

Syllabus

FORE 6397: Special Topics - Technology Acceleration

Summer 2015: Summer Session 3, June 1-July 16

Course Time/Location:

- Wednesdays, 5:30-8:30pm CST
- Online – Adobe Connect (<http://uh.adobeconnect.com/ta/>)
- Password: houstonfutures/houston4sight (Enter as a Guest)

Course Shell: Blackboard

Instructor: John Smart

Email: johnsmart@gmail.com

Telephone: 650-396-8220 office
650-468-4462 cell (urgent only)

Skype: johnsmart_asf

Office Hours: By request

Prerequisites: Graduate Standing

Overview

We've seen astounding changes in technology in the last century. What's more, several types of technological change have accelerated over this time period, particularly those associated with digital and nanotechnologies. Some say accelerating scientific and technological change have in turn become the prime drivers and accelerators of business and social change. If this technology acceleration continues, we can expect profound new productive and intelligence capacities, wealth, and social change in coming decades. In a world where big data is growing 55% a year (IDC), and our leading mobile platforms (Google Now, Siri, Cortana) are learning new conversational and intelligence skills every month, it's never been more important to assess what all this technology acceleration means for strategic foresight practice.

Objectives

The objectives of the course are for students to:

- Gain a multidisciplinary, multiperspective understanding of technology acceleration
- Develop a point of view on how technology acceleration may impact global futures
- Gain insight into new digital, quantitative, and collaborative technology platforms and methods that are impacting strategic foresight practice.

Readings/Texts

Select any three of the following eighteen books (see Modules below). Look them over online first. Amazon links are provided below. I suggest picking one book that seems outside your normal area of interest, and two that seem more helpful to your career goals. A draft of the first book, *The Foresight Guide*, will be provided as a free PDF by me when you sign up for the class, so you only need to purchase **two** of the eighteen, if you wish.

Syllabus

Approach

The course is built around two documents—this syllabus and the schedule, found under the “Course Info” menu on Blackboard. Your first step is to study each of these, ask any questions you wish, and then get into the activities.

We’ll look at technology acceleration in six units from six complementary perspectives, using a few recent books to explore each perspective. In each unit, we’ll seek insights that can improve your strategic foresight practice. Each book presents some possible, probable, and preferable futures of technology evolution and development, both in the shorter run (next three to five years, our typical client interest) and the longer run (next ten to fifty years). You will be asked to skim three of these books during the class, and to present your thoughts on them in a five minute [lightning talk](#) to your colleagues. Here are our six modules:

Module 1. Universal Acceleration

What is accelerating change from a universal perspective? What exactly has accelerated in universal and human history, and why? Are technological systems becoming a better “substrate” for information processing, adaptation, and intelligence than biology? In what ways are they presently worse? Can we expect technology to emerge out of biology on other planets like Earth? We’ll look at some the arguments, and their strategic foresight implications. **Books:** *The Foresight Guide*, John Smart, 2015. (PDF provided by instructor) [Cosmic Evolution: The Rise of Complexity in Nature](#), Eric Chaisson, 2001. [Visions of Technology: A Century of Debate about Machines & Humans](#), Richard Rhodes, 2000.

Module 2. Technology, Wealth, and Social Acceleration.

As digital tech and nanotechnology accelerate their performance/price trends, they drive accelerating trends in every other technology market, and in wealth production, entrepreneurship and social actions (sharing, collaboration, and activism). These trends and actions in turn are impacting all of the world’s greatest problems, to varying degrees, as various performance thresholds in the information, intelligence, and interdependence of these technologies are reached. Let's see how. **Books:** [The Second Machine Age](#), Brynjolfsson and McAfee, 2014. [The Birth of Plenty: How Modern Prosperity was Created](#), William Bernstein, 2010 [Exponential Organizations](#), Salim Ismael, 2014

Module 3. Quantification, Simulation and Foresight Acceleration

As big data, open and social platforms, digital currencies, sensors, maps, simulations, and algorithms proliferate and accelerate, a variety of new collective and machine intelligence foresight tools and methods are emerging, including predictive analytics, statistical models, crowdsourcing, solving, funding, and founding, and ideation, innovation and prediction markets. How and how fast may all this technological change affect strategic foresight practice, and how can you continually find and use the best of these new foresight tools and methods for your clients? **Books:** [Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie or Die](#), Eric Siegel, 2013.

Syllabus

[*The Signal and the Noise: Why Many Predictions Fail, but Some Don't*](#), Nate Silver, 2015

[*Open: How We'll Work, Live, and Learn in the Future*](#), David Price, 2013

Module 4. Biologically-Inspired AI, Intelligent Agents, and the Singularity Hypothesis

New machine intelligence paradigms like deep learning are making great strides in natural language understanding, machine vision, statistical inference, and many other types of analysis and pattern recognition. Many of these machines use parallel, collective, connectionist approaches, very similar to the way the human brain appears to process information. The better neuroscience gets, the more engineers are learning how to copy biological intelligence processes and run similar algorithms in our machines. In fact, all this work is increasingly “uploading” portions of ourself into the digital world, and we are now even seeing the emergence of sentiment and values maps in our social networks (the “valuecosm”), and personal intelligent agents (“digital twins”) that have crude models of our values, preferences, and even mental and emotional states. We’ll ask where these assistive technologies and human-machine partnerships may go coming years, and consider the hypothesis of the technological singularity (artificial general intelligence). Trustable machine intelligence might emerge in our cars, robots, and digital systems in coming years. We’ll consider why and how fast that might occur, and some foresight implications of increasingly intelligent and symbiotic machines and personal agents in coming years. **Books:**

[*Cognitive Computing: A Brief Guide*](#), Peter Fingar, 2015.

[*The Future of the Mind*](#), Michio Kaku, 2014.

[*The Singularity is Near*](#), Ray Kurzweil, 2005.

Module 5. Globalization and Societal Convergence and Deceleration

As technology-enabled globalization and wealth production accelerates, developing economies show many convergent economic, environmental, security, political and regulatory processes, making some types of social futures more regulated and predictable than ever before. What’s more, several social change processes are today decelerating on several measures (population growth, conflict, pollution, individual energy use, Eroom’s law of FDA drug approval), and in speed- and cost-to-capability in many areas (health care, defense, litigation, patents, large construction projects), often in direct proportion to the wealth or technology of the country under study. How can knowledge of these trends and social constraints help our clients? **Books:**

[*The Infinite Resource: The Power of Ideas on a Finite Planet*](#), Ramez Naam, 2014.

[*Infinite Progress: How IT Ends Ignorance, Disease, Poverty, Hunger & War*](#), Byron Reese, 2013.

[*The Difference: How Diversity Creates Better Groups, Firms, Schools, Societies*](#), Scott Page, 2008.

Module 6. Social Challenges and Failure States

There are many social challenges and failure states we might see in a world of continuing technological acceleration, including increasing digital and income inequality, erosion of democracy and privacy, terrorism and conflict, pandemic, failing education, addiction and dependency, resource scarcity, and global warming and other environmental catastrophes. Entrepreneurs and managers will also be challenged to use evidence-based management and to continually innovate or be overtaken by competitors. We’ll consider several of those

Syllabus

challenges, and ask how better foresight and better design of "antifragility" or immunity into our systems. so they get stronger under stress, can help us and our clients achieve the best and avoid the worst of what may happen in an ever-faster technological future. **Books:**

[Megachange: The World in 2050](#), Franklin and Andrews, 2012.

[Billion Dollar Lessons: The Greatest Business Failures of the Last 25 Years](#), Carroll and Mui, 2009.

[Antifragile: Things that Gain from Disorder](#), Nicholas Taleb, 2014.

Class activities

We'll have one three hour class each week. The object will be to **discuss the topics described in each week's module above**, using the books to inspire our discussion. Those who picked a book being covered that week are encouraged to be discussion leaders that week. This includes the first week, for anyone who picks one of the books scheduled for the first class.

Online Activities/Assignments

In weeks two to five, you'll be asked to post one **thought-provoking discussion item** (article, video, statistic, question, etc.) related to that week's topic on Blackboard. Start its title with "Discussion:" so we know what it is. Please also make a **helpful comment** (helpful to the poster or to the class) on someone else's post that week. Let them know what you think. (50 possible points per discussion item plus comment).

In any three weeks, you'll be asked to post a **high-quality learning item** (in-depth articles, videos, etc.) on a foresight topics or practice related to that week's module. Start its title with "Learning Item:" so we know what it is. Think like an instructor, and include a **suggested brief assignment** for future students in relation to this item. In a few sentences, tell future students of the course 1) why it's important to the module, and 2) what they should do after reading it. Research something? Write something? Answer a question? (100 possible points per learning item plus assignment)

In any two weeks, you'll be expected to skim each of your chosen books with enough depth to post a 400-600 word review of the chosen book on Amazon, a review that expresses original opinion about some topic in the book, and of course to rate the book (one to five stars) in your review. Cross post your review to Blackboard (150 possible points per review).

In the **last week**, you'll be asked to turn in a **Final Writing Project**, a roughly 1000 word (roughly four pages, double spaced) essay on any of the topics we've discussed in class. It should show original thought and offer a few takeaways for strategic foresight practice, as you envision it for yourself or others. (200 possible points).

Topical Schedule

Week 1. Universal Acceleration.

Week 2. Technology, Wealth, and Social Acceleration.

Syllabus

Week 3. Quantification, Simulation and Foresight Acceleration.

Week 4. Biologically-Inspired AI, Intelligent Agents, and the Singularity Hypothesis.

Week 5. Globalization, Societal Convergence, and Deceleration.

Week 6. Social Challenges and Failure States.

Grading

There are 1000 possible course points, divided by 10 to give your final score. An overall grade of 70-79 a C, 80-89 a B, 90-100 an A. Doing the work, however brief, will automatically get you to 70, above that is up to you. Virtual class attendance is not graded, so if you have to skip one or two that's fine, but please let me know in advance.

Point Breakdowns:

4 Discussion Forum Posts (Any Four Weeks) | 50 points each | 200 points/20%

3 Learning Item Posts | 100 points each | 300 points/30%

2 Book Review Posts | 150 points each | 300 points/30%

1 Final Writing Project (Week 6) | 200 points/20%

Lateness

For discussion posts, and all your other assignments, any submission more than one week late is reduced by a letter grade equivalent in points. That is the only penalty, so even a very late assignment should absolutely be turned in – in other words, there is no good reason to do all your work. But it is of most benefit to yourself and to your classmates to be timely in your work. Don't stack everything up in the last three weeks. Get as much done beforehand as you can.

Your Final Writing Project needs to be turned in by the Friday of Week 6 or you'll get no points for it. I have to get grades in shortly after class.

Interaction

The course meetings are conducted online in AdobeConnect.

Adobe Connect offers two-way voice interaction and a shared desktop.

The course shell, for posting, grading, assignments is on Blackboard.

(www.uh.edu/blackboard).

I look forward to meeting you, and making our time together as useful for you as it can be.

Other policies

Academic honesty policy All UH students are responsible for knowing the standards of academic honesty. Please refer to the UH catalog. Plagiarism, using research without citations or using a created production (such as other people's words) without quotations or citations, will result in a grade penalty or failure of the course. Internet sources must be credited according to the sites recommended citation guideline if available. If no citation guideline is

Syllabus

provided by the web source, then the date, URL site owner, and author must be included with the web material used.

Disabilities: If you have a disability and need a special accommodation consult first with the Coordinator of Health Disabilities Services, Bayou 1402, telephone 283-2627, and then discuss the accommodation with me.

Incompletes: A grade of "I" is given only in cases of documented emergency or special circumstances late in the semester, provided that the student has been making satisfactory progress. An Incomplete Grade Contract must be completed.

Withdrawals: Refer to class schedule for dates to withdraw without evaluation from a course.