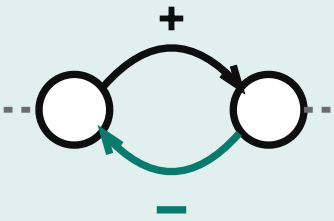
Method

Causal loop diagram

A diagram of words and arrows that shows how variables influence each other and which loops reinforce or balance a system.



In Spanish

Diagrama de bucles causales

Origin

Maruyama (1963); spread by system dynamics, Sterman (2000)

Output

A map of the system's cause-and-effect relationships, with its vicious and virtuous circles

What it's for

It helps you see why a problem keeps coming back or gets worse, and where to intervene to change it.

Key elements

Every arrow, a sign

With "+" both variables move in the same direction; with "−", in opposite directions.

Loops that reinforce or balance

Some amplify a change, like a vicious circle; others slow it toward a limit.

Delays matter

An effect that takes time to arrive explains many swings; mark it on the arrow.

How it's done

1 

Name the variables as things that can go up or down.

2 

Connect them with arrows and mark whether each relationship adds or subtracts.

3 

Look for the loops and tell the story they explain.

Applications in design

When to use it

When a problem keeps coming back and quick fixes don't solve it.

Avoid

Adding so many variables that nobody can follow it.

Don't fall for it

It's an explanation to be checked against data and against the people in the system.

Connections

Builds on

- Leverage points

Used by

- Systemic design

Related to

- Ecosystem map

Authors and works

1963	**Magoroh Maruyama**	Described self-amplifying causal processes; according to the field's history, it is the first published use of a diagram of this kind.
2000	**John D. Sterman**	Explained how to draw and read them within system dynamics; the exact origin of the method is debated.

Sources

Original sources

- Maruyama, M. (1963). The second cybernetics: Deviation-amplifying mutual causal processes. American Scientist, 51(2), 164–179.

Secondary sources

- Sterman, J. D. (2000). Business dynamics: Systems thinking and modeling for a complex world. Irwin/McGraw-Hill.

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