

*The Constructed Self: Me, Us and Them*  
**Research Project**  
**Winter Term 2009**

Being able to conduct research and write an effective research paper is an academic skill you will need to employ frequently in your college career. The skills you will need to write an effective research paper are the same skills you will need in a successful professional career as well. Therefore, this term we will spend considerable time developing the skills necessary for you to become an effective researcher and research writer.

Thematically this term we are examining the various ways that we, as humans, have attempted to understand ourselves. Your research project will allow you to focus on the final area we will be examining—biotechnology and other relevant current scientific developments—and how these developments could change how we define “human.” The University Studies Goals which you will continue to develop through this project are critical thinking and communication as well as ethics and social responsibility.

Be careful that your research paper is an essay in which you develop your own original thought, i.e., thesis, and not merely a report of the existing published information on the topic. It will not be merely a parody of others ideas but rather you will use your research to develop your own position and ideas on the topic you are examining.

The final length of your paper should be a minimum of 8 pages (no longer than 12) excluding your works cited page. Your font size should be no larger than 12 and your margins should have a 1 ½ inch right margin and 1 inch margin on the remaining sides. The documentation style should be either MLA or APA depending on your major.

The developments which have occurred in biotechnology and related scientific areas have caused many to speculate that these developments will so alter humans and human society that we have moved into a “posthuman” stage of history. Listed below are some specific areas of scientific development associated with these changes. After choosing a topic which interests you, you will need to do some initial reading in order to arrive at a narrowed topic and eventually a thesis. You will not be able to create a workable thesis and research proposal without first educating yourself somewhat on the topic you are examining. **Once you have arrived at a workable focus/thesis for your paper, you will need to address the following components in your paper.** Listed below is the recommended order of the sections although #2 and #3 could be reversed.

1. Explanation of the scientific development. (This will be based primarily on information in your sources.)
2. The real and potential benefits and dangers of this scientific development both for individual humans and society as a whole. (Again, this will be from research but could include your own observations as well.) This section will

- include data presented in graphical form related to the scientific development or the audience (potential beneficiaries and/or those potentially harmed).
3. How the scientific development impacts or will potentially impact our understanding of what it means to be human. (This will come from both your analysis and research and could or should include data and graphs of such data.)
  4. Specific recommendations about how to use/apply this technology in the future in order to benefit humankind and avoid potential dangers. (Again, this combines both your own analysis and research.)

### **Possible Topics**

**Genomics**—understanding the underlying functions of genes as they relate to human behavior. Some areas of studies associated with this have been behavior genetics and examining the interaction of certain genes as they contribute to certain behaviors such as intelligence, aggression and sexuality. Numerical/statistical data used could be the growth of genome banks over time, the number of people over time who might benefit from such research as well as those who might be harmed by this work.

**Neuropharmacology**—understanding the biochemical nature of the brain and its mental processes and how specific psychotropic drugs can alter that behavior. Common drugs associated with this area of study are Ritalin, Prozac, Zoloft and Paxil. Numerical/statistical data could include the increase in diagnosis of such conditions as ADHD in school populations over time.

**Gerontology**—the study of aging and how and why the body ages and dies. Areas of study related to this have been evolutionary and molecular biology. Stem cell research has also been used to try to reverse or halt the effects of aging through cell regeneration or reproductive cloning. Advancements in medicine have already prolonged life and increased life span which has created new issues such as the increases in new diseases such as Alzheimer's, competition for limited resources, as well as problematic issues such as determining when death occurs. Numerical/statistical data could include the size of our population of a specific age group and what might happen to that number as medical techniques improve.

**Genetic Engineering**—a laboratory technique used by scientists to change the DNA of living organisms. This area of study involves several areas. It could be as simple as examining embryos for genetic diagnosis and screening by potential parents before implantation to avoid certain biological disorders. However, it could also involve actual genetic manipulation of the DNA to create or clone “designer babies” through either somatic gene therapy or germ-line engineering. Other technologies associated with this are gene therapy and Recombinant DNA technology. There are lots of numerical/statistical data to look at depending on which living organisms are being examined and what is being done with them toward what end.

**Artificial Intelligence**—also known as machine intelligence, is defined as intelligence exhibited by anything manufactured (i.e. artificial) by humans or other sentient beings or systems. It is sometimes hypothetically applied to general-purpose computers but is also applied to robotics and nanotechnology in human medicine. There is numerical/statistical data that could elucidate, for example, what will happen (has happened) when humans are replaced by machines.

**Human Cyborgs**—are combinations of people and animals or machines. Donna Haraway's influential work, *A Manifesto for Cyborgs: Science, Technology, and Social Feminism in the 1980s*, defined cyborgs as "a cybernetic organism, a hybrid of machine and organism, a creature of social reality as well as a creature of fiction." People are cyborgs when pieces of them are undeniably tied to the computer as an extension of themselves. We see a meshing of technology and man in healthcare when humans and technology function as one, such as with man surviving with a pacemaker, or a woman surviving with a respirator. Cosmologist Stephen Hawking, the famous scientist and author who suffers from amyotrophic lateral sclerosis (Lou Gehrig's Disease), has a computer-generated voice. In these cases, technology assists individuals to overcome health problems. They represent solutions rather than situations created by technology. Numerical/statistical data on people with artificial limbs, for example, would be appropriate in this topic.

**Once you have chosen one of the broad areas of research above, you will need to think more specifically and methodically about what you exactly want to research within this larger topic.** For example, while you may have chosen gerontology as your broad topic, you would need to narrow within that topic to perhaps looking at the rise of new diseases simply because of increasing life spans. You will need to gather initial sources and examine them as to the research available for your topic. This will help you determine whether you need to change the focus of your topic or will help you write a narrowed tentative thesis. After you have completed this preliminary research, you will then submit a **one page typed paper proposal which poses your specific research question and what kinds of information you plan to use in your paper including a numerical/statistical data source.** In other words, what do you want to know and what is the general information/categories you will need to explore to answer your question? The following is an example of a paper proposal.

## **Research Proposal**

**Research Question/s:** How will the development of humanlike robots impact human society and who we define as human?

### **Suggested areas of study for the paper:**

In order to answer this question, I will need to find out exactly what is being done in the area of robots. I know already that several of these areas of research are attempting to make robots more “humanlike.” That is, they are working on robots who respond to and convey facial expressions. There is robotic research into creating robots that are self learning as well as those that look and move like humans. I plan to initially discuss exactly what research is being done in artificial intelligence as it relates to robotics.

Secondly, I plan to discuss the potential benefits and “dangers” attached to this research. Two large questions surface here. First, how will these robots potentially aid or enhance human life? Second, how will these robots fit into human society? If they become sentient, i.e. self thinking, will we accord them the same rights as biological humans? If they do become autonomous and independent will this reality pose a significant threat to existing humans? The core of many science fiction movies, starting with Frankenstein, have emphasized the fear of technology run amok but is this more hype than reality?

Thirdly, I want to examine how this developing technology could ultimately change the definition of human. Maybe, humans will no longer be seen as primarily biological beings. Maybe we will develop another criteria by which to determine humanity. Could this distinction between biological and mechanical humans create schisms within society? How will biological humans be redefined with the introduction of mechanical humans? These are questions I am contemplating.

Finally, I plan to end my paper with offering specific suggestions to try to avert potential dangers associated with this developing area. This may include federal or global restrictions or guidelines. Maybe there will need to be some kind of governmental oversight, some research protocols.

I realize that your research question will be tentative but you need to enter into research with some mental frame in order to be productive. Submit along with your proposal an annotated bibliography which contains at least six sources, one of which may be from a reputable internet source and at least one source for numerical/statistical data you plan to use. The following is a guideline as to what an annotated bibliography should include.

## **Annotated Bibliography**

An annotated bibliography contains descriptive and evaluative comments on the sources. When evaluating, remember that researchers need to be concerned about the sources they use as evidence. Some material you find might be based on incorrect or outdated information, or on poor logic. You should use books, scholarly journals, academic articles, etc. **Newspapers, Popular Magazines (i.e. Time, Newsweek) and Encyclopedias are not appropriate sources and should be used only as background material.** Be very careful when evaluating an Internet source.

Questions you should consider when choosing a source include: Is the author you are reading an established voice in the field? For example are you citing an established psychology journal to prove your point about human cloning, or are you citing a source that has recently been on the bestseller list? Is the publisher reputable? How current is the material? Can you hold the author accountable for the information dispersed?

Please follow correct MLA or APA formatting. When listing sources, follow the same form as you would in completing the *Works Cited* page of your final paper. The writing center has lots of information on how to cite correctly. Your description and evaluative comments about a source will appear immediately following the citation, as in the example below. This description and evaluation should include a brief summary of the source as well as how you plan to use the source in your research paper. What information are you going to pull from it?

### **Example:**

Fukuyama, F. *Our Posthuman Future: Consequences of the Biotechnology Revolution*. New York: Farrar, Straus and Giroux, 2002. (MLA Format)

This book examines the various ways that biotechnology is changing human life. He examines research in the brain both for genetic behavior tendencies as well as its biochemical makeup and how it can be influenced by drugs to alter human behavior. He also examines the expanding human lifespan and potential problems associated with longevity. He finally examines the developments in genetic engineering. He posits that even though science has the potential to radically change our understanding of human there is a "Factor X" which biotechnology cannot change. He ends the book but offering several suggestions for policy change and action to safeguard what he calls "human dignity." Since I am only examining the impact of psychotropic drugs on human behavior, I will only use this information but will also closely how he is defining human nature and how these drugs can potentially alter it.

Fukuyama, F. (2002). Our posthuman future: Consequences of the biotechnology revolution. New York: Farrar, Straus and Giroux. (APA Format)

This book examines the various ways that biotechnology is changing human life. He examines research in the brain both for genetic behavior tendencies as well as its biochemical makeup and how it can be influenced by drugs to alter human behavior. He also examines the expanding human lifespan and potential problems associated with longevity. He finally examines the developments in genetic engineering. He posits that even though science has the potential to radically change our understanding of human there is a "Factor X" which biotechnology cannot change. He ends the book but offering several suggestions for policy change and action to safeguard what he calls "human dignity." Since I am only examining the impact of psychotropic drugs on human behavior, I will only use this information but will also closely how he is defining human nature and how these drugs can potentially alter it.

Even after you hand in your research proposal and annotated bibliography, you will probably find that you may need to refine your research question as well as find more sources. However, if you put in adequate time and effort into your research proposal, this may not be significant. Your research proposal is just that, a proposal, and your thesis and research will inevitably become more focused and specific. It is at this point that you will need to write an outline of your paper.

For a guideline of how to develop an outline and a sample outline visit the Purdue Universities Online Writing lab:

Guideline: [http://owl.english.purdue.edu/handouts/general/gl\\_outlin.html](http://owl.english.purdue.edu/handouts/general/gl_outlin.html)

A Sample Outline: [http://owl.english.purdue.edu/handouts/general/gl\\_outlinS.html](http://owl.english.purdue.edu/handouts/general/gl_outlinS.html)

Finally, you should be ready to draft your paper. Your rough draft should be as complete as it can be with a developed introduction, body and conclusion including accurate/complete citing and a Works Cited page so that I can give you as much feedback as possible.

### **Research Project Due Dates and Grade Percentages**

Proposal and Annotated Bib.	Thurs. Feb. 12 <sup>th</sup>	6%
Outline and /or Rough Draft	Thurs. Feb. 28 <sup>th</sup>	10%
Final Draft	Thurs. Mar. 12 <sup>th</sup>	14%