Regional Strategies for the Greening of the Educational Process
Given the role of technology, is regionalism a viable factor in the greening of buildings & educational facilities?
What defines a region? Where are we?
We are in a coast plain environment. High humidity, high temperature, cloudy skies, moist soils, strong winds, and low elevation.
Historic Strategies for dealing with Natural and Environmental Issues

For well over 250 years an urban riverside community has existed in New Orleans. This despite numerous flood, epidemics, fires and wars.

How was this accomplished before recent technological advances?
The first attempts at levees were in 1726. They were 4’ tall.

The built environment reacted to numerous fires and floods. There were changes in how, and where we built.
18th Century Urban structure New Orleans
18th century Urban structure New Orleans

DESIGN FEATURES

Broad Covered Galleries
Ground Floor Storage Only
High Volume Living Spaces
Large Shielding Roof
18th Century
Urban structure
New Orleans
18th Century Urban structure
New Orleans

DESIGN FEATURES

Tall Shuttered Windows & Doors
Changes in materials with additional masonry & plaster
Internal Fireplaces
A somewhat standard vocabulary of elements was established to address the demands made by nature and climate. Each element responded to a very specific demand.
The first education facilities were no exception. They followed the tried and tested approaches.

In addition they were willing to adapt.
Even in the urban context, issues such as clean drinking water, took their example from traditional approaches.

Again adaptation was essential.
A rural example utilized many of the same elements found in the denser urban counterpart.
The industrial revolution, progress and experimentation
While interesting, not all experiments were successful.
By the late 1920s, major companies were manufacturing unit air conditioners, such as this one produced by Carrier. When several were spaced about a large room, they governed temperature and humidity without the expense of installing a system of ductwork. (Mémoires, Sociétés des Ingénieurs Civils, 1929.)

The advent of the “climatic controlled” building
Modernist strategies in the design of schools
In New Orleans

Open plans, daylighting, proper solar orientation, natural ventilation with primary areas raised well above ground, shaded play areas.
Energy Cost as a primary factor in strategy selection
Oil prices ranged between $2.50 and $3.00 from 1948 through the end of the 1960s. The price of oil rose from $2.50 in 1948 to about $3.00 in 1957. When viewed in 2006 dollars an entirely different story emerges with crude oil prices fluctuating between $17 - $18 during the same period. The apparent 20% price increase just kept up with inflation.

From 1958 to 1970 prices were stable at about $3.00 per barrel, but in real terms the price of crude oil declined from above $17 to below $14 per barrel. The decline in the price of crude when adjusted for inflation was amplified for the international producer in 1971 and 1972 by the weakness of the US dollar.
What Next?
Regional Strategies vs. Technology
Or
The Reduction of Demand by the Prudent Use of Regional Strategies
Regional Strategies

Rather than using increasingly scarce and expensive energy to overcome most issues, look to the regional and local resources to address the broader needs.

Reduce demand whenever and wherever possible.
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• Climatic resources
• Community resources
• Human resources
• Technological resources - New industries, refitted industries
Regional Strategies

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- **Climatic resources** - Abundant sunlight, high precipitation, constant below grade temperature, decent winds
- **Community resources** - Public transit, community education programs
- **Human resources** - Teachers, school staff, students, design professionals, volunteers, and business community
- **Technological resources** - New industries, refitted industries
Planning Realistically

Existing Facilities
Planning Realistically

New Facilities
Site Factors
Building Envelope
Energy Systems
Control Systems
Operational Scheduling
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Solar orientation studies

North-south orientation compared to east-west orientation in Gainesville, Fla. Note: North-south orientation assumes solid walls on north and south elevations. East-west orientation assumes solid walls on east and west elevations.

Rinker Hall is oriented on a pure north-south solar axis, increasing daylighting contribution by 30%.

The orientation and organization of the building anticipates near threshold photovoltaic strategies.
Building orientation - maximize daylighting / minimize thermal heat gain
Appropriate site landscaping
With high level of water management, and conservation

The use of interior / exterior space where possible
Where possible, the use of operable windows and openings
The Building Envelope conceived as a protective filter reducing direct heat gain and focusing sunlight and views.
The Building Envelope as a collecting device for light, heat, water, and air movement
Broad based approach to on-site energy generation & technology using orientation as a primary tool

Multiple sources of production
One of the difficulties with technology is the variety and its rate of change.
In some instances technology presents the current best case solution. Certainly with building automation and control systems this is the case.
Regional Strategies

The strategies are simple - optimize all resources, minimize all exposure to negative conditions.

While simply stated it is difficult to do in our highly complex technological culture. There is still a great of resistance to the “easy” energy driven approach.