



Syllabus
Summer 2016

MOB7518-B01: Solving Big Problems

Day and Time: Tues, Thurs – 6:30 pm to 9:00 pm
Location: Horn Computer Center 159

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Office Hours: After class or by appointment



Are the brightest minds working on the most important problems? My view is that we could do a lot better on this and it would make a huge difference.

Bill Gates

TABLE OF CONTENTS

About the Course	1
Grading	1
Deadlines and Deliverables	2
Course Material	2
And Beyond	2
Policy Matters	3
Project: Understanding a Big Problem	4
Sessions	6



There is no passion to be found in playing small, in settling for a life that is less than the one you are capable of living.

Nelson Mandela

About the Course

This MBA elective course is about the big problems in business, society, and the environment and how they may be solved. Big problems are those that if solved even partly could transform industries or societies, change the way we live, and greatly better people's lives. Examples include viable alternate energy, affordable transportation not based on fossil fuel, addressing global warming and environmental damage, developing treatments for diseases neglected for economic reasons, alleviating food and water shortages, responding to disasters, bringing products and services to ignored markets, and many others.

Big problems are complex, systemic, and difficult to solve. They cut across disciplinary boundaries, business functions, organizations, industries, science and technology, society and culture, politics and history, etc. Solving them requires creativity and innovation, strategic and entrepreneurial thinking, management and organizational practices, and an understanding of the world. Solutions are similarly boundary crossing. The aim of the course is to discover how big problems may be solved.

The belief underlying this course is that the business approach can be employed to solve big problems even if they lie partly or fully in non-business settings. This approach to tackling them is often not taken. Conversely, given the complexity and systemic nature of big problems, the skills and knowledge gained about societies, culture, environment, and innovation will make you a more effective manager, leader, entrepreneur, and a better informed global citizen.

An accepted body of knowledge about solving big problems does not exist, so there is no text-book for the course. Instead, through a breadth of case studies, articles, TED videos, discussions, written assignments, and a project, we will discover the process by which big problems may be solved. This is a learning-through-discovery course. You should draw upon your experiences and understanding of big problems, and the knowledge you have gained from other business courses and your education before Babson.

The course addresses some of **Babson's graduate program learning goals**: entrepreneurial thinking and acting; social, environmental, and economic responsibility; functional depth with integrative ability; managing in a global environment; and innovative problem solving.

The core strategy course (MOB7202) is a pre-requisite for this 3-credit elective course.

Grading

The course grade will be determined by the following components and weights:

Discussion Contribution & Professionalism	Individual	30
Assignment on Listening	Individual	15
Causal Map Assignment	Team	8
Creating Markets Blog Post	Team	7
Project Report	Team	25
Report Critique & Suggestions	Individual	10
Introspective Essay	Individual	5

As the course involves learning through discovery, your contribution to the class discussions is very important. Therefore, 30% of the grade is based on the quality and frequency of your contribution. Prepare the reading

material well before class so that we can focus on discussion when we meet. I will grade this grade component after every session. You are welcome to seek my feedback about it at any time during the semester.

There is a written, individual assignment, worth 15 points, on understanding the lives of the elderly, what matters to them, what problems they would like solved, etc. This is a maximum of 1000 words. I will post a selection of brief articles and you are welcome to interview any elderly persons you like. It is due on Thursday, July 21 but you must get started on it as soon as possible to give yourself enough time to conduct interviews and visits.

Two in-class assignments, on causal maps and writing a blog post, will carry 15 points.

You will work in teams on a project and submit a report of about 2000 words. Select any big problem you like. Research it to develop a deep understanding of it and write a report. Provide data, show important factors or variables, and the relationships among them. The report is worth 25 points.

In the final class meeting, we will discuss ideas for solutions to the problems described in the reports. Every student will read every report and come prepared with ideas for how the problem can be solved. This important discussion is worth 10 points.

Finally, submit a 1-page essay during the last session describing what you have learned that will help you in your career and to achieve your aspirations. What skills and knowledge do you need to improve and how will you do it? This introspective essay constitutes 5% of your final grade.

Deadlines and Deliverables

Thursday, July 7	Finalize project team and topic by end of class
Thursday, July 21	Assignment on listening, observing, empathizing
Friday, August 12, 9:00 pm	Email project report
Thursday, August 12	1-page introspective essay

Course Material

There is no text-book for the course and nothing to be purchased from the campus bookstore. We will use cases and articles that can be purchased directly from the publisher Harvard Business Publishing. Check Blackboard for information on how to make the purchase. We will also use freely available Internet sources and newspaper articles available through the library's databases. Check the session folders on Blackboard for downloading information. Before every class, check its session folder for the latest information. As the course progresses, I may change some readings depending on new articles and news stories published.

And Beyond

If your interests in big problems go beyond the course, I am creating a website www.solvingbigproblems.com with a range of resources to explore your interests further. It is currently under construction and even when complete I will update it continually. It includes a blog with a few posts with more to follow in future months. On Facebook (Solving Big Problems) and Twitter (@SolvingBigProbs), I will post links to articles and news stories. You can connect through those two media for updates on big problems. These resources are not required for the course but are meant for those with a continuing interest.

POLICY MATTERS

Honor Code

Read and practice the honor code: <http://www.babson.edu/student-life/community-standards/Pages/honor-code.aspx>.

Disability Accommodation

Any student who feels he or she may need an accommodation based on the impact of a disability should contact the professor privately and in a timely fashion to discuss his or her specific needs. Students must also contact the Manager of Disability Services at 781-239-4508 or in Hollister Hall to coordinate reasonable academic accommodations.

Religious Observances

Any student who faces a conflict between the requirements of a course and the observance of his or her religious faith should contact the instructor as early in the semester as possible. In such event, the instructor will provide reasonable accommodations that do not unduly disadvantage the student.



We can send people to the Moon; we can see if there's life on Mars – why can't we get \$5 [mosquito] nets to 500 million people?

Jacqueline Novogratz

Founder and CEO of the Acumen Fund

PROJECT



Nothing in life is to be feared.
It is only to be understood.

Marie Curie

Project on Understanding a Big Problem

We often solve problems without understanding them well. The practice is common enough that it is called the plunging-in trap. The course project is about avoiding this trap in solving big problems.

You will work in teams on a project on understanding any big problem of your choice. Submit a report of 1800 – 2000 words by 9:00 pm on Friday, August 12. Email a single file that I can post on Blackboard. On Tuesday, submit a printed copy when we meet for class.

Select any big problem you like. Research it to develop a deep understanding of it. Through your report, educate the reader about the big problem.

Don't develop any solutions. Leave that to us, the readers of your report.

Your goal is to immerse us in the phenomenon/problem so we understand it really well.

I will post the reports on Blackboard for all of us to read for discussion during the last session on Thursday, August 18. During that discussion, we will all develop ideas for solutions. I will make more suggestions about the report and discussion during the course of our sessions.

The report should include, in any order you like, but need not be limited to:

1. Ecosystem map or list of players.
2. Causal map along with the puzzle it answers.
3. Solutions that others have tried: what were they and what were the outcomes?
4. Based on where your team would like to attack the problem, apply the problem discovery framework.
5. Paragraph on type of data gathered and types of sources used.
6. Informed ignorance: what is important that we should know but don't know and should therefore learn about. Limit yourself to the 5 most important things.

Refer to the document *Business Writing* posted on Blackboard for guidance about writing the report.

SESSION DETAILS



I think it is often easier to make progress on mega-ambitious dreams. I know that sounds completely nuts. But, since no one else is crazy enough to do it, you have little competition.

[Larry Page](#)

Session 1: Tuesday, July 5

Big Problems, Mega Trends, Moonshots

Individuals as Big Problem Solvers

What Matters To You

Learning Themes

- What are the characteristics of big problems? Why do they exist? Why haven't they been solved?
- What roles do big or mega trends play in solving big problems?
- What big problems matter to you and why?

Readings

"Bill Gates: Here's my plan to improve our world – and how you can help," *Wired*, November 2013.

"Google's Larry Page on why moonshots matter," *Wired*, January 2013.

"Why we can't solve big problems," *MIT Technology Review*, 2012.

"What the future may bring," *MIT Sloan Management Review*, 2013. Also see www.2052.info, which is mentioned in the article.

"Norman Borlaug, plant scientist who fought famine, dies at 95," *New York Times*, September 14, 2009

"The coming climate crash: Lessons for climate change in the 2008 recession," *New York Times*, June 21, 2014.

"Renewable energy stumbles toward the future," *New York Times*, April 22, 2016.

"Fatal stampede in South Africa points up university crisis," *New York Times*, January 11, 2012

"Problem of where to put waste besets nuclear industry," *New York Times*, June 10, 2011

"US inaction lets look-alike tubes kill patients," *New York Times*, August 20, 2010

<http://data.myworld2015.org/> This is a fun survey. Join millions of others to rank global problems and see how your priorities compare to theirs. In class, I will present data from Pew Research on priorities in the US.

Browse examples of big problems the main page of the Solving Big Problems website

<http://solvingbigproblems.com/#> and check information about the big trends in society at the page devoted to it.

Optional Material for Your Interest

What Happened to the Future? *Founders Fund Manifesto*, <http://foundersfund.com/the-future/>

Annual letters written by Bill and Melinda Gates, <http://www.gatesfoundation.org/>

TED: James Hansen: "Why I must speak out about climate change" (17:51), www.ted.com

Session 2: Thursday, July 7

Organizations as Big Problem Solvers

Strategic Set of Organizations as Big Problem Solvers

Learning Themes

- What is the value of organizations and strategic sets of organizations in solving big problems?
- What are the characteristics of such organizations?
- What is their process of problem solving?

Readings

Celtel International B.V. (Case)

“Special Forces innovation: How DARPA attacks problems,” *Harvard Business Review*, October 2013

Optional Material for Your Interest

<http://solvingbigproblems.com/#/bp-solvers-organizations/>

List of organizations solving big problems.

Session 3: Tuesday, July 12

Taking a Business Approach to Societal Problems

How Societal Realities Should Inform Businesses and Organizations

Learning Themes

- What does it mean to take a business approach to societal problems?
- How does it differ from other approaches? What is its unique value?
- Why and how should organizations and businesses learn from societal realities?

Readings

The Aravind Eye Hospital, Madurai, India: In Service for Sight (Case)

The Stool Makers of Jobra Village, chapter 4 in *Banker to the Poor: Micro-Lending and the Battle Against World Poverty* by Muhammad Yunus, 1999.

Childhood Malnutrition in Vietnam, chapter 2 in *The Power of Positive Deviance: How Unlikely Innovators Solve the World's Toughest Problems* by Richard Pascale, Jerry Sternin, Monique Sternin, 2010.

Optional Material for Your Interest

"Delivering world-class health care, affordably," *Harvard Business Review*, November 2013

"Serving the world's poor, profitably," *Harvard Business Review*, September 2002

TED: Melinda French Gates: "What Nonprofits Can Learn from Coca Cola" (16:30), www.ted.com

TED: Shivani Siroya: "A smart loan for people with no credit history (yet)" (8:11), www.ted.com

TED: Michael Porter: "The case for letting business solve social problems" (16:28), www.ted.com

TED: Esther Duflo: "Social experiments to fight poverty" (16:47), www.ted.com

TED: Sendhil Mullainathan: "Solving social problems with a nudge" (18:01), www.ted.com

Session 4: Thursday, July 14

Making Solutions Economically Viable: Business Models and...?

Learning Themes

Promising solutions with their roots in science, technology, and medicine can fail to have an impact unless the organizations that produce and deliver them are made financially viable beyond initial funding. People with business expertise can play an essential role in solving big problems by creating organizations that are financially sustainable and growth capable. It is a difficult task and the failure rate is high but with careful thinking and thoughtful experimenting, it can be done.

There are 2 types of economic viability that matter in the big problem context: affordability of product or service for people and financially sustainable organization.

Readings

Webvan (Case)

“Zipcar: startup genius, public failure,” *Wall Street Journal*, January 2, 2013

“Inside the fall of SunEdison, once a darling of the clean-energy world,” *Wall Street Journal*, April 14, 2016

“This whole ‘Uber for doctor house calls’ idea is basically doomed,” *Quartz*, January 2, 2016,

<http://qz.com/581151>

Optional Material for Your Interest

“Solar and wind energy start to win on price vs. conventional fuels,” *New York Times*, Nov 23, 2014

“Water-cleaning technology could help farmers,” *New York Times*, February 16, 2014

Session 5: Tuesday, July 19

From Subconscious Mental Models to Deliberate Causal Maps

Learning Themes

Humans operate with subconscious mental models of the world, whether accurate or not. How we believe a phenomenon works, which aspects we see and which ones we are blind to, influences our beliefs and choices. This session is about how we can move from subconscious, inaccurate mental models to deliberate causal maps that better reflect messy reality. We will use evidence, critical thinking, and conceptual thinking to develop causal maps of big problem phenomena.

Readings

TED: Tom Wujec: “Got a wicked problem? First tell me how you make toast” (9:01), www.ted.com

“Smoke from cooking stoves kills people,” *The Economist*, September 23, 2010

“Are you solving the right problem?” *Harvard Business Review*, September 2012

Selection of newspaper articles on electric cars (links on Blackboard)

Optional Material for Your Interest

TED: Casey Gerald: “The gospel of doubt” (18:19), www.ted.com

Session 6: Thursday, July 21

Listening, Observing, Empathizing → Insight

Learning Themes

How to read, observe, listen, experience, empathize and thereby develop an understanding of somebody else's world. From it, develop insights about how the big problems they face could be tackled.

Readings

"An anthropologist walks into a bar," *Harvard Business Review*, March 2014

"Why I am a listener: Amgen CEO Kevin Sharer," *McKinsey Quarterly*, 2012

"The executive's guide to better listening," *McKinsey Quarterly*, 2012

Video of a suit designed at MIT to approximate the life of people in their mid-70s: <http://agelab.mit.edu/agnes-age-gain-now-empathy-system>

"Do something," *JAMA*, 2010 (*JAMA* = Journal of the American Medical Association)

"What are we going to do with dad?" *Health Affairs*, 2005

"Dad's legacy," *Health Affairs*, 2007

"Not needed," *JAMA*, 2009

"Perchance to dream," *JAMA*, 2010

"A reasonable hope," *JAMA*, 2010

Graded Assignment

Working individually, submit an essay of 800 to 1000 words about the lives of the elderly, what are their biggest challenges and sources of frustration, what are their desires, what would make their lives better? Interview at least two people. Spend time with them and observe them if you can. This assignment is about listening, observing, seeing the invisible, understanding, and drawing insights about the lives of people whose problem(s) you wish to solve.

The HBR article on the anthropological method and the two articles from McKinsey have ideas you will find useful. Start with them. Then go to the second set of articles that are background reading on the lives of the elderly. Read them to gain some understanding and then follow it up with observing and listening.

Optional Material for Your Interest

"What do the poor need? Try asking them," *New York Times*, August 8, 2015

TED: Chimamanda Ngozi Adichie: "The danger of a single story" (18:49), www.ted.com

Session 7: Tuesday, July 26

Imagination. Possibilities.

Learning Themes

Advances in science and technology deepen our understanding of important phenomena and create new possibilities for solutions. While many would argue that one must always start with a problem and then devise a solution, the realities of scientific and technological advances, serendipitous discoveries, present a complementary scenario. They give us novel possibilities and we have to use our imagination to develop ideas for worthwhile problems that they could solve.

This session is about how to discover worthwhile problems to solve by leveraging advances in science and technology. It is about using our imagination to conceive possibilities that matter.

Readings

Browse: <http://www.visions2100.com/>

TED: "A demo of wireless electricity," by Eric Giler (10:09) (This video complements the case)

WiTricity: Electricity Cuts the Cord (Case, 2011)

"How I did it... Twitter's co-founder on creating opportunities," *Harvard Business Review*, June 2015

"The Echo from Amazon brims with groundbreaking promise," *New York Times*, March 9, 2016

Optional Material for Your Interest

TED: Adam Foss: "A prosecutor's vision for a better justice system" (15:57), www.ted.com

Session 8: Thursday, July 28

Big Bets and Small, Failure, Persistence, Exit, Pivot, Experiments, Refinement

Learning Themes

This session covers several valuable ideas that are worth remembering while dealing with new, unfamiliar situations and solving big problems. Some questions to consider as you read the assigned material:

- Is it essential to place big bets or can you place small ones? Does it depend on the circumstances?
- If failure is inevitable and no one really wants to fail, how should we think about failure?
- How do you decide when to persist, when to exit, and when to pivot?
- How do you think about experiments? They are essential but they can also be costly.
- Why is there so little talk about refinements? What role do they play in solving big problems?

Readings

Speeding Ahead to a Better Place (Case)

TED: Astro Teller: "The unexpected benefit of celebrating failure" (15:32)

"7 epic fails brought to you by the genius mind of Thomas Edison," *Smithsonian.com*, November 20, 2013

"For Iridium, a quick trip back to earth," *New York Times*, August 14, 1999

"Buffett bets big on railroads' future," *New York Times*, November 4, 2009

"Pivoting pays off for tech entrepreneurs," *Wall Street Journal*, April 26, 2012

Session 9: Tuesday, August 2

Working with Stakeholders and Gaining Resources

Learning Themes

No person or organization can solve problems alone; none operates in isolation. There is a larger ecosystem of people and organizations who could be engaged to contribute resources and expertise to solve problems jointly. This session is about developing ideas for how to attract stakeholders and gain their resources.

Readings

BuildingBlocks International (Case)

“A new alliance for global change,” *Harvard Business Review*, 2010 (written by leaders of Ashoka)

“Bringing minds together,” *Harvard Business Review*, 2011 (written by a co-founder of Boston Scientific)

Optional Material for Your Interest

“The mega-community approach to tackling the world’s toughest problems,” *strategy+business*, 2010

“A new approach to funding social enterprises,” *Harvard Business Review*, 2012

“Ten nonprofit funding models,” *Stanford Social Innovation Review*, 2009

“Creating shared value,” *Harvard Business Review*, 2011 (Michael Porter)

TED: Michael Metcalfe: “A provocative way to finance the fight against climate change” (12:52) www.ted.com

Session 10: Thursday, August 4

Why Good Solutions are Sometimes Not Adopted

Learning Themes

Good solutions and innovations are often not adopted or are adopted poorly. This is especially the case when they are new to those for whom they are meant. The goal of this session is to understand this common phenomenon so that we may launch solutions differently for speedier adoption.

Readings

Uptake of Malaria Rapid Diagnostic Tests (Case)

Note on Innovation Diffusion: Rogers' Five Factors (included in case-pack)

Optional Readings for Your Interest

"Slow ideas," *New Yorker*, July 29, 2013 (Atul Gawande)

"Eager sellers, stony buyers," *Harvard Business Review*, 2006

"Kiva the disruptor," *Harvard Business Review*, 2012

"Why surgical gloves were not used earlier," *The Lancet*, September 26, 2015

Session 11: Tuesday, August 9

Creating Markets

Learning Themes

To accelerate adoption of new products and services and making their associated organization financially sustainable requires creating markets. New refers to both new to the world and new to those for whom it is intended. Good solutions to big problems will remain inconsequential unless we create a market for them to enable adoption and growth. In this discussion we will use the term 'markets' more broadly than usual.

Readings

Henry Heinz: Making Markets for Processed Foods (Case)

"Red ocean traps," *Harvard Business Review*, March 2015

"Rethinking the 4P's," *Harvard Business Review*, January-February 2013

Further Optional Readings

"The art of designing markets," *Harvard Business Review*, October 2007

"Do better at doing good," *Harvard Business Review*, May-June 1996

"Water flowing from toilet to tap may be hard to swallow," *New York Times*, May 8, 2015

Session 12: Thursday, August 11

Scaling-Up or “Mushrooming” Solutions and Making the Enterprise Sustainable

Learning Themes

If a solution works well, it needs to be made available to benefit more people. But scaling up or “mushrooming” is difficult to accomplish. In this session, we will understand these issues and develop ideas based on examples of successes and failures.

Readings

Made By Survivors: Business Solution for a Social Problem (Case)

“The wrong-headed belief that every business should scale up,” *The Atlantic*, February 2016

“Two keys to sustainable social enterprise,” *Harvard Business Review*, March 2015

Optional Reading for Your Interest

“The limits of scale,” *Harvard Business Review*, 2014

“Mission, margin, mandate: Multiple paths to scale,” *Innovations*, 2011

Preparation Guidance

Treat the case as background story but don’t ignore the exhibits. In class, we will discuss ideas for solutions that address the problems framed by the co-founders at the end of the case.

Note that the project reports are due by 9:00 pm on Friday, August 12. Email a single file to gbhardwaj@babson.edu and submit a printed copy in class next Tuesday when we meet.

Session 13: Tuesday, August 16

Metrics: Evaluating Possibilities, Assessing Progress

Shape of Things to Come?

Learning Themes

Metrics are measures for things that matter. They can be used to assess investment and strategic opportunities and they are used to evaluate progress in problem solving. Because what matters is often difficult to measure, we have to be particularly insightful about the use of metrics in the context of big problems. In this session, we will learn about how we should think of and apply metrics to solving big problems.

The second topic is about looking at the future and what you might encounter in your long careers. How should we think about the shape of things to come? The future arrives neither in the shape we hope nor in the time we envision. Sometimes, it doesn't arrive at all. So, how should we think about and prepare for the future?

Readings and Videos

Acumen Fund: Measurement in Impact Investing (A) (Case)

"Bill Gates: My plan to fix the world's biggest problems," *Wall Street Journal*, January 25, 2013

TED: Parag Khanna: "How megacities are changing the map of the world" (20:34), www.ted.com

TED: Michael Green: "How we can make the world a better place by 2030" (14:39), www.ted.com

"Bill Ford charts a course for the future," *McKinsey Quarterly*, 2014

"3-D printing will change the world," *Harvard Business Review*, March 2013

"The fragile framework: Can nations unite to serve earth's climate?" *Nature*, 2015 (in comic form)

"An executive's guide to the Internet of Things," *McKinsey Quarterly*, August 2015

Optional Material for Your Interest

"Guidelines for social return on investment," *California Management Review*, spring 2004

"Simple measures for social enterprise," *Innovations*, 2008

Management: The Next 50 Years, 50th anniversary issue of *McKinsey Quarterly*

Video: Elon Musk and Y Combinator President on Thinking for the Future (47:53)

<http://video.vanityfair.com/watch/elon-musk-y-combinator-president-thinking-for-the-future>

Session 14: Thursday, August 18

Report Discussion

Learning Themes

- Deepening our understanding of big problems
- Asking the right questions
- Developing ideas for solutions

Readings

Project reports (will be posted on Blackboard after submission on Friday, August 12)