MINDFUL BUILDINGS

Seeing Beyond the ‘Green’

Himanshu Parikh
A GLASS BUILDING IN THE DESERT SUN!

Where has common sense disappeared?
DO WE COPY OR MOVE ON?

Can’t we lead by capitalizing on our propensity to be frugal?

Source: European Environment Agency
MINDFUL BUILDINGS

BACK TO THE BASICS

- Simplicity
- Frugality
- Multiplicity
Simplicity is not boring
SIMPLICITY

LEARN TO KISS
(Keep It Simple Stupid)

Use design to convert sophistication to simplicity **without** losing the magic.

Simpler the faster.

Simpler the cheaper.

Simpler the more beautiful.
FRUGALITY

Reducing Concrete –
Shells Made Simple
FRUGALITY

Reducing Steel -
There is Still a Scope Through Conceptual Thinking
DESI SPACE FRAME

vs.

ITS HI-TECH COUSIN

• Reduced diagonal ties.
• Half the shear members.
• Pyramids from cottage workshops.
• Assembled on site without staging.
• No expensive joints.
• Self aligning and curving.
• \( \frac{1}{3} \) rd cost of proprietary systems.
FRUGALITY

Local Materials, Skills and Responses
FRUGALITY

Appropriate Response to Earthquake
Building is the nothing between boxes

Weight reducing vertically: Stone - rammed Earth - soil blocks - wattle and daub.
PARAG PLAYSCHOOL, AHMEDABAD
MULTIPLICITY

FROM FRAME TO BOX
Frame structure with an outer skin of brick walls

34 perimeter columns & frames replaced by earthquake proof box of loadbearing folded walls.

60m X 80m 4-STOREY FACTORY WITH 11m. SPANS
FOLDED WALLS WITH CORNER BARS

FLYASH-POLYSTYRENE BRICKS PEPPERED WITH ORDINARY RED BRICKS
WALL MASS & HOLLOW SLABS FOR ECONOMY, INSULATION AND THERMAL COMFORT
THE RESULTING FAÇADE
MULTIPLICITY

INTEGRATING STRUCTURE
WITH
NATURAL COOLING
AND
DEEP LIGHT WASHING
Outlets for dropping water into the Bricks

China mosaic layer
15cm thk. RCC slab

Bricks
Clog free-nozzle for spraying water

Bricks

Air inlet

Pipe to the tank collecting drained water and then recycled to the top

Water channel to hold drained water

57.5cm thk. Exposed brick wall

PROPOSED FACTORY BUILDING MADHU INDUSTRIES - AHMEDABAD
Finished cost Rs. 700/sq.ft. and power consumption reduced by 40%
2,00,000 sqft. B + 4 storey hospital in loadbearing, fully built in 1 year at the total cost of Rs. 1500 per sqft. including all finishes and services - year 2011.
SHEAR WALL & FLAT SLAB VS. CONVENTIONAL FRAME

COST (LACS) vs. ZONES (STORIES)

- SW SYSTEM
- MRF SYSTEM
LOW RISE: FLAT SLAB, SHEAR WALL & COLUMN SYSTEM
HIGH RISE: NIWARU, TILAK MARG, JAIPUR
ECONOMIC FLAT SLAB
NO INTERNAL COLUMNS
DUCTS AS SHEAR WALLS
ADVANTAGES

LESS HEIGHTS AND COOLING VOLUMES

BEAMS NOT INTERFERING WITH SERVICES

PARTITION FLEXIBILITY

FASTER TO BUILD

CLEANER LOOKING

CHEAPER BY ABOUT 20%
FUNDAMENTAL FLOWS OF RATING SYSTEMS:

❌ The embodied energy, constituting a large component of life cycle energy, misses fair evaluation as there are no measures of human ingenuity.

❌ Active technology interventions score over passive non-consumption.

❌ Low rewards for nurturing crafts, job creation and trickle-down prosperity in preference to mechanisation; poverty being the worst polluter.

❌ No rewards for building less.

So much for the work in the earlier slides! It has taken years to cope with buildings which ‘float’, now I have to design ‘green’ buildings which ‘float’!!
MINDFUL BUILDINGS

KEEP IT SIMPLE
CONSERVE AND HARNESS RESOURCES
BRING IT ALL TOGETHER

THANK YOU