

# HONORS SOPHOMORE SEMINAR: CHAOS & ORDER

## CCS 300H, SPRING 2009 SYLLABUS

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**Meeting Time and Place:** Monday and Wednesday 9:00am-10:15am, Loyola 15.

**Instructor:** Karen Adkins, Loyola 16, (303) 458-4024, e-mail: [kadkins@regis.edu](mailto:kadkins@regis.edu) ; Michael Ghedotti, Science 225, (303) 458-4091, e-mail: [mghedott@regis.edu](mailto:mghedott@regis.edu) (Office hours will be announced in class.)

**Course Books:**

Goodman, A. 2007. *Intuition*. Dial Press.  
 Gould, S. J. 1992 (reissue). *The Panda's Thumb: More Reflections on Natural History*. W. W. Norton & Co.  
 Horgan, J. 1996. *The End of Science, Facing the Limits of Knowledge in the Twilight of the Scientific Age*. Broadway.  
 Rossenwasser, D. & J. Stephen. 2005. *Writing Analytically, 4<sup>th</sup> Edition*. Heinle.  
 Sobel, D. 1995. *Longitude, The True Story of a Lone Genius Who Solved the Greatest Scientific Problem of His Time*. Penguin.

**Honors Sophomore Seminar Description (Regis Bulletin):** As the third course in a five-semester honors sequence, this course invites students to consider the human person in relation to both society and the natural world. Using a historically recursive approach, students investigate the scientific method and induction as modes of understanding our world. Prerequisite(s): CCS 200H and HO 250.

**Course Goals:** Science is often viewed as distinctly different from other academic ways of engaging with the world in its greater “objectivity” or consistency. However, individual, technological, and societal forces are significant in science as they are in other disciplines. This seminar endeavors to help students critically engage with the natural and social sciences as ways of knowing the world. Specifically:

- Students should be able to evaluate critically the scientific way of knowing as practiced in the natural and social sciences. Students should be able to intelligently discuss the questions:
  - **What is science**, especially as compared to other ways of knowing? (e.g., the role specific methods, the effect of individual perspectives, the status of applied and pure science, and the interplay between empiricism and theory)
  - **What does it mean “to know” in science?** (e.g., reductionism and holism, the effect of the instrument, the ability of a human being to accurately study human phenomena)
  - **How do individual, group, and larger societal perspectives affect scientific understanding?**
- Students will demonstrate knowledge of some ways in which changing conceptual models and methods of knowing have specifically resulted in changing understanding of **cosmology** (our place in the universe), the **origin of the diversity of life** (our place in the living world), and **human behavior & culture** (our self-conception and our place in society).
- Students will demonstrate the ability to differentiate between scholarly and popular writing, and incorporate scholarly research in constructive argumentative papers. Students will demonstrate the ability to develop and complicate (i.e., “evolve”) a thesis based on analytic consideration of academic sources.

**Grading:**

Social Science Presentation (including typed presentation summary)-----	15%	75 pts.
Research Paper, 8 full-12pp. + refs./lit. cited (incl. question & draft)-----	30%	150 pts.
Entry Slips & Paper Peer Reviews-----	10%	50 pts.
Participation -----	10%	50 pts.
Midterm Examination-----	15%	75 pts.
Comprehensive Final Examination -----	20%	100 pts.
Total -----	100%	500 pts.

GRADING SCALE—The grading scale based on a percent scale will be as follows.

A = 100.0–92.50	B- = 82.49–79.50	D+ = 69.49–66.50
A- = 92.49–89.50	C+ = 79.49–76.50	D = 66.49–62.50
B+ = 89.49–86.50	C = 76.49–72.50	D- = 62.49–59.50
B = 86.49–82.50	C- = 72.49–69.50	F = <59.49

**In-Class Participation:** As an honors course, it is a basic assumption that students will participate actively in discussions in class. Participation will be monitored in class. Students will be given a participation grade with 50% of that grade based upon attendance and attentiveness in class and the remaining 50% determined by a general assessment of the frequency and substantive nature of student contributions to discussion.

**Entry Slips:** Completed by Monday over all the coming week's reading assignments. Review Chapter 1 in *Writing Analytically* focusing on details, evidence, and relationships. Entry slips must include:

1. a concise **one or two sentence statement of the main point(s)** made by the author(s) in each reading (see p. 39 box in *Writing Analytically*),
2. a brief (1-2 paragraph) explanation of **how each reading is related to one of the three central course questions** (it should somehow demonstrate that the student has read the material), and
3. **TWO** of your own questions or opinions **about the entire week's** reading (see p. 25 box in *W. A.*).

Entry slips must be *typewritten* and **turned in, in class**. They will not be accepted late. **DO NOT** complete entry slips for any readings in *Writing Analytically*.

**Research Paper:** The research paper will be completed as a COMPLETE draft and a revised final paper. The paper should be between **eight full pages** and 12 pages in length excluding references/literature cited. The research paper will explore how a particular natural science, social science, or science-related discipline has historically changed in how its practitioners view/understand their subject of study and it will analyze how and why that change in perspective occurred. Students should start with a general research question and then, as research in the published literature proceeds, develop a thesis (**See especially *Writing Analytically* box on P. 164**). This paper **MUST** cite at least **six (6) academic sources** in support of its thesis **one (1) of which must be a reading from the course. The other five (5) sources must be academic and must NOT be one of the course readings**. Appropriately cited course readings (beyond the one required) or non-academic sources can be used when appropriate, but will not count toward the six minimum academic sources. For writing this paper, read or review *Writing Analytically*. This paper **MUST** use cited sources (*six or more*), with at least one source obtained from outside of course readings. The final draft of the paper must be turned in with previous revision comments.

\*Papers must be typed or word processed and stapled. Honestly, folding page corners is not an acceptable alternative. *Otherwise they will not be accepted.*

\*Papers must have margins between 3/4 and 1 1/4 inches, be double spaced or space and a half, have a font size of from 10-12 point, be in a reasonable font face (e.g., Times, Times New Roman, Palatino), and be **within the page limits EXCLUDING** the references/literature cited section (The min. length is the length in **FULL** pages.)

\*All literature/references used must be cited in text and then listed as a full citation in the References or Literature Cited section in APA, MLA, or another instructor-approved format.

**Late Papers:** It is expected that all papers will be turned in on time. Late final revised papers will be accepted within one week with a significant penalty (**10% off**). *No late assignments will be accepted more than one week after the due date*. Excuses such as computer malfunction are not acceptable. Back your work up.

**Social Science Group Presentation:** Working in a group with two (or three, if necessary) other students, you will extend our case study analysis of scientific thinking to the social sciences. Your group will choose one example of a conflict, from one of the social sciences, that reflects debate about this social science connected to at least one of our main course questions. Your group will give a **15-20 minute presentation**, followed by 5 minutes of questions from colleagues. On the day of your presentation, you will turn in (1) a bibliography, (2) a brief critical overview of the primary text with which you anchor your presentation (**bring 30 copies of this overview to class**), (3) an outline of your presentation (What is your main point? How did you arrive at it based upon your analysis? Who presents what?), and (4) brief evaluations of the performance of each member of the group by each member of the group.

**Midterm Examination:** The midterm examination will involve answering two randomly selected synthetic essay questions unaided (no books, no notes) from a set of seven questions included with this syllabus.

**Final Examination:** The 1<sup>st</sup> part of the exam will be similar to the midterm. This part will require students to answer randomly selected *short* essay questions unaided (no books, no notes) from a set of questions distributed before the last week of classes. The 2<sup>nd</sup> part of the final exam will involve answering a larger synthetic essay or essays (revealed at the final) for which students may use their books and notes.

**Attendance & Absence:** This is a discussion-focused course. Therefore, attendance is required and will be taken at each class period. If you have more than four absences (for any reason) your grade will be reduced by one partial letter grade (e.g., an A- would become a B+) for *each* absence beyond four. Any students with eight or more absences (>1/4 of the course) will receive an F for the course.

**Schedule:** The due dates given for assignments are fixed. However, the dates for topics and activities may change (though they are unlikely to do so). Do the reading assigned for each class BEFORE class.

### JANUARY / FEBRUARY

Monday	Tuesday	Wednesday	Thursday	Friday
<b>12</b> Chaos & Order: What is science? Goodman, <i>Intuition</i> : whole book	<b>13</b>	<b>14</b> What is science and what is science for? Goodman, <i>Intuition</i> : whole book †Dixon, <i>What is Sci. For?</i> : 20-36	<b>15</b>	<b>16</b>
<b>19</b> <b>M.L.K. Jr. DAY</b> (no classes)	<b>20</b> <u>ADD/DROP</u> <u>DEADLINE</u>	<b>21</b> Pre-Scientific Science (?) †Genesis 1-2 (two versions) †Koestler, <i>Sleepwalkers</i> : 19-65	<b>22</b>	<b>23</b>
<b>26</b> Scientific Cosmologies: Religious Conflict? †Gould, <i>Dino. in a Hayst.</i> : 38-50 †Koestler, <i>Sleepwalkers</i> : 357-383	<b>27</b>	<b>28</b> Galileo: Theory & Instrument †Koestler, <i>Sleepwalkers</i> : 431-470	<b>29</b>	<b>30</b>
<b>2</b> Math. vs. Exper. Science †Kuhn, <i>Structure</i> : Ch.10,111-135 †Adkins, Kuhn Summary Handout	<b>3</b>	<b>4</b> Galileo, Theory & Instrument in Science †Feyerabend, <i>Against Method</i> : 99- 108, 121-140, 295-310	<b>5</b>	<b>6</b> Res. Quest. Due to Instructor by 5pm (L 16 or SCI 225)
<b>9</b> Paradigms & Papers REVIEW-Writing Analytically: 1-76 †Kuhn, <i>Structure</i> : Ch.11,136-143	<b>10</b>	<b>11</b> The End of Science & Philosophers of Science Horgan, <i>The End of Sci.</i> : 1-59	<b>12</b>	<b>13</b>
<b>16</b> The Scientific “Rev.” in the 17 <sup>th</sup> Cent.: Stars vs. Clocks Sobel, <i>Longitude</i>	<b>17</b>	<b>18</b> Class, Science, & Technology in the 18 <sup>th</sup> Century Sobel, <i>Longitude</i>	<b>19</b>	<b>20</b> Deadline for Paper 1 Draft DUE by 5pm
<b>23</b> Overview and Review +Academic Research	<b>24</b>	<b>25</b> <b>MIDTERM EXAM</b>	<b>26</b>	<b>27</b>
<b>2</b> <b>SPRING</b>	<b>3</b> <b>BREAK</b>	<b>4</b> <b>WEEK</b>	<b>5</b>	<b>6</b>
<b>9</b> 19 <sup>th</sup> Century Science: Darwin & Evolution Gould, <i>The Panda’s Thumb</i> : 19-44; 59-68	<b>10</b>	<b>11</b> 19 <sup>th</sup> Century Science: Wallace: “The Other Guy” †Berry, <i>Infinite Tropics</i> : 1-26 Gould, <i>The Panda’s Thumb</i> : 47-58	<b>12</b>	<b>13</b> Instructor Conferencing Deadline
<b>16</b> 20 <sup>th</sup> Century Science & Society: Racism & Sexism -Social Science Overview- Gould, <i>Panda’s Thumb</i> : 145-176	<b>17</b>	<b>18</b> -pick presentation topics- Level of Selection †Dawkins, <i>The Selfish Gene</i> : 21-45 Gould, <i>The Panda’s Thumb</i> : 85-92	<b>19</b>	<b>20</b> <u>WITHDRAW.</u> <u>DEADLINE</u>
<b>23</b> Sociobiology: Nat. and Soc. Intersect †Dennett, <i>Darwin’s Dangerous Idea</i> : 73-80, 361-369, 481-493	<b>24</b>	<b>25</b> Scientific Reductionism in Natural & Social Sciences Horgan, <i>The End of Sci.</i> : 114-158	<b>26</b>	<b>27</b>

† = given as handout **&/or** on electronic reserve

**MARCH / APRIL / MAY**

<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>
<b>30</b> The Science Wars and Social Science †Flyvbjerg, <i>Making Social Science Matter</i> : 141-165	<b>31</b>	<b>1</b> Theory and Context in Social Science †Laitin, <i>Pol. &amp; Soc.</i> 31: 163-184 Perestroika Manifesto E-mail	<b>2</b>	<b>3</b>
<b>6</b> Student Presentations	<b>7</b>	<b>8</b> Student Presentations	<b>9</b>	<b>10</b> <b>Good Friday</b>
<b>13</b> Student Presentations	<b>14</b>	<b>15</b> Student Presentations	<b>16</b>	<b>17</b>
<b>20</b> What is science for? Bring Goodman ( <i>Intuition</i> ) to class. †Dixon, <i>What is Sci. For?</i> : 20-36 Horgan, <i>The End of Sci.</i> : 261-281	<b>21</b>	<b>22</b> Review & Final Thoughts	<b>23</b>	<b>24</b> Deadline for Paper to Indicated Instructor
<b>27</b> <b>FINAL EXAM</b> <b>10:10-12:10pm in LOY 15</b>	<b>28</b>	<b>29</b>	<b>30</b>	<b>1</b> <b>Finals</b> <b>END</b>

† = given as handout **&/or** on electronic reserve

**Absence for Athletic Competition:** If you are a member of an official Regis athletic or debate team and must miss a class period, you **MUST** present the instructors with an official schedule provided by your coach (with the days to be missed highlighted) during the first week of the semester.

**Course Withdrawal Policy:** Students are expected to know and observe the published deadlines for (a) dropping the course and (b) withdrawing from the course. These deadlines are published on the University's Academic Calendar, which is available on the Regis University website, in the Schedule of Courses, and in the Dean's Office. Please observe the following dates: Last Day to Drop the Course: January 20, 2008; Last Day to Withdraw from the Course (no refund): March 20, 2008. **THESE DEADLINES ARE NOT FLEXIBLE.**

**Cellular Phones:** Turn them off during the class period. No text messaging during class.

**Learning or Physical Disability:** If you are a student with a documented disability and need accommodation for this class, then please let the instructors know immediately. If you think you may have an undocumented learning disability contact Learning Support Services (Life Directions Center 118, [disability@regis.edu](mailto:disability@regis.edu), Phone: 303-458-4941). Retroactive accommodation will not be provided.

**Possible Grading Inaccuracies:** If you think that something was graded incorrectly, please bring this to your instructors' attention. Wait at least one day (a "cooling off" period) and resubmit the assignment to your instructor with a brief, written explanation of what you think the error is.

**Inappropriate Academic Conduct:** In the event that plagiarism or cheating occurs, the consequences will be severe. Plagiarism on drafts or final papers or cheating on exams will minimally result in a failing grade (F) for the course. Any offense will be reported to the Regis College administration.

**Plagiarism** – The use of another writer's words or ideas without using proper documentation to credit the other writer.

There are three types of plagiarism that occur with regrettable frequency in student papers:

- (1) failing to cite direct quotations,
- (2) failing to cite borrowed ideas and information, and
- (3) failing to enclose cited borrowed language in quotation marks or to paraphrase cited text that is not in quotation marks.

(modified from Hacker, D. 2003. *A Writer's Reference, Fifth Ed.* Bedford/St. Martin, New York. p. 383)

If a student has any questions about plagiarism or how to cite material in papers, he/she must talk to one of the instructors and/or visit the Regis College Writing Center (Loyola 1, Phone: 303-458-4039).

**PLEASE READ THE SYLLABUS CAREFULLY IT OUTLINES THE POLICIES AND PROCEDURES THAT WILL GOVERN THIS COURSE.**

**Description:** This assignment is a 15-20 minute presentation, followed by 5 minutes of questions from colleagues. On the day of your presentation, you should be prepared to turn in

- (1) a bibliography,
- (2) a brief critical overview of the primary text with which you anchor your presentation (**bring 30 copies of this overview to class**),
- (3) an outline of your presentation (What is your main point? How did you arrive at it based upon your analysis? Who presents what?), and
- (4) brief evaluations of the performance of each member of the group by each member of the group.

### **The Plan:**

Working in a group with two (or three, if necessary) other students, you will help extend our case study analysis of scientific thinking from the natural to the social sciences. Your group will choose one example of a conflict, from one of the social sciences, that reflects debate about this social science connected to at least one of our main course questions (what is science? What is scientific knowledge? How do individual, group, and larger societal perspectives affect scientific understanding?). Your goal as a group should be both to explain the conflict and its significance to this social science, and also to formulate an (even tentative) answer to the specific question about the discipline the conflict raises.

The presentation itself should **begin first with** a focus on the conflict itself, which should involve a single (or two) primary source (i.e. *not* scholarly analyses or summaries of the conflict, but the actually contentious article, experiment, etc.). For instance, when your professors present the “Perestroika” debate in political science (the debate over whether or not the discipline is too focused on quantitative analysis, too reductive, and misses theoretical context), we will begin our analysis with the anonymous (and hilarious) 3-page email (no doubt written by disgruntled post-docs) that kicked off the debate.

But to help you answer questions about the disciplinary significance of this conflict, you should plan on consulting extra sources. The bibliography that you submit should include both some (2 or 3 is enough) scholarly articles that reflect or discuss this issue, as well as at least one popular or less-scholarly analysis. Npr.org and pbs.org are good sources to consult here; the now-defunct *Lingua Franca*, as well as *The Chronicle of Higher Education* and *The New York Review of Books* are good popular sources to search for coverage of more academic debates.

### **Timeline:**

- **Monday, March 16:** Historical overview of social sciences; form groups
- **Wednesday, March 18:** Groups select topics
- **Wednesday, April 1:** Case study of Perestroika conflict by Adkins/Ghedotti, sample presentation
- **Monday, April 6:** First group presents (with gentle grading and benevolent *American Idol*-style evaluation for the class)
- **Wednesday April 8 - Wednesday April 15:** Remaining group presentations (2-3 each day)

**Grading Criteria:** We will assess your presentation and written work as individuals based on

- (1) the clarity of your explanation of the primary text and the way in which it represents a specific conflict or challenge to our understanding of the discipline;
- (2) your ability as a group to suggest some answers to the questions the conflict raises;
- (3) your integration of the primary text with the secondary analysis; and
- (4) how fairly and productively the group works as a team.

## GROUP PRESENTATION

### POSSIBLE CASE STUDIES IN EACH DISCIPLINE

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Students may suggest others in addition to these as well.

#### **Anthropology**

- Repatriation of native skeletons, artifacts
- Museum ownership and display of non-Western cultures
- Native Americans' environmental stewardship before 1492 (ecological saints/depleting sinners)
- Native Americans' cultural complexity before 1492 (mostly chiefdoms/many complex states)
- The changing view of Captain Cook and the native Hawaiians

#### **Economics**

- Jeffrey Sachs' theory of global economies (his jump starts of former Soviet economies)
- Wall Street collapse and theories of capitalism (e.g., derivatives)

#### **Geography**

- Jared Diamond's *Collapse* and its theory of why societies fail (Easter Island)

#### **Political Science**

- Benedict Anderson's challenge to classic theories of nationalism (*Imagined Communities*)

#### **Psychology**

- Behaviorism
- Mind/Brain/Folk Psychology
- Psychoanalysis as science and therapy
- Philip Zimbardo's Stanford prison experiment
- Harry Harlow's study of maternal attachment with monkeys

#### **Sociology**

- Sokal hoax (sociology of science)

Research papers (draft and final) will be 8-12 pp, double-spaced, and will include a minimum of 6 academic sources (APA or MLA citation format). **One (1) academic source must be a reading from the course. The other five (5) sources must be academic and must NOT be one of the course readings. No electronic sources will be accepted in the bibliography/literature cited**, with the exception of journal articles that are available through on-line sources but originally were published in text, or sources that have been explicitly cleared with one of the professors.

**Content:** The paper will *analyze how and why* a particular natural science, social science, or science-related discipline has historically changed in how its practitioners view/understand their subject of study. Remember that we discussed in class a variety of reasons such perspectives could change (e.g., empirical inconsistency after gathering more data, changing societal perspectives, “Eureka” moment). The paper should analytically incorporate at least one of the readings done during the semester.

**Getting Started:** *Research papers like all analytical writing are attempts to answer questions* (see p. 164 in *Writing Analytically*). Try to initially suspend judgment and avoid clear positions. Review *Writing Analytically* pp. 163-178 (in Ch. 6), pp. 296-308, and pp. 312-314 (in Ch. 12). **For example**, a student could start with the broad discipline of Cultural Anthropology and then develop a refined question such as, what were the effects of changing views of the American and European family on understanding of family structure (kinship systems) generally in anthropology? Then, the refined question could be developed into a thesis statement based on analysis of the academic sources (e.g., “The increasing involvement of women in anthropological studies caused an obvious shift away from past anthropological understandings of family structures as focused on the public activities of their adult male members.”) The final paper draft will be written in support of a clearly stated thesis that explicitly includes discussion of what factors or combination of factors led to the change in perspective.

For writing this paper, read or review *Writing Analytically* pp. 24-39 (Ch. 1), pp. 41-61 (Ch. 2), pp. 116-120 (in Ch. 4), pp. 143-149 (in Ch. 5), and pp. 296-308 (in Ch. 12).

In terms of research, academic sources means (crudely) sources that are themselves based upon research. **If you’re reading something and it doesn’t have footnotes or references in it, it’s not really an academic source.** If you’re unsure if something you’ve found counts, check with one of your professors. The library has many tools to help you with your research. Because DML’s collection is finite, you will probably need to make use of LoanRanger or Prospector to get at least some of your sources. Try to settle on a topic early enough that you can start requesting sources if need be, and plan on looking at more sources than are required.

#### **Timeline:**

- **Friday, Feb. 6:** Submit your research question by 5pm to your designated instructor.
- **Friday, February 20:** Two copies of the complete paper draft due to your designated instructor. Schedule conference with professor for by March 13<sup>th</sup>.
- **Friday, April 24:** Final draft due by 5:00pm to indicated instructor.

**Grading criteria:** The papers need to analytically address a course-related question. We’ll look for complicated theses (pp. 164-178 in *Writing Analytically*), careful analysis (p. 39 in *W. A.*), coherence of expression and grammatical facility. Because research is so important to this paper; we’ll be looking for you to incorporate good academic sources, and to specifically analyze your research and direct it towards answering your question. As with the previous paper the quality and significance of your revision will also be assessed. The final draft of the paper must be turned in with previous revision comments

**Final note:** Remember to review the syllabus policy on plagiarism; plagiarized papers will result in failure of the course. Plagiarism includes more than simply buying a paper; be sure you understand what plagiarism is. If you have any questions about plagiarism and citation standards, please ask your professors, or consult with the Writing Center.