biomimicry

compassion

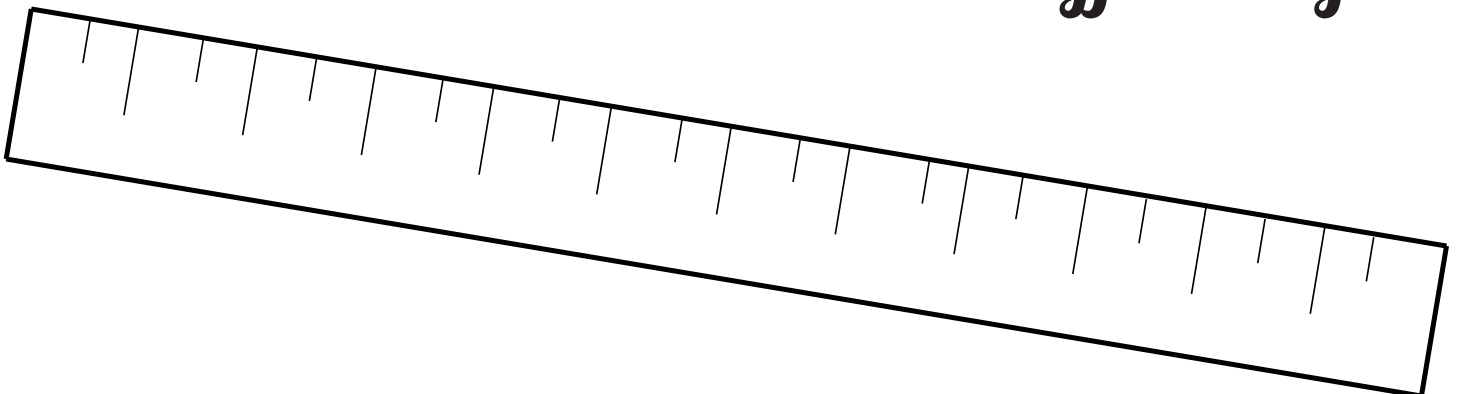
local

“If the desired system state is good education, measuring that goal by the amount of money spent per student will ensure money spent per student. If the quality of education is measured by performance on standardized tests, the system will produce performance on standardized tests. Whether either of these measures is correlated with good education is at least worth thinking about.”

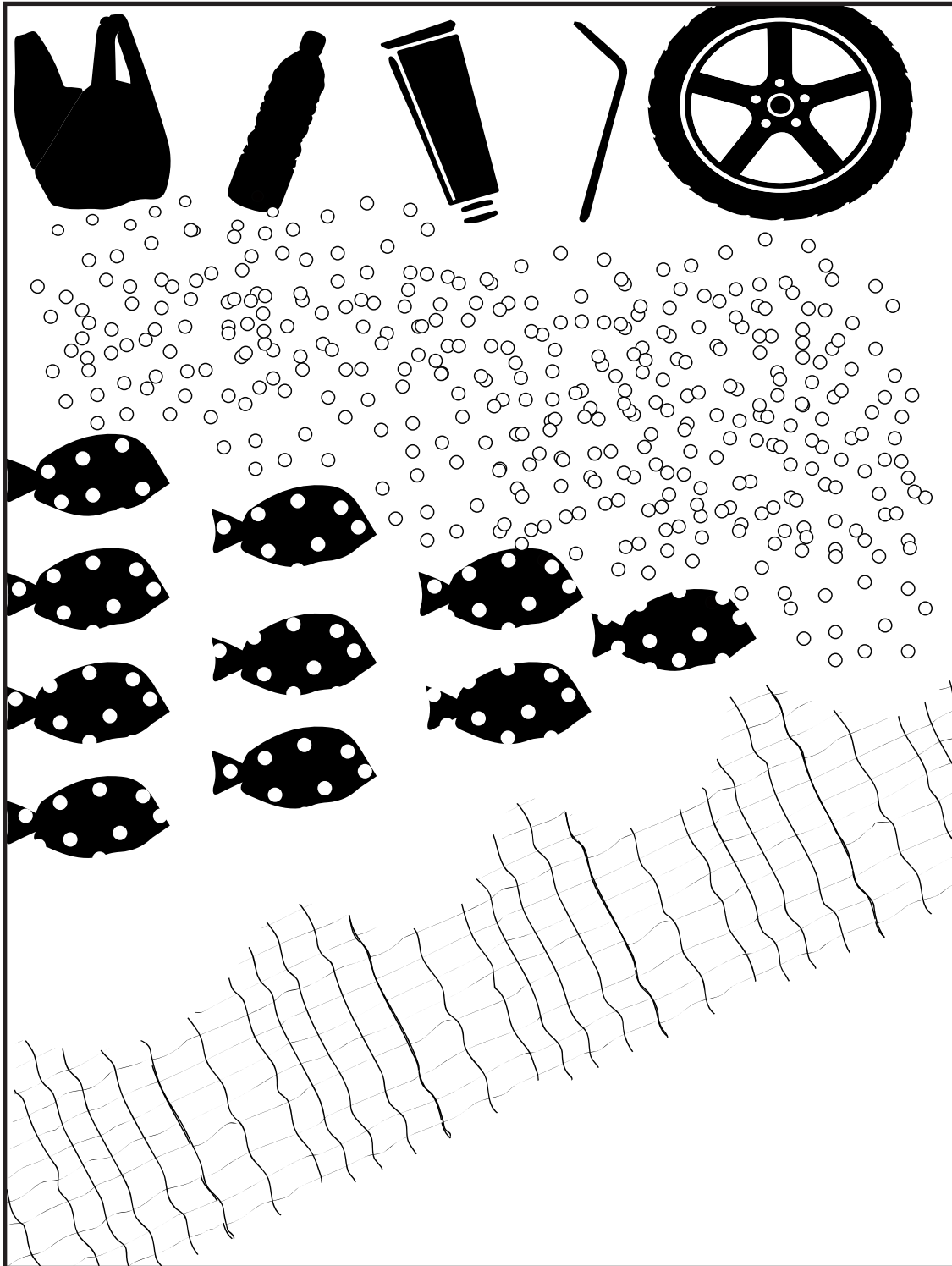
- Thinking in Systems



*What do you want to
measure differently?*



Connect the microplastic dots!



Although you can connect all the microplastic in this book, it's not so easy in real life. An estimated 65 million microplastics are released into waterways every day, and once they are released, they are extremely difficult to catch. They often end up in the stomachs of marine animals and ultimately in our own. Plastic never fully disintegrates, so all plastic becomes microplastic after about a year. Some of the biggest sources of microplastics are tires, fleece clothing, disposable plastics (like bags and water bottles), and the microbeads found in many cosmetic products. Charleston's harbors alone contain an estimated 7 tons of plastic waste, so do your part by buying microplastic-free products and recycling to make sure your plastic ends up where it belongs!

R

Riddles

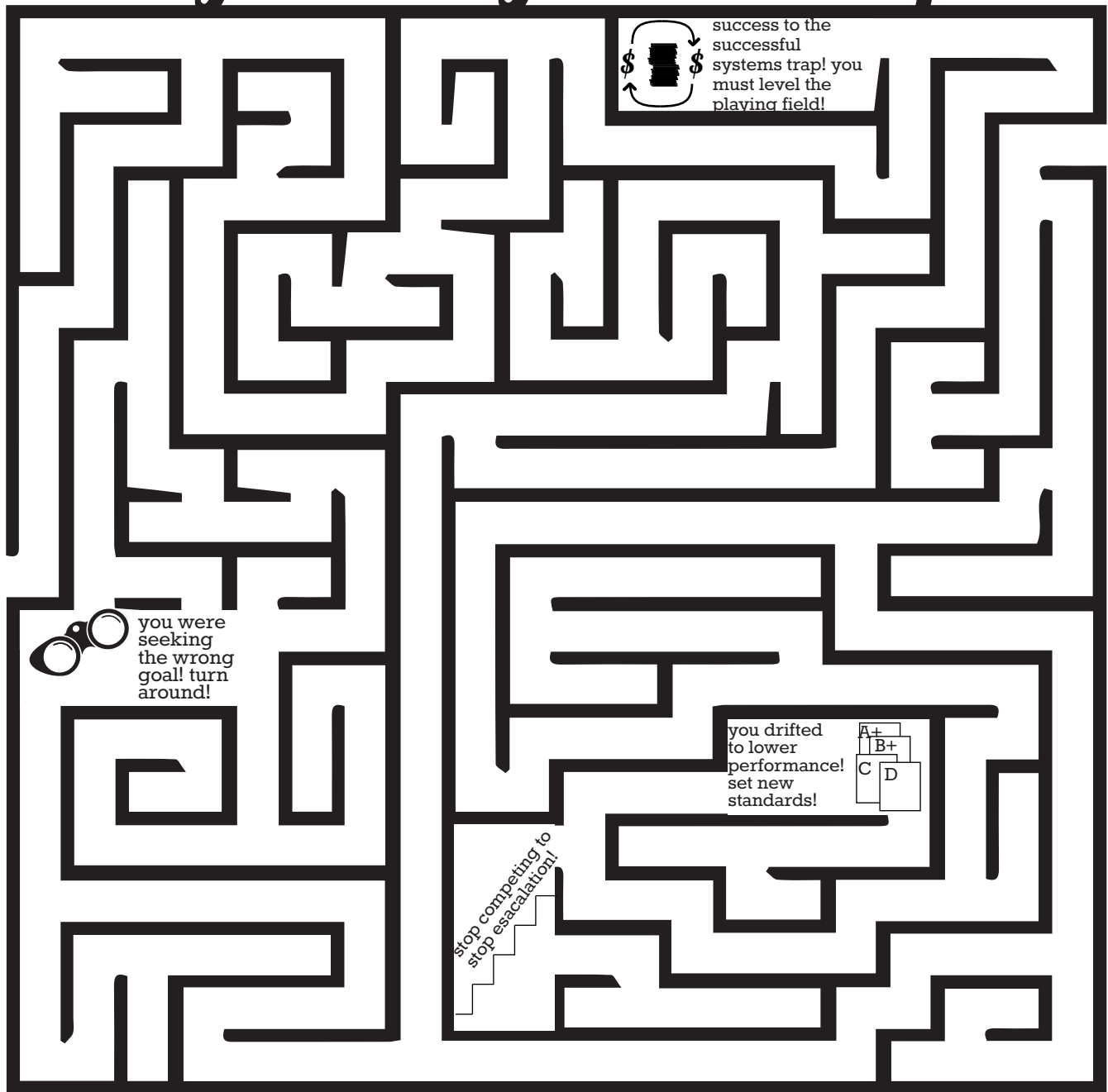
①. What's
white, green,
and read all
over?

②. If more
money yields more
problems, what does
deep community
engagement
yield?

③. A Mexican
man and a Honduran
woman walk into America.
What is the likelihood they
will be called offensive names,
live in fear of deportation, &
experience systematic
oppression?

1. White comfort propaganda about green practices that actually benefit corporations more than the planet or individuals
2. Community! Which has been shown to increase happiness and life expectancy! our society teaches us that things we can measure are more
important than things we can't. If we only work toward quantity, then quantity will be the result at the cost of qualitative life experiences.
3. Highly likely considering the fear of others we have cultivated in our systems. as Jimmy Carter suggested 40 years ago, immigration from Mexico
is a systemic problem caused by the gap in opportunity and living standards between the U.S. and Mexico. He suggested we spend money to help
build the Mexican economy rather than spend money on border guards and barriers.

dodge the systems traps!



"In a world of complex systems, it is not appropriate to charge forward with rigid, undeviating directives. Stay the course is only a good idea if you're sure you're on course. Pretending you're in control even when you aren't is a recipe not only for mistakes, but for not learning from mistakes. What's appropriate when you're learning is small steps, constant monitoring, and a willingness to change course as you find out more about where it's leading."

-Thinking in Systems

mad lib

If a _____ is torn down, but the _____ that
noun noun

_____ it is left standing, then that rationality
past tense verb

will simply produce another _____. If a
noun

_____ a government,
noun verb

but the _____ patterns of thought
adjective

that _____ that _____ are left
past tense verb noun

intact, then those patterns will repeat themselves...There's

so much _____ about the _____.
noun noun

And so little _____ .
gerund

- from Zen and the Art of Motorcycle Maintenance, as quoted in Thinking in Systems

“If a factory is torn down, but the rationality that produced it is left standing, then that rationality will simply produce another factory. If a revolution destroys a government, but the systematic patterns of thought that produced that government are left intact, then those patterns will repeat themselves. There's so much talk about the system. And so little understanding.”

use systems thinking to deconstruct an event!

event

patterns

structures

mental models

We often read about events in the news as isolated instances occurring unattached from any underlying factors, when in reality, an event is the tip of a systems iceberg! Systems thinking teaches us that every event is an outcome of underlying patterns, structures, and mental models. To analyze an event, ask yourself what patterns you can find over time, how the patterns are related/created, and what underlying assumptions, values, and ideas make the structures possible.

“Imagine a cherry tree in full bloom, its roots sunk into rich earth and its branches covered with thousands of blossoms. The petals begin to fall, covering the ground in a blanket of flowers and scattering the seeds everywhere. Some of the seeds will take roots, but the vast majority will simply break down along with the spent petals, becoming part of the soil that nourishes the tree - along with thousands of other plants and animals. Looking at this scene, do we shake our heads at the senseless waste, mess, and inefficiency? Does it look like the tree is working too hard, showing signs of strain or collapse? Of course not...The entire lifecycle of the cherry tree is rewarding, and the only ‘waste’ involved is an abundant sort of nutrient cycling that only leads to more good things. The tree shows no signs of discontent or resentment - in fact, it looks like it could keep this up indefinitely.”

- adapted from William McDonough by
Pilar Gerasimo

Personal Sustainability

what are your branches, or areas where you can expand your boundaries?

what are your roots? In other words, what keeps you grounded and connects you to yourself?

what are energy drains and gains in your life?

what are your nutrients, or areas in your life that you can use to nurture yourself instead of causing waste?

what do you value?

what is your purpose?

**how do you measure success?
does this align with your values?**

“A system is a set of things - people, cells molecules, or whatever - interconnected in such a way that they produce their own pattern of behavior over time. The system may be buffeted, constricted, triggered, or driven by outside forces. But the system’s response to these forces is characteristic of itself, and that response is seldom simple in the real world.”
- Thinking in Systems

Meadows, Donella H. Thinking in Systems: A Primer. 2008. Chelsea Green Publishing: Vermont.

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