**ENGLISH 635 (#79054)**

**“Literature & Science: The Emergence of Two Cultures across the Nineteenth Century”**

**Professor Mark Lussier**

“It would be a denial of the dignity of human nature and the relative importance of the faculties with which we are endowed, were we to condemn at one time austere reason engaged in investigating causes and their mutual connections, and at another that exercise of the imagination which prompts and excites discoveries by its creative power.” (Alexander von Humboldt, *Cosmos* 78)

**I. Course Description & Requirements**

The renowned natural philosopher/scientist Alexander von Humboldt uttered the words found in the epigraph (above) at the end of his introduction to the massively influential five-volume work *Cosmos*, published in 1845, which attempted nothing less than an authoritative summation of all physical elements comprising the cosmos (from celestial dynamics to linguistic/semiotic systems), yet his argument for the continued integration of ‘reason’ and ‘imagination’ passionately voiced above (and reflected in comments by canonical Romantic writers like Coleridge and Shelley) had already taken on the character of a rearguard action, since the rationally driven sciences—through ever greater sub-disciplinary specialization and with ever greater reliance on experimental outcomes represented through mathematical formalism—had moved well beyond the analytic and computational skills of most ‘ordinary’ people. This growing alienation from the language and outcomes of the physical sciences, when coupled with an increasingly uneasy sense among human forms of ‘imagination’ that beneath scientific investigation lurked problematic ethical elements, fueled in particular a growing chasm between the humanities and the sciences. This view was forcefully summarized by C. P. Snow in his Rede lectures delivered at Cambridge University, who suggested that these zones of human knowledge had crystallized into “two cultures” whose adherents “had almost ceased to communicate at all” (2). The emergence of this ‘two cultures’ model forms the core of analytic concern for our class this semester, and our method will be to critique crucial texts (both scientific and literary) across the nineteenth century to map a counter-argument, one more in line with the spirit of Humboldt but one equally manifest in the writing of philosopher-physicists at the vanguard to physical description at the beginning of the twentieth century (e.g. Einstein’s theory of relativity, Heisenberg’s principles of uncertainty, and Bohr’s dynamics of complementarity).

**II. Needful Information**

Class = Thursday, 4:40 – 7:30 PM (WHall 167)

Office = LL 547C

Hours = Tuesday & Thursday, 1:00 – 3:00

Email = mark.lussier@asu.edu

**III. Course Requirements**

Our subject (the dynamic relationship between literature and science) and the diversity and increased fragmentation of knowledge across the English Romantic and Victorian eras (ever-evolving specialization) offers considerable challenges for our five-weeks together, and I need your help to do justice to the subject, since even in a four-hour class I cannot cover every aspect of the assigned reading. And so, the first requirement is that you arrive with reading completed and with questions prepared for the class to pursue (you should have two questions per class). The second requirement is straightforward and traditional; you must complete a publication-scale research paper intersecting some aspect of the class and incorporating the scientific entries as a vehicle for interpretive analysis (and I assume we will discuss this on the first day of class). Finally, I want each of you to have at least two individual mentoring sessions in the office (although I have formalized at least one such meeting: see November 3rd). This will allow me to: 1) get to know you; 2) offer any guidance you might need in generating a research topic for the course, and 3) help with the final translation of that research into your paper for the class. Of course, in a class that meets only fifteen times, anything beyond one absence can create problems, so your presence is both desired and required (unless documented for specific unavoidable calamities). And so, your final grade will be determined by your in-class participation and mentoring exchanges (20%), your participation in our mini-conference in November exchanges (20%), and the completion of your research paper (60%).

**IV. Reading Materials/Encyclopedia Entries**

Abbott, Edwin A. *Flatland: A Romance of Many Dimensions*. New York: Dover, 1992.

Bohr, Niels. “Atoms and Human Knowledge” ([www.nhn.ou/Bohr-lecture-OU-1957](http://www.nhn.ou/Bohr-lecture-OU-1957))

Carroll, Lewis. *Alice in Wonderland*. 2nd Ed. New York: W. W. Norton, 1992.

Einstein, Albert. Einstein, Albert. “The World as I See It” ([www.aip.org/history/einstein](http://www.aip.org/history/einstein))

Heisenberg, Werner. “The Implications of Uncertainty” ([www.aip.org/heisenberg/p08.htm](http://www.aip.org/heisenberg/p08.htm))

Mark Lussier, “Wave Dynamics as Primary Ecology in Shelley’s *Prometheus Unbound*” ([www.erudit/revue/ron/1999/v/n16](http://www.erudit/revue/ron/1999/v/n16))

Otis, Laura, Ed. *Literature and Science in the Nineteenth Century*. Oxford: Oxford UP, 2002. (*LS*)

Shelley, Percy. *Shelley’s Poetry and Prose*. New York: W. W. Norton, 2002.

Shelley, Mary. *Frankenstein*. New York: W. W. Norton, 1996.

Snow, C. P. *Two Cultures*, vii-52. (Available through Chinook/ACLS Humanities E-Book)

Stevenson, Robert Louis. *Strange Case of Dr. Jekyll and Mr. Hyde*. New York: W. W. Norton, 2003.

Wells, H. G. *The Island of Dr. Moreau*. New York: Bantam, 1994.

*Stanford Encyclopedia of Philosophy* (<http://plato.stanford.edu/>): “Principles of Uncertainty”; “Copenhagen Interpretation of Quantum Mechanics”; “Theory of Relativity” (<http://plato.stanford.edu/entries/genrel-early/>)

**V. Reading Schedule**

The condensed temporal structure for our class necessitates rapid movement across too much information (of course), and the pace will be brisk. Given this, I urge you to maintain the reading schedule, since a significant part of your grade will be generated from in-class participation. [I assume you really do not want to hear me lecture three hours per week but like Newton I abhor a vacuum.]

08/18 Introduction to Course: Review of Syllabus; Roundtable discussion of individual and collective interests. Lecture = “The Emergence of Two Cultures across the Nineteenth Century.”

08/25 The Issue at Hand: C. P. Snow, *Two Cultures* (vii-52); Laura Otis, “Introduction” (vi-xlii in *LS*); “Prologue: Literature and Science,” Edgar Allan Poe, John Tyndall, T. H. Huxley, and Matthew Arnold (*LS* 1); John Tyndall, “On the Scientific Use of the Imagination” (*LS* 68) + Lecture = “The Language of Science from the Royal Society to Romanticism.”

09/01 A Brief Archaeology of Scientific Writing in the 19th Century: Sir William Herschel, “On the Power of Penetrating into Space by Telescopes” (*LS* 43); Sir John Herschel, “Outlines of Astronomy” (*LS* 51); Faraday, “Experimental Researches in Electricity” (*LS* 55); James Clark Maxwell, all selections (*LS* 70); William Thomson, Lord Kelvin, “The Sorting Demon of Maxwell” (*LS* 79); Herman von Helmholtz, “On the Conservation of Forces” (*LS* 121); Jean Baptiste de Lamark, “From *Zoological Principles*” (LS 240); Sir Charles Lyell, “From *Principles of Geology*” (*LS* 246); William Whewell “From *Philosophy of the Inductive Sciences*” (*LS* 252); T. H. Huxley, *On the Physical Basis of Life* (*LS* 273-6) + Percy Shelley, *Queen Mab* (PBS 15-71)

09/08 Percy Shelley, *Queen Mab* (concluded) and *Prometheus Unbound*; Mark Lussier, “Wave Dynamics as Primary Ecology in Shelley’s *Prometheus Unbound*” ([www.erudit/revue/ron/1999/v/n16](http://www.erudit/revue/ron/1999/v/n16))

09/15 Luigi Galvani, “From *De Viribus Electricitatis* (LS 135); Sir Humphry Davy, “From *Discourse, Introductory to a Course of Lectures on Chemistry*” (*LS* 140); Babbage, “From *On the Economy of Machinery and Manufactures*” (*LS* 109); Xavier Bichat, “From *General Anatomy*” (*LS* 150); Rudolf Verchow, “From *Cellular Pathology*” (*LS* 152) + Mary Shelley, *Frankenstein* (vii-58)

09/22 Mary Shelley, *Frankenstein* (58-156); Anne Mellor, “Possessing Nature: The Female in *Frankenstein*,” and Marilyn Butler, “*Frankenstein* and Radical Science” (302-13)

09/29 Robert Louis Stevenson, *The Strange Case of Dr. Jekyll and Mr. Hyde*; George Henry Lewes, “From *The Physical Basis of Mind*” (*LS* 161-3); George John Romanes, “From *Mental Evolution in Man*” (*LS* 279)Thomas Laycock, “From *Mind and Brain*” (*LS* 349); Henry Maudsley, “From Body and Mind” (*LS* 364), Cesare Lombroso, “From *The Criminal Man*” (LS 516)and William James, “From *Principles of Psychology*” (*LS* 373)

10/06 H. G. Wells, *The Island of Dr. Moreau*; Claude Bernard, “From *An Introduction to the Study of Experimental Medicine*” (*LS* 203); Sir James Paget, “Vivisection: Its Pains and Its Uses” (LS 209); Charles Darwin, “From *Origin of the Species*” and “From *The Descent of Man and Selection in Relation to Sex*” (*LS* 258, 308); Thomas Henry Huxley, *On the Physical Basis of Life* (*LS* 273), and Hebert Spencer, “From *Principles of Biology*” (*LS* 285).

10/13 Abbot, *Flatland: A Romance of Many Dimensions*; Augustus de Morgan, “From *Formal Logic*” (*LS* 19); George Boole, “From *An Investigation of the Laws of Thought*” (*LS* 24); John Venn, “From *The Logic of Chance* (*LS* 27); Albert Einstein, “The World as I See It” and “Theory of Relativity” (both on-line), and Lewis Carroll, *Alice’s Adventures in Wonderland*; Nina Auerbach, “Alice in Wonderland: A Curious Child” (334-44)

10/20 Lewis Carroll, *Alice in Wonderland*; Frances Power Cobbe, *Unconscious Cerebration: A Psychological Study* (LS 424); Peter Coveney, “Escape” (327-34); Donald Rackin, “Blessed Rage: Lewis Carroll and the Modern Quest for Order” (398-404), Werner Heisenberg, ““The Implications of Uncertainty” and “Principles of Uncertainty” (both on-line), and Bohr, Niels, “Atoms and Human Knowledge” and “Copenhagen Interpretation of Quantum Mechanics” (both on-line).

10/27 Round Table: Contemporary Science and Current Criticism

11/03 Mentoring Appointments

11/10 In–Class presentations

11/17 In-Class Presentations

11/24 No Class/Thanksgiving

12/01 Open Discussion