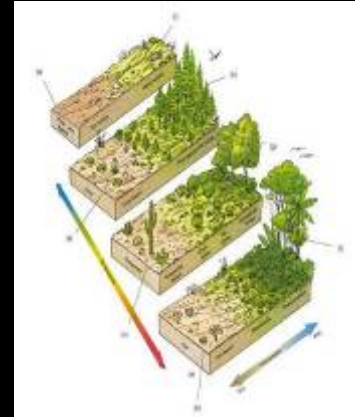
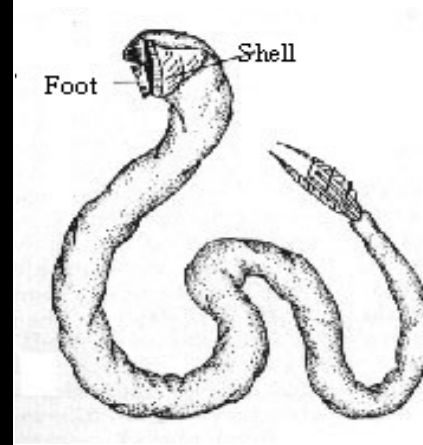
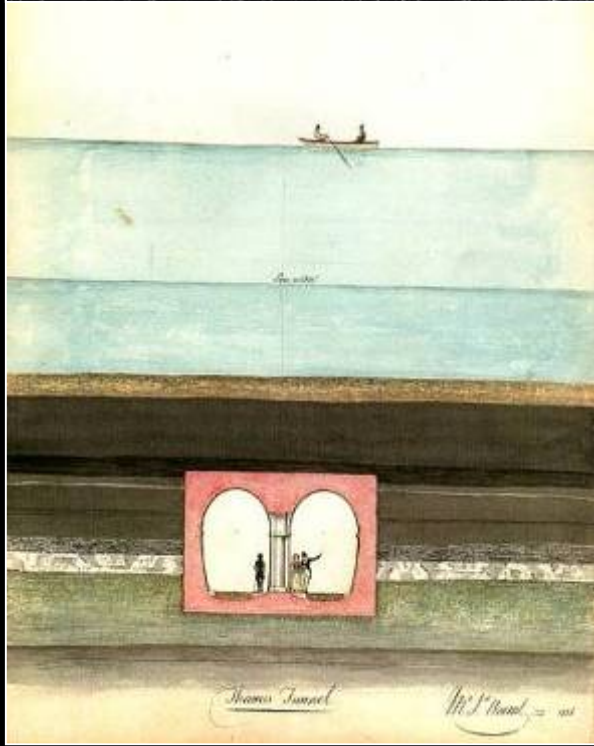
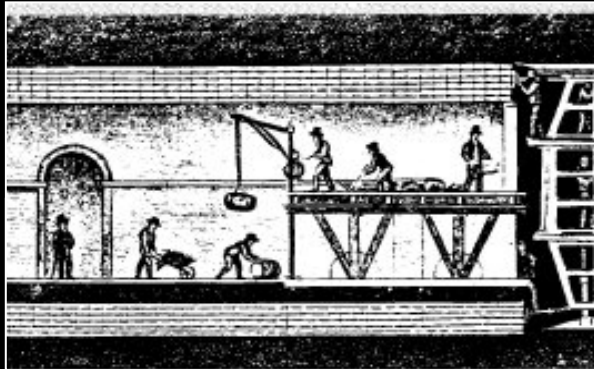


Biomimetic Approaches To Architectural Design For Increased Sustainability

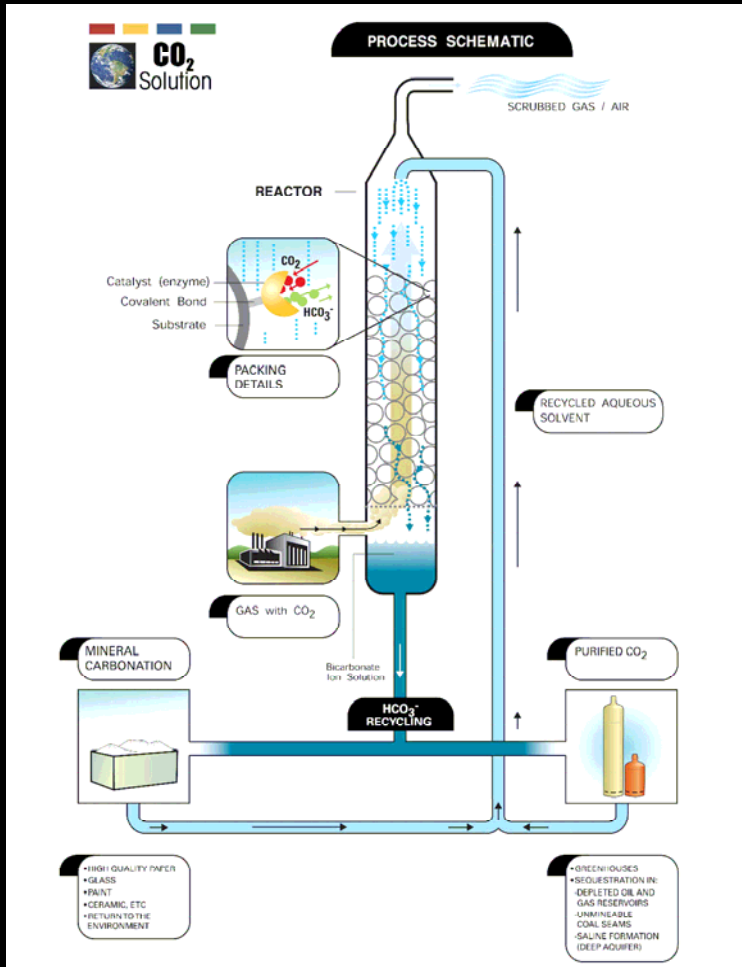


Maibritt Pedersen Zari
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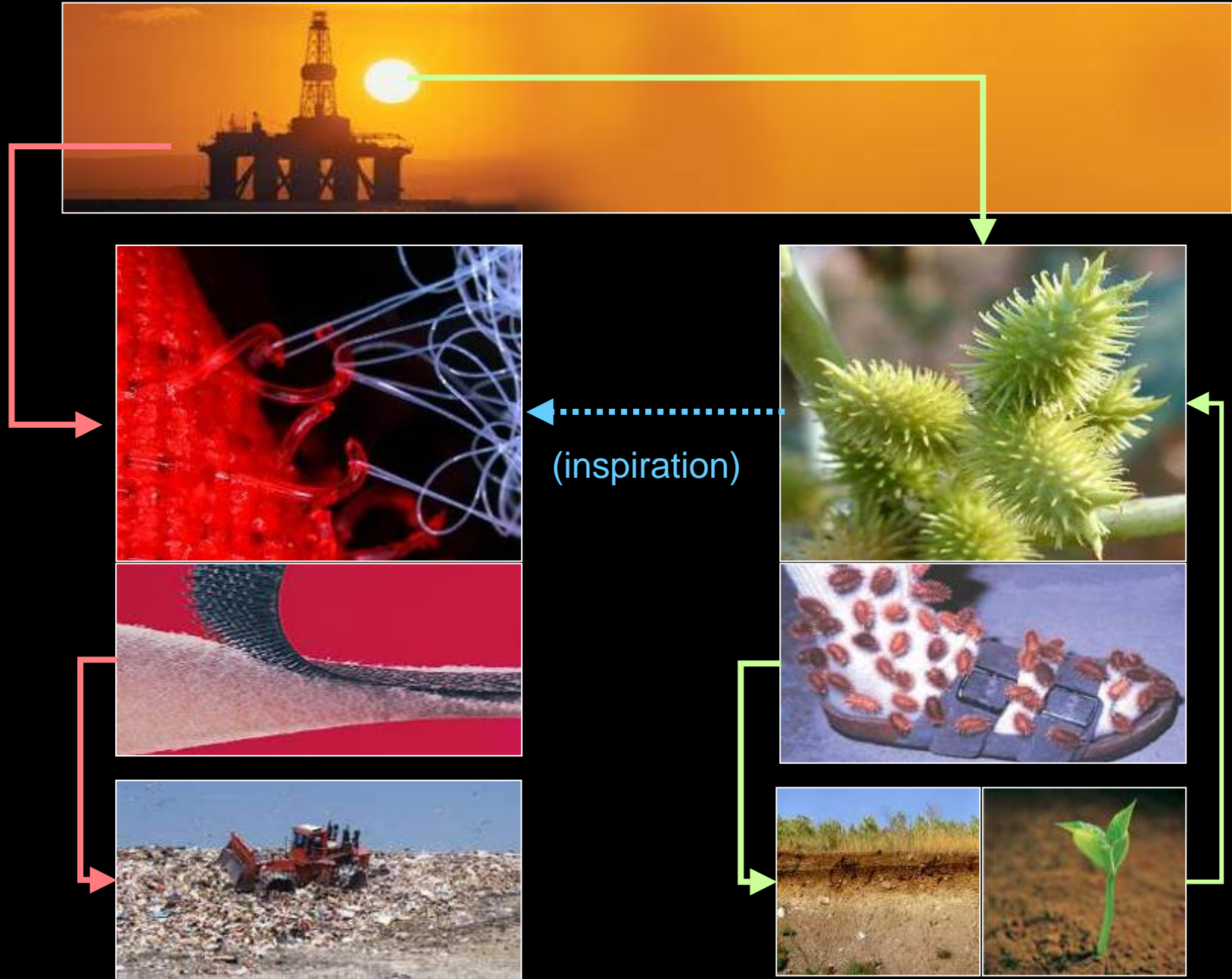


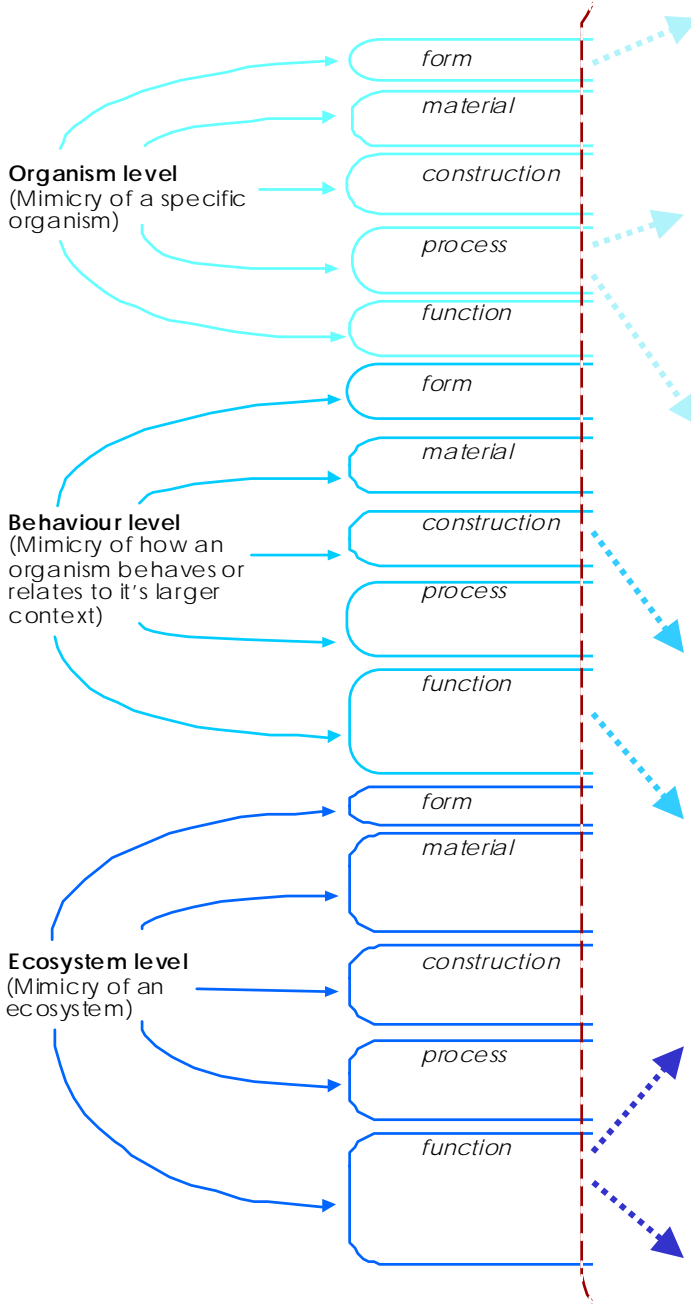
Marc Brunel - Tunnelling Shield, Thames Tunnel 1843



CO₂ Solutions - Carbon Sequestration
Process mimicry at the organism level

Biomimicry for sustainability?

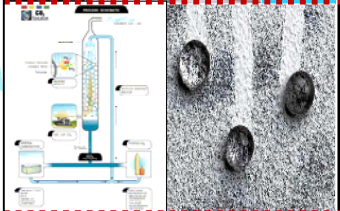




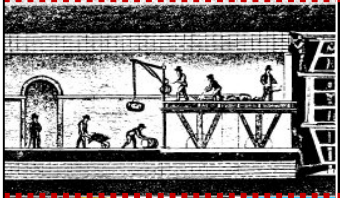
DaimlerChrysler Bionic car



Waterloo International Terminal



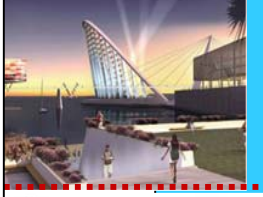
Carbon Sequestration
The Lotus Effect



Brunel Tunnelling Shield



CH2 project

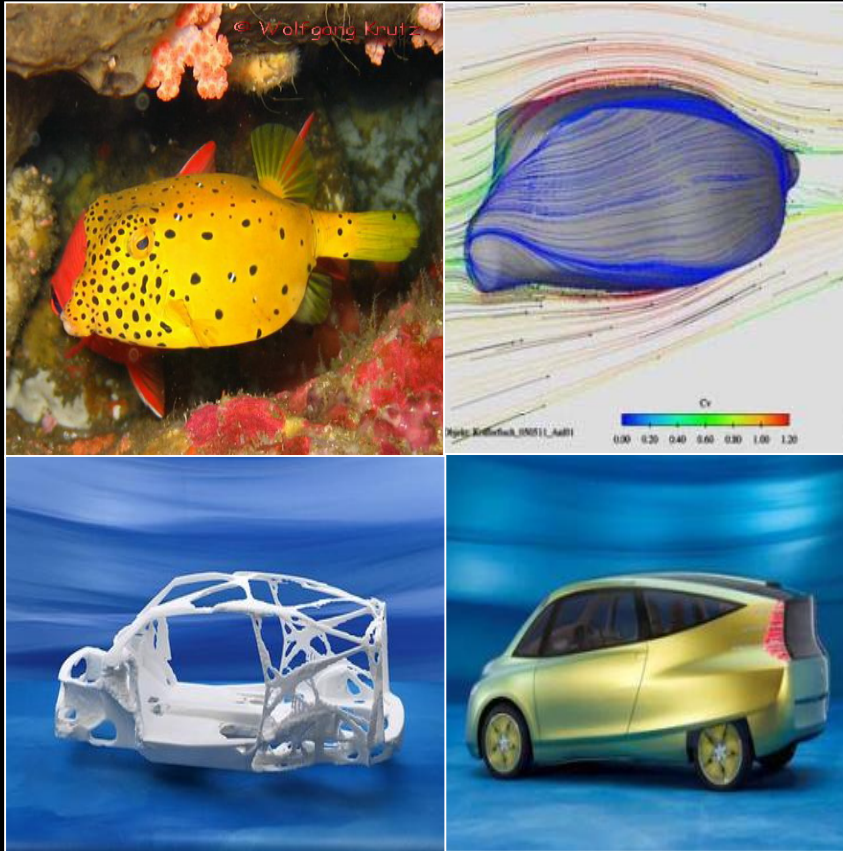


Teatro del Agua



Lloyd Crossing Project

Approaches to biomimicry



Designers looking to the living world
Bionic car



Biology influencing design
The Lotus Effect



← organism level



← behaviour level



← ecosystem level

Example - a building that mimics termites:



Organism level
(Mimicry of a specific organism)

- form* The building looks like a termite.
- material* The building is made from the same material as a termite (a material that mimics termite exoskeleton / skin for example).
- construction* The building is made in the same way as a termite (it goes through various growth cycles for example).
- process* The building works in the same way as an individual termite (it produces hydrogen efficiently through meta-genomics for example).
- function* The building functions like a termite in a larger context (it recycles cellulose waste and creates soil for example).



Behaviour level
(Mimicry of how an organism behaves or relates to it's larger context)

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Ecosystem level
(Mimicry of an ecosystem)

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Form / process mimicry at the **organism level**



Grimshaw Architects - Waterloo International Terminal, London

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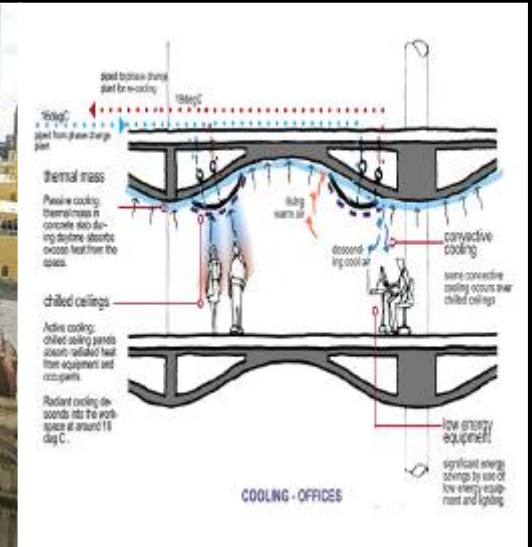
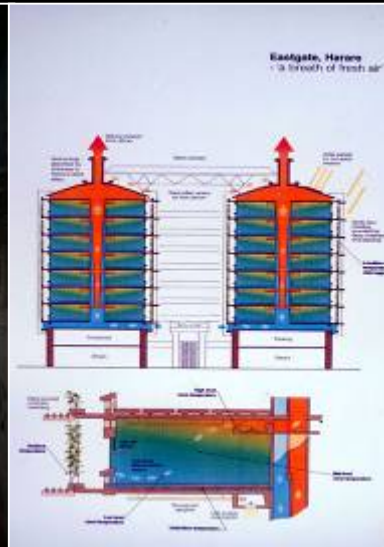
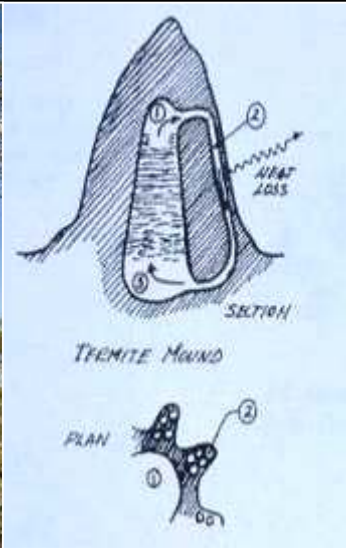
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Process / function mimicry at the **behaviour level**



Mick Pearce - Eastgate Building, Harare & CH2 project, Melbourne.

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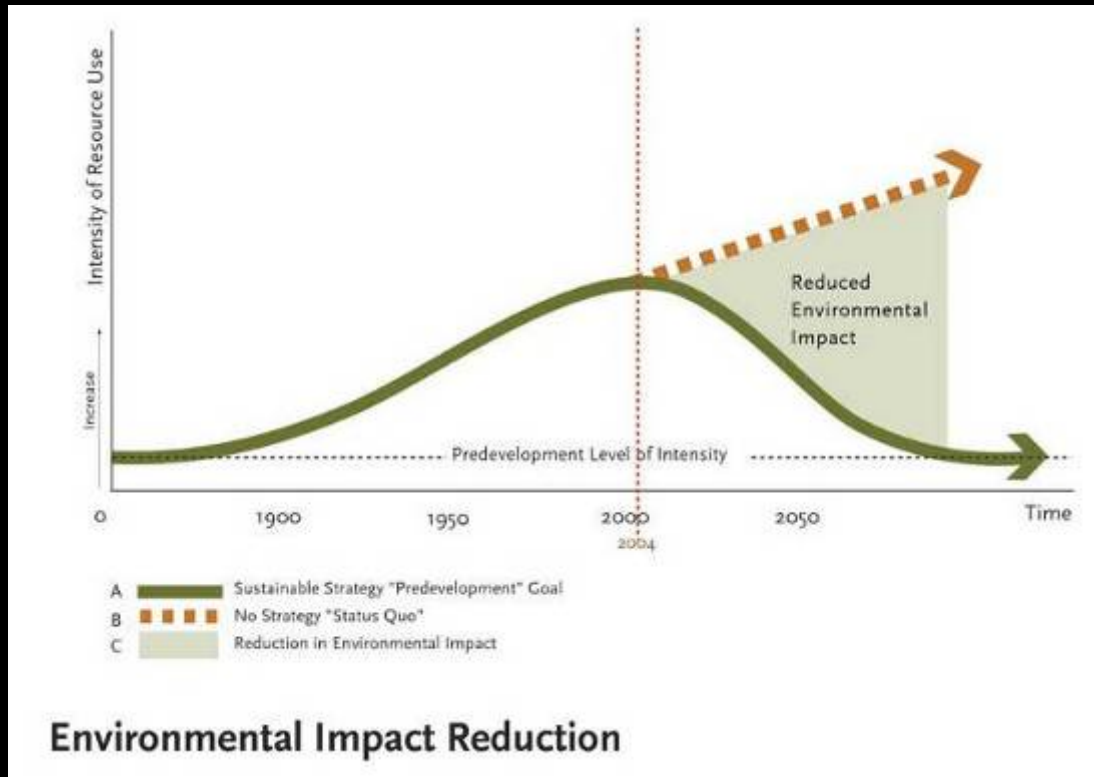
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Function mimicry at the **ecosystem level**



Mithūn Architects and GreenWorks Landscape Architecture
Lloyd Crossing Project proposed for Portland, Oregon.

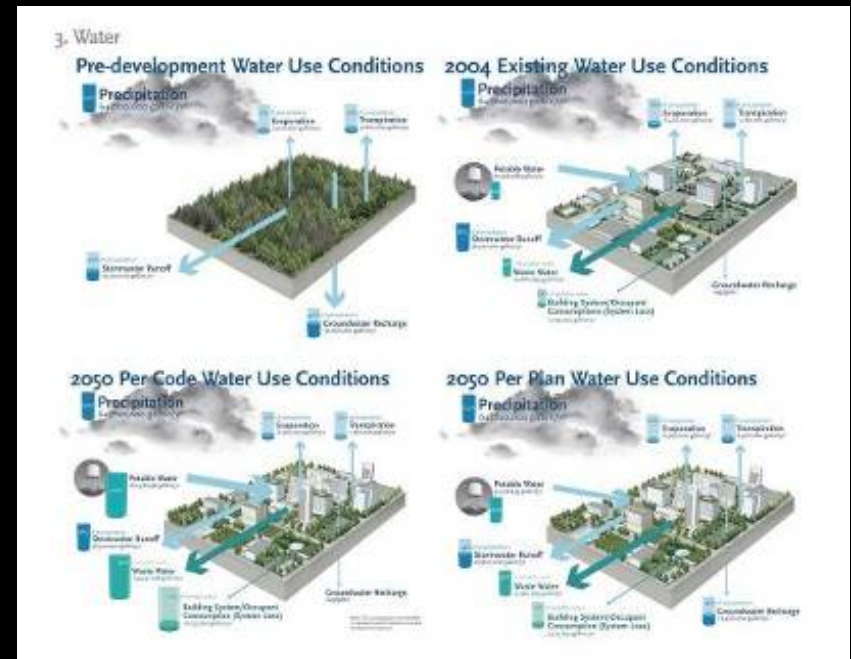


*Mithūn Architects and GreenWorks Landscape Architecture
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Biomimicry for sustainable architecture

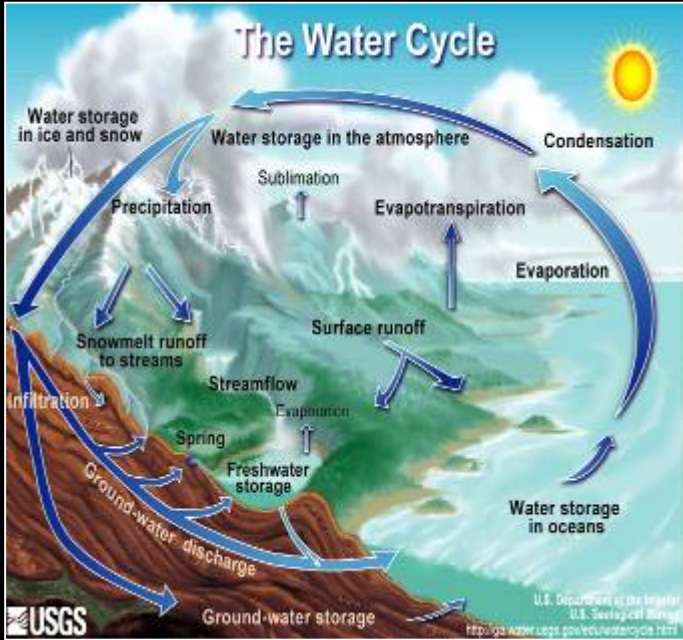


Vs



Multiple levels of mimicry

Process / function mimicry at the organism and ecosystem levels



Grimshaw Architects

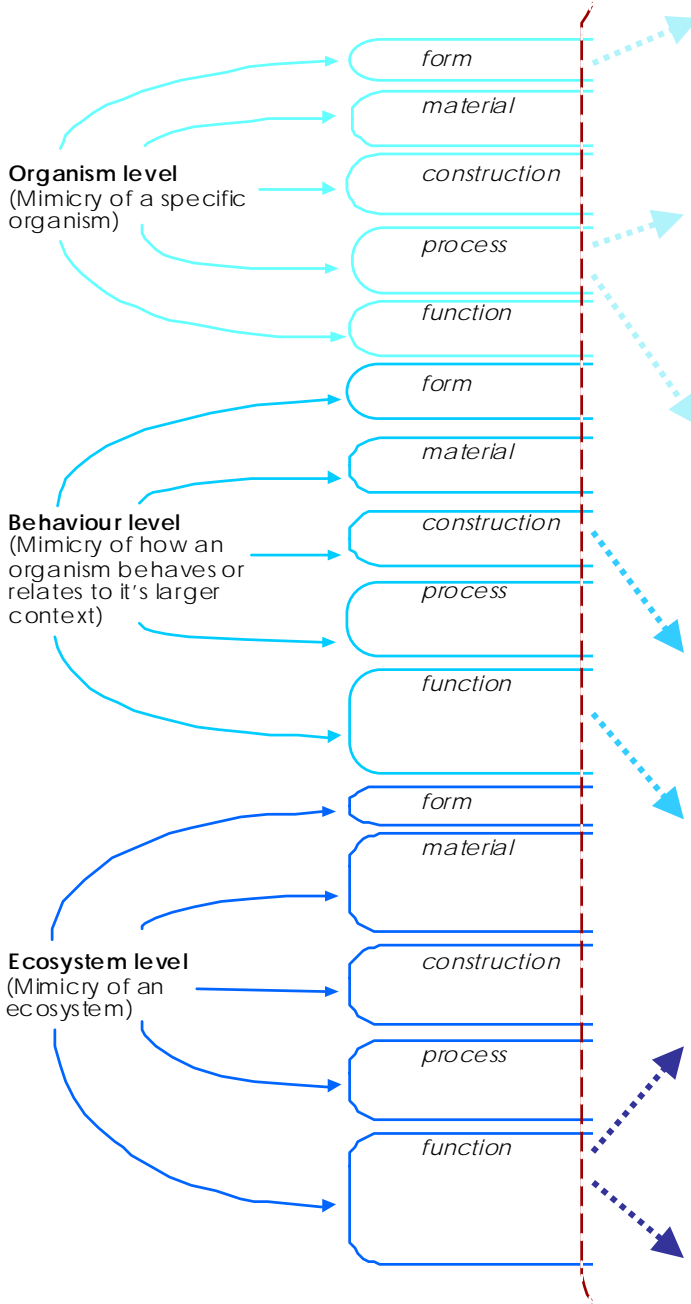
Teatro del Agua

Mimicry and integration

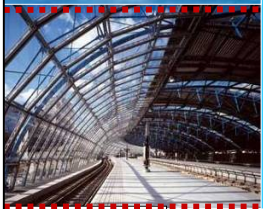


McDonough and Partners
Adam Joseph Lewis Center for Environmental Studies at Oberlin College,
Ohio.

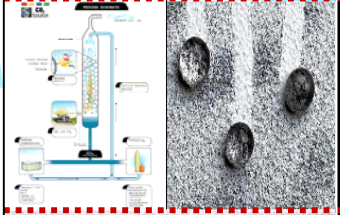
Process mimicry at the ecosystem level



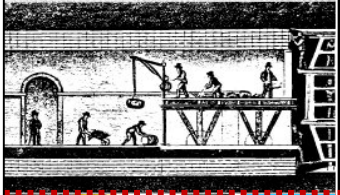
DaimlerChrysler Bionic car



Waterloo International Terminal



Carbon Sequestration
The Lotus Effect



Brunel Tunnelling Shield



CH2 project



Teatro del Agua



Lloyd Crossing Project

Changing design metaphors?



or



?

Biomimetic Approaches To Architectural Design For Increased Sustainability



Maibritt Pedersen Zari
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School of Architecture
Victoria University
Wellington
New Zealand

'From my designer's perspective, I ask: Why can't I design a building like a tree?'

A building that makes oxygen, fixes nitrogen, sequesters carbon, distils water, builds soil, accrues solar energy as fuel, makes complex sugars and food, creates microclimates, changes colours with the seasons and self replicates.

This is using nature as a model and a mentor, not as an inconvenience. It's a delightful prospect...'

(McDonough and Braungart, 1998)



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