



BIPV

Designing for PV

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Director, Arup
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Tipping Points...

in my experience!

Awareness

Opportunity

Money value

Carbon value

Aesthetics

Technology

Project message

Politics

- **Critical Decisions**
- Is the location suitable?
- Is a good orientation available?
- Appropriate type of PV
- Can it look great?
- Applied, integrated or symbiotic?
- Value

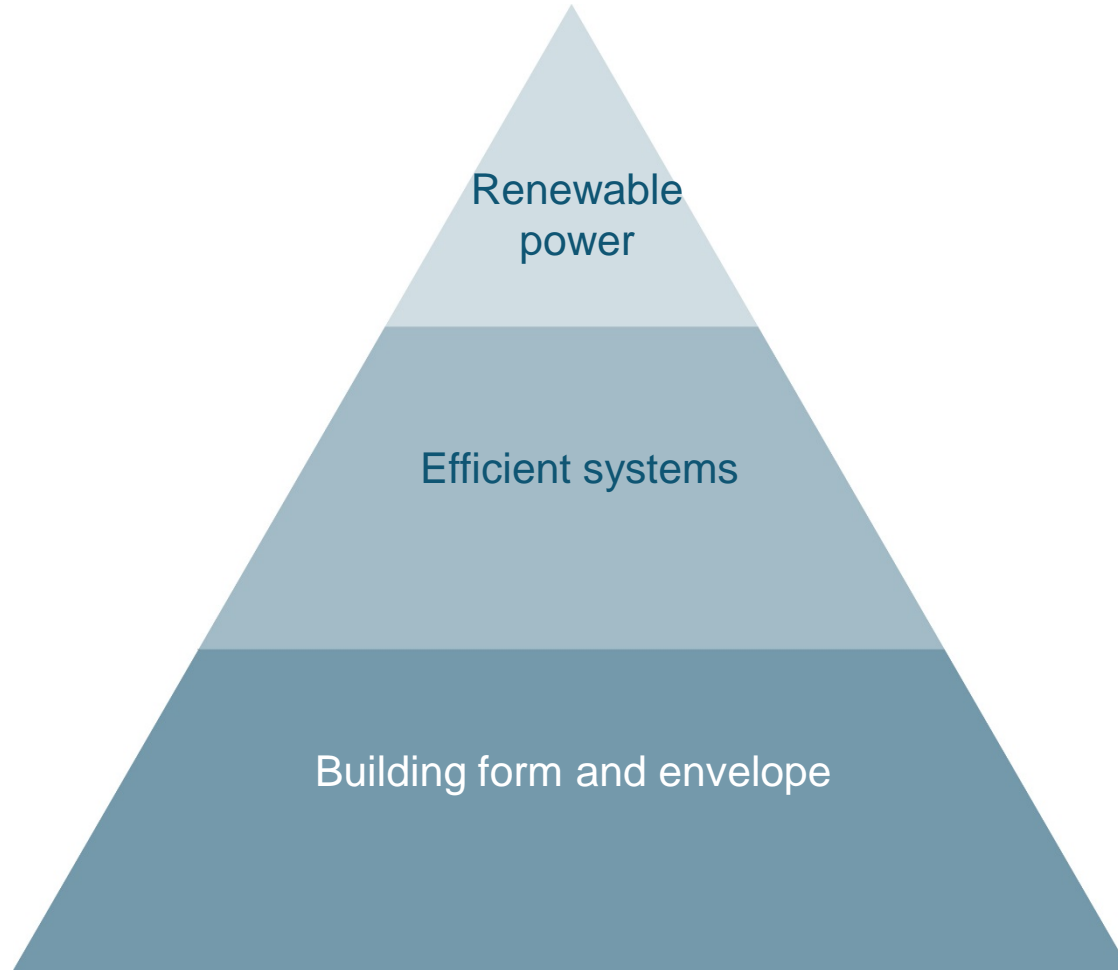


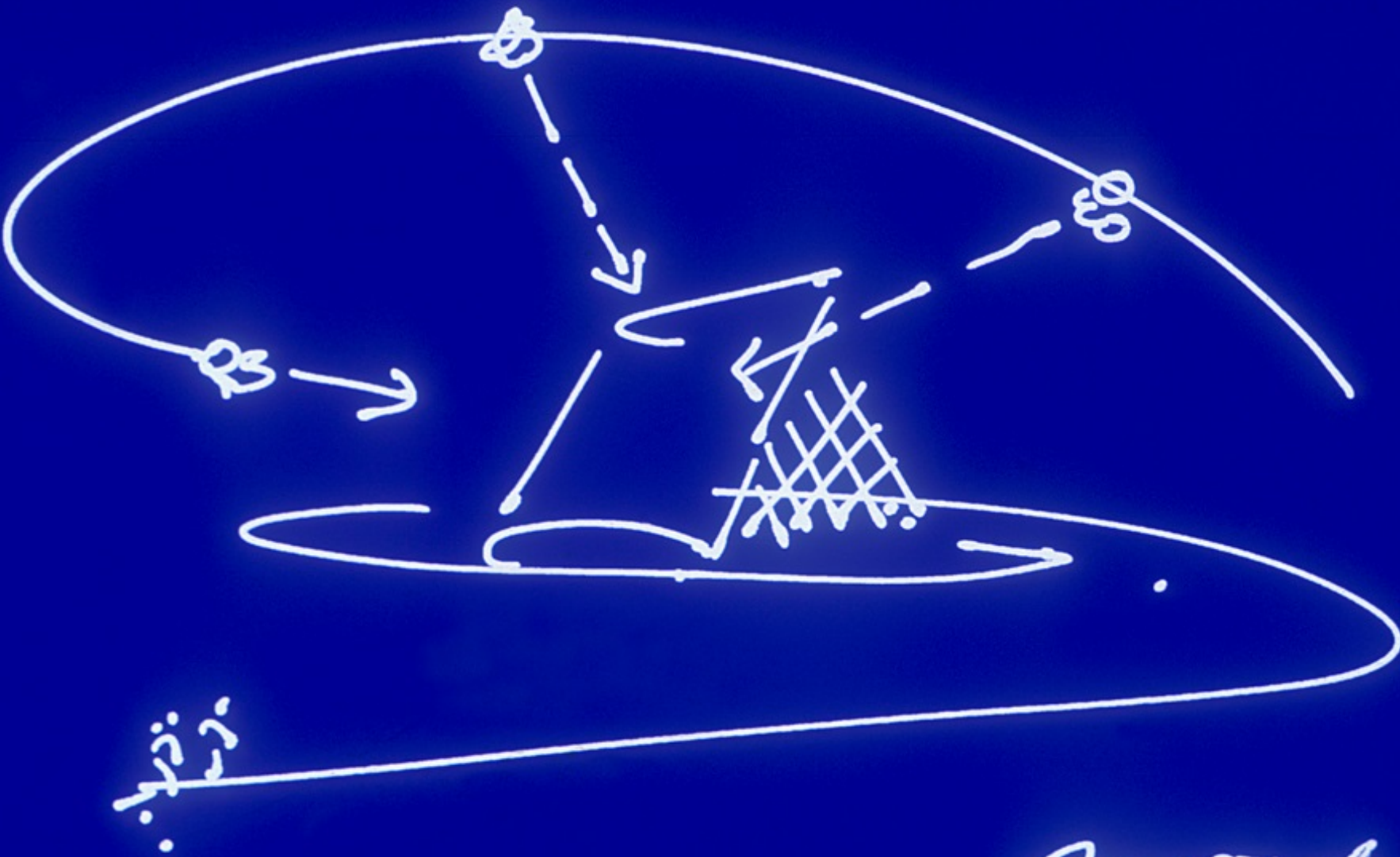


Druk White Lotus School



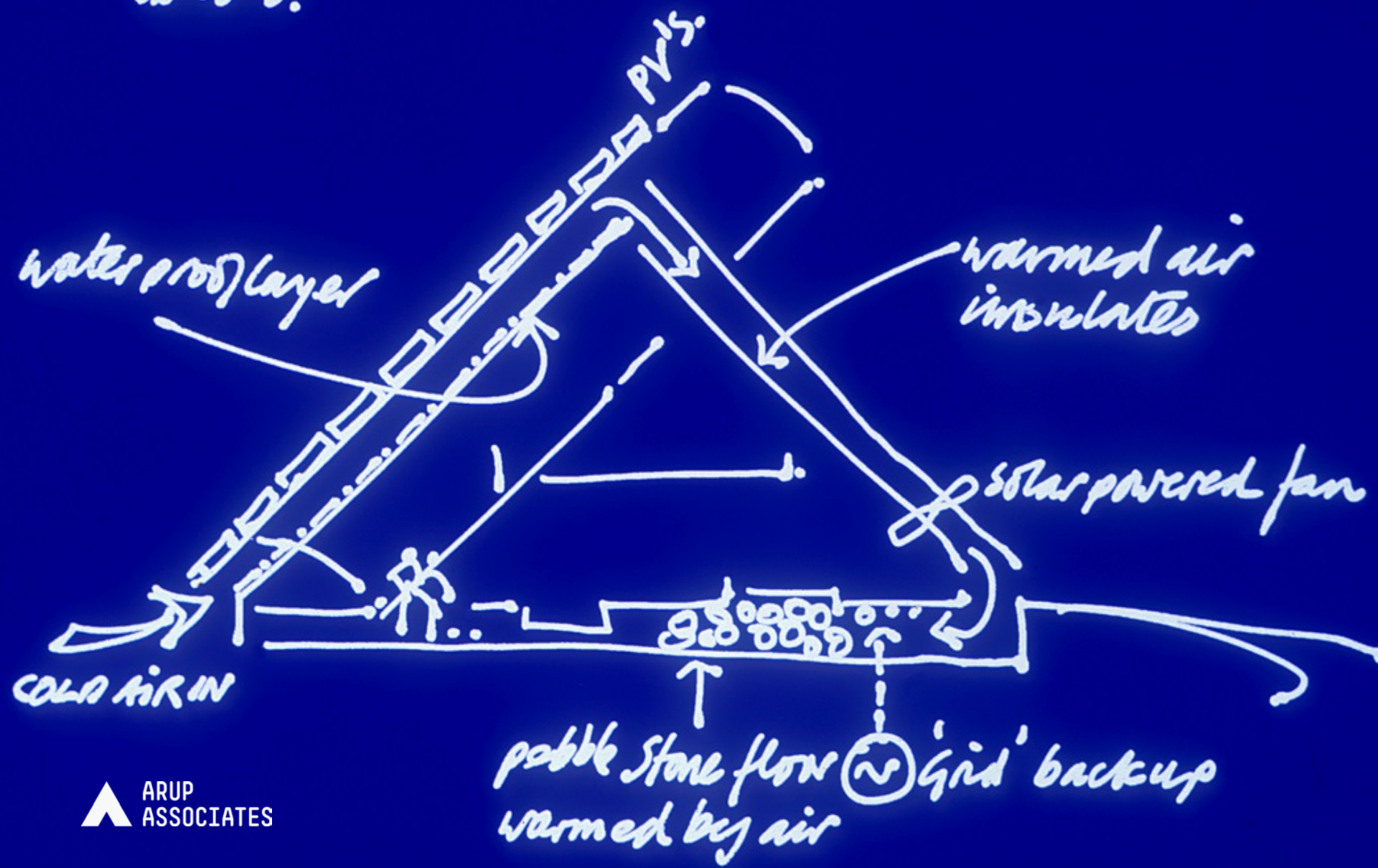
Symbiosis through energy hierarchy





Approach.
10 25.5.

SECTION
20 26.3.



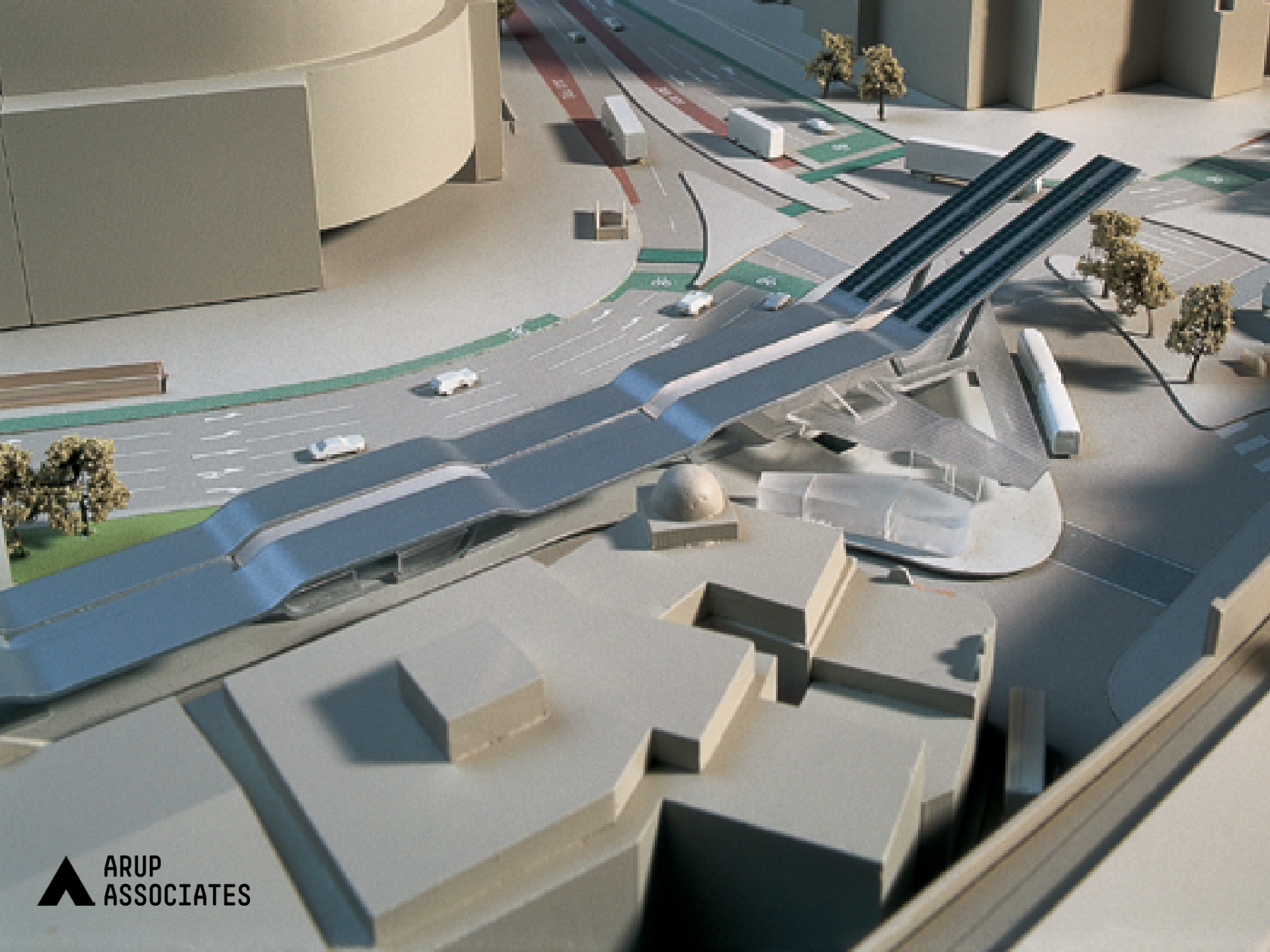






ENERGY + HEALTH

VAUXHALL









D	
2	Stockwell Brixton West Norwood
88	Stockwell Clapham Common
N2	Stockwell Brixton West Norwood Crystal Palace Every night

E	
156	Watts
344	Watts
tops F G H J	E

Did you know?

On the canopy above there are solar panels generating electricity to power the bus station lights

Electrical power currently being generated **15.00** kW

Total electricity generated since installation in 2004 **167967** kWh

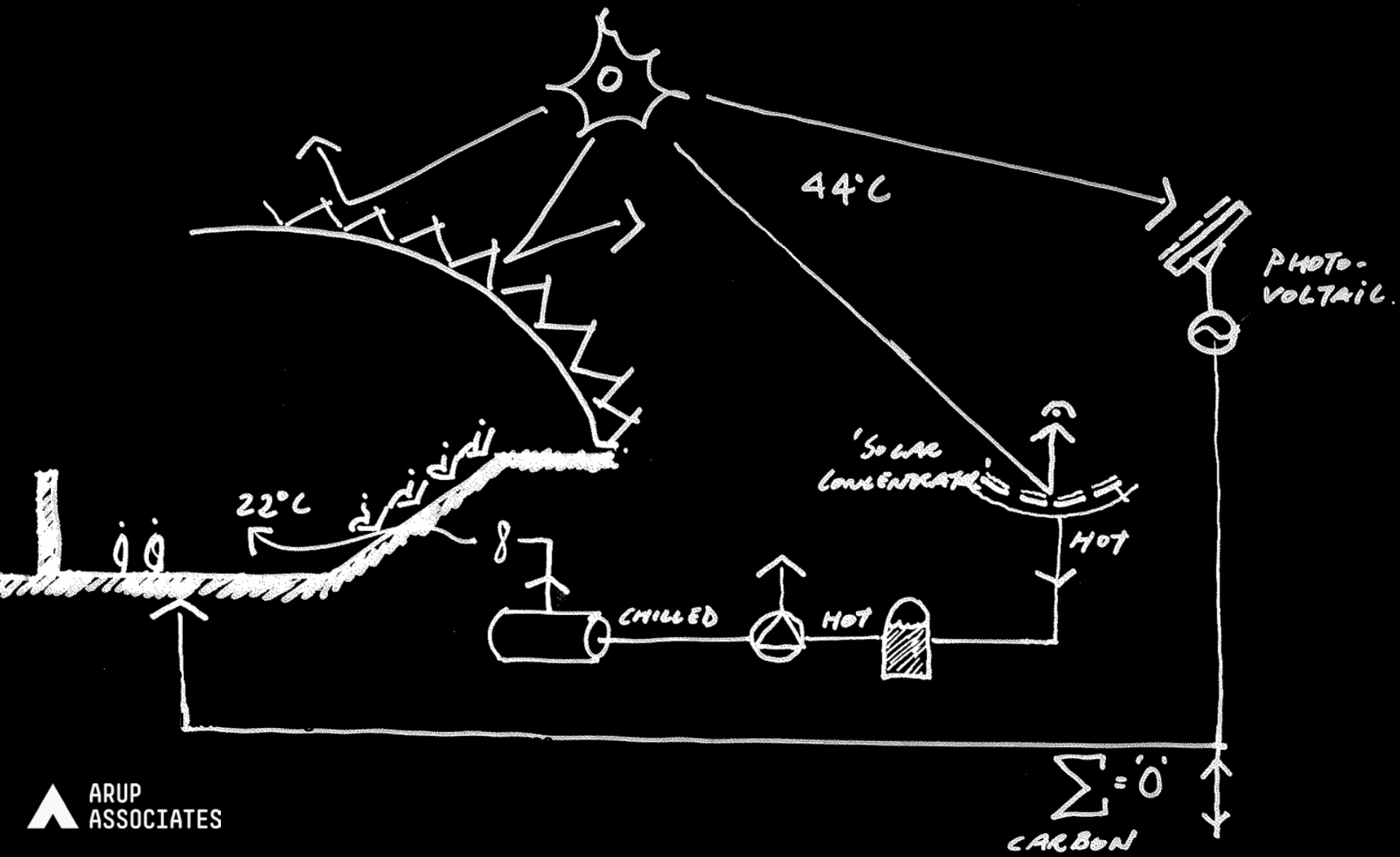
Total carbon dioxide emissions saved **67186** kg

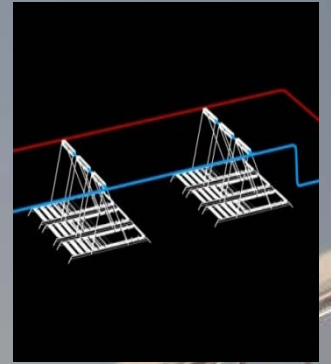
To explain further...

1kWh (kilowatt hour) is equivalent to the energy used by ten 100W lightbulbs switched on for an hour

Carbon dioxide (CO₂) is a 'greenhouse gas' contributing to climate change, and 1kg of CO₂ is produced by burning 0.5 litres of petrol

In one year the electricity generated by the solar panels on this bus station will be enough to make nearly 1 million pieces of toast!





Stage 01
Solar Harvesting







Architect; RPBW
California Academy of Science

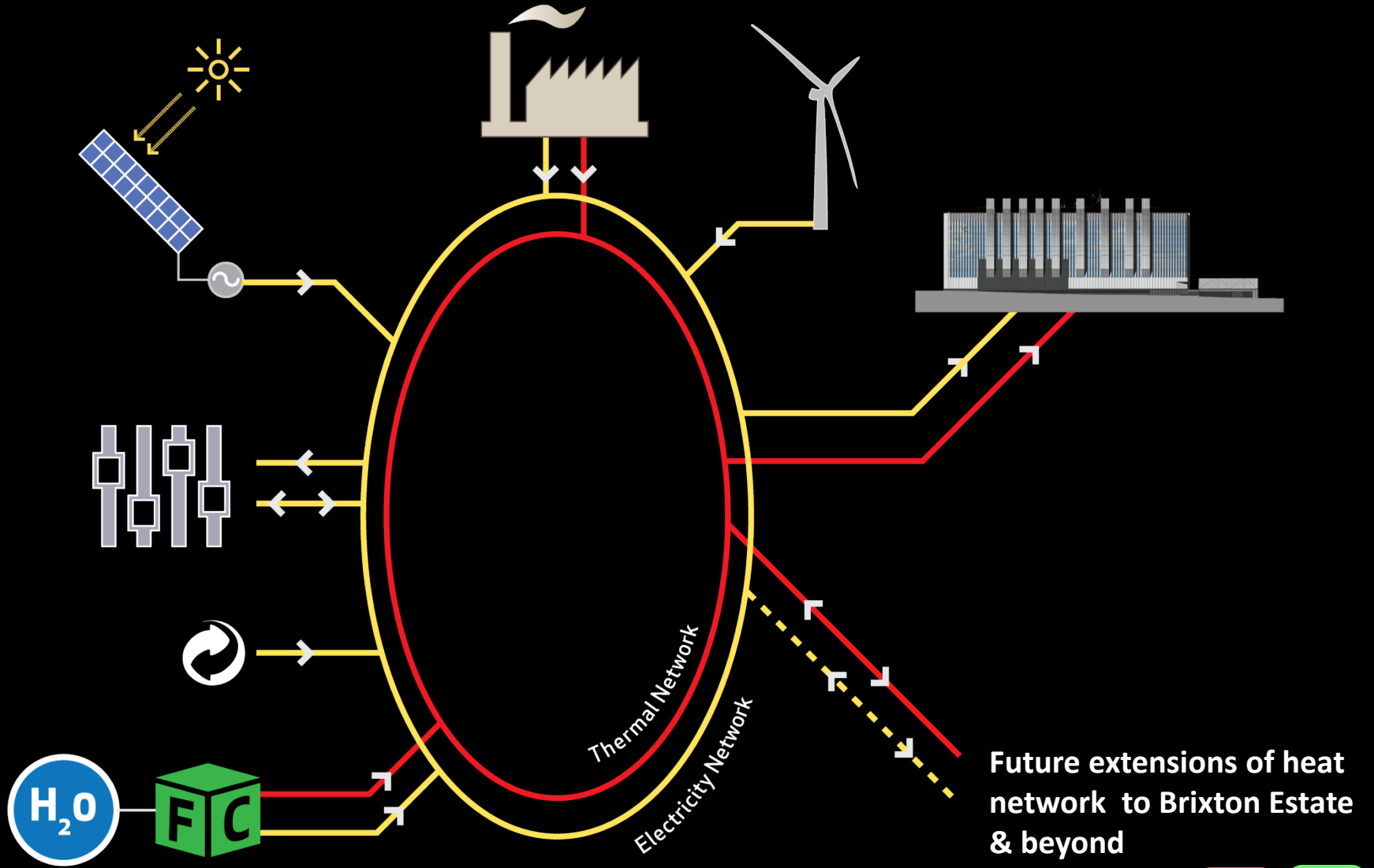




Architect: Wilkinson Eyre
The Crystal

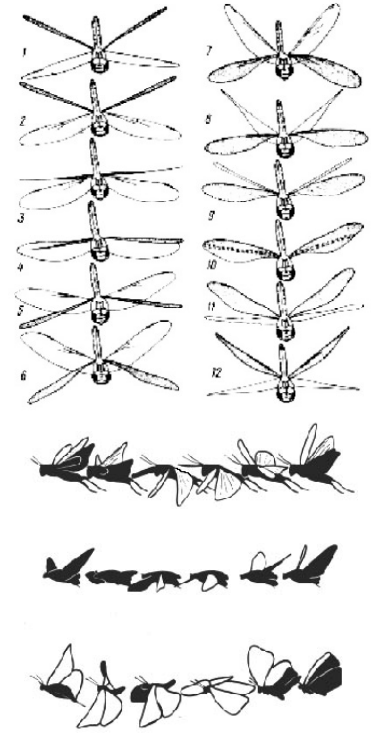
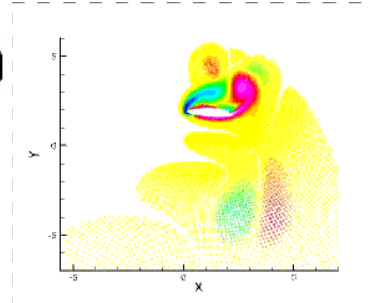
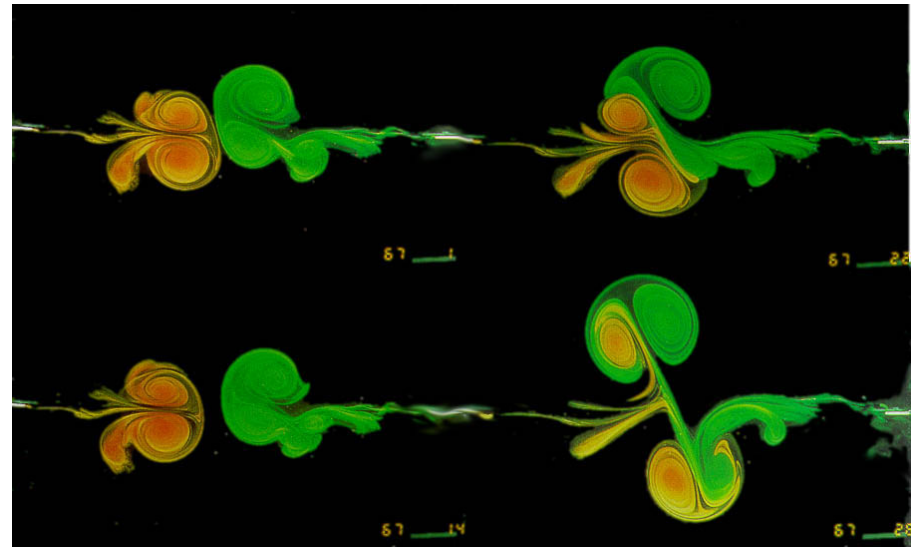
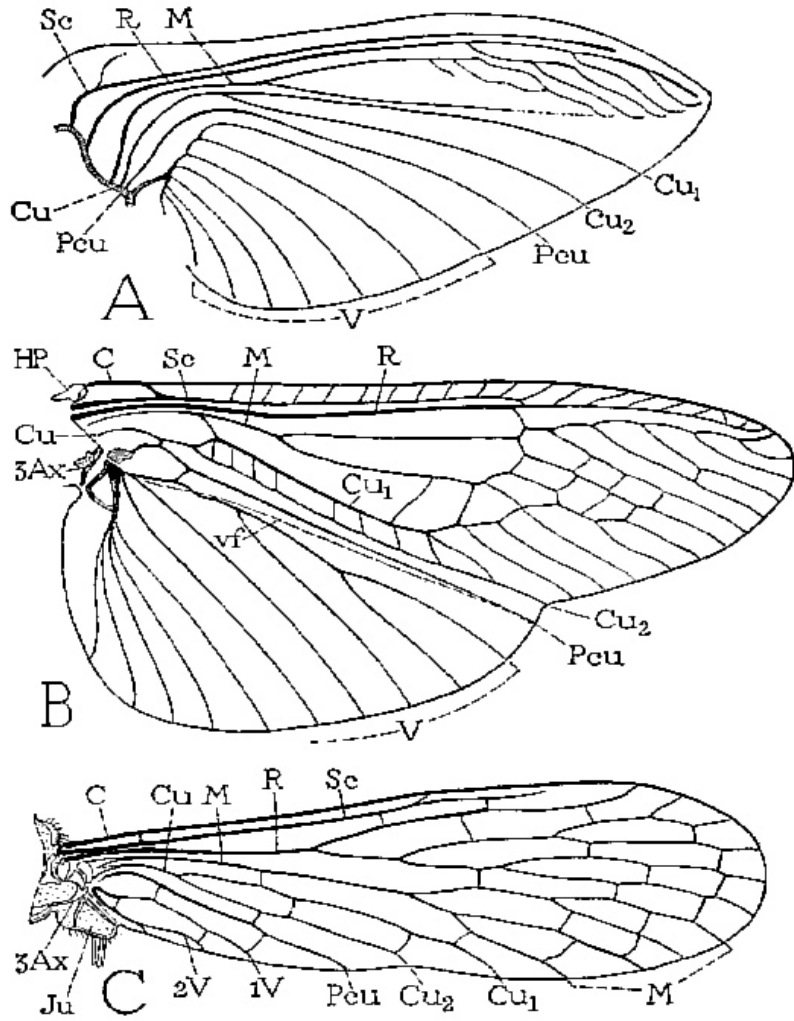


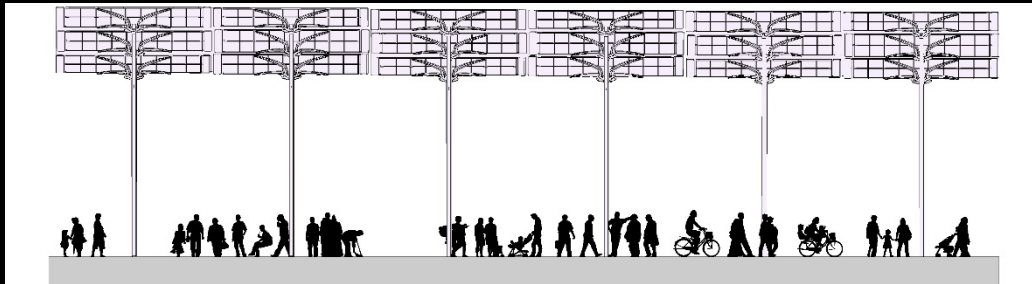
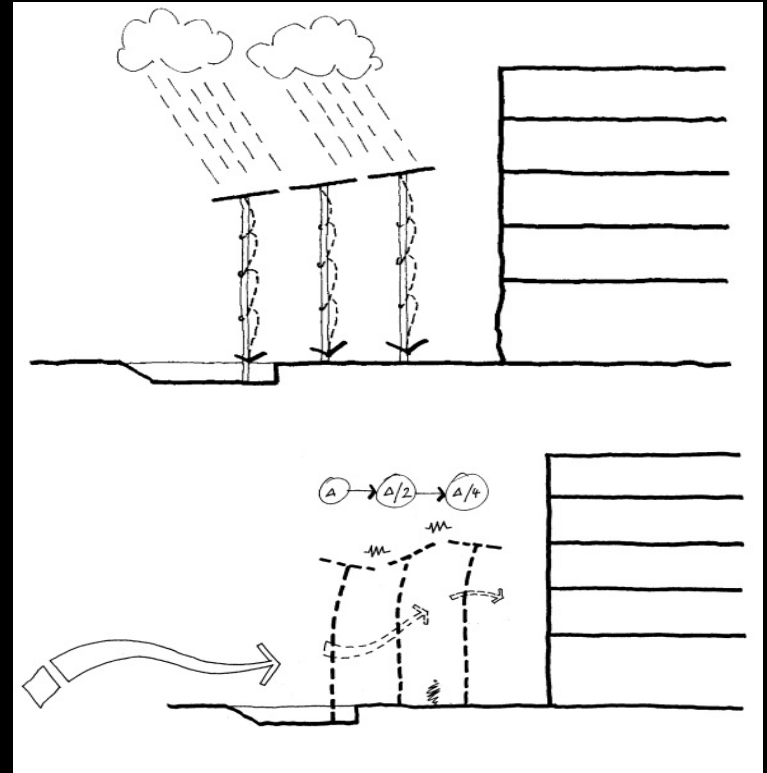
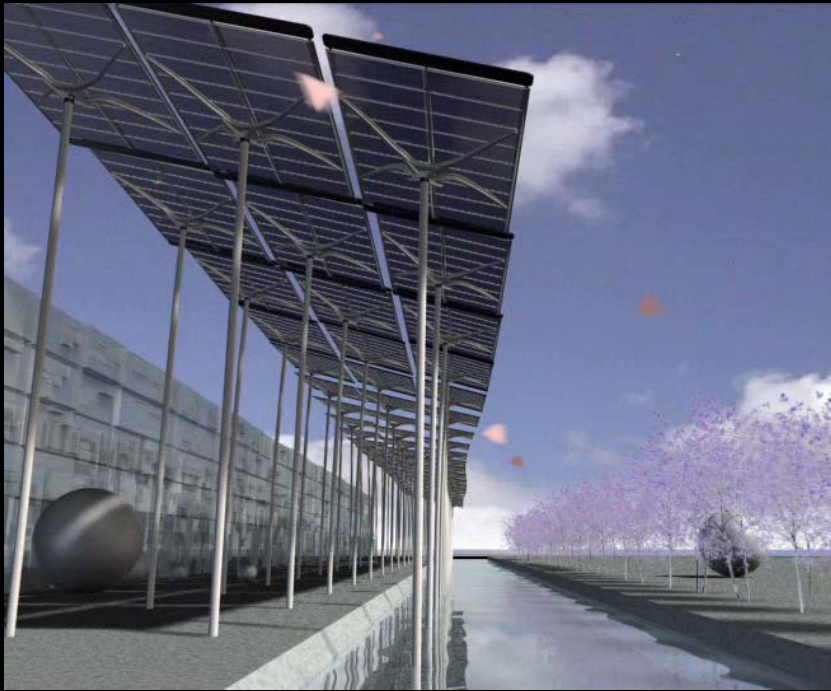
Architect: RONALD LU & PARTNERS LTD
Construction Industry Council (CIC), Hong Kong



Future extensions of heat network to Brixton Estate & beyond







“A design team
which produces a total,
balanced, efficient design
can help to produce a
better environment”

Sir Ove Arup

