

Peer Feedback Sessions: Scheduling Updates

Please see your syllabus for deadlines for our three upcoming peer feedback sessions: Sept 21, Oct 5, Nov 9

- **Today (Sept 14):** form small groups, exchange e-mail addresses (groups should be 3-4 persons; we will use the same groups for all upcoming peer feedback sessions)
- **Sept 21 (Literature Review Feedback Session):** e-mail draft document to me and your small group by noon on Sept 18
- **Oct 5 (Research Question Feedback Session):** e-mail draft document to me and your small group by noon on Oct 2
- **Nov 9 (Research Plan Feedback Session):** e-mail draft document to me and your small group by noon on Nov 6

Also: Next Week

Remember that our session next week (Sept 21) includes two distinctive components:

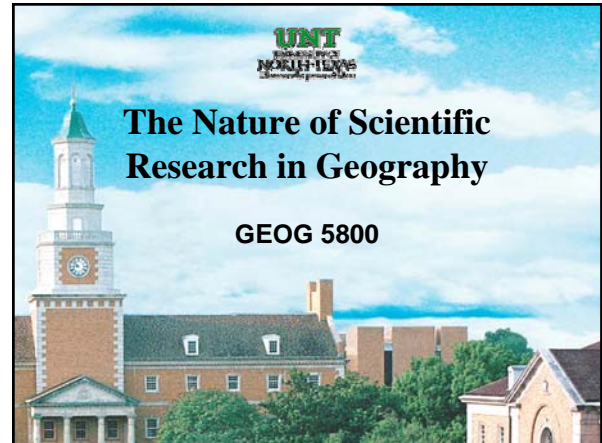
- **Article Case Studies Discussion:** examination of the four article case studies highlighted on the course website
- **The Literature Review Feedback Session:** just mentioned

Note on Project Possibilities for this Course

Last reminder that your syllabus gives you two options for the project you will complete for this course:

- **A research plan or outline:** this is all that we've talked about so far in the course, and this is the project option that I highly recommend
- **A research report:** representing the completed results of a geographic study. This includes all the elements of a research plan (introduction, literature review, case study/research questions), plus results and conclusions. This is an available option.

I provide two options because some students are in a non-thesis option and they do not intend to complete the major research project that the research plan prepares you for. I still believe the research plan helps everyone get the most out of the course possible. However, if the "report" option interests you most, you must talk with me before proceeding.



Science and Geography

- **"Geography is a science"**
 - Some may disagree with this statement, but our reading for this week argues this is true
 - Q: What is a scientist? What are people thinking of when they say geography is not a science? What do you think?

Science and Geography

- **"Geography is a science"**
 - "Science ... is a fruitful mode of inquiry, not a list of enticing conclusions" (Stephen Jay Gould)
 - "Geography ... is a truth-seeking discipline whose raw material consists of empirical observations" (John U. Marshall)

Science and Geography

- “Geography is a science”
 - “Science is a personal and social human endeavor in which ideas and empirical evidence are logically applied to create and evaluate knowledge about reality” (Daniel Montello and Paul Sutton)

Science and Geography

- Our focus here is on the process of science followed in geography
 - Scientific method: “the logical structure of the process by which the search for trustworthy knowledge advances” (Marshall)
 - Not what we find, but how we find it

Science and Geography

- Our Marshall reading provides some insight into
 - the “traditional” view of the scientific method
 - some issues with this traditional view and process
 - an alternative approach: Popper’s fallibilism and the use of falsification rather than verification

Science and Geography

- Q (group discussion):
 - In a nutshell, what is Marshall’s “traditional view” of the scientific method?
 - How would you describe this process of investigation? See my scientific method handout
 - What are Marshall’s issues with the traditional view – and how does Marshall think that “fallibilism” provides a fix?

Science and Geography

- Speaking practically, there is room for both inductive and deductive reasoning
 - Theory-creation is fundamentally a creative process that involves many kinds of thinking
 - Some theories come from generalizing based on past observations (induction)
 - Some theories come from rigorous application of logic (deduction)

Science and Geography

- Speaking practically, there is room for both inductive and deductive reasoning
 - Good geographical analysis draws on both inductive experience and deductive theory
 - Montello and Sutton make the point that scientific reasoning is extremely complex
 - “While our definition of science highlights logical thinking, it makes no claim that scientists think exclusively in a logical manner”

Science and Geography

- Speaking practically, there is room for both inductive and deductive reasoning
 - Good geographical analysis draws on both inductive experience and deductive theory
 - Montello and Sutton make the point that scientific reasoning is extremely complex
 - They use the term “abductive” to refer to this highly creative way of reasoning

Science and Geography

- See again the scientific method handout: summarized as a series of steps
 - Induction and deduction both play a role throughout

Scientific Method in Geography

- Four different approaches
 - 1. physical geographers who say scientific method is appropriate
 - 2. human geographers who say scientific method is appropriate, but application leads to problems not found in the physical sciences

Scientific Method in Geography

- Four different approaches
 - 3. human geographers who say scientific method is not appropriate because of the subject matter of human geography
 - 4. human geographers who apply Marxist methods in geography (such methods are scientific, but in a different way than the natural sciences)

Scientific Method in Geography

- The last part of our discussion concerns the application of scientific method in geography
 - This is the case for most (but not all) students and faculty in our department
 - Even if you're not using a scientific method approach in your research, the following discussion still provides some useful insights into the nature of research in geography

Scientific Method in Geography

- If scientific method is to be applied at all in geography, geographers must come to terms with two key issues
 - 1. Geography as a whole deals with multiple-variable, open systems
 - 2. Human geography in particular deals with knowing subjects

Scientific Method in Geography

- The first problem (multi-variable, open systems) can be termed uniqueness
 - Geographic phenomena are complex in character and causation
 - Example: soils have 15 characteristics necessary for a full description; study of soils includes physical, chemical, and microbiological processes

Scientific Method in Geography

- The first problem (multi-variable, open systems) can be termed uniqueness
 - This means that geographers find it difficult to carry out experimental testing
 - Sheer size of systems makes laboratory testing impossible (a city, a river basin)
 - Scaling down a system for lab analysis is seldom a good option (scaling may change an important variable)

Scientific Method in Geography

- The first problem (multi-variable, open systems) can be termed uniqueness
 - Q: how can we as geographers deal with this problem?

Scientific Method in Geography

- The first problem (multi-variable, open systems) can be termed uniqueness
 - One solution: the field experiment, involving data collection outside of the lab
 - Control variables through statistics and analysis, not research design (isolate two variables, all other variables held constant)
 - Issue: unrecognized/unrecorded variables create problems – can't be accounted for

Scientific Method in Geography

- The second problem (knowing subjects) is common to all social sciences
 - Issue: interference by the observer with the phenomenon observed
 - The character of human behavior and decision-making processes is something that many branches of human geography have debated over the decades
 - Q: how might we deal with this?

Term Projects

- Opportunity now to discuss anything related to your ultimate research plans for this course (if you wish)
 - Your ideas, your interests, your resources
 - My expectations (literature review, paper, presentation)