

Art and the Environment

Creativity and Engineering for Environmental Action

Life has an impact on the environment. Trees emit chemicals that degrade visibility and modify the climate in particular regions. Tiny animals create structures such as the Great Barrier Reef. Our attitude to the environment also arises out of the society in which we live. Human beings have been modifying the environments in which they live for centuries, and some cultures have lived in harmony with the environment better than others. It is for these reasons that environmental engineers, who discover and create and apply technology to improve the environment, and artists, who explore and experiment with the values of society, have a role to play together in the environmental movement.

Combining the creation of art with principles from environmental engineering science for the purpose of encouraging environmental change is the focus of this course. Prof. George Rivera from the Fine Arts Department, a world re-known artist and art curator in digital art, and Prof. Shelly Miller from the Mechanical Engineering Department, an expert in environmental engineering and air quality, will join together to team teach this course. The course will be a unit level course for undergraduates in engineering and art. A maximum of students will be accepted. Classes will meet on Tues and Thurs from : PM in Engineering's Integrated Teaching and Learning Laboratory and in the Fine Arts Building computer lab.

Figures and illustrate the visual impact of air pollution. Figure Yosemite Valley on a clear day, compared to Figure Yosemite Valley under a haze of smog, implies that our own activities are changing the environment and our perception of the environment. The haze of smog seen in Figure is due almost entirely to the automobile traffic in Yosemite and the weather patterns that keep the auto exhaust trapped in the valley. Engineers are motivated to create new technologies that emit less visibility degrading contaminants. Artists can use these types of photographs to create art about the environment, making statements about the environmental degradation due human activities.

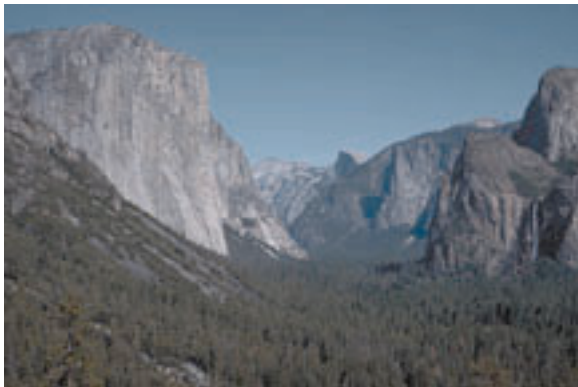


Figure Yosemite on a good day

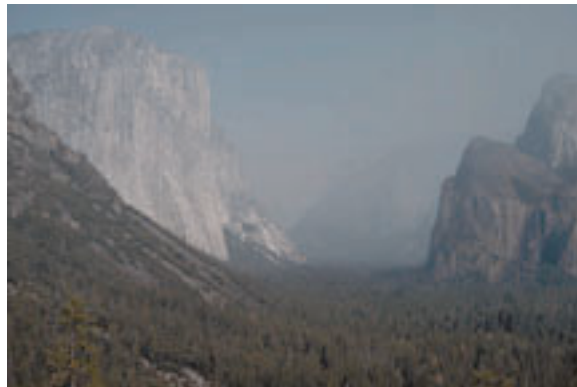


Figure Yosemite on a bad day

One artist who has created art about environmental issues is Mel Chin. He became interested in environmental art as his ideas expanded to include a greater consideration for ecological systems and sustainability. Chin's interests include creating work that addresses issues of habitat devastation, restoration, and sustaining the planet's biodiversity.



Figure Revival Field

Barbara Matilsky () wrote the following about Chin's artwork entitled Revival Field:

"The contaminated earth was fenced in with chain link and subdivided by intersecting paths that form an X. The project's boundaries are circumscribed by a square. Chin conceives of these overlays as a target, a metaphorical reference to the works pin point cleanup. The divisions are also functional, separating different varieties of plants from each other for study. In the circular field the intersecting paths create four fields where six types of plants and two pH and two fertilizer tests can occur in each quadrant. The land area between the square and circle functions as a control plot where plants will be seeded with local grasses. The design for revival field facilitates the chemical analysis of each section."

Course Structure

The class will be a one semester course and will consist of lectures, discussions, assignments, hands on labs, and a semester long project. The project will be to design and build an art/engineering piece that promotes environmental action and teaches about an environmental issue.

Profs Rivera and Miller will teach concepts from art and environmental engineering science through lectures class discussion readings and hands on labs Art concepts that will be taught include:

- Conceptual Art
- Suzi Gablik on the Environment
- Artists & the Environment
- Land Art Eco Art etc
- Women Environmental Artists
- Individual Artists

Engineering concepts that will be taught include:

- What is environmental engineering science? (week)
- Introductory Engineering Design (week)
- Tools of the trade (week)
 - Steady state box models and residence times
 - Thermodynamics and energy transfer
 - Chemical reactions and equilibria
- The nature of water quality problems (week)
- The nature of air pollution problems (week)
- Hazardous waste (week)

Hands on lab activities include:

- Internet and library research
- chemistry experiments (for example determining the pH of a solution)
- physical experiments (for example measuring the velocity at which differently shaped objects fall under the influence of gravity)
- instrumentation (how does a vacuum pump work for collecting air samples?)
- measurements (counting particles using a laser beam)

Assignments will be given that include written essays on topics covered in the course (for example short papers addressing how art can impact society what evidence of environmental change do you experience in your own life) short take home experiments (for example have the students determine the pH of three different liquids they come into contact with during their daily routine and discuss) short technical assignments (calculations to determine the gravitational settling velocity of particles of different diameters) and written summaries of internet and library research Engineering students will be expected to execute a series of additional technical assignments

Finally students will produce a collaborative piece of environmental art Teams of students will be formed so that two engineers and two art students will work together on the project The art pieces will have a focus to address issues that the students have learned about and are motivating environmental action The art pieces will be completed at the end of the semester for exhibit in the Boulder Valley schools the galleries of CU's Engineering Center NCAR and possibly nationally and abroad

Students will be graded on their participation in the class assignments and writings short take home experiments research and the creation and completion of their art projects

Texts

Living Downstream: A Scientist's Personal Investigation of Cancer and the Environment
by Sandra Steingraber Vintage

With this eloquent and impassioned book biologist and poet Sandra Steingraber shoulders the legacy of Rachel Carson producing a work about people and land cancer

and the environment that is as accessible and invaluable as Silent Spring and potentially as historic. In her early twenties, Steingraber was afflicted with cancer, a disease that has afflicted other members of her adoptive family. Writing from the twin perspectives of a survivor and a concerned scientist, she traces the high incidence of cancer and the terrifying concentrations of environmental toxins in her native rural Illinois. She goes on to show similar correlation in other communities, such as Boston and Long Island, and throughout the United States, where cancer rates have risen alarmingly since mid-century. At once a deeply moving personal document and a groundbreaking work of scientific detection, *Living Downstream* will be a touchstone for generations, reminding us of the intimate connection between the health of our bodies and the integrity of our air, land, and water.

The Reenchantment of Art by Suzi Gablik Thames & Hudson

One of the livelier critics of the contemporary art scene, Gablik tries to trace the roots of the present crisis in aesthetics and to map out some ways of escape. Gablik's thesis is not original. "Since the Enlightenment," she maintains, "our view of what is real has been organized around the hegemony of a technological and materialist world view; we no longer have any sense of having a soul." Spirituality and ritual have been the first casualties of this attitude, but the most profound reordering, Gablik says, has occurred in the area of social relations, as the spread of individualistic philosophies has weakened or destroyed the cohesion of traditional communal structures, leading to the modern artist understanding his or her vocation in terms of the objects created rather than the audience addressed.

Conversations Before the End of Time Thames & Hudson

In this book, thoughtful people explore questions that the comfortable and apathetic will not. Questions about squeezing everything out of everything—art, the environment, community. She brings out how most art is for only a select and privileged few due to the way Western Civilization exists now. Some of the views might seem a bit extreme, but after all, it is the extremists on both sides who shape the future. Suzi Gablik interjects that the strongest (industrial/polluting/rich) extremists might be winning today. I think this book suggests that some artists are saying we should care about each other by connecting more closely to each other and the resources we live with. Kandinsky, Malevich, Mondrian, the Bauhaus school, and many other thinkers stated these similar things some years ago. This book restates this modified theme today.