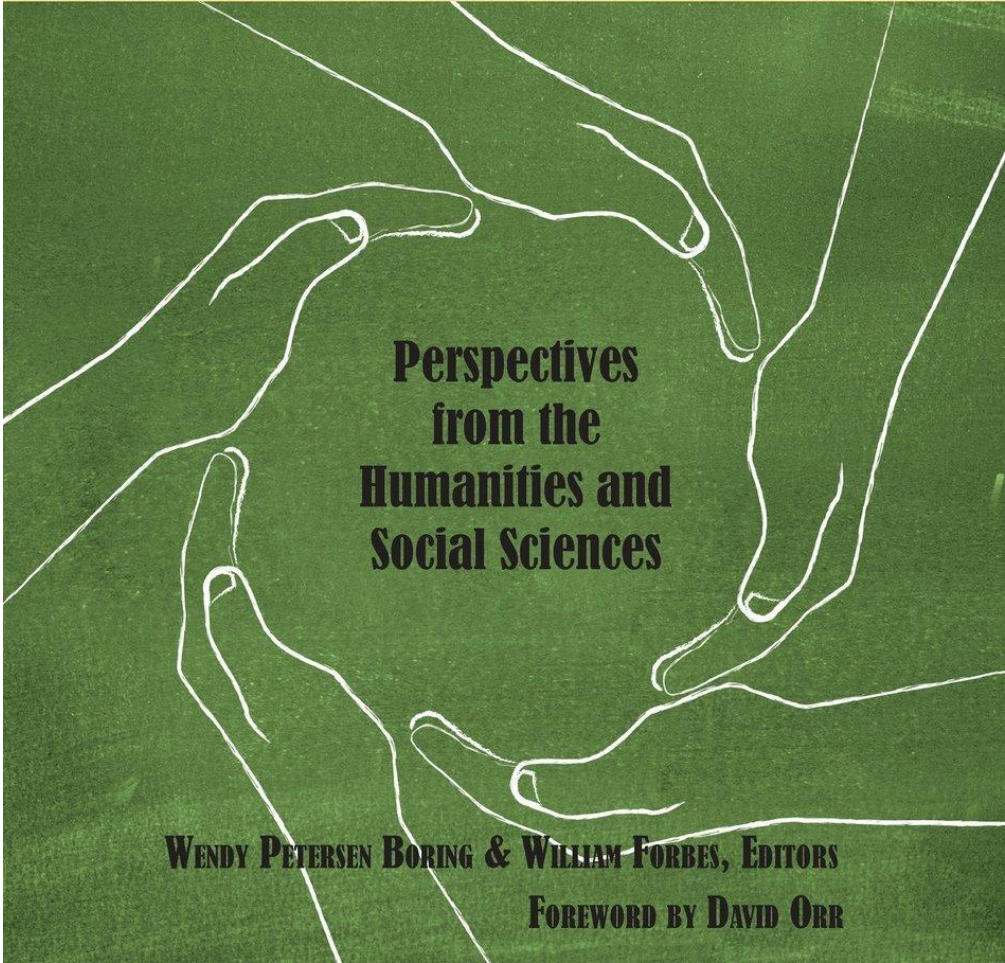


# A Decade of Lessons from Connecting Campus Greening with the Classroom at Rice University



**Richard R. Johnson, Rice University**  
**February 28, 2014**

# **Teaching Sustainability**



**Perspectives  
from the  
Humanities and  
Social Sciences**

**WENDY PETERSEN BORING & WILLIAM FORBES, EDITORS**

**FOREWORD BY DAVID ORR**



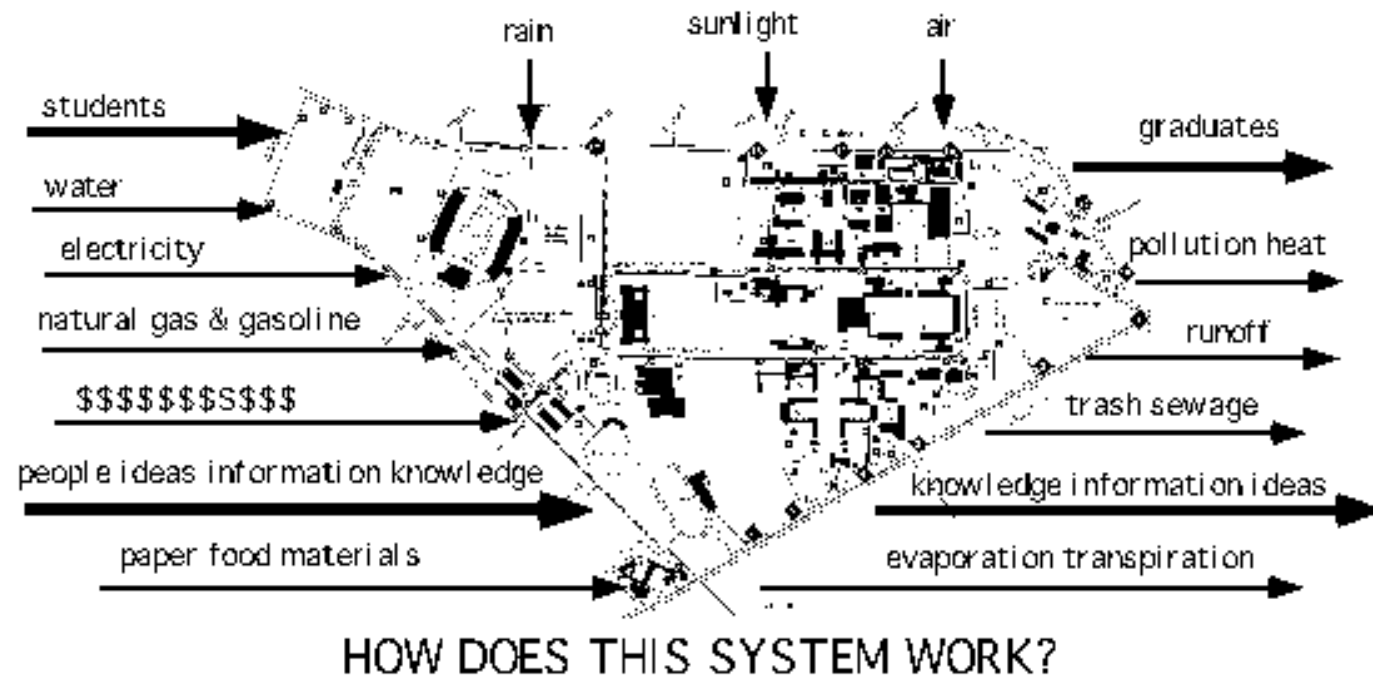
# A Movement is Born



“...examine resource flows on this campus: food, energy, water, materials, and waste. Faculty and students should together study the wells, mines, farms, feedlots, and forests that supply the campus as well as the dumps where you send your waste. Collectively... support better alternatives that do less environmental damage, lower carbon dioxide emissions, reduce use of toxic substances, promote energy efficiency and the use of solar energy, help to build a sustainable regional economy, cut long-term costs, and provide an example to other institutions. The results of these studies should be woven into the curriculum as interdisciplinary courses, seminars, lectures, and research. No student should graduate without understanding how to analyze resource flows and without the opportunity to participate in the creation of real solutions to real problems.”

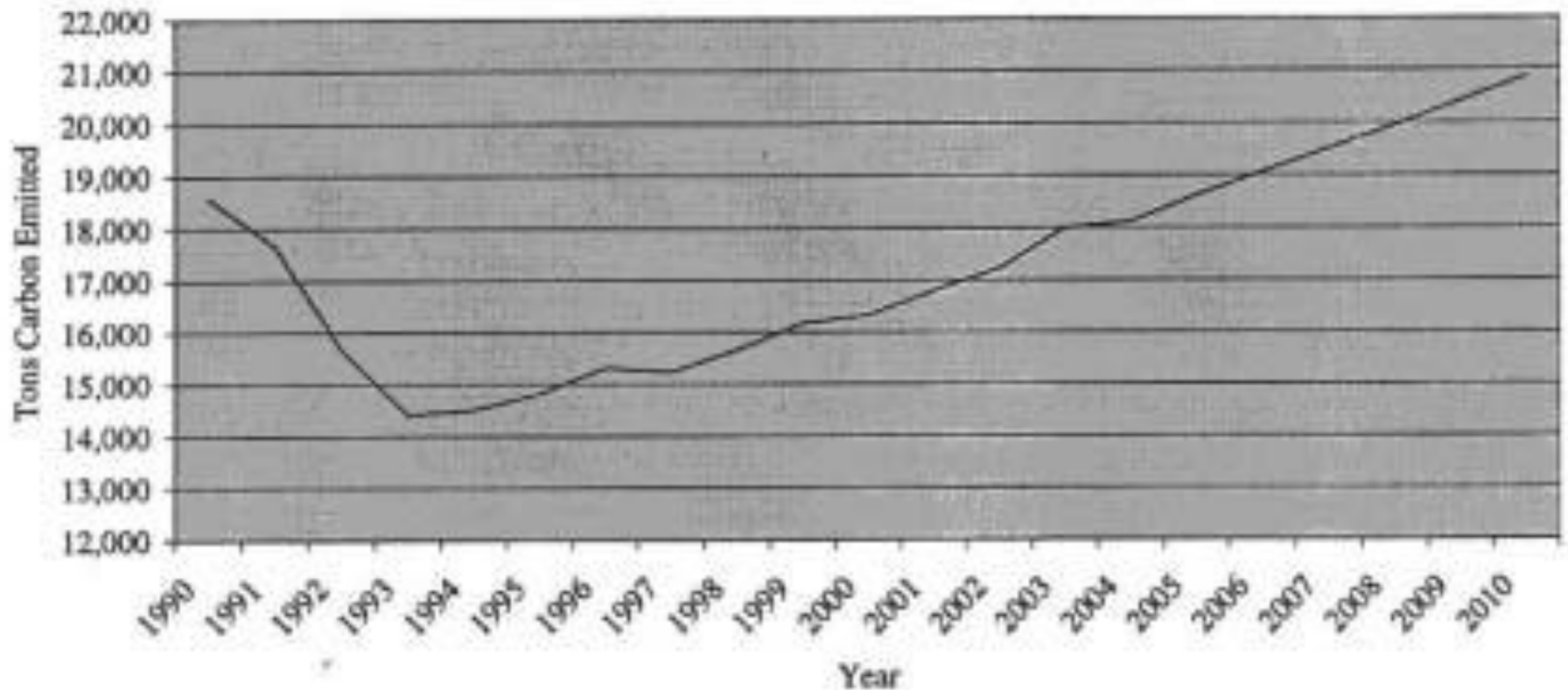
-- Dr. David Orr, adapted from commencement address to  
Arkansas College, 1990

# 1998: Studying Rice as an Environmental System



# 1999: The Impact of CO2

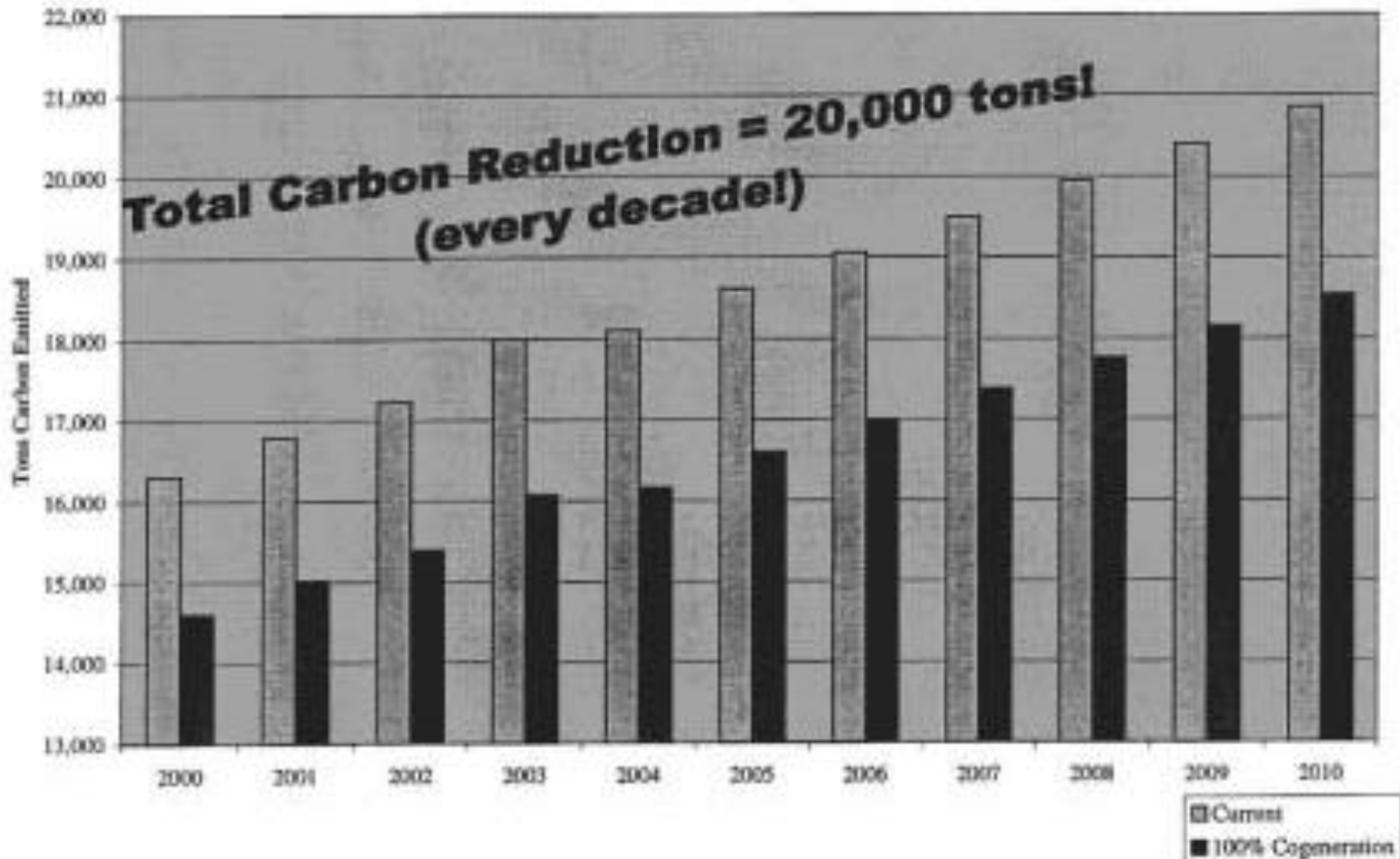
Figure C5. Rice University Carbon Emissions Projections from Energy Consumption.  
Data from Appendix, Section H.



While Rice's overall carbon emissions had *decreased* between 1990 and 1998 due to improvements in the Central Plant, the gains were projected to be wiped-out by 2006 from campus growth.

# 1999: The Impact of CO<sub>2</sub>

Figure C7. Rice University Carbon Abatement from Cogeneration Upgrade (2000-2010).  
Data From Appendix I, Section J.



The class projected that emissions levels could be held below 1990 levels through 2010 by switching entirely to natural gas powered cogeneration.

## Administrative Challenges to Sustainability at Rice

- Organizational Management
  - Problem: Lack of a person to speak for environmental issues
  - Proposal: Hire a sustainability coordinator
- Policy
  - Problem: University not fulfilling commitments as a signatory of Talloires Declaration
  - Solution: Enact a university sustainability policy

# Rice University Sustainability Policy

Rice University recognizes the critical importance of sustainability.

Its present needs must be met while protecting the interests of future generations. The Shell Center for Sustainability, the Center for the Study of Environment and Society, the Environment & Energy Systems Institute and student organizations should be utilized to foster environmental consciousness and mitigate the university's ecological footprint. Rice University works with students, faculty, and staff to improve environmental sensitivity. University practices will evolve along with the Rice community to keep abreast with changing needs and new technologies. The University believes that students who graduate from Rice need to understand the concepts of sustainability and possess a sense of responsibility for the future.



# ENST 302 / SOCI 304: Environmental Issues – Rice Into the Future

The 2 Key Assignments are:

- **Group report** on a specific campus greening topic across a spectrum of universities
- **Group project** to improve the university's environmental performance in some way

## **Lesson 1:**

**Never underestimate the ability of three (or four or five) students to effect real change.**

# U.S. BUILDINGS IMPACTS ON RESOURCES

**39%** of total energy consumption

**71%** of electricity consumption

**39%** CO<sub>2</sub> emissions

**30%** of raw materials use

**30%** of waste output

**12%** of potable water consumption



Going Green: Rice Commits To Building Energy-Saving, Eco-Friendly Facilities

*Rice News*, August 24, 2006



# Rice LEED Status Update

Project	LEED Rating
Baker College Addition	Silver
Biosciences Research Collaborative (Core and Shell)	Gold
Brockman Hall for Physics	Gold
Duncan College	Gold
Gibbs Recreation Center	Silver
McMurtry College	Gold
Oshman Engineering Design Kitchen	Gold
Rice Children's Campus	Silver
Will Rice College Addition	Silver
Wilson House	Silver

This represents about  
20% of our total campus  
square footage!



**Lesson 2:**  
**Access is critical.**









**Lesson 3:**  
**Trust is also critical.**

LOVE  
FOOD  
HATE  
WASTE

A top-down view of a white ceramic plate set against a dark background. The words 'LOVE', 'FOOD', 'HATE', and 'WASTE' are arranged vertically in the center of the plate, constructed from various food items. 'LOVE' uses cucumber, cherry tomato, corn, and green beans. 'FOOD' uses carrot, tomato halves, and cucumber. 'HATE' uses corn, green beans, and cucumber. 'WASTE' uses ketchup, peas, corn, and green beans. A silver fork is positioned to the left of the plate, and a silver knife is to the right.

# MARTEL COLLEGE









## **Lesson 4:**

**“Unsuccessful” projects can be successful.**



**Lesson 5:**  
**Students are resourceful.**







**Lesson 6:**  
**Engage constantly with project teams.**





## **Lesson 7:**

**Sometimes project momentum is more important than project completion.**

# Building Deconstruction on Chaucer Street



In the U.S., approximately 35-40% of the solid waste stream consists of construction and demolition waste.

-US Army Corps of Engineers







# Rice Children's Campus: Reuse of Bricks







# Rice Children's Campus



**Lesson 8:**  
**Sometimes the end is not the end**  
**(or is but shouldn't be).**









**Lesson 9:**  
**Success breeds success.**



# Farmers' Market







# Welcome to the Real Food Revolution's Farm to Fork Dinner

*Special thanks to*

Chefs Ed , Kyle and Johnny for helping plan and prepare this dinner

*and to*

The Center for the Study of Environment and Society and Student Activities President's  
Programming for helping to fund this event

## Appetizers

Zucchini, spinach and oven-dried tomato rolls  
*from Atkinson Farm*

Seasonal greens and arugula with satsuma orange segments,  
candy cane beets and a honey citrus vinaigrette  
*from Atkinson Farm & Animal Farm*

Apple and goat cheese roulade with rainbow micro greens  
*from Blue Heron Farms & Bella Verde Farms*

Texas quail with a honey cider glaze  
*from Lockhart, Texas*

## Entrees

Chicken with potato marquee, sherried mushrooms and green  
beans  
*from Oaks of Mamre Farm, Animal Farm & Atkinson Farm*

Vegetarian: herb-marinated tofu with potato marquee, sherried  
mushrooms and green beans  
*with tofu from Calco of Houston*

## Desert

Creme brulee and crea puffs with caramel  
*from Oaks of Mamre Farm*



*Cranberry Cous Cous*

*Stewed Garbanzo Beans*

*Steamed Cabbage and Peppers*

***Rice University Farmers Market Special***

*Vegetarian Gumbo (NO GLUTEN)*

*Thickened with Roux made from*

*Quinoa and Brown Rice Flour*

***(Contains Dairy)***

*Steamed Brown Rice*







# Farm-to-Fork-to-Farm Program





# Questions?

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