Transhumanism and Technological Singularity (TTS):

Ethical, Social and Religious Implications
(BLHV 464-140)

Provisional Syllabus, Spring 2017

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This is a three-credit course

Course Description

- Transhumanism is the belief that technology can allow us to improve, enhance and overcome the limits of our biology. More specifically, transhumanists believe that by merging man and machine via biotechnology, molecular nanotechnologies and artificial super intelligence, one day science

will yield humans that have increased cognitive abilities, are physically stronger, emotionally more stable and have indefinite life-spans. This path, they say, will eventually lead to "posthuman" intelligent (augmented) beings far superior to man - a near embodiment of god

- Critics, although accepting the premise of accelerated technological developments (called Technological Singularity) in all these areas, are much more pessimistic about outcomes; they are emphasizing ways in which these science/technology trends could bring existential threats to mankind and are using the Fermi paradox (The apparent size and age of the universe suggest that many technologically advanced extraterrestrial civilizations ought to exist; however, this hypothesis seems inconsistent with the lack of observational evidence to support it) to posit that super advanced civilizations tend to self-destruct.

- Which position is right? Where would the balance tilt: happy outcomes or terribly destructive ones? Are the trends and their consequences real? If they are, what are the desired paths humans should take to maximize the benefits and minimize the perils? These are no easy yes/no answers; the method we will use to bring some light is to understand the implications of different (possible) scenarios and develop a sensitivity analysis of factors that could change the outcomes and those factors may give an indication of directions to follow for positive results.

- We will analyze arguments on both sides and try to understand the ethical, social and religious implications of these concepts that seem futuristic but whose consequences could be closer than what it appears given the accelerated progression of remarkable scientific developments (especially during last century)

- We cannot ignore these problem; the genie (or better said the genies) of biotech/genetics, artificial intelligence, nanotechnology are already out of the botlle(s) and we (the humans) better make the right decisions in the coming decades or else? We better find ways to invalidate Fermi's paradox.

This course is intended to give students an overview of a number of hot topics at the intersection of technical, scientific, ethical and religious debates in our society. Specifically, by the end of this course, students should be able to understand the major facts about the accelerated development of scientific concepts and technologies:

1. Understand what the concepts of Transhumanism and Technological Singularity (TS) are and their relationship
2. Understand key trends about genetics, nanotechnology and advanced robotics which could lead to Singularity
3. Get an update of recent computer science developments in AI (artificial intelligence) and of paths that could lead (in a fairly short period of time) to ASI (artificial superintelligence)
4. Become aware of potential dangers in developing these technologies (existential threats) and ways of mitigating these perils by developing checks and balances within research projects for ASI and nanotechnology
5. Review the ethical, social and religious implications of these developments and get involved in debating the options

In addition to these substantive goals, students will further develop their writing, oral communication, and analytical skills. Specifically, students will be expected to:

1. Write clear, precise papers that develop stringent arguments and provide solid evidence for their claims. Make sure to follow the MLA style of citations (http://www.citationmachine.net/mla/cite-a-website)
2. Orally present their ideas in a logical and cogent style; develop and exercise debate skills.
3. Develop their understanding of historical explanation and evaluation of facts

Evaluation
Students are expected to attend lectures, read assigned texts, submit term paper & essays, and participate in discussion and debates, as well as display an ability to absorb, comprehend, and analyze the course material.

Course Requirements
§ Reading Assignments (see below)
§ Submit two analytical essays (4 to 5 pages each, max) on assigned readings. (Topics will be distributed in advance.)
§ Submit one 10-15 page term paper at the end of the semester
§ Oral Presentation: a 10-15 minute review of your semester paper
§ Actively participate during the class by answering questions and by presenting assignments from the instructor and by taking assigned quizzes (the first quiz would be within the first two weeks)

Study Groups
Depending on class size, study groups will be formed to prepare class presentation(s) and defend (al least) one debate on assigned topics

Grading Policy
This is a three-credit course
Final grade for the course will be based on the following:
1. Class Participation (including tests, quizzes, debate participation) 25%
2. Analytical Essays 30% (15 X 2)
3. Final Exam Paper 30%
4. Oral Presentation 15%
Grade Table

93-100 % = A (superior)
90 - 92 % = A-
87 - 89 % = B+ (very good)
83 - 86 % = B (good)
80 - 82 % = B-
77 - 79 % = C+

Disabilities Statement
If you believe you have a disability, then you should contact the Academic Resource Center (arc@georgetown.edu) for further information. The Center is located in the Leavey Center, Suite 335. The Academic Resource Center is the campus office responsible for reviewing documentation provided by students with disabilities and for determining reasonable accommodations in accordance with the Americans with Disabilities Act (ADA) and University policies.

Turnitin.com
Students acknowledge that by taking this course all required papers can be submitted for a Textual Similarity Review to Turnitin.com for the detection of plagiarism. Use of the Turnitin.com service is subject to the terms of use agreement posted on the Turnitin.com site.

Georgetown Honor System
All students are expected to follow Georgetown's honor code unconditionally. We assume you have read the honor code material located at www.georgetown.edu/honor, and in particular have read the following

documents: Honor Council Pamphlet, "What is Plagiarism?", "Sanctioning Guidelines", and "Expedited Sanctioning Process."

Submitting material in fulfillment of the requirements of this course means that you have abided by the Georgetown

Honor Pledge:

> *In the pursuit of the high ideals and rigorous standards of academic life, I commit myself to respect and uphold the Georgetown Honor System: To be honest in any academic endeavor, and to conduct myself honorably, as a responsible member of the Georgetown community, as we live and work together.*

Work that appears to have been plagiarized or otherwise violated the Honor Code will be reported to Georgetown's

Honor Council. If the Council finds that the work violates the university's standards of academic honesty, the work will receive a grade of zero for the assignment for the first offense; a second infraction will earn an F for the course. The Honor Council may impose sanctions of its own as well.

Policy Accommodating Students' Religious Observances

The following is university policy:

Georgetown University promotes respect for all religions. Any student who is unable to attend classes or to participate in any examination, presentation, or assignment on a given day because of the observance of a major religious holiday or related travel shall be excused and provided with the opportunity to make up, without unreasonable burden, any work that has been missed for this reason and shall not in any other way be penalized for the absence or rescheduled work. Students will remain responsible for all assigned work. Students should notify professors in writing at the beginning of the semester of religious observances that conflict with their classes**.**

Devices

The use of electronic devices (mobile phones for calls/texting, games, pagers, etc) during class is strictly forbidden. Anyone text-messaging or emailing in class will be asked to leave and will be listed as absent.

Audio/video recording of classroom lectures and discussions is not

permitted. Laptop computers may be used for *note-taking, without*

internet surfing.

Readings Assignments

Required readings for each class are listed below, and should be completed before the class period. All others are highly recommended, and may be referred to in class. Other articles and supplemental materials will be uploaded to Blackboard and/or will be made available in class. Students are responsible for accessing articles, other materials and assignments on Blackboard and/or reserves (regular and electronic) at Lauinger Library

! ! ! ! ! Important Information about Attendance ! ! ! ! !

Attendance is mandatory; keep in mind that this is a remotely taught course using remote teaching tools we have at our disposal: Blackboard Collaborate and especially Zoom. It is necessary that students should be able to posses and use during lectures adequate laptops and standard audio headphones and a video camera; students are required to keep the video camera on during the lectures and class discussions to help enhancing the "in the classroom feeling" among the participants.

It is important to notice that this presents some advantages for students; if they have good bandwidth Internet connections at home they will be able to attend the lecture from home. If they don't have adequate bandwidth for their home Internet connections, they still could attend the remotely taught lectures by going to the classroom assigned (at 640 Mass Ave) where there is a good network connection (SaxaNet - provided by the university) that allows them to follow the lecture.

Also, there are going to be individual, video, one-on-one sessions as required with every student (again, using remote teaching tools) that will help with personal guidance in answering questions and clarifying issues related to the material taught and to the essays and examinations subjects.

Students with two absences for any reason may receive a failing grade for the course. If you miss a class it is your responsibility to make up any assignments on time and obtain class handouts. Students are expected to behave during class in accordance with the Code of Campus Conduct.

Late Assignments

No credit will be given for any assignment that is submitted late without the prior approval of the instructor. Prior approval means the student has communicated with the instructor before the assignment deadline. An

assignment that is submitted late with the instructor's approval will have its grade reduced by 10 percent for every day it is late.

Texts and other media required (placed on reserve at Georgetown University Library)

- Max More and Natasha Vita-More Editors, The Transhumanism Reader, 2013
  - Wiley Blackwell, a John Wiley & Sons Publishing
  - ISBN 978-1-118-33431-7
- R. Kurzweil, The Singularity is Near, Penguin Books, 2005,
  - ISBN 0 14 30.3788 9
- Eric Drexler, Engines of Creation: 1989, The Coming Era of Nanotechnology (available on line:
  http://e-drexler.com/d/06/00/EOC/EOC_Table_of_Contents.html)

- Francis Fukuyama, Our Post Human Future, 2002, Farrar, Straus and Giroux Publishing, New York,
  - ISNB 0-374-23643-7
- N. Bostrom, Superintelligence, I.EG.O. SpA, 2014, ISBN: 978-0199678112, (available also on Kindle); available at Georgetown University library as electronic resource
  (http://catalog.library.georgetown.edu/search/X?SEARCH=a:(nick%20bostrom)&searchscope=4&SORT=D)

- Media:
  - Gatacca (director: Andrew Niccol): movie released by Columbia Pictures, 1997
  - The Singularity (director: Doug Wolens); documentary movie
  - The Matrix: movie released by Warner Bros, 1999, directed by The Wachowski Brothers

Texts (not required but recommended)

- Charles Rubin, The Eclipse of Man, New Atlantis Books, 2014,

- o ISBN: 978-1-59403-736-8
- Eric Drexler, Radical Abundance, 2013, Perseus Book Group

  ISBN-13: 978-1610391139
- John Horgan, The End of Science, Addison-Wesley Publishing Company, 1996,
  - o ISBN 0-201-62679-9
- * C. Grau, Philosophers Explore Matrix, 2005, Oxford University Press,
  - * ISBN-13: 978-0195181074
- Glenn Yeffeth Editor , Taking the Red Pill, , Benbella Book, 2002,
  - o ISBN – 1-932100-02-4

Primary Sources - required (they will be provided weekly in the class packet)
- Nick Bostrom, Transhumanism Values (in the packet)
- S. Dickel & A. Frewer, Life Extension- Eternal Debates on Immortality (in the packet), in Post and TransHumaniasm
- Robert Ranisch, Transhumanism Morality (in the packet) in Post and TransHumaniasm
- Phs-Explore-Matrix-Ch11-Kevin-Warwick (in the packet)
- David S. Oderberg, Could There Be a Superhuman Species (in the packet)
- Holub-Creating-Better-People (in the packet)
- Patrick D. Hopkins, Why Uploading will not Work, or, The Ghost Haunting Transhumanism (in the packet)
- Michael Hauskeller, My Brain, My Mind, and I: Some Philosophical Assumptions of Mind-Uploading (in the packet)
- Anthony Rhodes, The Case Against Computational Theory of the Mind: A Refutation of Mathematically- Contingent Weak A.I. (in the packet)

Course Outline

Week1: Introductions and orientation; goals of the course and review of the syllabus
  General goals of Humanism, transhumanism, posthumanism;
  - dependence on major technical and scientific advances
  - traditional areas of philosophy (ethics, theory of knowledge)
  - relationship to religion
  Watch the documentary: The Singularity (director Doug Wolens)

<u>Week2</u>: Overview of Transhumanism history;
- transhumanist ideas through centuries
- influences of enlightenment on transhumanism
- Condorcet, Benjamin Franklin, Nietzsche, J.B.S. Haldane, J.D. Bernal
- influence of Huxley's Brave New World
- eugenics and transhumanism

<u>Week3</u>:

Singularity and other core technologies
- Singularity concept
- Technological Singularity. The overlapping of three major revolutions GNR(genetics, nanotechnology, robotics).
- The law of accelerated returns; Benefits and potential contributions of GNR to achieving transhumanism's goals
- Nano everything, **personal identity,** enhanced decision making (proactionary principle)

<u>Week4</u>:
Nano technology;
- historical developments
- Drexel and visions of molecular factories: molecular assemblers, replicators,
- nano medicine, nanobots,
- nano technology and existential threats (Bill Joy and the "gray goo" problem)

<u>Week5</u>:
Human enhancement – visions of transhumanism and posthumanism
-five areas of human enhancement and potential social implications
- life expansion and immortalism (Land of Cockaigne)
- physical enhancement; social and self-esteem implications

<u>Week6</u>:
- Human Enhancement
  – Case studies:
    • Brain chips
    • Electrode stimulation of the brain

* Theological reflections on human enhancements and implications on ethical issues in human enhancement

Week7:
            Bio-determinism and its social and ethical implications
                - genetic engineering, germline therapy (CRSPR-Cas9)
                -    the optimistic transhumanism view (R. Bailey)
                -    the pessimistic view (transhumanists' critics)
                -    concept of human nature, human rights, human dignity
                     and implications of ignoring (or negating) it
                -    Fukuyama and the call for regulatory policies
Watch the movie: Gatacca (director Andrew Niccol), 1997

Week8:
            Artificial Superintelligence (ASI);
            the paths to achieve ASI (whole brain emulation, biological cognition, etc.)
            Cognitive superpowers (an ASI takeover scenario)

Week9:
            ASI, the intelligence explosion; existential threats; the control problem
            Discussion of the Fermi paradox
            Substrate independent mind uploading (SIMU)
            Living in a simulation?
            Religious implications of the concepts of Transhumanism and of "living in
            a simulated world (software angels)
Watch the movie: The Matrix (director The Wachowski Brothers), 1999

Week10:
            Critiques and alternative points of view to Transhumanism.
              -"Singularity is not near"; challenges to the timeline and
                -    other technology assumptions
             - Issues with the law of accelerated returns
             - Complexity break and implications for software developments
             - The Fermi paradox and possible explanations
             - The "mind-body" problem; challenges to the concept of conscious machines

Week11:
            Nano technology; conceptual and implementation issues
            The Drexler-Smalley debate
            Nano technology and atomically precise manufacturing (APM)

Week12:
      General Critiques of transhumanism
- future hype, hubris, designer babies, trivialization of human identity,
- Gattaca argument, eugenic wars, Brave New World (BNW) argument

Week13:
      Metaphysical issues as potential show stoppers for transhumanism's goals:
- achieving consciousness in artificial intelligence - lack of consensus about CTM (computational theory of mind)
- mind uploading;
  - whole brain emulation is not achievable,
  - mind is biological substrate dependent
  - personal identity issues

Week14: Wrap-up and Concluding Thoughts
   Final Exam due date to be announced