

# Transdisciplinary Curriculum

A general proposal for a class for Ph. D students

## 1. Introduction to transdisciplinarity

## 2. Project management

- a. Discuss meeting schedules, format, and rules
- b. Analyze and contrast leadership and committee structures for optimal results

## 3. Project definition

- a. Define study boundaries appropriate to all disciplines
- b. Define conflicts of interest
- c. Define methods to coordinate research

## 4. Project Operations

- a. Address areas of uncertainty
- b. Discuss disciplinary methodologies and research impact
- c. Analyze roles of stakeholders and researchers and methods to incorporate stakeholders into research process

## 5. Project Results

- a. Discuss methods to use knowledge produced during research to further the project
- b. Identify steps and actions necessary to implement proposed solutions

# SWAN Student Workshop

Feb. 14th & 15th 2016

Biosphere 2



Tamee Albrecht - UA - Geography

Furrukh Bashir - UA - Hydrometeorology

Eliza Benites - UMI/UA/Paris 3 - Sociology

Claire Beveridge - UW - Environmental engineering

Kremena Boyanova - NIGGG-BAS - Ecosystem services

Violeta Caballo - Seville - Water governance & SES

Jampell Dell'Angelo - SESYNC - Water governance

Chloé Fandel - UA - Hydrology

Christopher Fullerton - UA - Geography

Susan Harris - UA - Hydrology

Nuria Hernandez-Mora - Seville - Water governance & SES

Jacob Hileman - UC Davis - Environmental policy

Lily House-Peters - UA - Geography

Owen King - UWE - Political ecology

Kristin Kuhn - UNESCO-IHE - Ecohydrology

Claude LeGouill - UMI - Sociology

Brian O'Neill - UA - Sociology

Tanya Trenkova - NIGGG-BAS - Web GIS

Rositsa Yaneva - NIGGG-BAS - Ecosystem services

Zhao Yang - UA - Atmospheric sciences

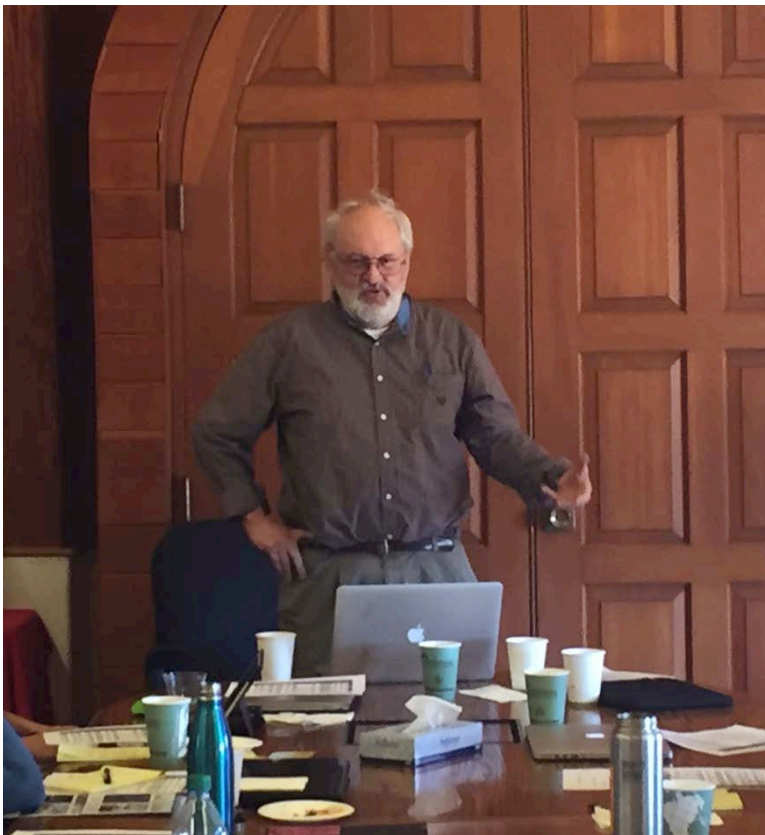
Petar Yordanov Nikolov - U of Sofia - GIS





# Focus on Discrete Topics

**Professor Victor Baker**



**Zak Royse**



# ◆ Physical sciences

Key terms and processes

Labs to expand understanding

Explanation of the key processes and interconnections - cause-effect interactions

Uncertainties of parameters

How models work (climate/hydrological models)?

Time-space variability

Issue of scale in defining research projects

# ◆ Social Sciences

Political ecology

Socio-ecological systems

The perception that nature is not independent of human influences

The study object is where the power is focused – institutions, agencies

How they influence the landscape?

Geographical/landscape approach

Issue of scale in defining research project

# Projects - Case Studies

## **1. Use of Case Studies in Class**

To highlight areas of difficulties, begin the class with a study of case studies where transdisciplinary research has been attempted but effort failed.

## **2. Subsequent use of case study alternatives:**

Developed by the professor and present to the class

Have the class develop during the class based on background and interests



# Curriculum Ideas

1 semester (~15 weeks)

~20 PhD students

## GOAL:

Teach students to have a transdisciplinary mindset

## INTRODUCTION:

- Litany of failures
- Philosophy of science
  - role of uncertainty & subjectivity
- What is transdisciplinarity?

## PROJECT:

- Professor maintains a list of potential stakeholder contacts
- Students choose research questions & tackle them as a group

## TRANSDISCIPLINARITY:

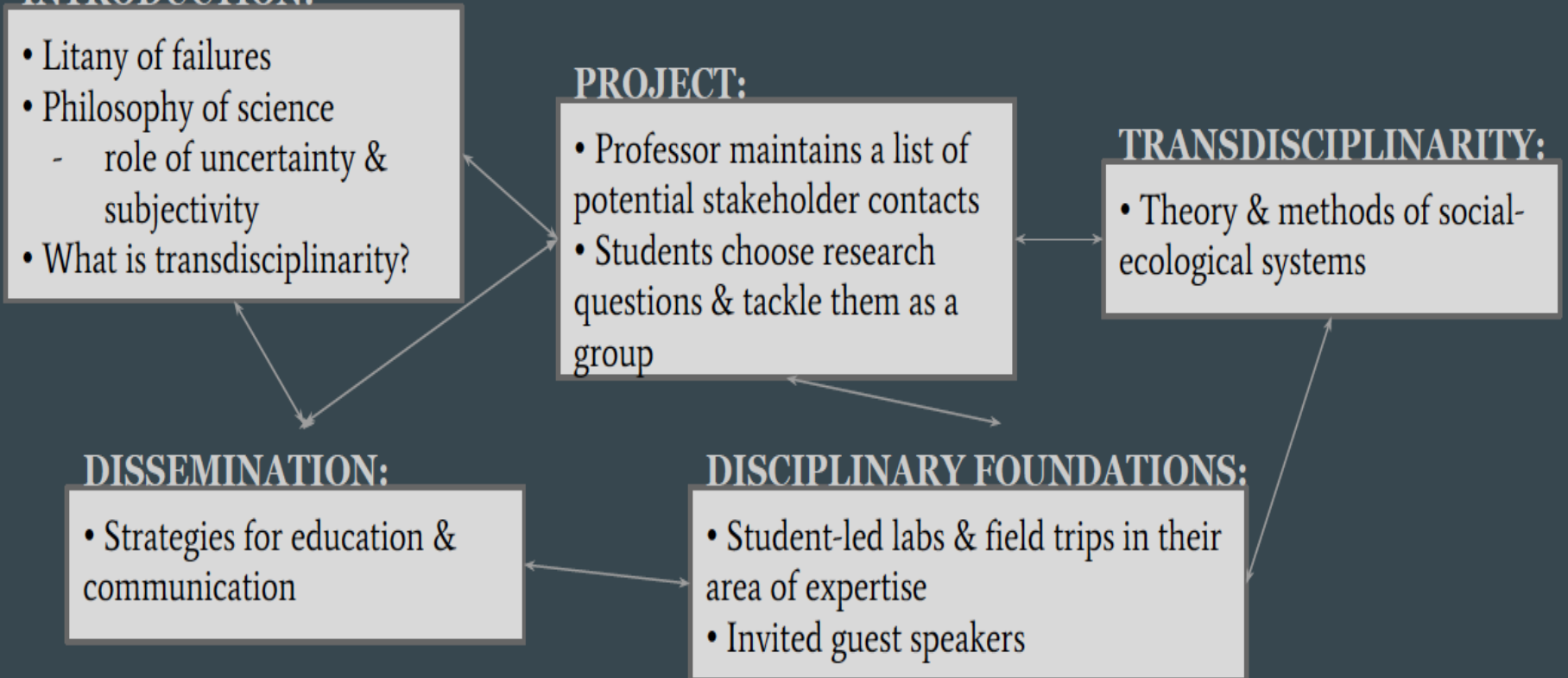
- Theory & methods of social-ecological systems

## DISSEMINATION:

- Strategies for education & communication

## DISCIPLINARY FOUNDATIONS:

- Student-led labs & field trips in their area of expertise
- Invited guest speakers



# Reflections

- Being physically in the same place is very valuable. Teleconferencing is challenging.
  - But, many teleconference discussions were still fruitful, especially sharing experiences.
- Disciplinary language barriers also make collaboration more difficult
- There is a trend of directionality - physical scientists often seek out collaboration with social scientists, but not vice-versa.
  - Results in a physical science framework driving transdisciplinary work
  - What do social scientists gain from transdisciplinary work?
- There are both strengths and limitations that come with each person's training
- The fundamental debate is about where knowledge resides.