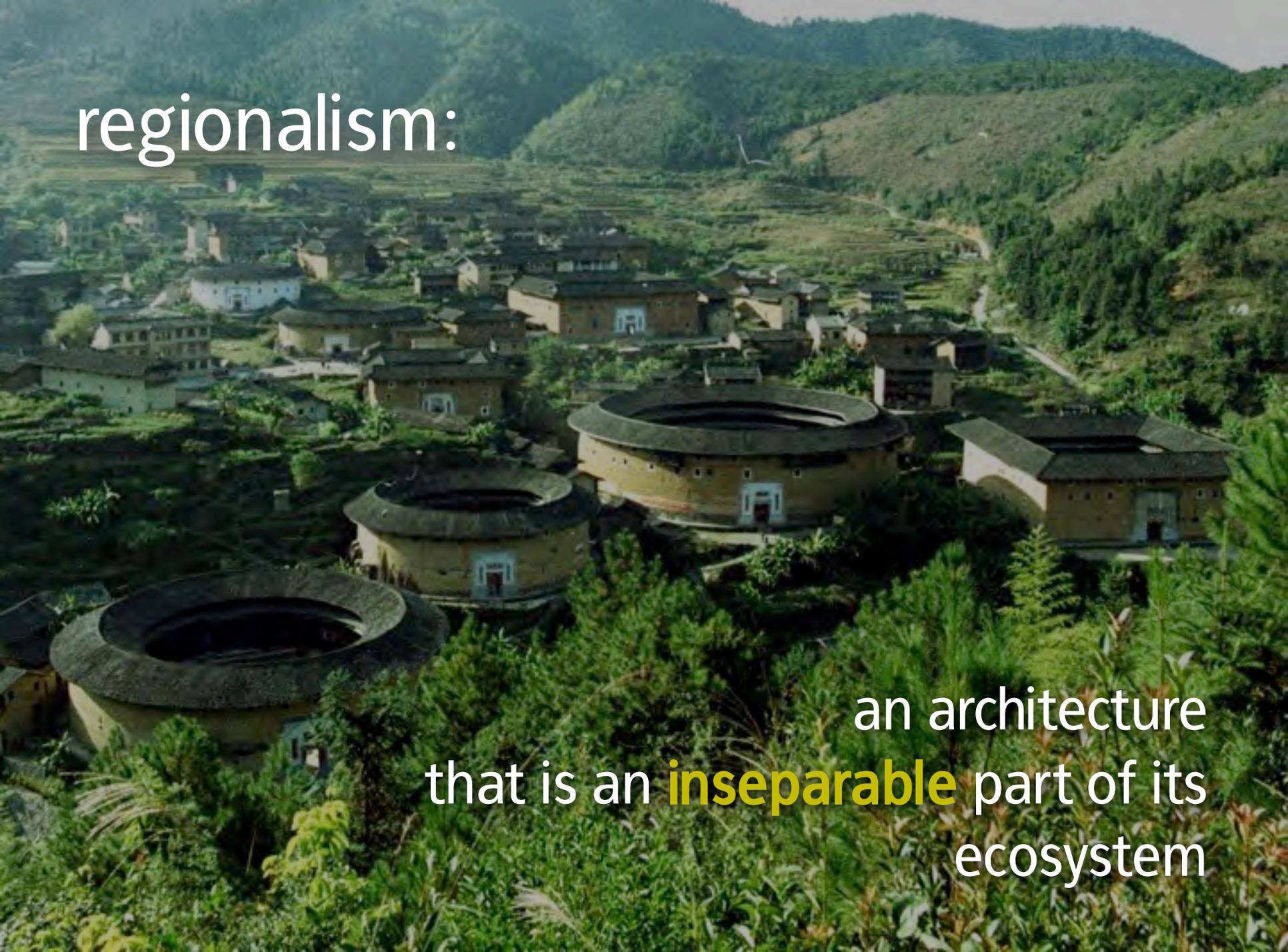




# Holistic Approaches *to a* Sustainable Regionalism

Mark Broyles **HuttonArchitectureStudio**

An aerial photograph of a village nestled in a valley. The village features several prominent circular earthen buildings, known as tulou, which are built on a hillside. The buildings have thick walls and dark, flat roofs. The surrounding landscape is lush and green, with dense vegetation and rolling hills in the background. The sky is clear and blue.

regionalism:

an architecture  
that is an **inseparable** part of its  
ecosystem

regionalism:

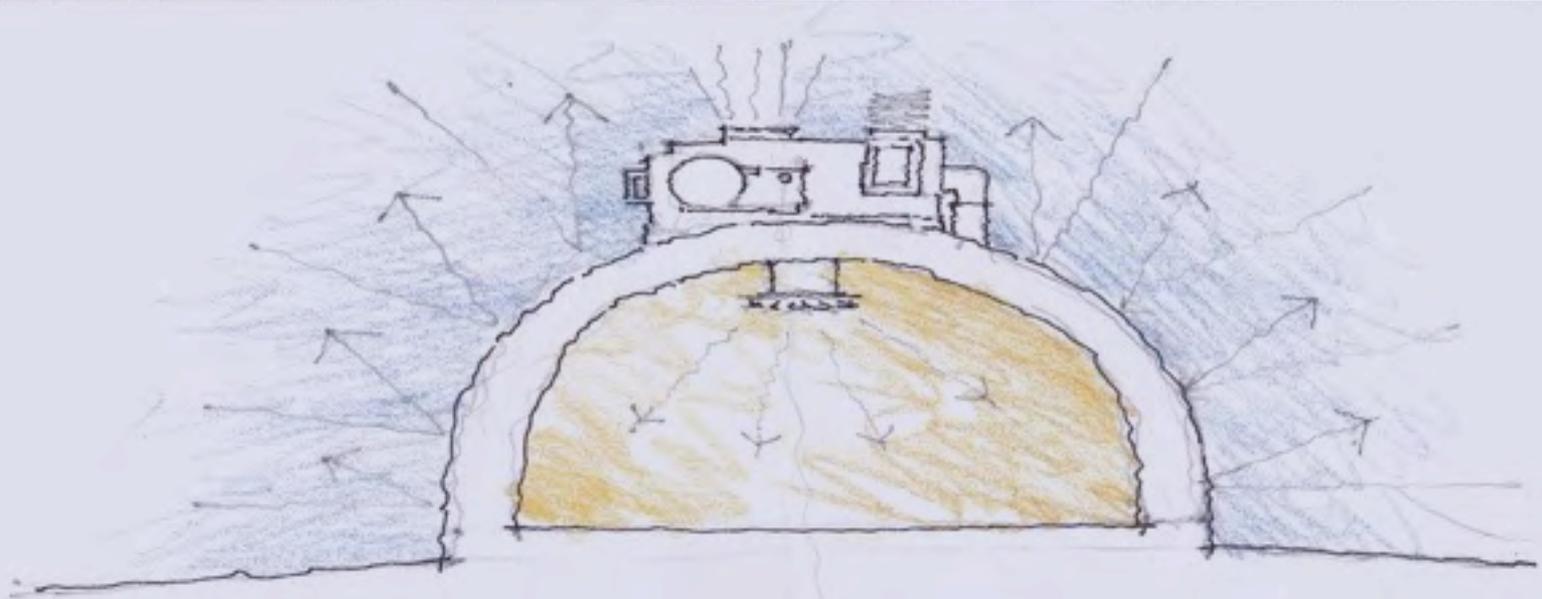
*people*

are an **inseparable** part

of their

**ecosystem**

but today,  
most buildings  
separate us from  
the ecosystem around us.



on purpose.



we have become very good

at creating  
*and* sustaining

artificial climates and  
environments.

so a **lot** of our efforts at **sustainability**  
involve making our artificial...  
*separated....*  
environments

**simply more**  
*efficient.*





regionalism starts with the  
region.

*(Latin **regere**, to rule)*

An aerial photograph showing a vast urban area with a large blue lake in the center. The surrounding landscape is a mix of green fields and brownish terrain, with a river valley visible in the foreground. The text is overlaid on the image, with a dark triangle behind the central words.

and the region  
is made up of a particular  
climate  
geology  
ecosystem

which form the natural resources for  
a regional human culture.



*however...*

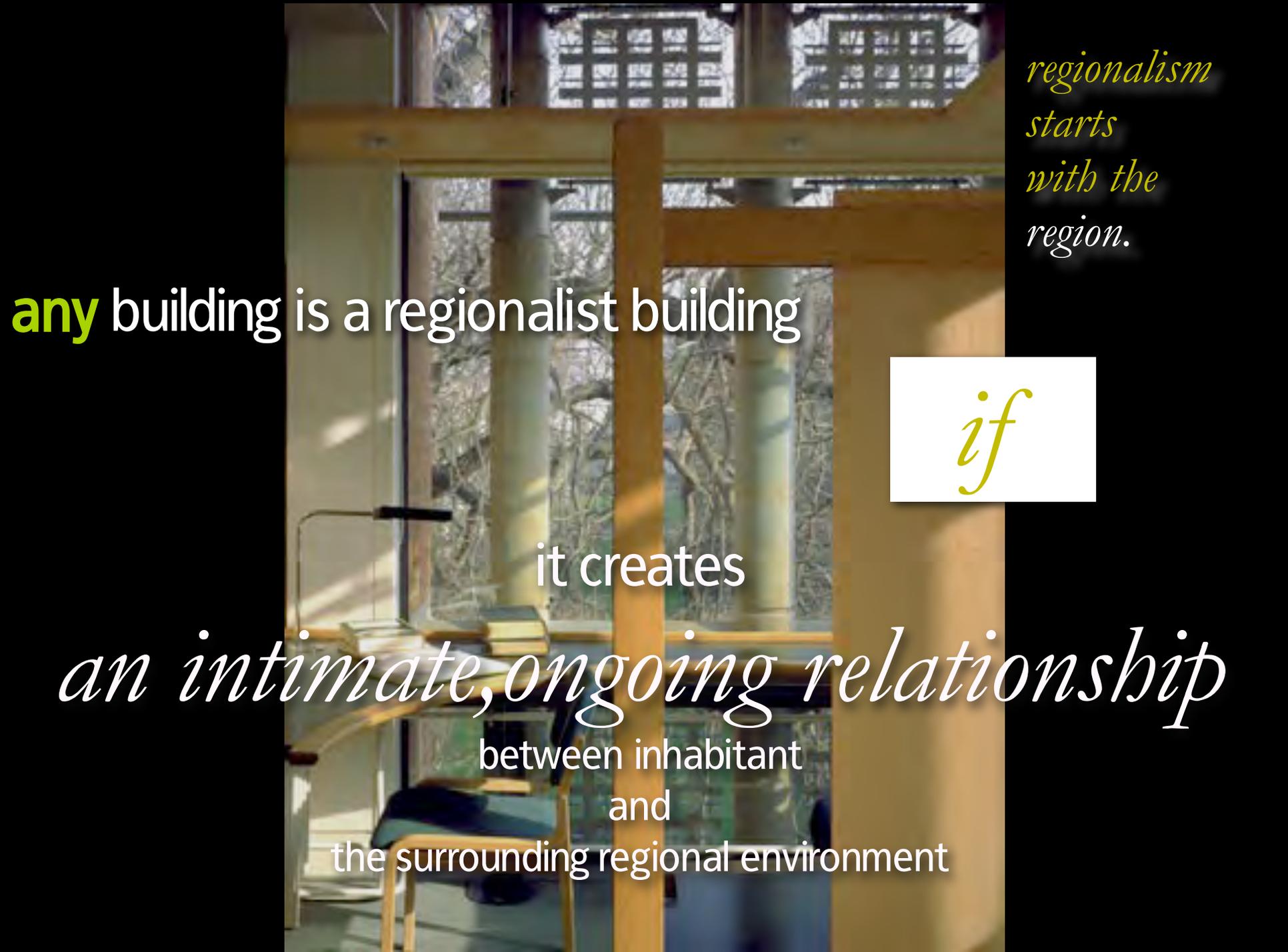
the regional environment has progressively less to do  
with the response of our building culture



1850

1910

2000



*regionalism  
starts  
with the  
region.*

**any** building is a regionalist building

*if*

it creates

*an intimate, ongoing relationship*

between inhabitant  
and

the surrounding regional environment

regional architecture

*doesn't mean* looking



log cabin



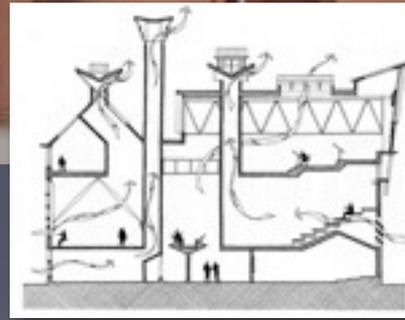
but

behaving

lunar module.

so where do we begin?

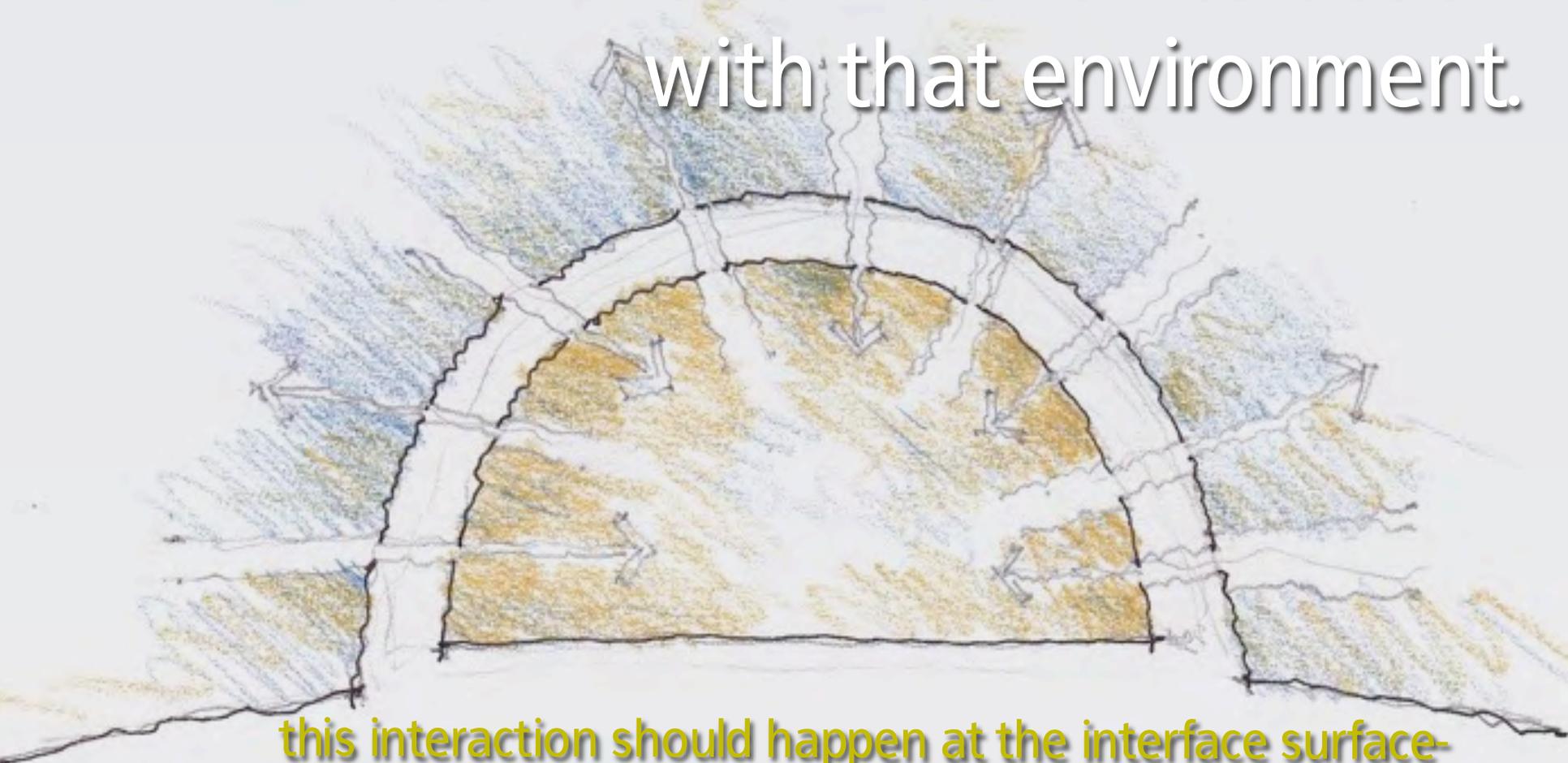
our buildings should  
*leverage*  
their environment,  
not resist it.



The Queen's Building, DeMontfort University, Short/Ford Architects

but- to leverage their environment, our buildings-  
and the spaces they enclose-

must have sufficient interaction  
with that environment.



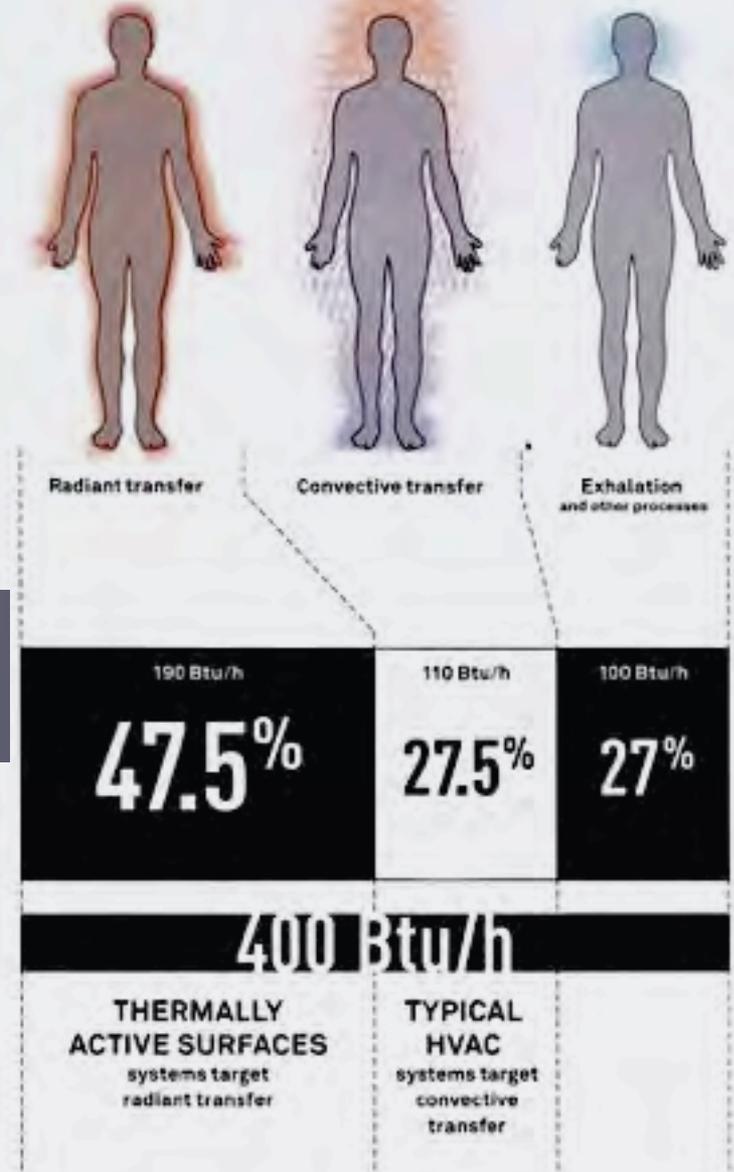
this interaction should happen at the interface surface-  
**the envelope.**

a key to successfully  
leveraging  
the  
environment

is

the rediscovery of  
radiant heat transfer.

*Thermally Active Surfaces in Architecture* **Kiel Moe**



So How Did We Get Here?

Electric

Light

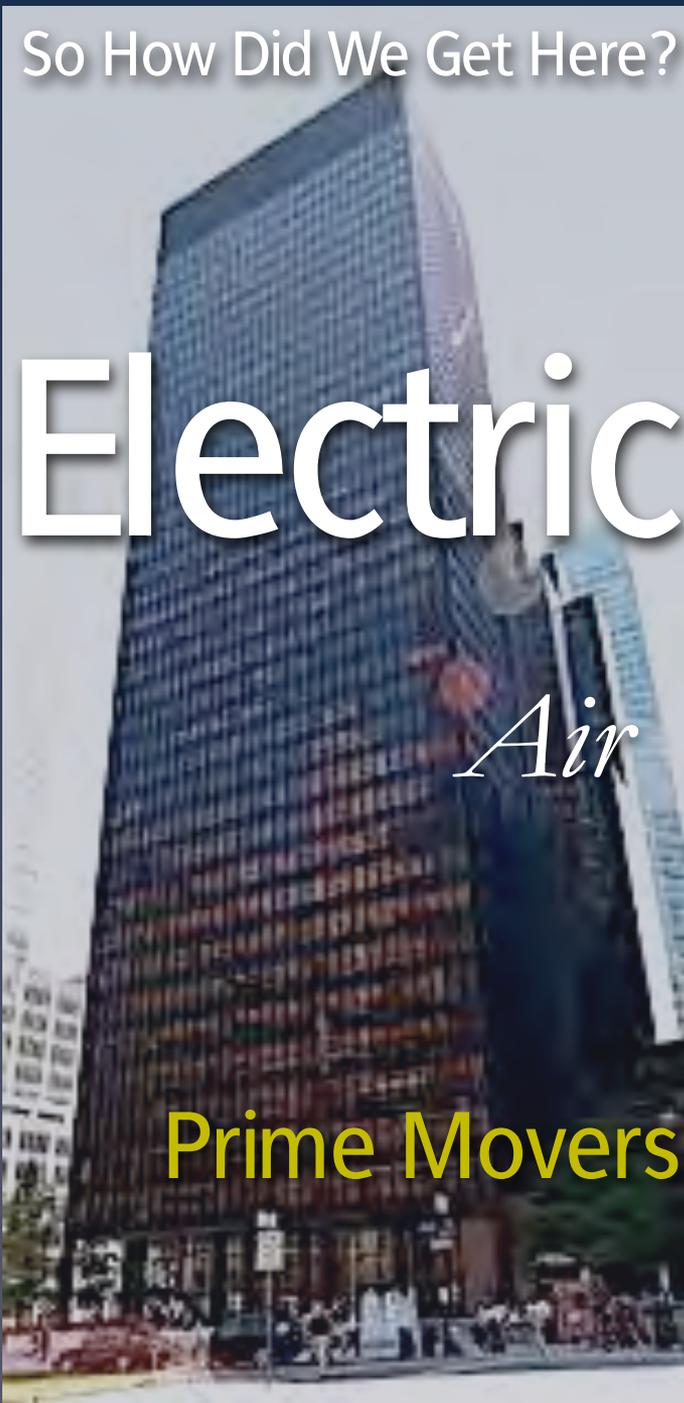
*Air*

&

*Conditioning*

Prime Movers

behind our design culture





electric light *revolutionizes* building depths

air conditioning *enables*



**artificial climate!!**

# current (regional) building culture: *(a recipe)*

1. accept **universal program**.
2. design **complex** conditioning system.
3. don't forget to use **air** as thermal storage and transfer medium.
4. make envelope as **resistant** to heat transfer as possible.
5. don't forget to hire someone **really smart** to operate it.
6. put some **pitched roofs and logs** on the outside.

# sustainable (regional) building culture:

1. ~~accept~~ adapt **universal program**.
2. design ~~complex~~ **simple** conditioning system.
3. don't ~~forget to~~ use **air** as thermal storage and transfer medium.
  4. make envelope ~~as resistant to~~ all about heat transfer.
5. don't ~~forget to~~ need to hire someone **really smart** to operate it.
6. go ahead and put some **pitched roofs and logs** on the outside.

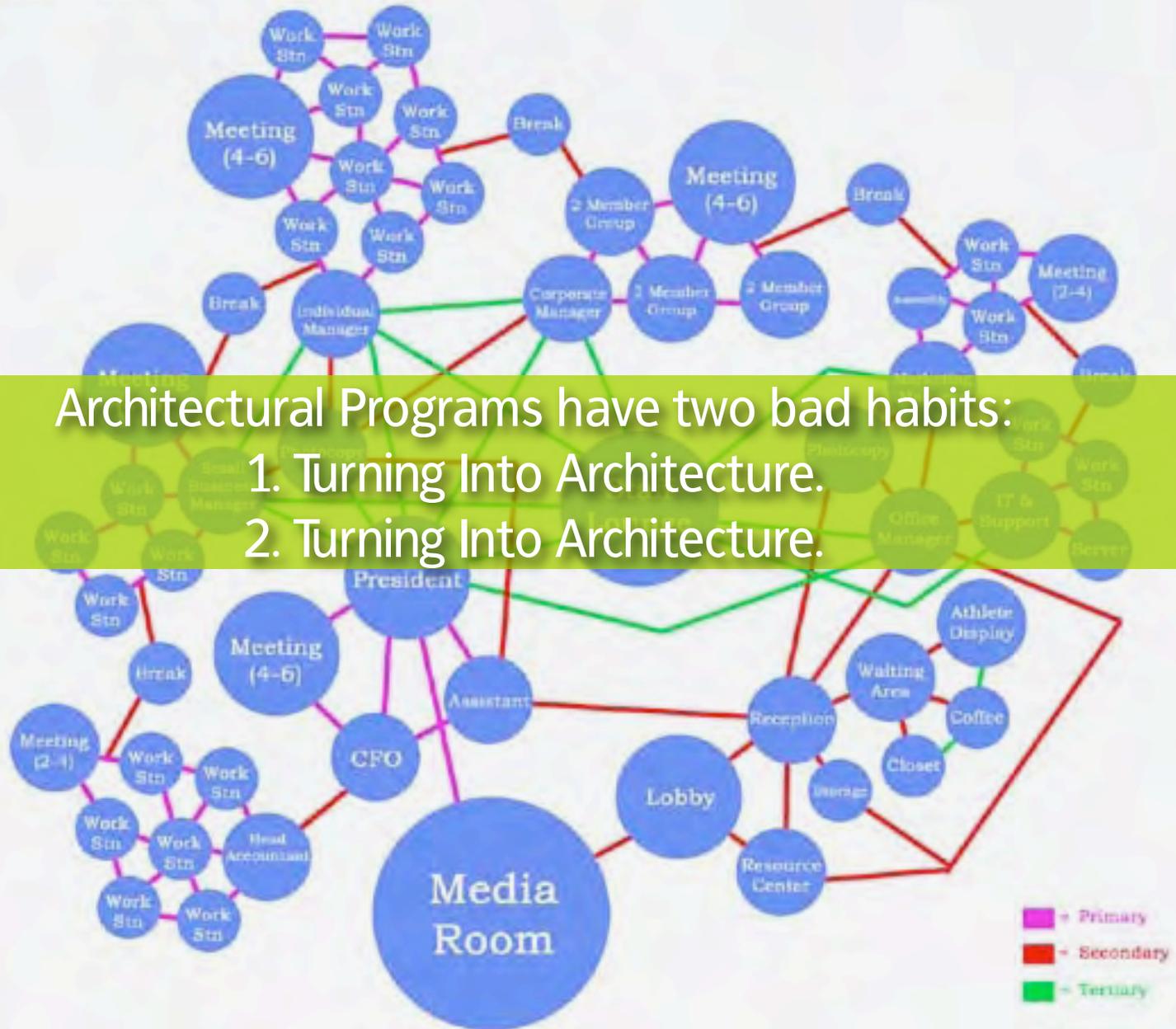
# sustainable **regional** building culture:

1. **accept** adapt **universal program**.

If the way we live and work in buildings is related to the outside climate and environment, the basic architectural program should reflect this.

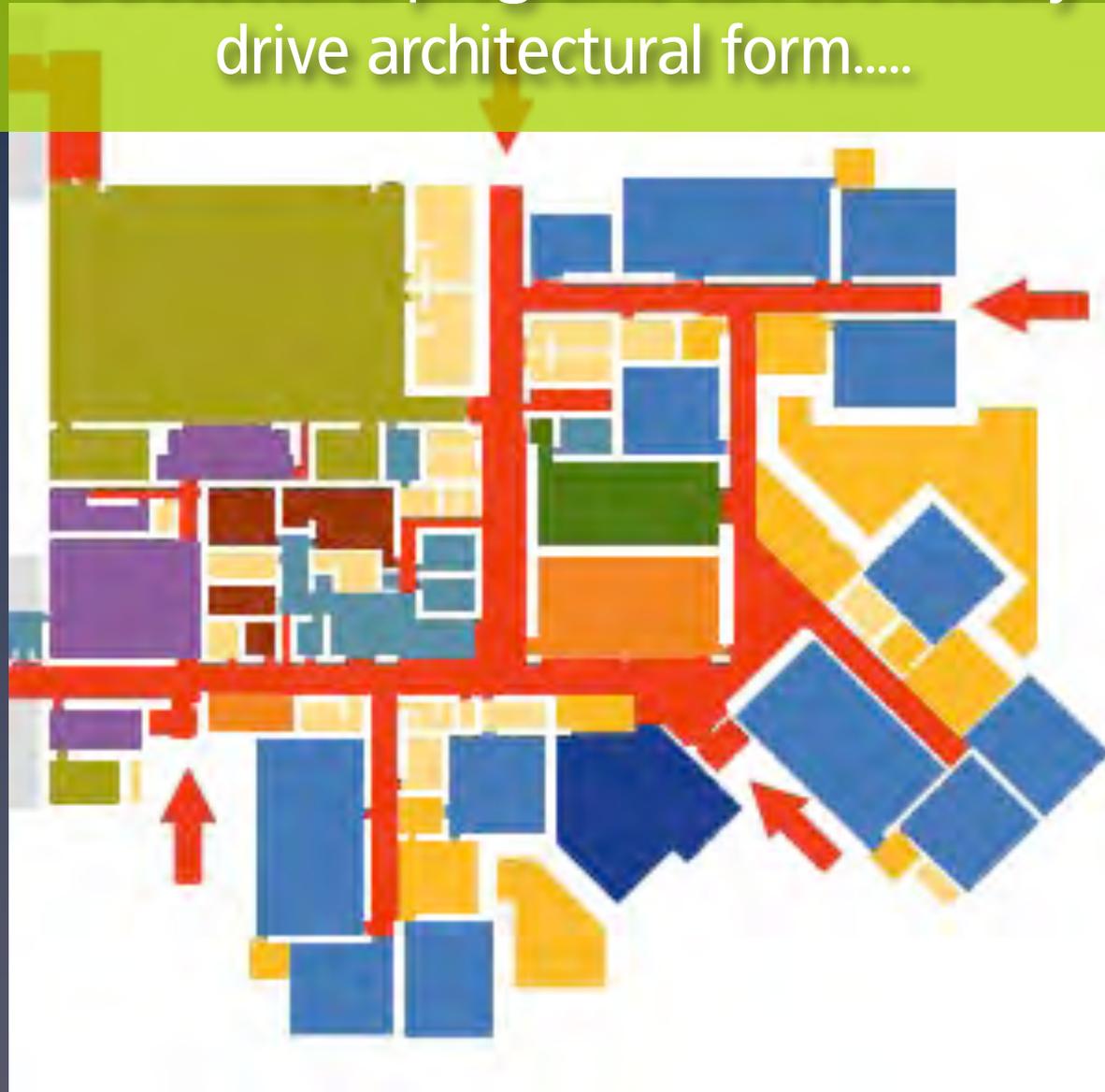
*An office building in New York  
should be different than  
an office building in Denver.*

Office Project  
Adjacency Bubble Diagram



Architectural Programs have two bad habits:  
1. Turning Into Architecture.  
2. Turning Into Architecture.

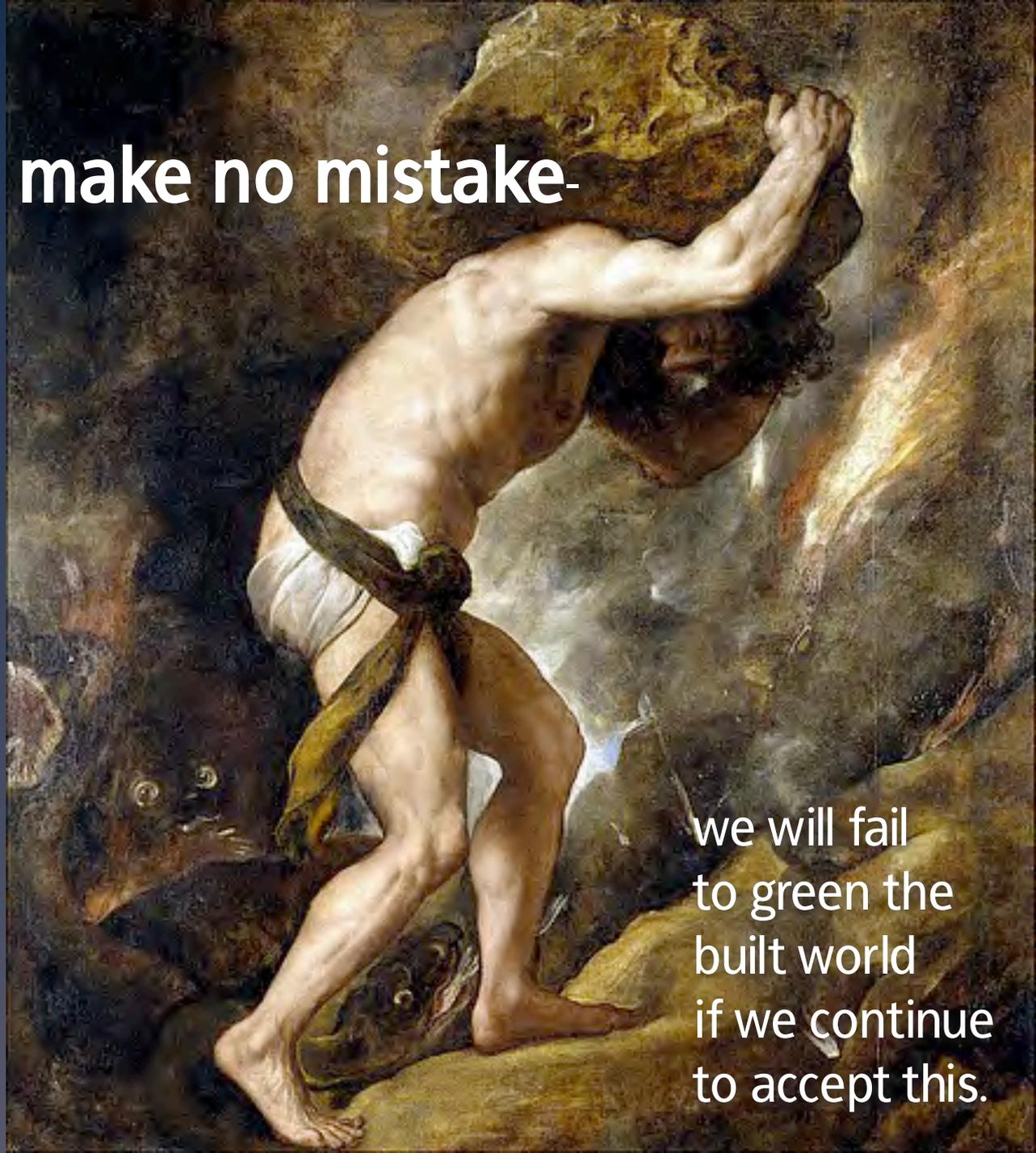
architectural programs can too readily  
drive architectural form....



make no mistake-

sustainable  
design success  
can't be  
dependent

on 60-year-old  
program  
expectations.



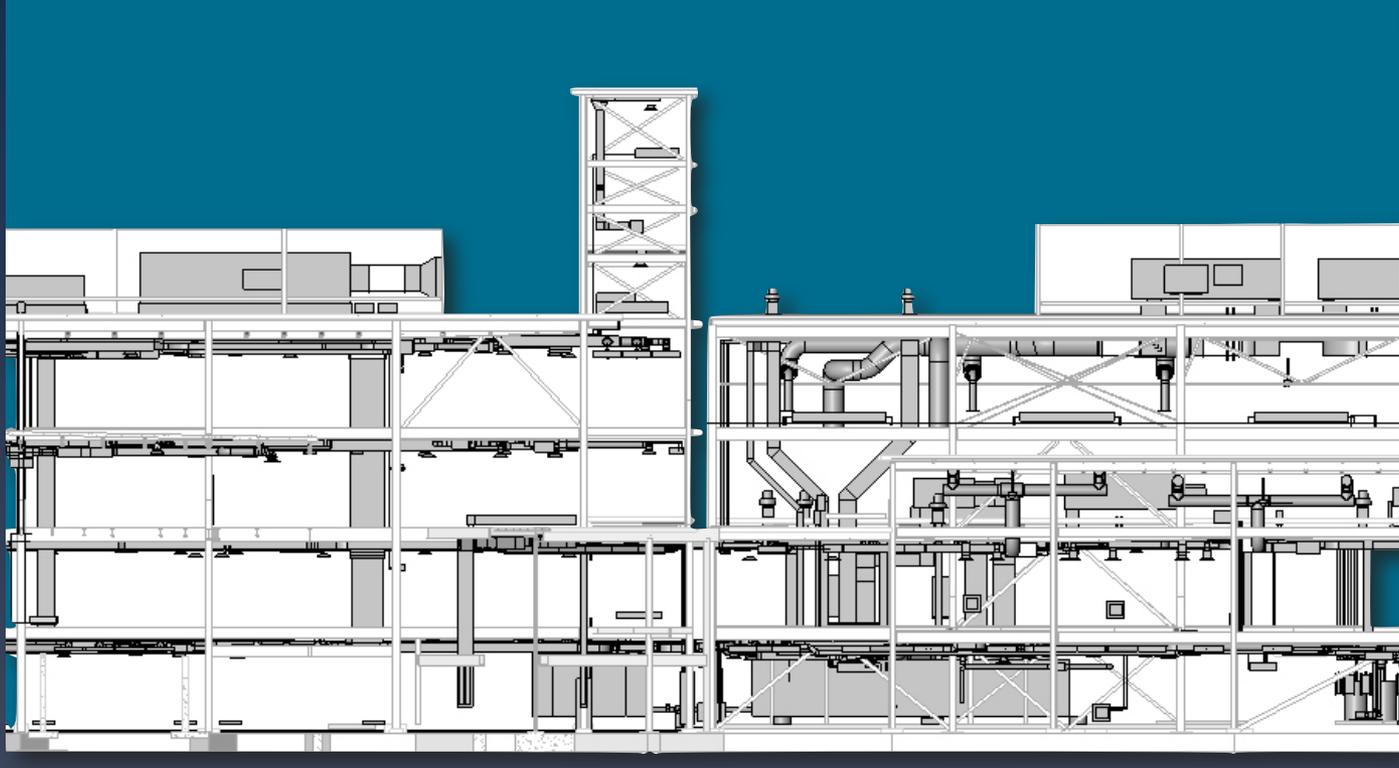
we will fail  
to green the  
built world  
if we continue  
to accept this.



sustainable **regional** building culture:

2. design **complex** simple conditioning system.

complex conditioning systems arise  
when we ask too much of the architectural program  
**and too little of the architectural fabric.**



# sustainable **regional** building culture:

3. don't **forget to** use **air** as thermal storage and transfer medium.

water is 832 times as dense as air,  
using up far less space to move and store  
the same amount of energy.



sustainable **regional** building culture:

4. make envelope **resistant** to all about heat transfer.

envelope as **skin**: an organic concept that allows for ventilation and thermal mediation to occur more passively and constantly



sustainable **regional** building culture:

5. don't forget to need to hire someone **really smart** to operate it.

Thermal performance too dependent on high levels of maintenance and active control is probably doomed to fall short of expectations.

Terry Thomas Building Weber Thompson Architects, Seattle



sustainable **regional** building culture:

6. go ahead and put some **pitched roofs and logs** on the outside.

A robust regional approach to building has very little to do with nostalgic aesthetics.



a new concept of organic architecture:  
**buildings as organisms**

trees: a biological model for architecture

*the imperative of shaped and oriented surface area for interchange  
the critical relationship of surface area to interior volume*



a critical building task:

separate ventilation (breathing)  
*from* thermal comfort (regulation)

*Buildings should function as environmental and climatic mediators,  
not as barriers.*



a critical building task:

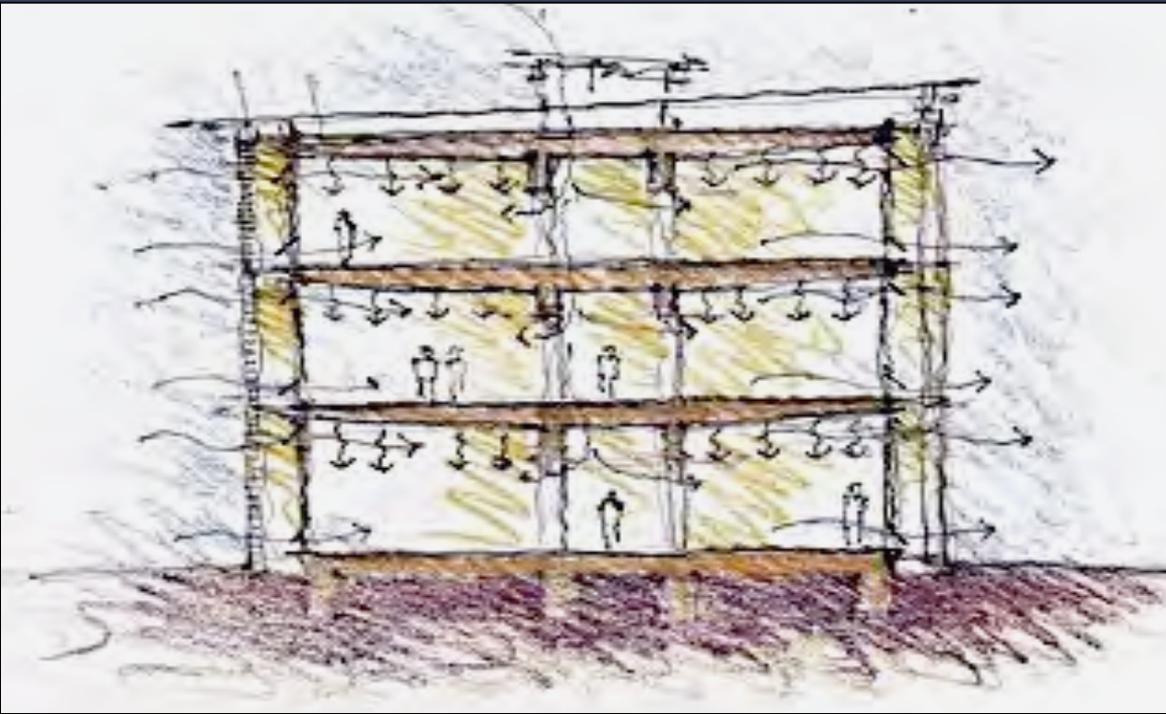
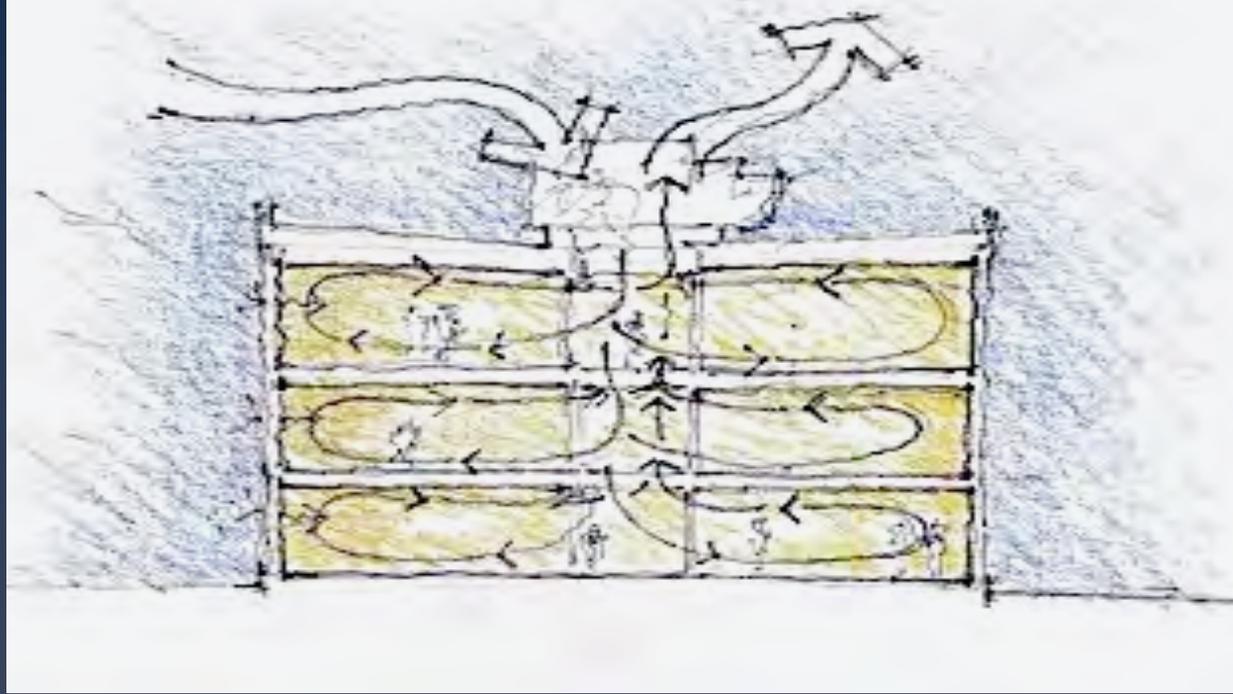
separate ventilation (breathing)  
from  
thermal comfort (regulation)

To create regional architecture, we want to break the habit of cocooning buildings and occupants.



*Our main reason to be designing in this way has been to optimize the use of air as our thermal transfer and storage medium.*

*If we can break the link  
between thermal comfort  
and ventilation  
(which became associated  
with the advent of air  
conditioning)*



*we can begin to  
reinvent the relationship  
between architecture  
and environmental  
comfort.*



*A key to making this separation of thermal comfort and ventilation successful lies in the rediscovery of radiant heat transfer and high-mass media for thermal storage and transfer.*

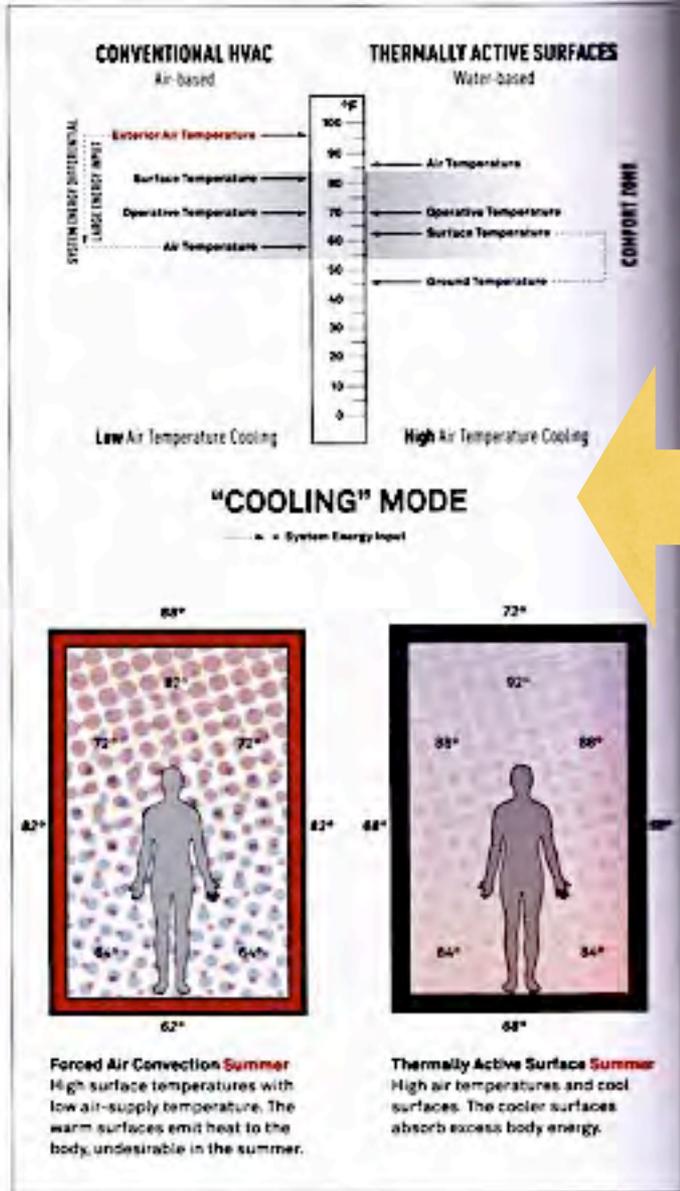
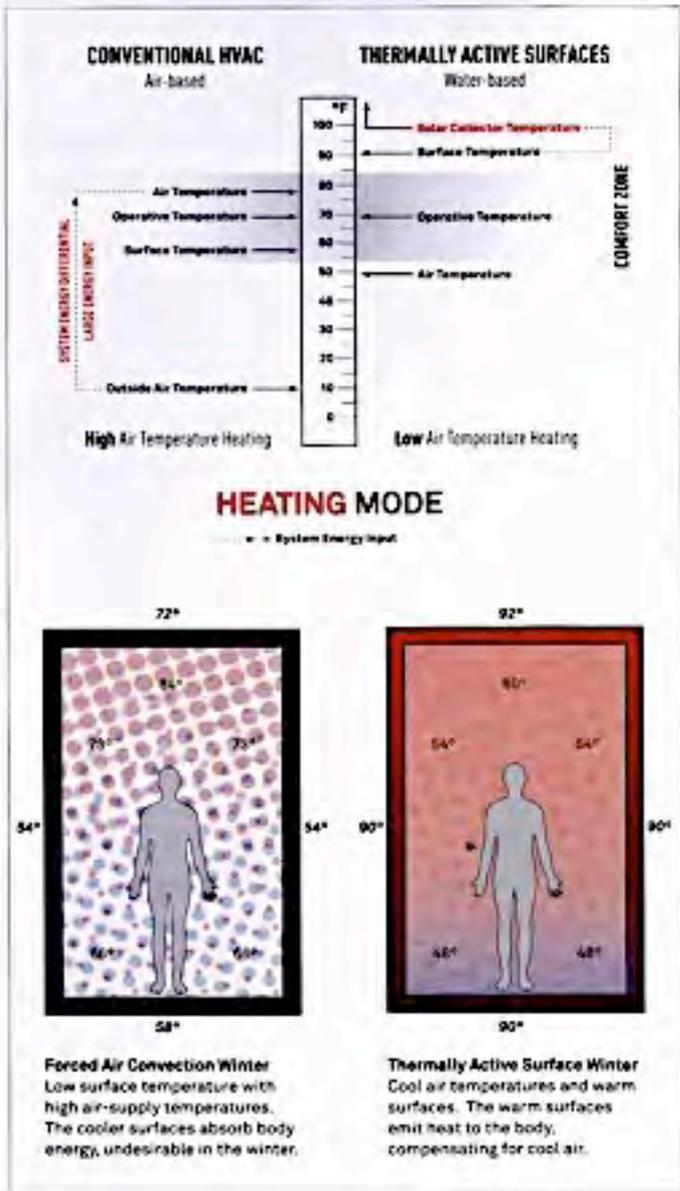


Proper radiant heat transfer control and manipulation

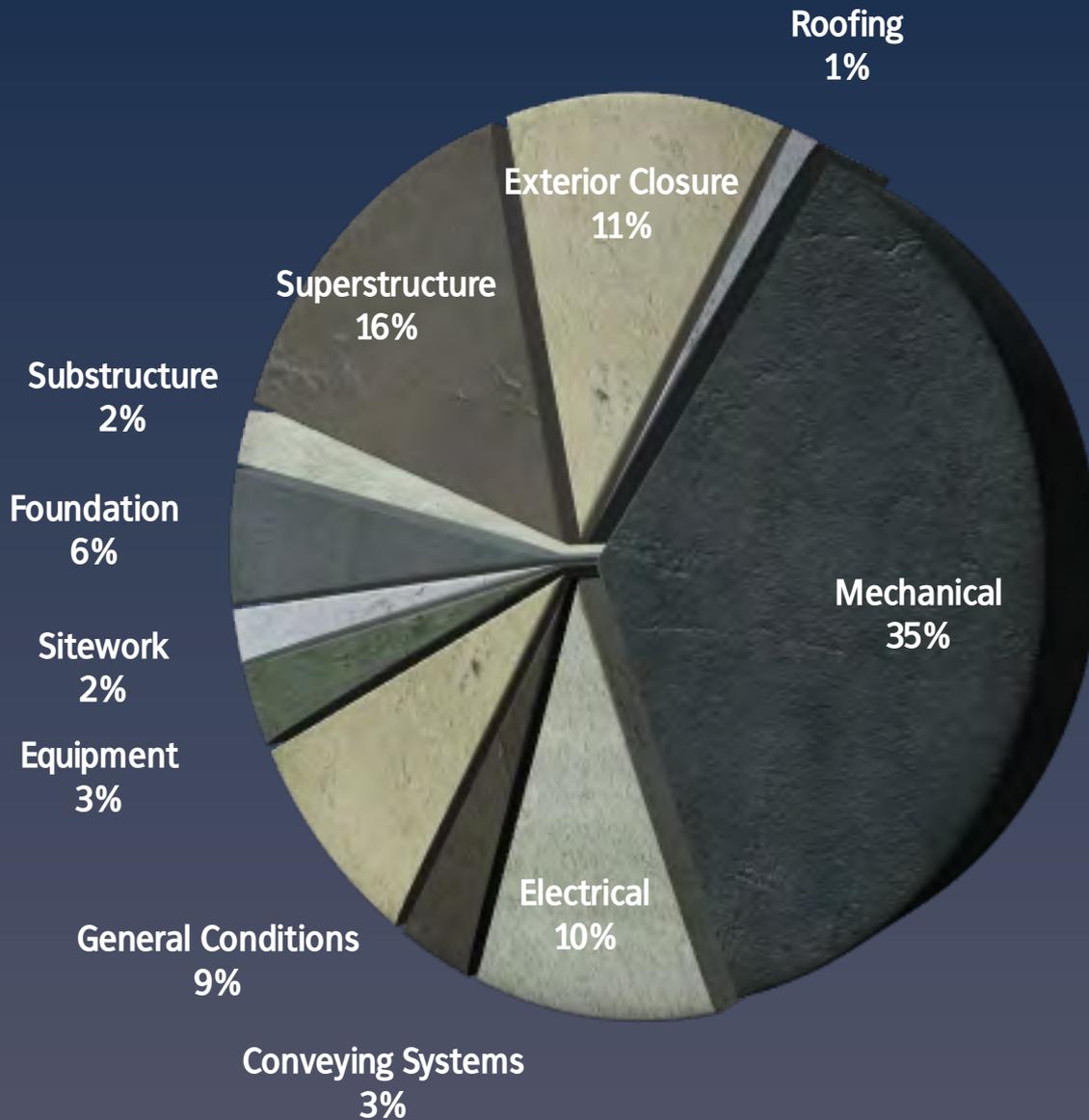
*can allow people to feel*

comfortable within a much wider range of air temperatures

*than is possible with reliance only on convection and conduction.*



*When air temperatures don't need to be micromanaged the level of complexity of air handling systems can be reduced drastically.*



*And we can begin to*

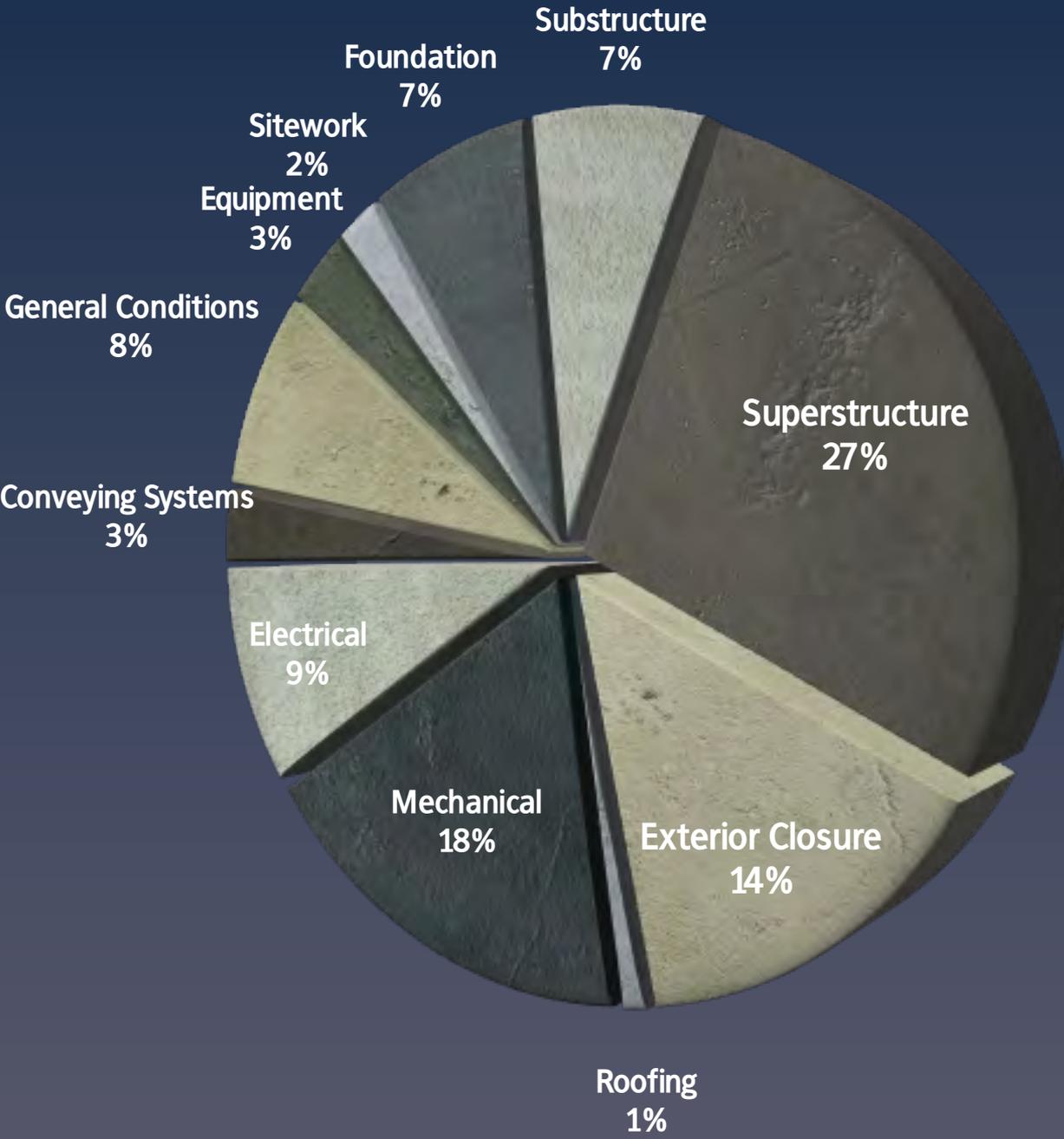
# Refocus

the design effort  
and budget  
on

architecture-as-  
organism

*vs.*

building-as-  
machine



*And we can begin to*

# Refocus

the design effort  
and budget  
on

architecture-as-  
organism

*vs.*

building-as-  
machine

So What **ARE** the critical steps?



# Step One.



Make program needs function well in shallow-plate buildings.

## GROUND FLOOR PLAN

- |                               |                        |                           |
|-------------------------------|------------------------|---------------------------|
| A. South Lake Union Streetcar | F. Meeting Space       | K. Restrooms              |
| B. Entry Plaza                | G. Retail              | L. Storage                |
| C. Gallery Space              | H. Courtyard           | M. Elevator / Stair Lobby |
| D. Charrette Space            | I. Green Screen Stair  | N. Adjacent Warehouse     |
| E. Workstations               | J. Supplies / Printing |                           |



Step One.

Deep buildings-  
like deep organisms-  
require more complexity  
and specialization.

Complex Interchange Zone

Easy Interchange Zone

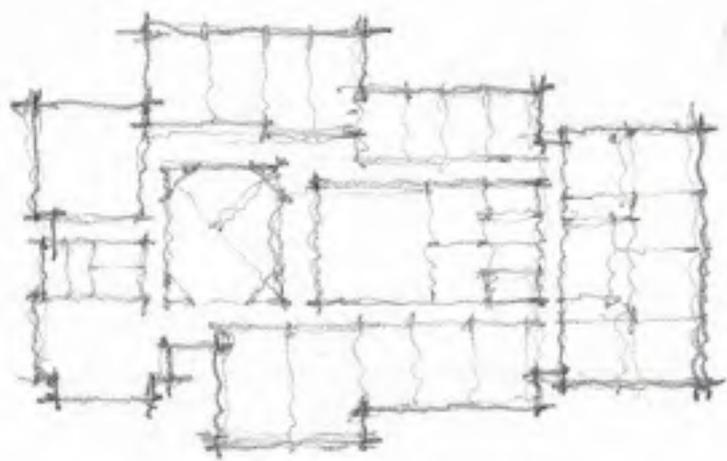
## Step One.



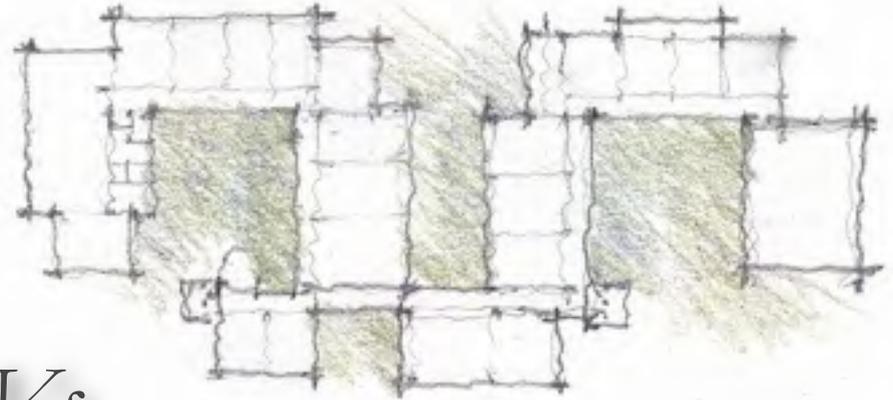
Shallow plate buildings enhance the relationship between occupant, sun, and mass storage.



Step One.



*Vs.*



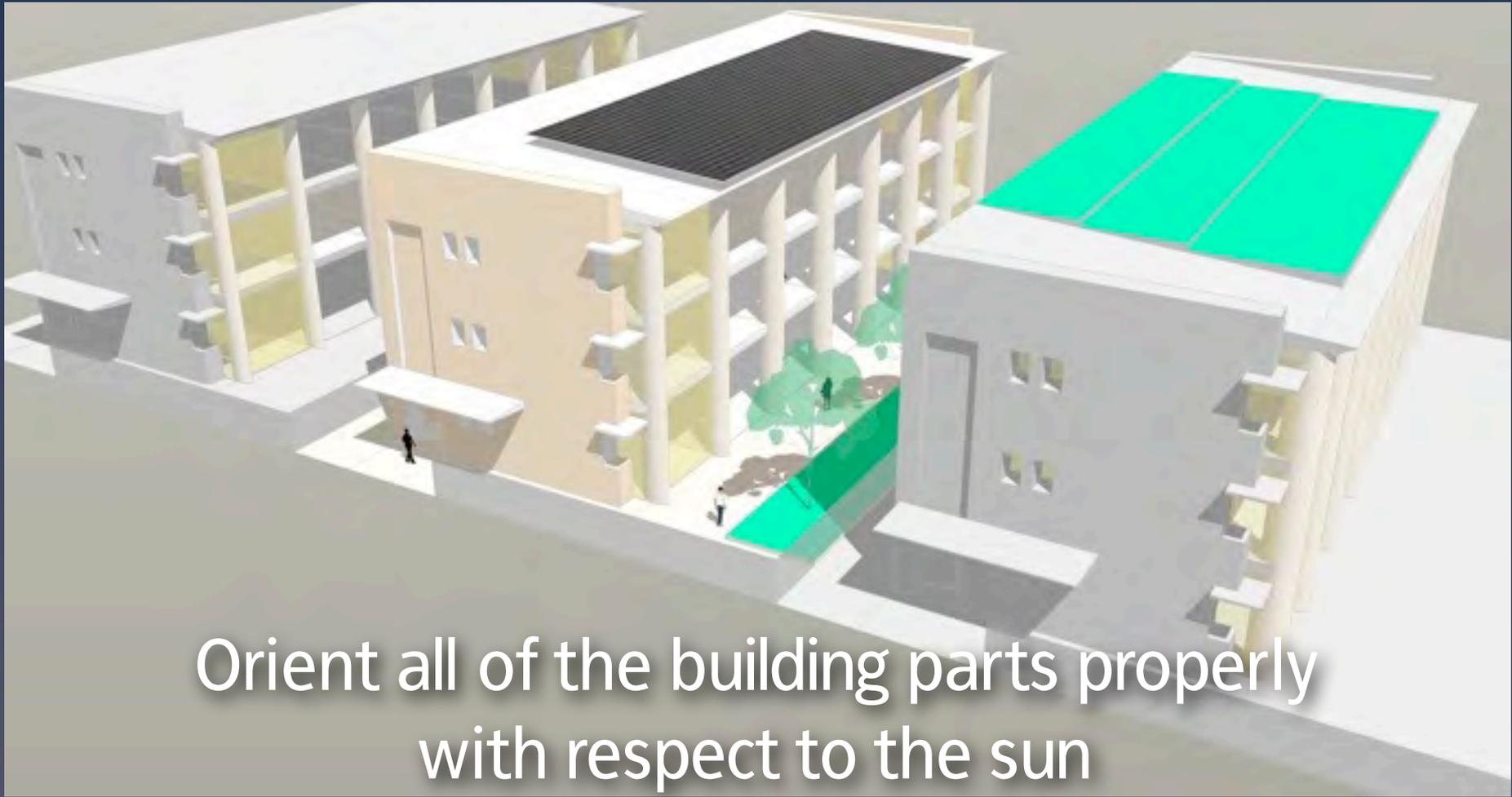
Make program needs function well  
*in* shallow-plate buildings.

Step One.



Make program needs function well  
in shallow-plate buildings.

## Step Two.



Orient all of the building parts properly  
with respect to the sun

**regardless of the site shape or orientation.**



A modern interior space featuring a textured, earthy wall. Two light-colored armchairs are positioned on a light-colored rug. A low, dark wood coffee table sits in front of the chairs. A large window with a black frame and a view of a garden is on the right. The room is lit with warm, ambient lighting, including recessed wall lights and a table lamp. The ceiling is made of dark wood with a recessed light fixture.

Step Three.

Earth coupling- even subtle- can pay dividends.

Step Four.

Make shallow-plate buildings  
out of high-mass materials.



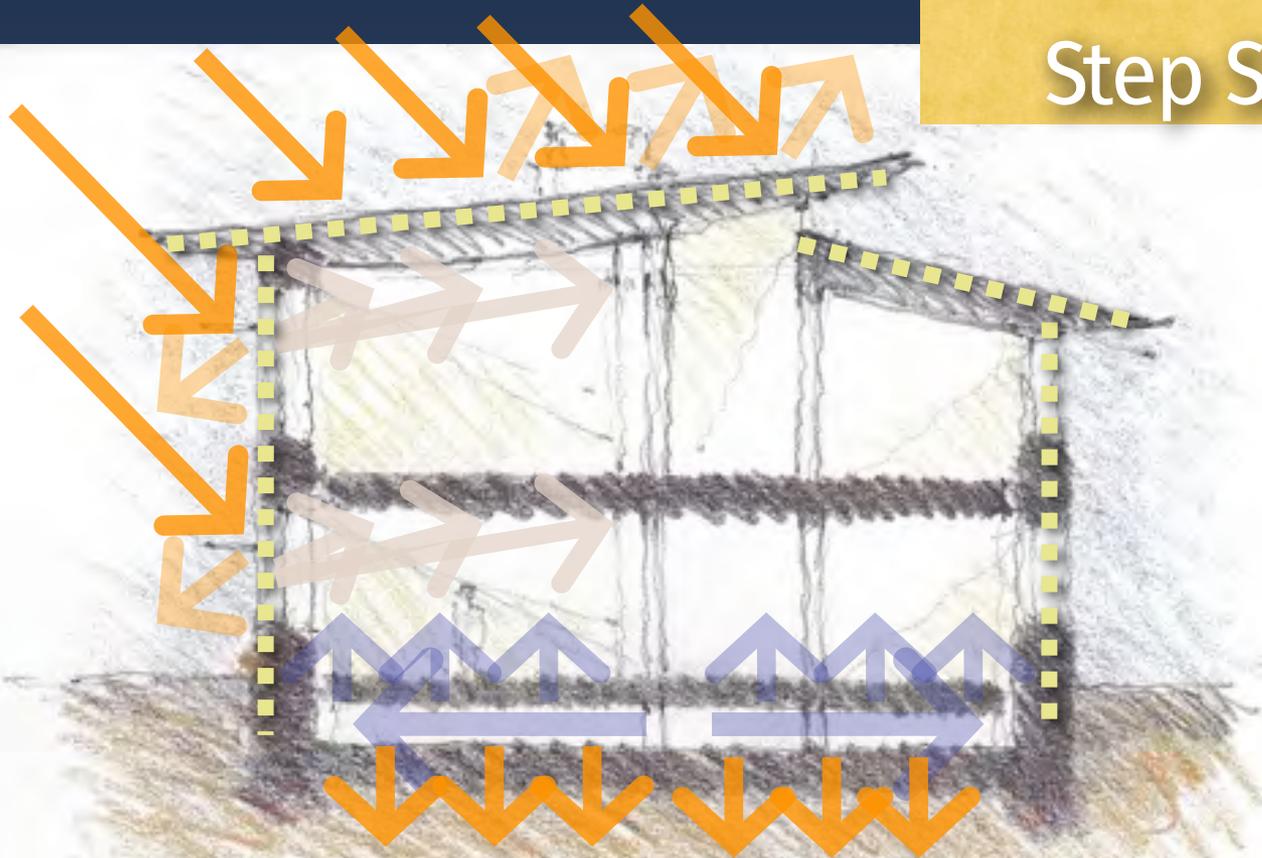
*Alys Beach Mixed Use Development Merrill Pastor Cogliari Architects*

## Step Five.



Augment thermal high-mass building performance with active-radiant heat transfer system.

## Step Six.



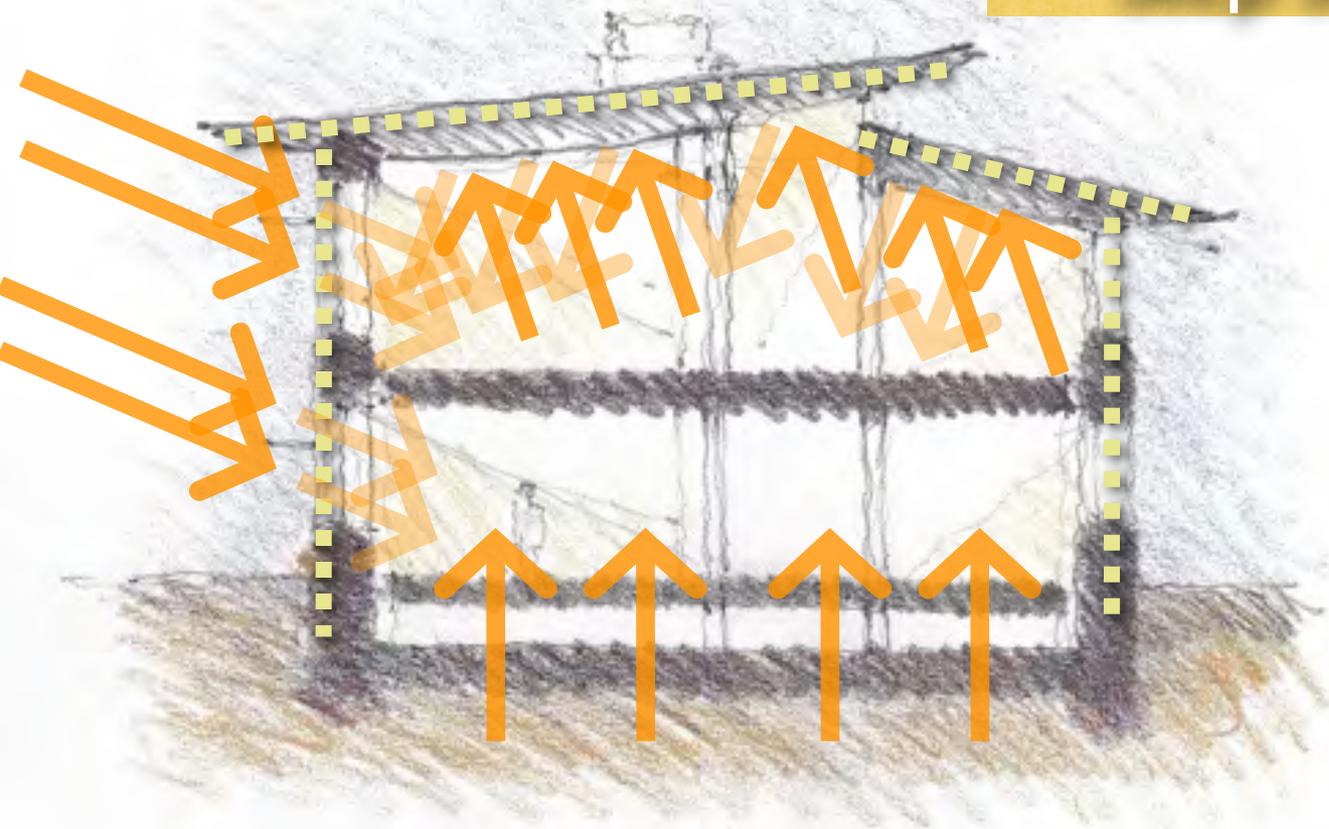
Summer:  
Radiant barriers reflect  
radiant energy, prevent  
surfaces from heating up

Interior mass moderates  
interior temperature  
swings

Ground coupling engages  
earth  
as heat sink

Design and manage  
the architectural radiant environment.

## Step Six.



Winter:  
Radiant barriers reflect interior radiant energy, prevent cold-sky radiation

Interior mass stores heat energy from solar gain, building loads, and heating system

Ground coupling engages earth as heat source, diurnal swing moderator

Design and manage the architectural radiant environment.

An aerial photograph of a city grid, showing a mix of building sizes and colors. A semi-transparent white banner is overlaid across the middle of the image, containing text. The text is split into two lines: the first line is in white, and the second line is in yellow.

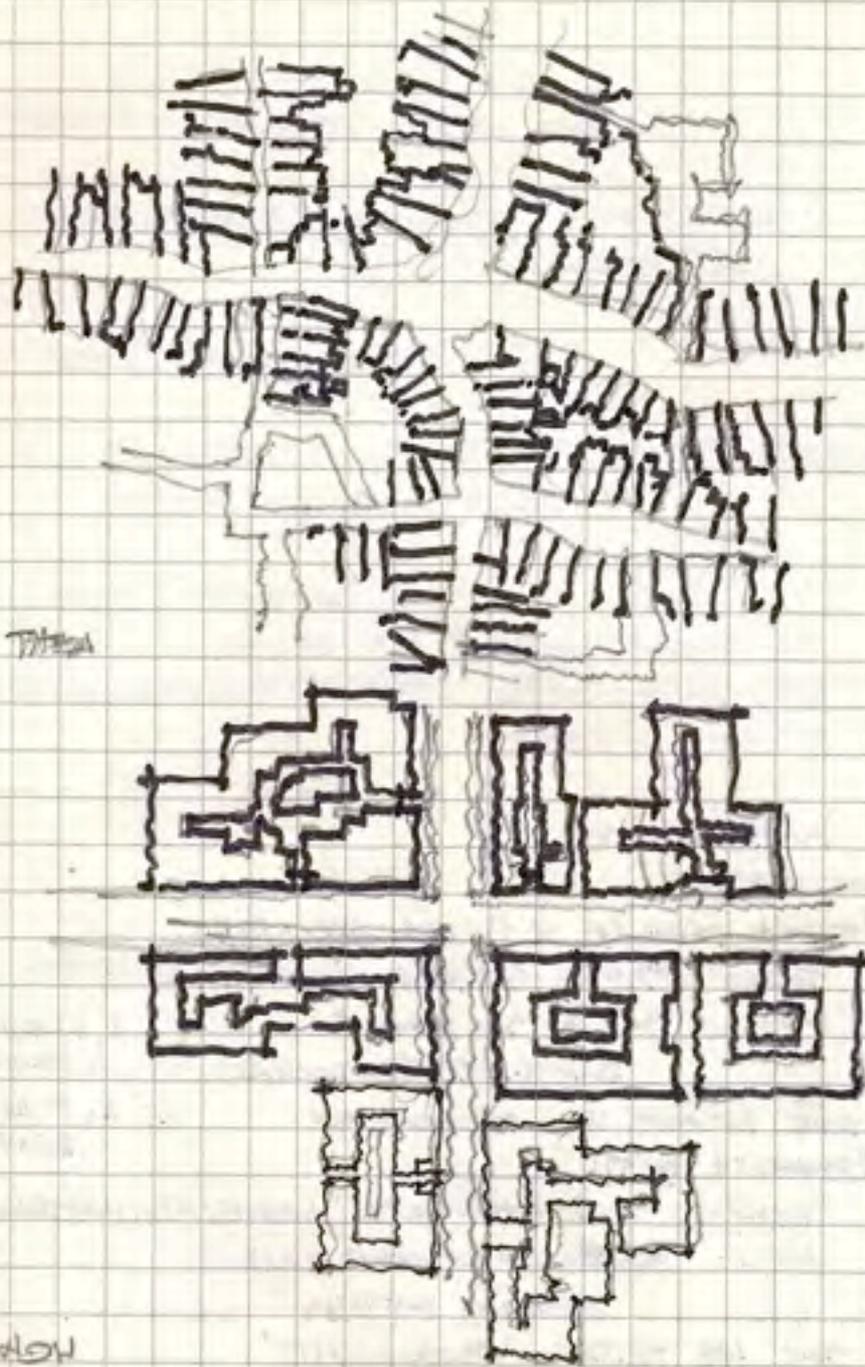
Holistic regional design:

**a culture of small buildings**

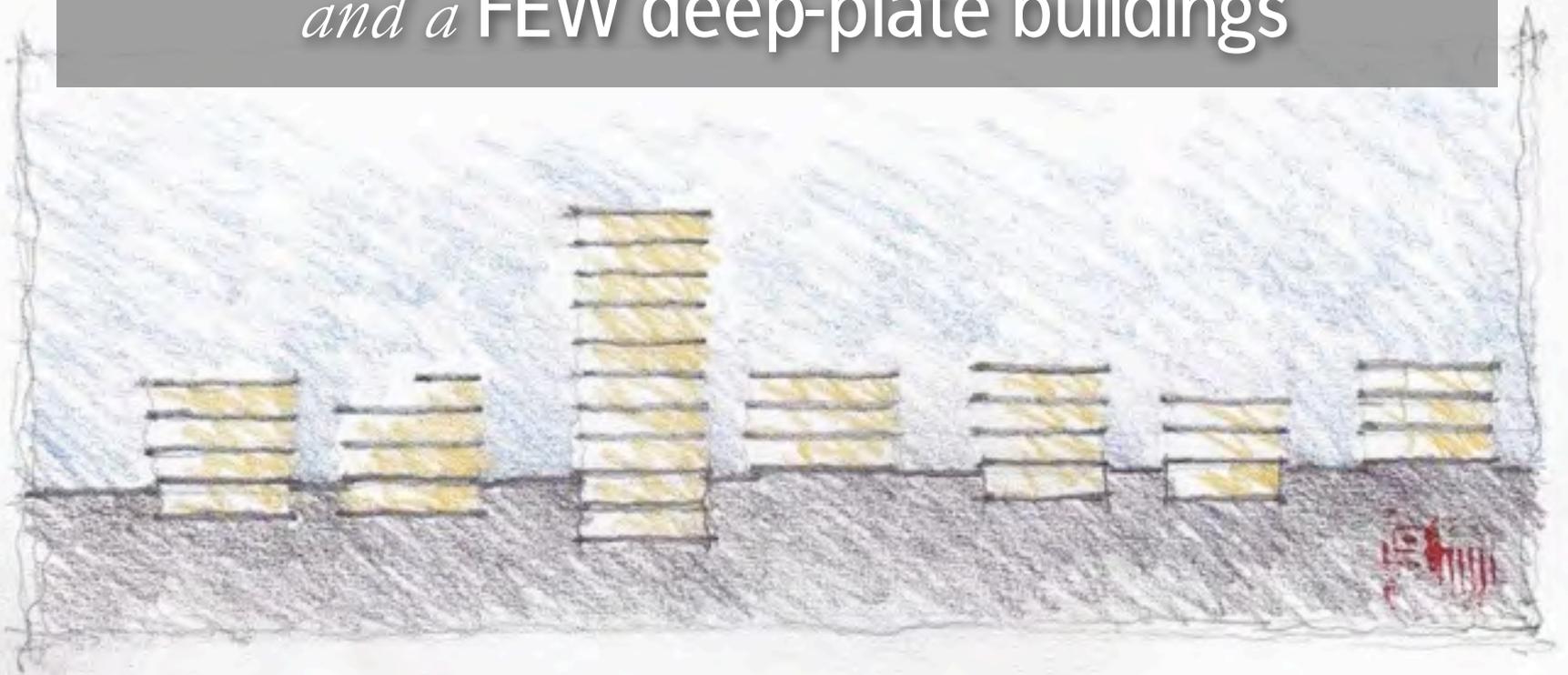


3-4 story city:  
architecture itself as  
**infrastructure**

Smaller buildings  
are better  
building blocks *for*  
good cities



**A Question of Balance:**  
cities of mostly low, high-mass buildings...  
*with a FEW tall buildings*  
*and a FEW deep-plate buildings*



Holistic regional design:

a culture of small buildings



*Walmart Today*



*Walmart Future*

# Holistic regional design:

## a culture of small buildings

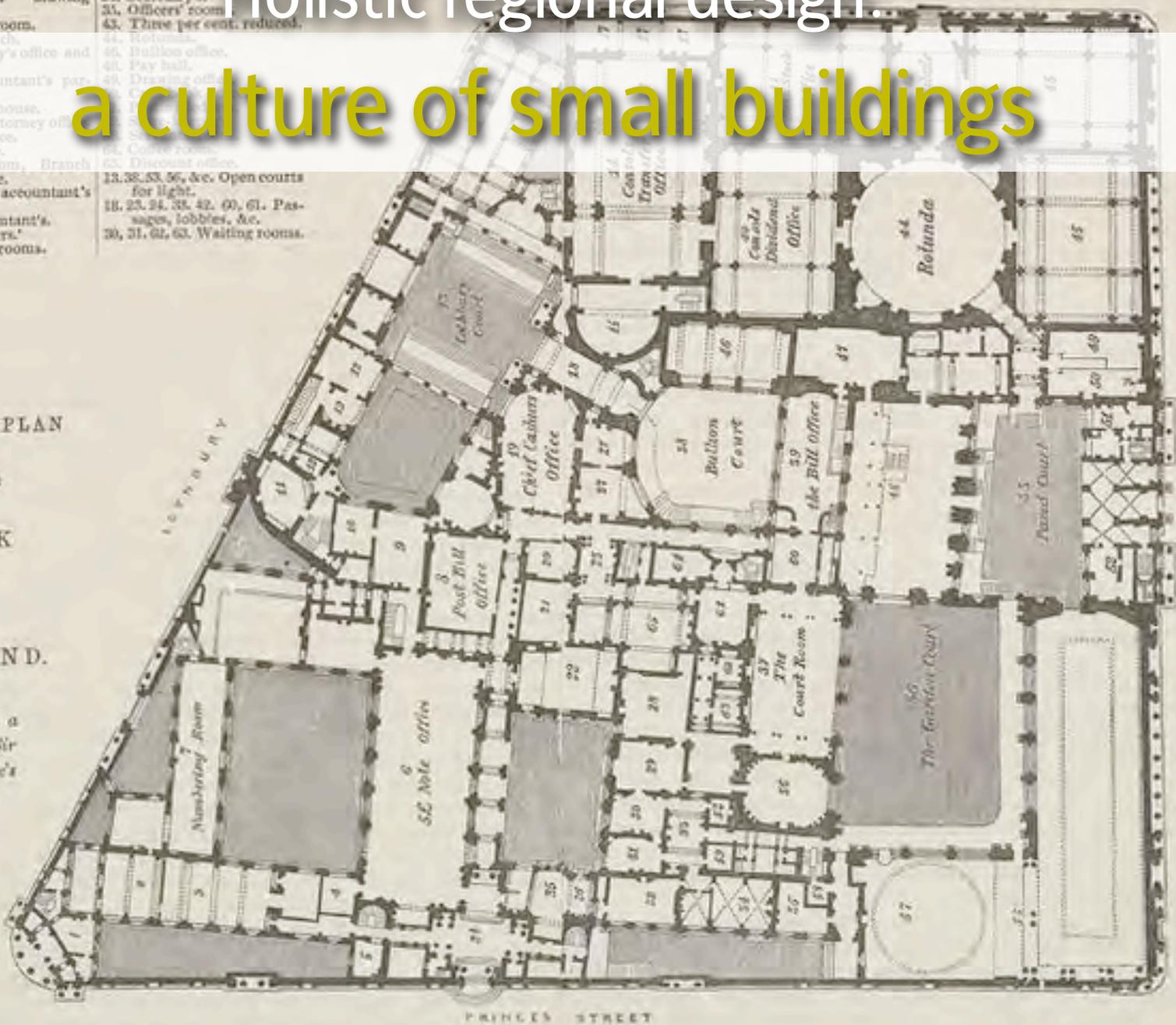
1. Mould-makers.
2. Note office.
3. Accountants' drawing office.
4. Note store-room.
5. Nightly watch.
- 9, 10. Secretary's office and room.
11. Chief accountant's parlour.
12. Secretary's house.
15. Power of attorney office.
17. Interior office.
21. Silver office.
21. Private room, Branch banks office.
25. Deputy accountant's office.
26. Chief accountant's.
27. Chief cashiers'.
28. Governor's rooms.

29. Deputy governor's.
- 32, 35. Committee rooms.
34. Secretary's.
35. Officers' room.
43. Three per cent. reduced.
44. Rotunda.
45. Bullion office.
46. Pay hall.
49. Drawing office.
50. Control & Transfer Office.
51. Control & Transfer Office.
52. Control & Transfer Office.
53. Control & Transfer Office.
54. Control & Transfer Office.
55. Control & Transfer Office.
56. Control & Transfer Office.
57. Control & Transfer Office.
58. Control & Transfer Office.
59. Control & Transfer Office.
60. Control & Transfer Office.
61. Control & Transfer Office.
62. Control & Transfer Office.
63. Control & Transfer Office.
64. Control & Transfer Office.
65. Control & Transfer Office.
66. Control & Transfer Office.
67. Control & Transfer Office.
68. Control & Transfer Office.
69. Control & Transfer Office.
70. Control & Transfer Office.
71. Control & Transfer Office.
72. Control & Transfer Office.
73. Control & Transfer Office.
74. Control & Transfer Office.
75. Control & Transfer Office.
76. Control & Transfer Office.
77. Control & Transfer Office.
78. Control & Transfer Office.
79. Control & Transfer Office.
80. Control & Transfer Office.
81. Control & Transfer Office.
82. Control & Transfer Office.
83. Control & Transfer Office.
84. Control & Transfer Office.
85. Control & Transfer Office.
86. Control & Transfer Office.
87. Control & Transfer Office.
88. Control & Transfer Office.
89. Control & Transfer Office.
90. Control & Transfer Office.
91. Control & Transfer Office.
92. Control & Transfer Office.
93. Control & Transfer Office.
94. Control & Transfer Office.
95. Control & Transfer Office.
96. Control & Transfer Office.
97. Control & Transfer Office.
98. Control & Transfer Office.
99. Control & Transfer Office.
100. Control & Transfer Office.

GROUND PLAN  
OF THE  
BANK  
OF  
ENGLAND.

*Copied from a  
Drawing in Sir  
John Soane's  
Museum.*

BY  
JOHN WEALE,  
1851.

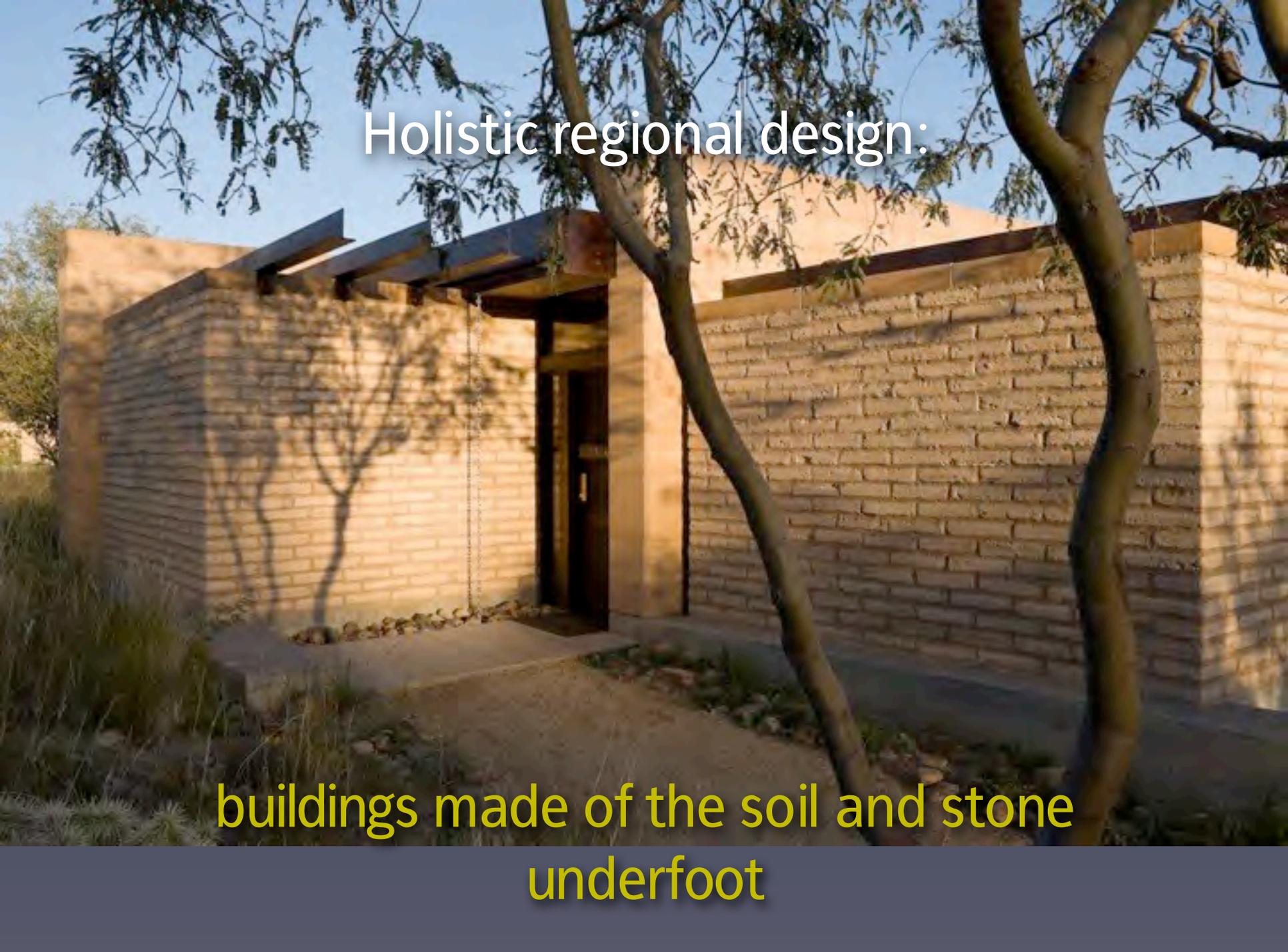


PRINCES STREET

Holistic regional design:



a culture of small buildings

A photograph of a modern building with a textured, light-colored facade made of stone or brick. The building has a dark wooden entrance and a large tree in the foreground. The text "Holistic regional design:" is overlaid in white at the top.

Holistic regional design:

buildings made of the soil and stone  
underfoot

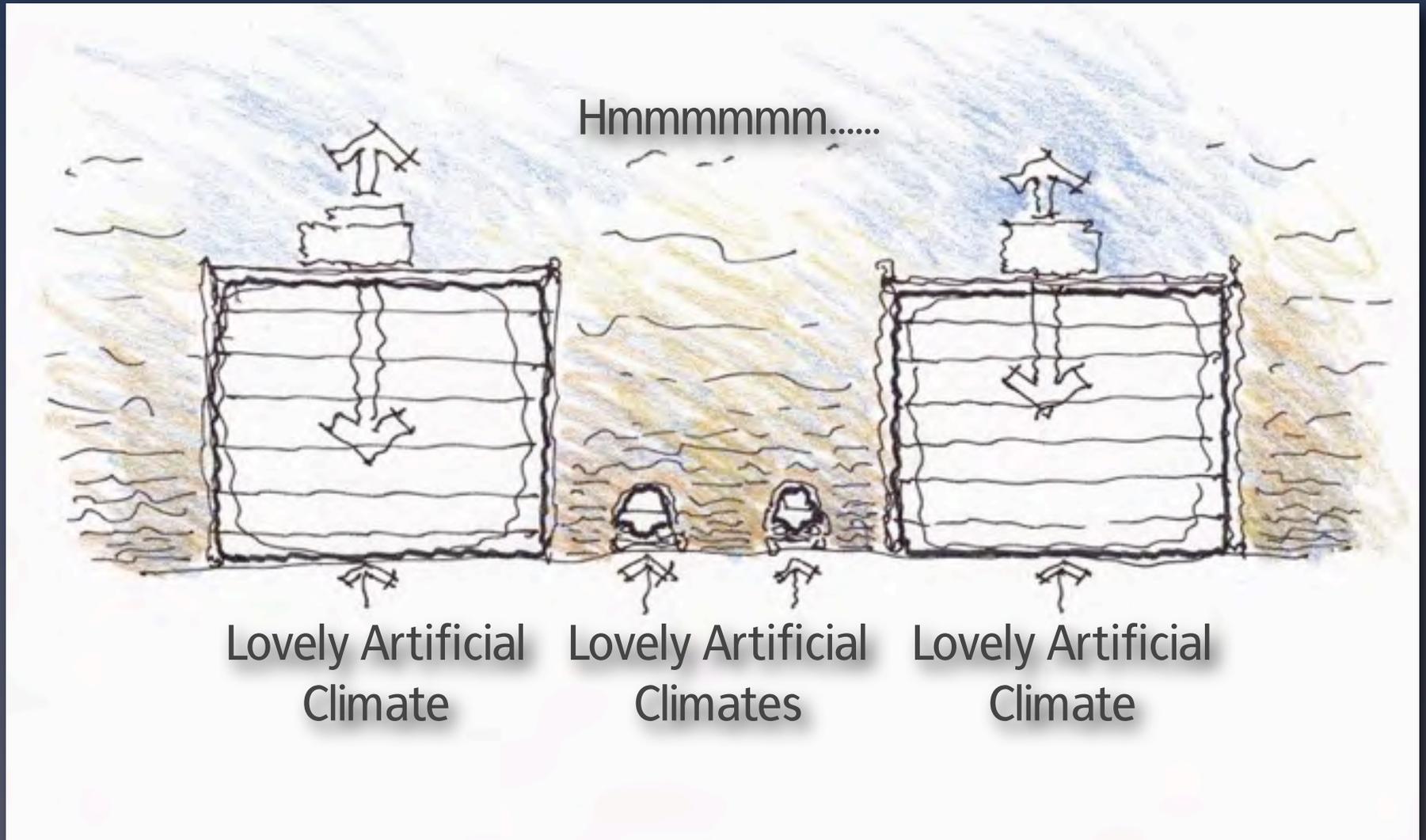


Holistic  
regional  
design:

*a culture of breathing buildings*

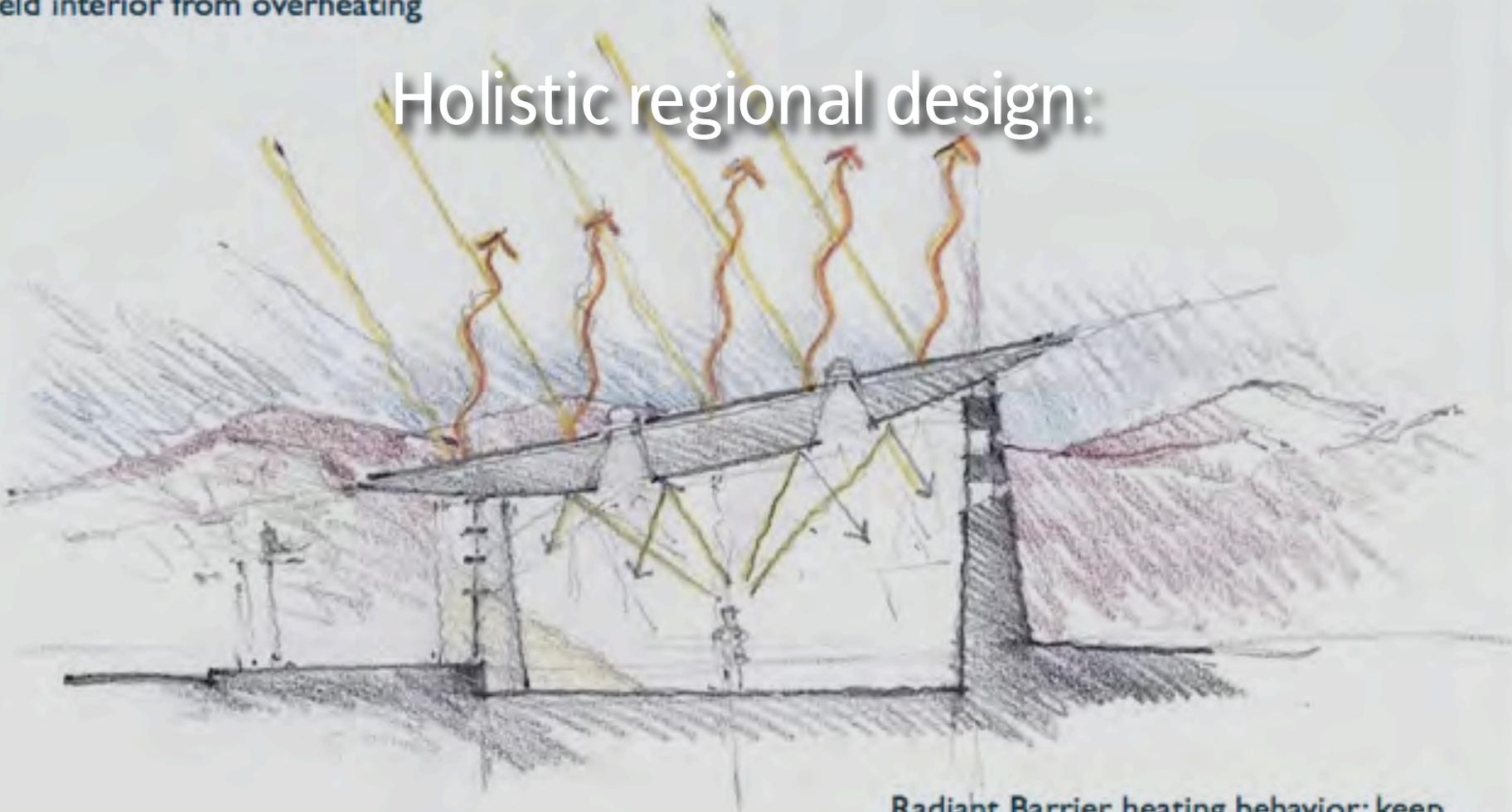


Artificial climates *and* sealed buildings  
**disconnect us**  
from stewardship *of the* 'outdoors'



Radiant Barrier cooling behavior:  
shield interior from overheating

# Holistic regional design:



Radiant Barrier heating behavior: keep  
radiant energy from escaping to cold sky

a culture of radiant buildings

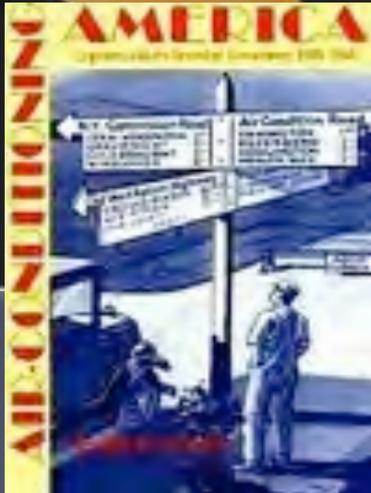


Holistic regional design:

a culture of organic buildings

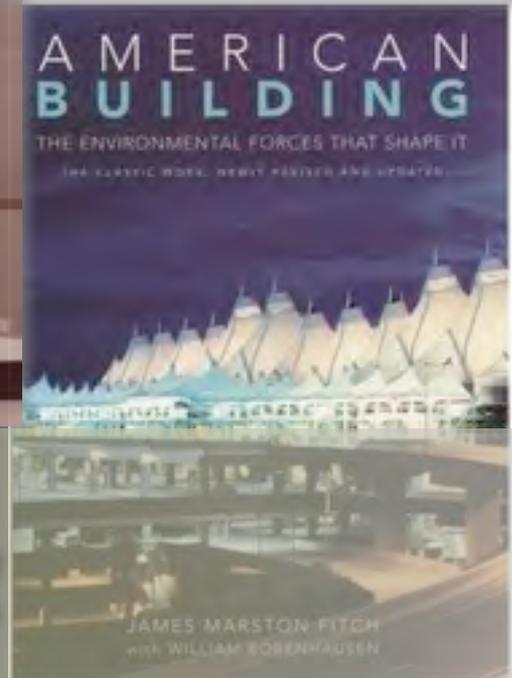
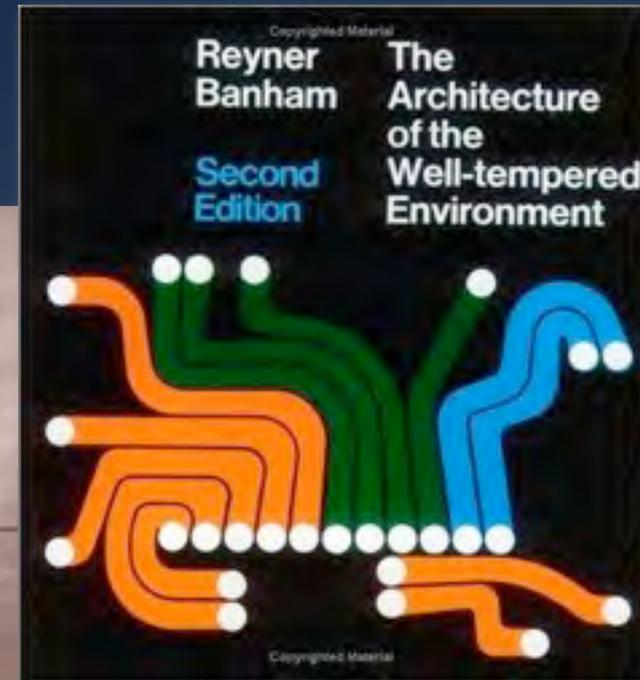
# Holistic regional design:

Thermal Delight in Architecture



THERMALLY  
ACTIVE  
SURFACES  
IN  
ARCHITECTURE

Kiel Moe



*Sources and Required Reading*