

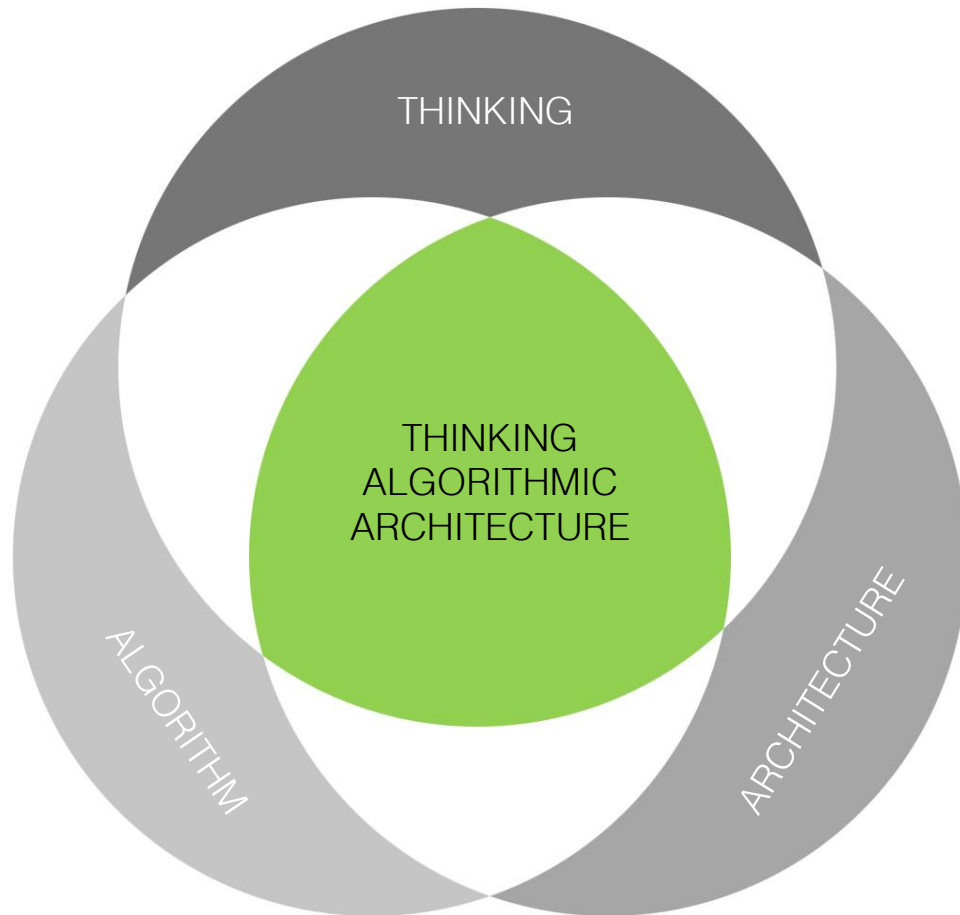
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Thinking Algorithmic Architecture

an overview of Digital Architecture

Objective

What this work aims to achieve



- To assess the evolution of Thinking Architecture
- To compare approaches
- To classify each approach on a type of Thinking

THINKING

- To form ideas, based on what reality is, and what it could become.

ALGORITHM

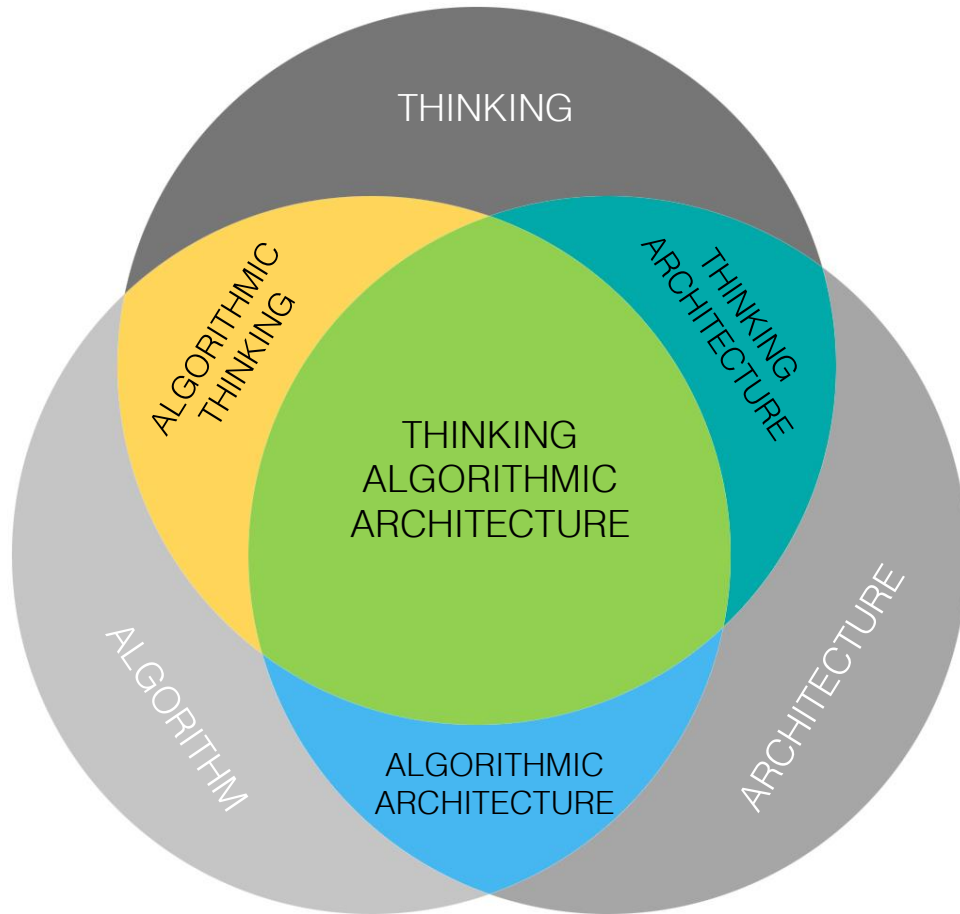
- Set of instructions to address a certain problem.

ARCHITECTURE

- The design of space regarding its potential occupation.

Methodology

How it is proposed to achieve the objectives



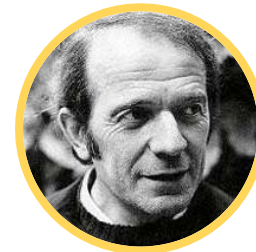
Alberti



Venturi



Lawson



Deleuze



Lynn



Schumacher



Aravena



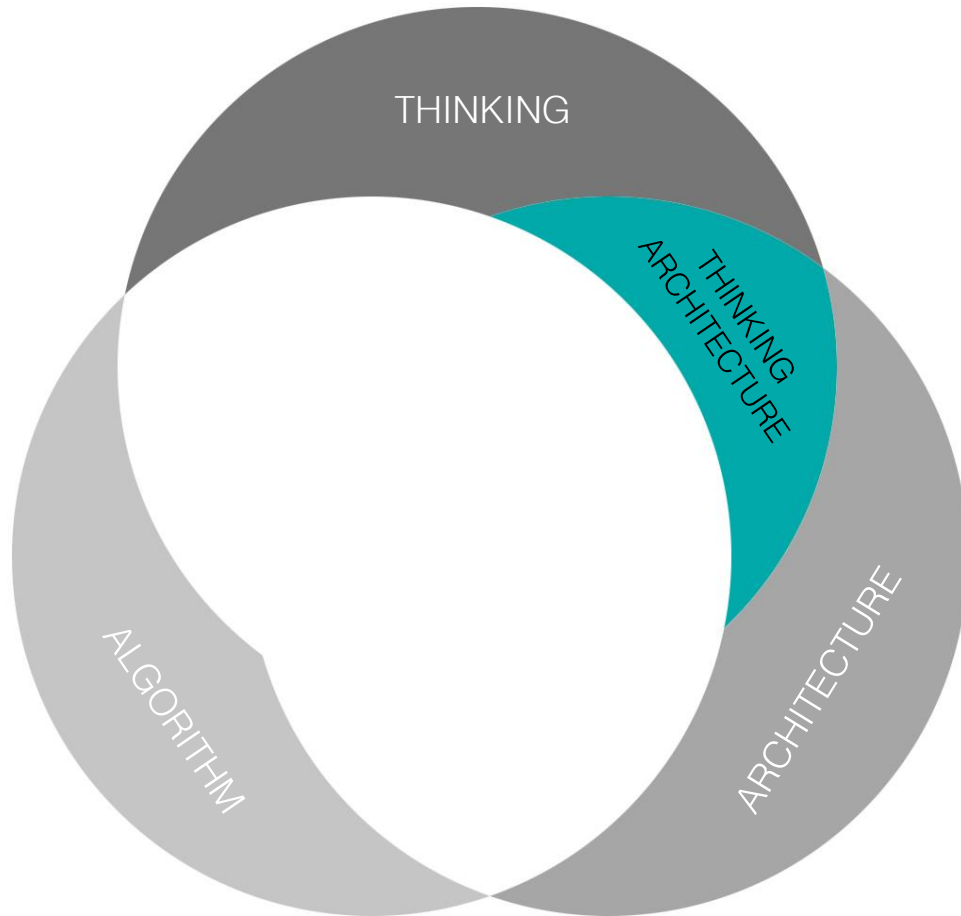
Retsin



Hahm

1. Thinking Architecture

Communicating, modelling and referencing



Lawson

- Architecture is always related to a **program**.
- Design should interact with its **pre-existing site**.

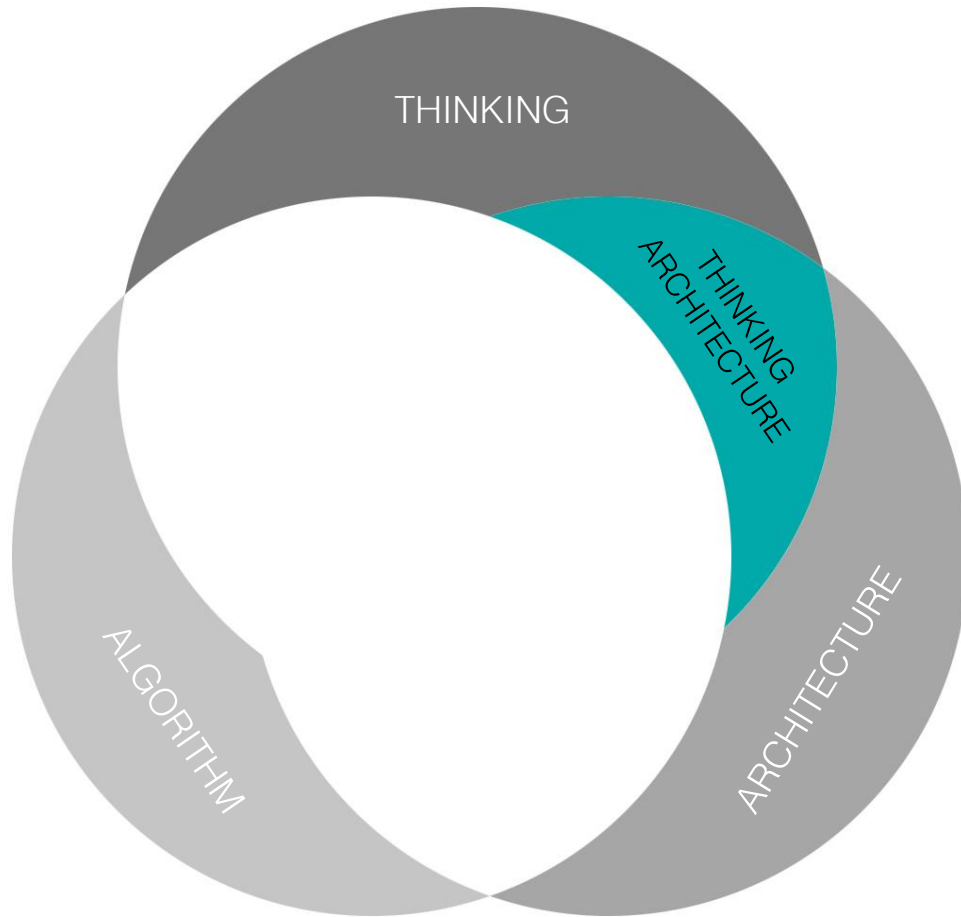


Braga Stadium

Souto de Moura (2003)

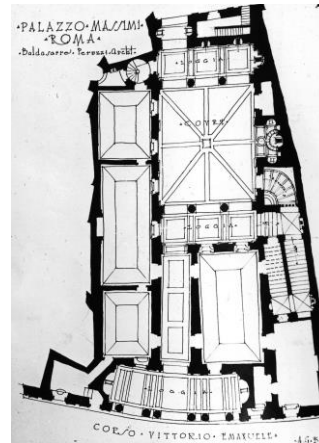
Complexity and Contradiction

Conflict as a tool to achieve an objective



Venturi

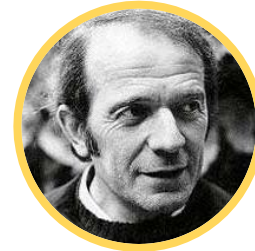
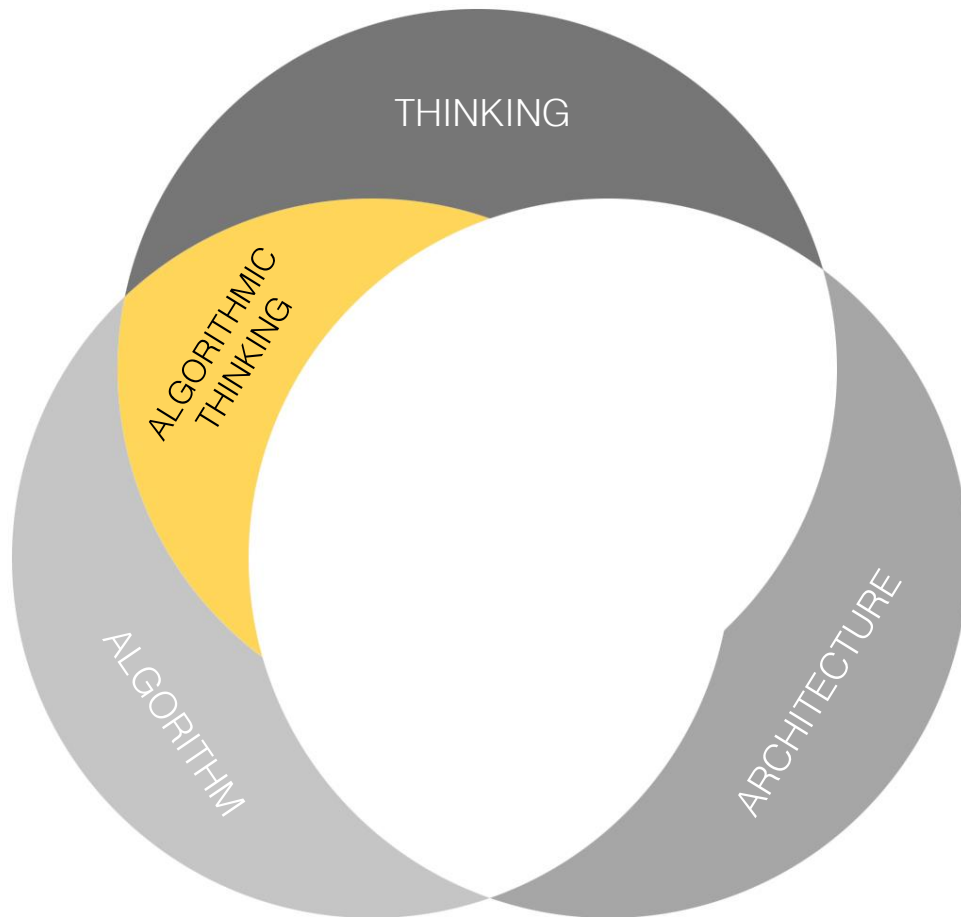
- It is essential to mediate and address **divergence**.
- If **conflict** is a basic expression of the social nature, it means that conflict is also at the base of Architecture itself.



Palazzo Massimo Alle Collone
Peruzzi (1536)

2. Algorithmic Thinking

Answering precision, efficiency and modulating after nature



Deleuze

- An object as a **singularity** and as matter is at the base of everything that exists.
- How to describe an object with the utmost **precision**?



Series of Objects
exhibited in Archilab

Objectile (1999)

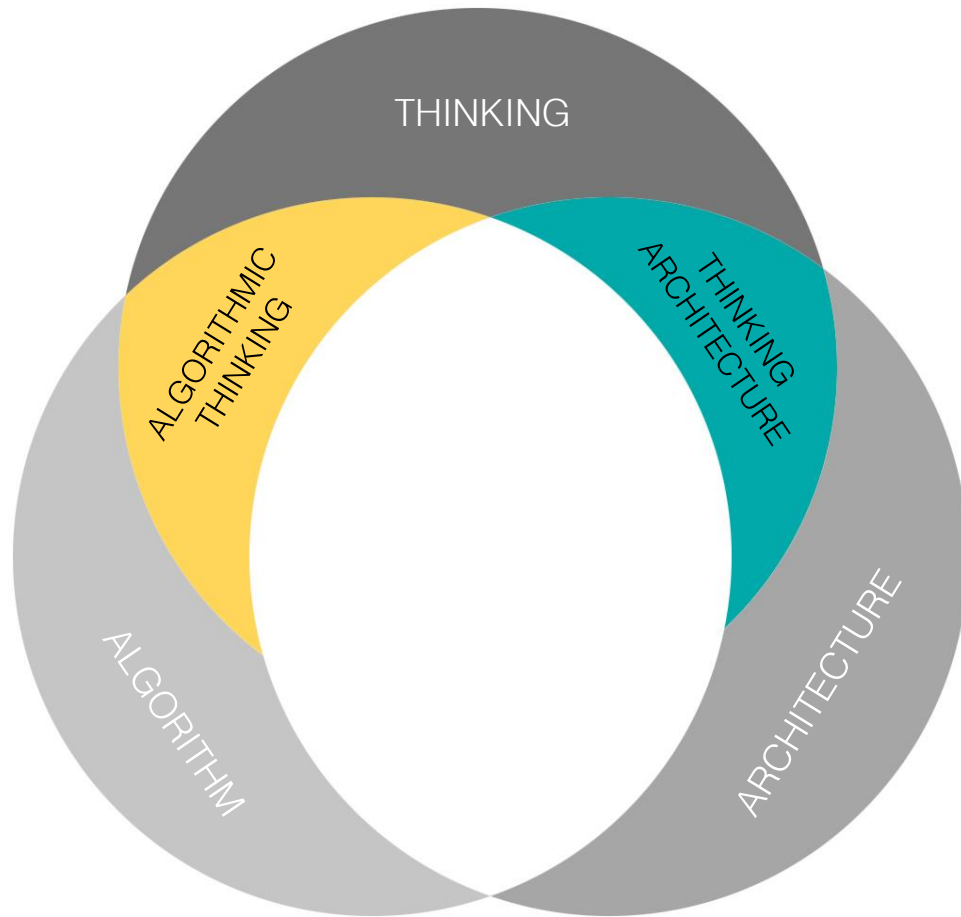


Alteka Tower (model)

Eisenman (1991)

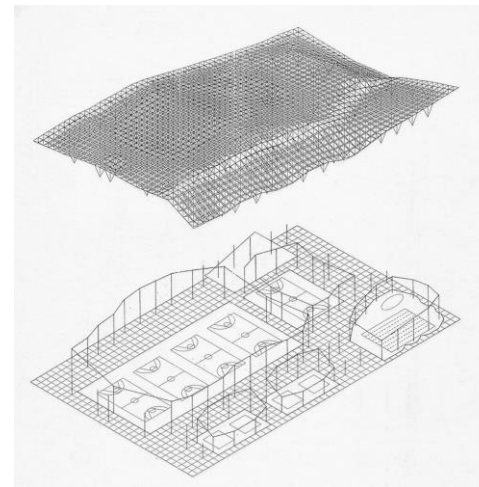
Folding

Complexity for the sake of complexity



Lynn

- Folds avoid fractures, overlay gaps, **interpolate**.
- The fold can accomplish opposite qualities: it can represent a sudden change of direction and it can **resolve differences** in a way which is distinct from other architectural methods of dealing with pluralism.



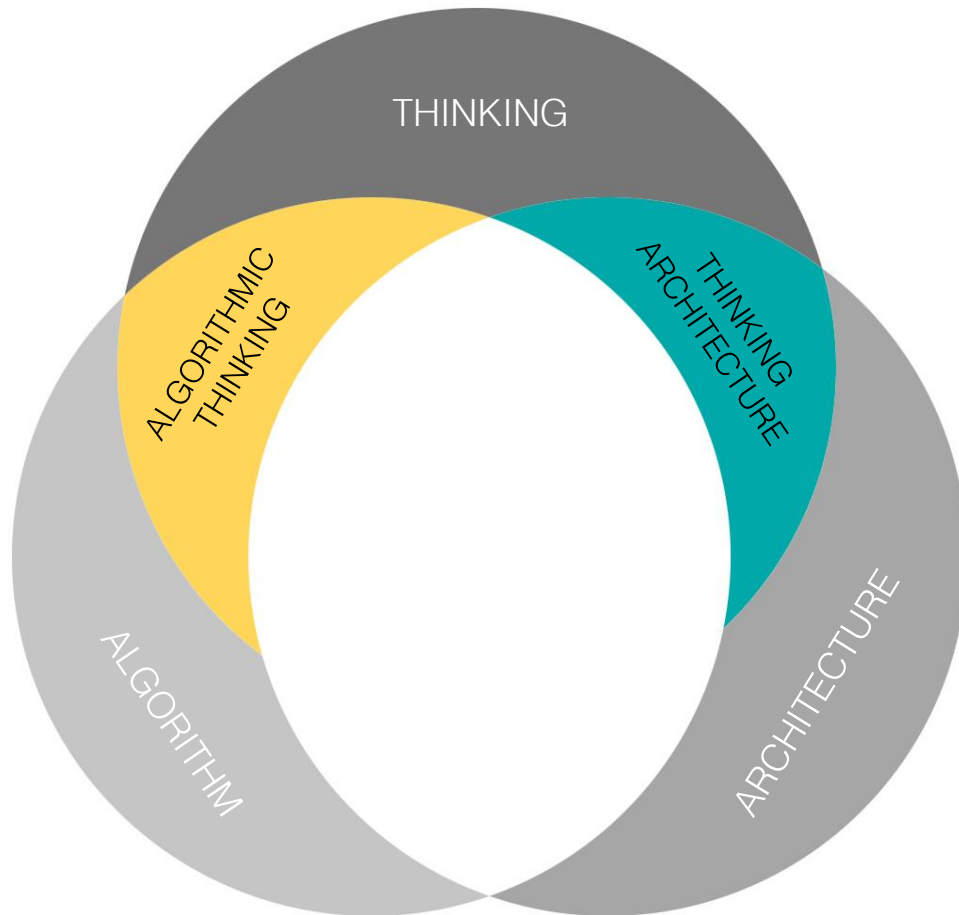
Odawara Gymnasium
Yoh (1991)



Manheim Multipurpose Hall
Otto (1975)

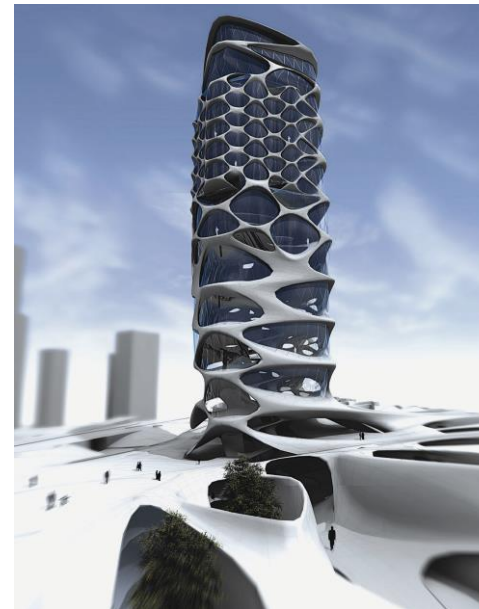
Parametricism

Taking Folding to the extreme



Schumacher

- It sets itself apart due to its ability to **describe systems** and subsystems of information.
- It denies pluralism; it **imposes itself** upon other approaches.



Vertical Shopping

Mitterer and Moroder (2006)

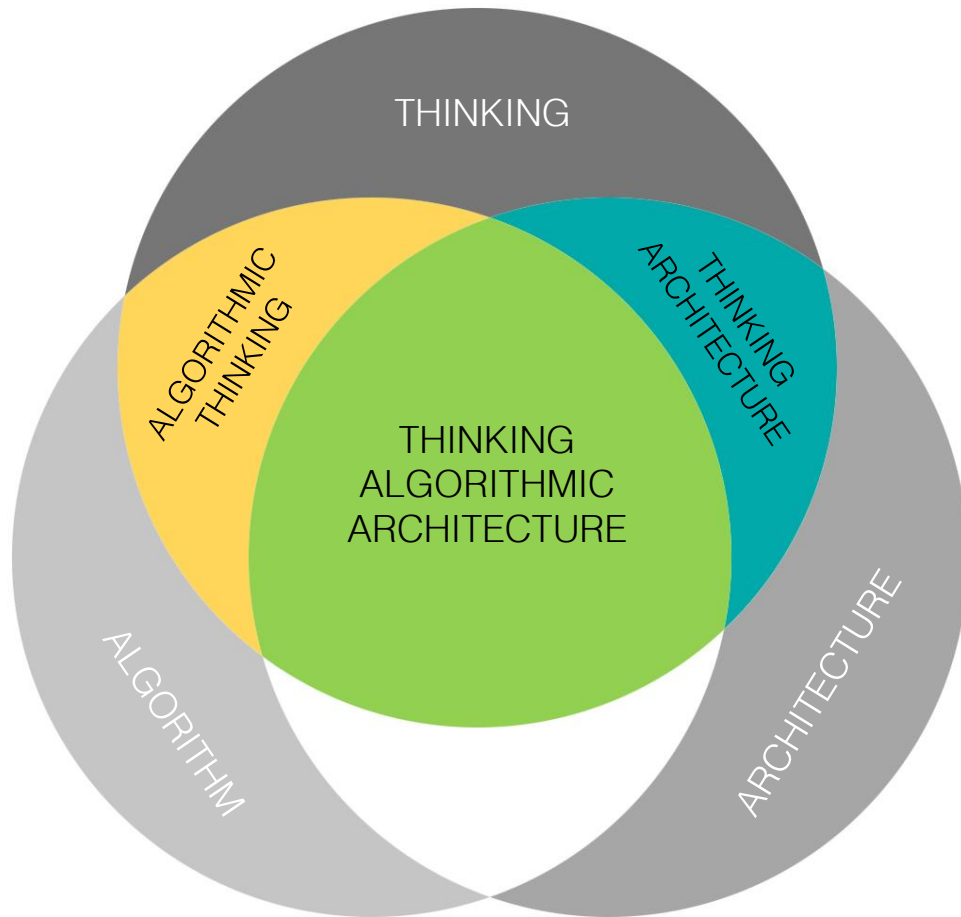


Chhatrapati Shivaji
International Airport
Terminal 2

SOM (2014)

3. Thinking Algorithmic Architecture

Articulating simplicity with complexity



Aravena

- To **design for the future**, rather than designing the future.
- Social housing is not only an ethical problem, but a complex problem that requires **professional quality**, rather than professional charity.



Villa Verde
Elemental (2013)

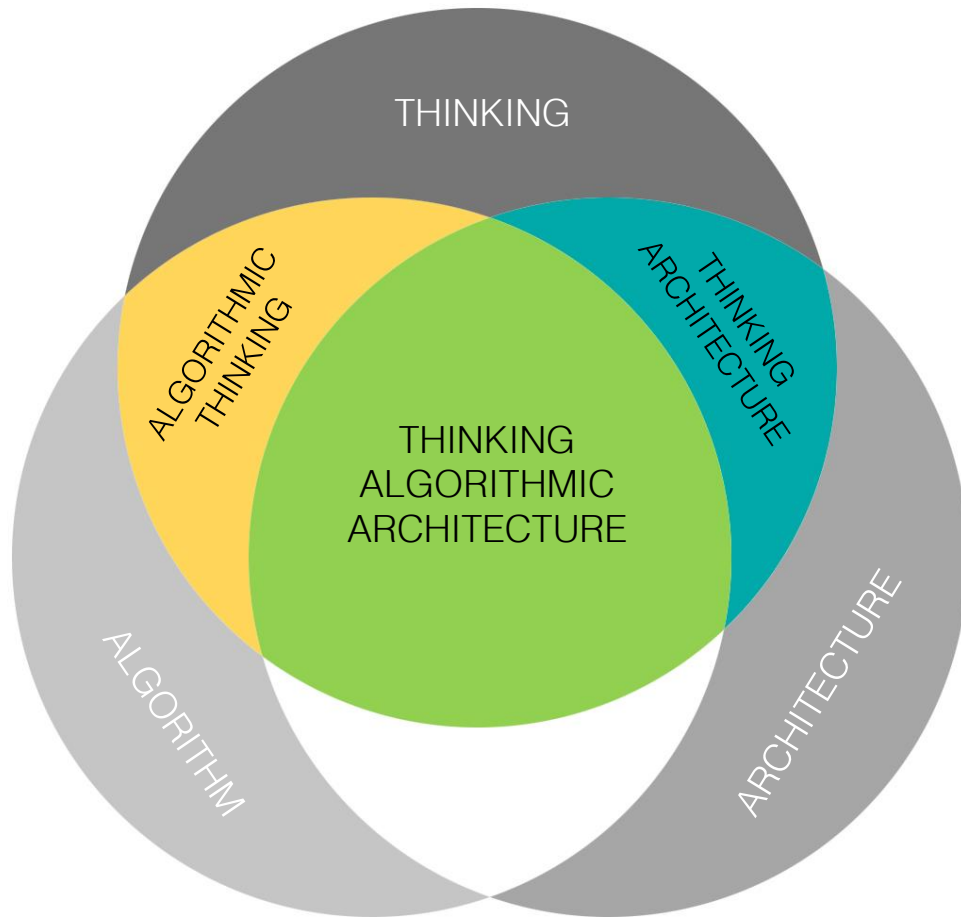
$$X = \frac{150 \text{ familias} \times 30 \text{ m}^2 \times \text{US} \$7.500}{1 \text{ ha}}$$



Quinta Monroy
Elemental (2004)

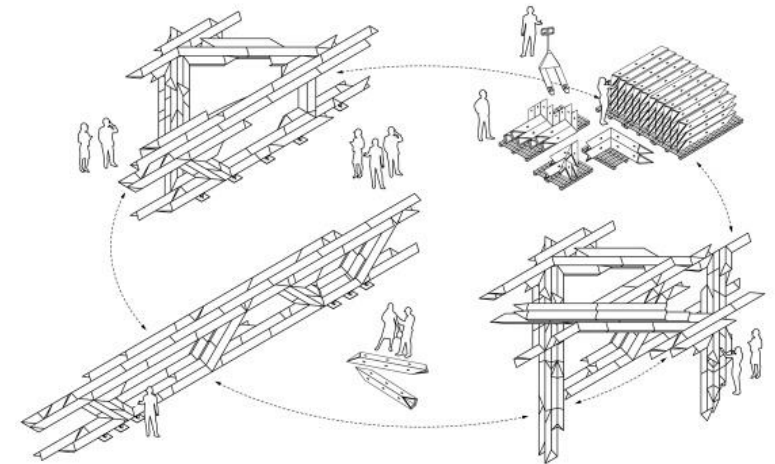
Discretism

Executing complexity



Retsin

- All that is **Discrete** is **quantifiable** by default, and thus more in touch with the reality of designing and building.
- Everything can be reduced to an **indivisible module** that is both an independent product and combinable element.

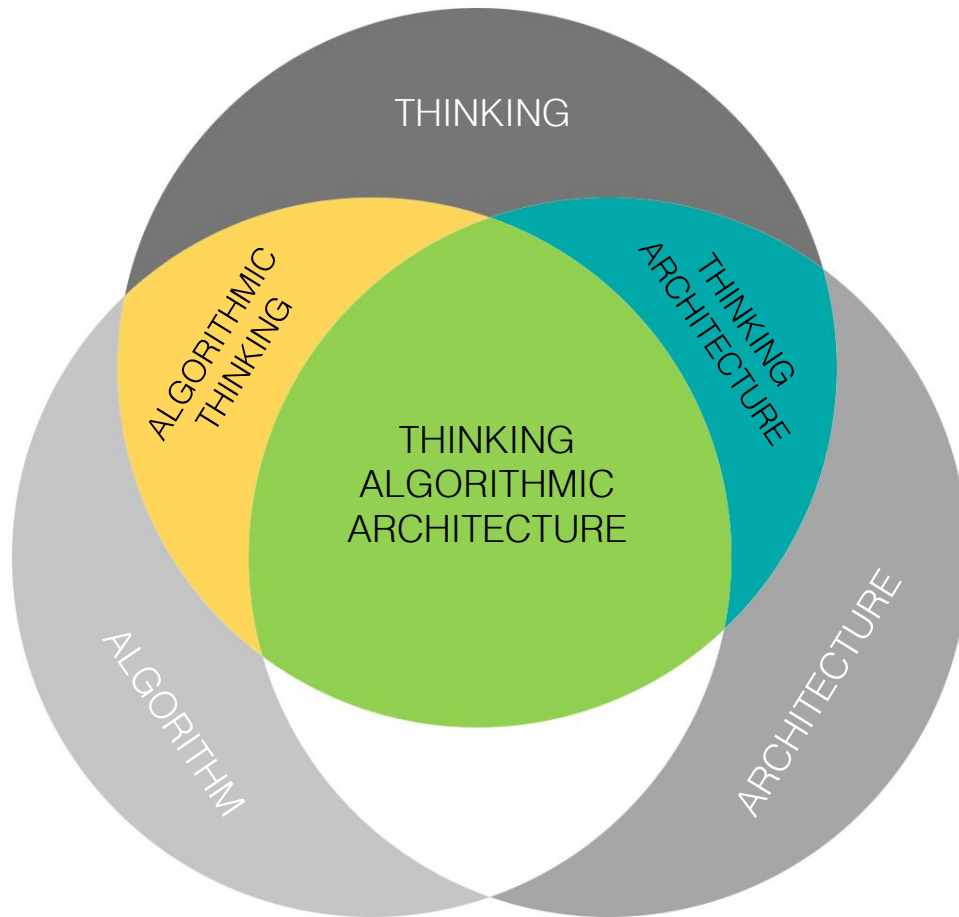


Biennale Pavilion, Tallinn

Retsin (2017)

Conclusions

Synthesizing thinking that is 'too recent'



- Design tools increase the need for Algorithmic Thinking
- In Architecture, **Algorithmic Thinking** should always be **paired** with **Architectural Thinking**
- Newer design tools **open up** different ways of thinking

THINKING ARCHITECTURE

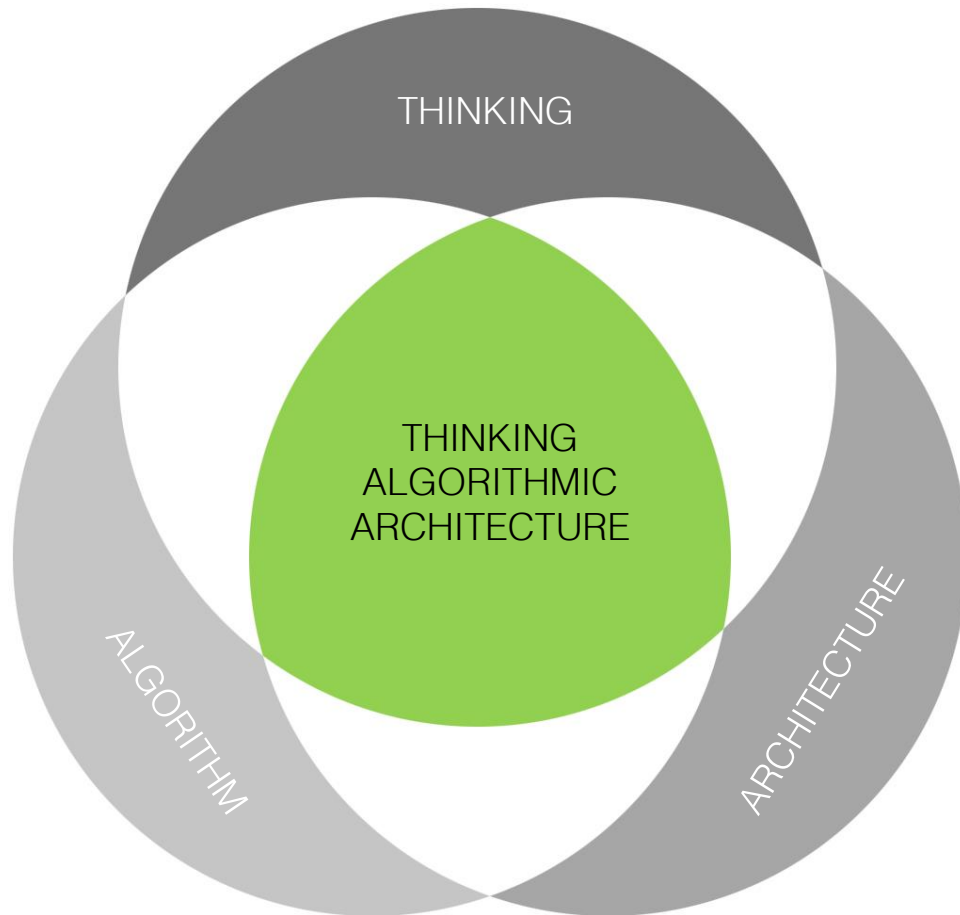
- It is related with **conflict/program** and how design manages to handle it.

ALGORITHMIC THINKING

- Formal approach towards which design is thought of efficiently, through sequential steps. It **seeks complexity**, as a way to generate evolution.

THINKING ALGORITHMIC ARCHITECTURE

- To address conflict efficiently, so as to **design adaptive** responses for the future.



- **Compare** design tools used in Architecture
- **Explore** the potential of Discretism
- Elaborate **alternatives**



Brickchain module
Bartlett students (2019)

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Thank you!

Questions?