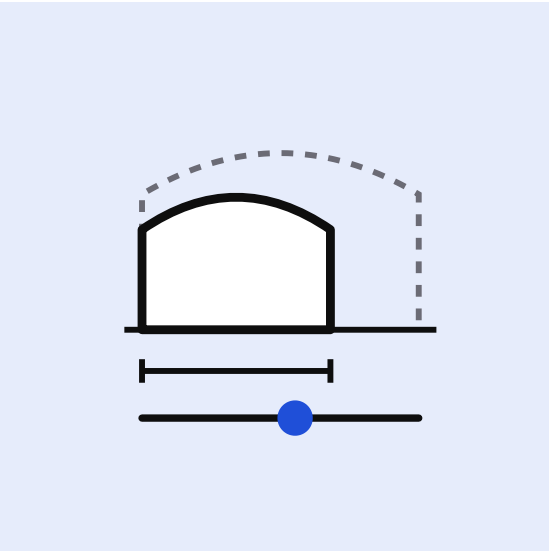
Specialty

Parametric design

A way of designing in which the form is built as a system of measurements and rules that depend on each other, so that changing one value updates the whole design.



In Spanish

Diseño paramétrico

Origin

The term comes from mathematics; in architecture Luigi Moretti used it (Milan Triennale, 1960). Software precedent: Sketchpad (Sutherland, 1963)

What problem it addresses

Redoing every version of a complex form by hand is slow and error-prone: the parametric model keeps the relationships and recalculates the rest.

Principles

Relationships, not loose measurements

You design how each part depends on the others.

A few values rule

A handful of key parameters govern the whole form.

Explore by changing

Moving one value instantly shows another version.

Applications in design

✓ Use it like this

First decide which values will change and how the other parts depend on them; then model.

✗ Avoid

Modeling everything with relationships from the first sketch, while the idea is still unclear.

Don't fall for it

A model with too many dependencies breaks when something important changes: keep it tidy and simple.

Connections

Related to

- Spatial design
- Generative design
- Industrial design

Authors and works

1963	**Ivan Sutherland**	Created Sketchpad, the first interactive drawing program, where constraints between lines held when one part moved.
2010	**Robert Woodbury**	Explained how parametric models are thought out and built, and proposed patterns to organize them.
2013	**Daniel Davis**	Reviewed the history of the term and showed that parametric models can break with late changes if they are not well structured.

Sources

Original sources

- Sutherland, I. E. (1963). Sketchpad: A man-machine graphical communication system [Doctoral dissertation, Massachusetts Institute of Technology]. Reeditada en 2003 como informe técnico UCAM-CL-TR-574, University of Cambridge. View source (https://www.cl.cam.ac.uk/techreports/UCAM-CL-TR-574.pdf)

Academic reviews

- Woodbury, R. (2010). Elements of parametric design. Routledge. View source (https://www.routledge.com/Elements-of-Parametric-Design/Woodbury/p/book/9780415779876)

Secondary sources

- Davis, D. (2013). Modelled on software engineering: Flexible parametric models in the practice of architecture [Doctoral dissertation, RMIT University]. View source (https://www.danieldavis.com/thesis-ch1/)
- Davis, D. (2013, August 6). A history of parametric. danieldavis.com. View source (https://www.danieldavis.com/a-history-of-parametric/)

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