

Please read and be prepared to discuss

The Birth of Community Gardens (New York City)

This story is about urban decay and restoration in New York City's Bowery District. A fiscal crisis in city government during the 1960s precipitated the **negative tipping point**: a reduction in services (e.g., police and fire protection) in the already depressed Bowery. A system of interconnected and mutually reinforcing **vicious cycles** was set in motion by the cascade of effects that followed:

- Reduction in public services led to a deterioration of public infrastructure and safety, causing people to move away.
- Fewer people on the streets and more vacant properties led to garbage dumping, criminal activity, and homeless beggars, with further deterioration of public safety and more people moving away.
- Less income for local businesses and less tax revenue for city government led to even less expenditure by city government, landlords, and local businesses for maintenance of buildings and other infrastructure. Buildings and streets fell into disrepair, contributing to further neighborhood deterioration, and more people moved away.

The **positive tipping point** began in 1973 when a young artist named Liz Christy saw a small boy playing in a trash-filled, rat-infested vacant lot and she decided to do something about it. She organized some friends to haul out the garbage and truck in soil to establish the Bowery Houston Community Farm Garden.

At first skeptical, the mostly African-American and Hispanic neighbors began to pitch in, and within a few months they were taking home armloads of tomatoes and cucumbers. Besides displacing rats and drug dealers, and creating a much needed green space, the garden also became an “outdoor community center.”

The garden served as a tipping point that reversed the vicious cycles described above. The vicious cycles of the negative tip were transformed into **virtuous cycles**:

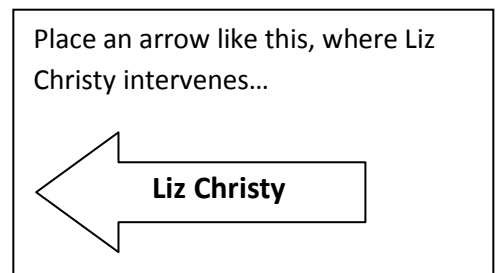
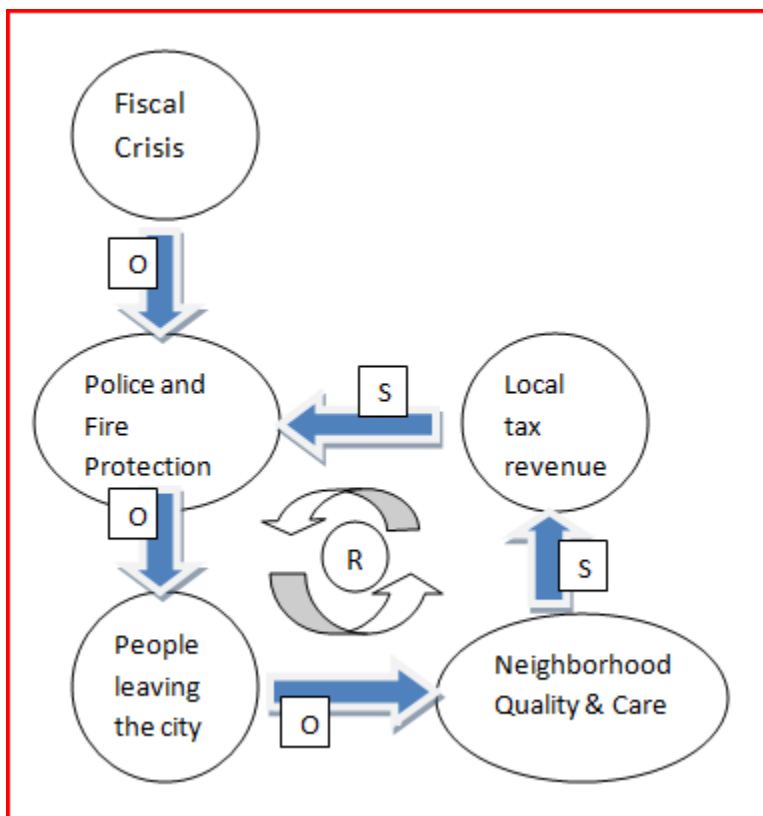
- The improvement in neighborhood quality – public safety, buildings and other infrastructure, visual attractiveness, and community spirit – attracted people to move into the neighborhood. More residents meant even more people on the streets and even greater public safety.
- More residents and fewer vacant properties meant more business income and tax revenue, leading to investment in neighborhood restoration.
- More income and tax revenue also increased public and private services, further contributing to neighborhood quality.
- At the same time, a new virtuous cycle of “success breeds success” (shown in blue) arose around the garden, which served as a symbol for improving the neighborhood. The success of the garden, experience with managing it, and improvements in neighborhood quality instilled awareness, pride, and commitment to improving both the garden and the neighborhood even further.

Once news of the garden's success spread, an entire movement developed. Neighboring neighborhoods established gardens, and in 1978 the city parks department began the Green

Thumb program which offered plants, tools, expertise, and \$1-per-year leases to community groups. By the late 1980s New York City was home to over 800 community gardens. They even attracted international attention, with people from as far away as China and Sweden visiting to learn how to start community gardens.

Most important, new virtuous cycles “locked in” the benefits. When property values in neighborhoods with gardens increased, the city government tried to sell garden lots for development. However, the pride and commitment of neighborhood residents, as well as experience and organizational capacity they acquired in the course of developing the gardens, enabled residents to take on the city bureaucracy, consolidating the legal tenure of the gardens.

The following causal loop diagram represents one possible representation of the situation. Start with the fiscal crisis and then follow the loop and see if it represents the story well. Is it accurate, simple as possible while being useful at the same time? **Then mark the diagram where the intervention of Liz Christy takes place and follow the loop again.** Does it still work?



Next - Read and Create Your Own Model of this Story!

2- The Rebirth of Rajasthan

Four thousand kilometers west of Apo Island, another set of feedback loops has transformed an Indian dust bowl, in the northwestern state of Rajasthan. Water has always been scarce in Alwar District. A scant average of 40 centimeters of rain falls each year, most of it during the three months of the monsoon. But over the millennia, farmers had used rainwater harvesting to get the most out of every drop. They had constructed johads, earthen embankments to trap the monsoon rains. Water from johad ponds had seeped into the aquifer below, recharging wells and supporting forests over 60 percent of the district.

Alwar's delicate balance was upset in the 1940s, when commercial logging set off a slow-motion chain reaction. Topsoil washed down the steep slopes and silted up the johads. With fewer johads to refill the water table, wells and even rivers began to run dry.

Vicious cycles sped up the decline. Modern tube wells bored deeper and sucked out more groundwater, requiring even deeper wells. Retreating groundwater meant fewer functioning wells, less vegetation, and still more erosion. With less irrigation water, farming declined, and men migrated to cities for work. Women and children had to spend up to 10 hours a day fetching firewood and water. The shrinking labor force and fraying social fabric sapped the means and the will to maintain johads.

Rainwater ponds had gone virtually out of use by 1985, when five young volunteers arrived from an anti-poverty group called Tarun Bharat Sangh (TBS). One of them, a doctor named Rajendra Singh, was hoping to start a clinic. But Mangu Patel, a large landowner from the village of Gopalpura, told him the immediate need was for water.

On Patel's suggestion, Singh and his colleagues began digging out a defunct johad pond. Seven months later, it was nearly five meters deep. When the monsoons came, not only did the pond fill to the brim, but a nearby well, long dry, began flowing again.

The next year, the whole village joined in to rebuild a second dam. By 1996, Gopalpurans had recreated nine johads, covering 964 hectares and holding up to 616 million liters of water. Their groundwater had risen from an average of 14 meters below the ground to 6.7 meters. The village wells were full again. "It's like a bank," says Singh. "If you make regular deposits, then you'll always have money to withdraw. If you are just taking, then you'll have no money in your bank account."

With water just a short walk away, women had time to start cooperatives, selling milk products, handicrafts, and soap. Children had time to go to school. With irrigation restored, men came home for dry-season farming. The area of wheat fields jumped from 33 to 108 hectares, and some growers diversified into sugar cane, potatoes, and onions.

Emboldened by success, the village council reforested a neighboring 10 hectares and set strict conservation rules. Families could break off dead limbs for fuelwood, but were fined for cutting

living ones. To underscore their commitment to the trees, villagers tied colorful rakhis, or kinship bracelets, around their trunks, a symbol of family protection.

As other villages witnessed Gopalpura's rebirth, they sought TBS's help to restore their own rainwater harvesting structures. By 2005, there were 5,000 johads in 750 villages, over an area of 8,000 square kilometers. A survey of 970 wells found all of them flowing—including 800 that had been empty just six years before. Alwar's forest cover had spread 33 percent in 15 years, and five dried-up rivers had come back to life, resurrecting habitats for rarely seen animals like antelopes and leopards.

Most important, Alwar's farmers organized to protect their hard-won resources. Several villages defeated efforts by state officials to cut down trees and tear down rainwater dams, sometimes by sitting-in at the sites. When the state sold commercial fishing rights to the reborn Arvari River, 70 villages united to get the sales canceled. Residents of the Sariska Tiger Reserve successfully sued to drive out the "marble mafia," whose illegal mines drained and poisoned their groundwater.

"They feel, 'We have given our work to this, so this is ours,'" says TBS volunteer Maulik Sisotia. "So they maintain it regularly, and they have a feeling of ownership. It's natural. If you participate in something, then you are very caring about it, so it should not be damaged."

Alwar demonstrates how a vicious cycle can flip over to a virtuous one. After years of taking too much water out of the ground, farmers began to put it back. The constructive feedback loops that followed were mirror images of the destructive ones that came before:

- As their wells revived, villagers were moved to build more johads, bringing still more wells back to life.
- Higher groundwater sustained the forests and vegetation that prevent erosion, further protecting the johads.
- As workers returned to the villages, more labor was on hand to construct and maintain new johads.
- The rewards of united action made village social institutions stronger, which inspired more community action.

An apt image for the reversal of a vicious cycle is Aikido, the martial art that turns around an attacker's force and directs it back at the attacker. After a positive environmental tip, some of the same eco-social currents that were degrading a system start building it back. Instead of fighting natural and social forces, citizens are working with them. They feel less like Sisyphus, pushing a boulder uphill, and more like Archimedes, given a lever and a place to stand.

Draw a model of this story to represent this situation.