Introduction

Thirty years ago, the Internet was a curiosity, China was in the early years of its economic ascent and India had just begun economic liberalization. In the intervening years, emerging markets would come to dominate economic growth; and seven new companies would take their place among the ten largest in the world today, commanding a combined market capitalization of about $9 trillion. When the pandemic struck last year, vast numbers of people in the world depended on the technologies these companies developed to communicate, work, and entertain themselves.

The changes we will see in the next thirty years will surpass those of the last thirty years. Some of today’s emerging markets will have emerged by 2050, rising to become middle-income or upper middle-income economies. Scientific and technological advancements that are only now emerging will have matured, changing where and how we live and what we consume. Yet these positive changes are contingent on our ability to contain the effects of climate change and simultaneously provide enough energy, food and other goods to sustain economic growth. They also depend on our ability to limit the destabilizing force of economic inequality, and the fissures created by ideological differences between the old and new world powers.

The objective of this course is to examine the changes we can expect between now and mid-century, assess their implications and identify opportunities for businesses. We will examine three types of opportunities: (1) those arising because a larger, richer, more urban (but still unequal) world demands more goods and services; (2) those created by addressing the three intertwined challenges of subduing climate change, transforming energy supply, and changing food production; and (3) those arising from transformative technologies over the next thirty years. Some of these technologies --- including biotechnology, artificial intelligence, and robotics --- are poised to bring about changes that sound as fantastical as hyperconnected pocket supercomputer did thirty years ago. Emerging technologies in biology are expected to allow, for better and for worse, much greater control over the genetic basis of life, allow treating many presently incurable
diseases, and change the practice of medicine. Robots are likely to become a routine part of life, performing such varied tasks as assisting surgeons and interacting with people in social settings. Developments in vertical takeoff and landing technology are poised to allow electric “flying cars,” and hyperloop technology to provide dramatically faster travel within and between dense city clusters in which most humans will live by mid-century. And artificial intelligence, which is still in infancy, will likely transform almost every business and industry. These and other technologies will change the way we live and work, create new industries, and propel global growth waves that include consumers and companies not only in the developed world but also in emerging markets that are on the path to convergence with the developed economies.

Course objectives

The objective of this class is to understand the most important changes likely to occur in the next 30 years, and to develop capabilities that allow you to think strategically about how to anticipate and capture the opportunities likely to emerge from these changes. Our aim is to combine the development of a conceptual framework with real life examples and assignments that help you develop a strategy for a specific opportunity. The conceptual framework lays the ground to:

- Understand the drivers and patterns of past and future economic growth, including
  - New technologies that create and disrupt entire industries
  - Emerging markets that are increasingly converging and competing with developed economies
  - An increasingly more urban and affluent world in which the ability of many people to meet their needs and aspirations is matched by vast and rising inequalities

- Understand the interdependencies and key global challenges in the coming decades with a “new world map” in which China, and potentially India, compete for economic and technological leadership with the US. These challenges include
  - Climate change
  - Supplying food and energy to a growing urban world
  - Global trade and reliance with competing global powers and systems of government

- Analyze how new technologies may help address these issues and create new waves of opportunities
• Examples of emerging technologies with the potential to help address
global issues and disrupt entire industries, including electric propulsion,
robotics, quantum computing, machine learning and artificial intelligence
• Cases of players that are at the forefront of leveraging these
technologies
• Strategic foresight as to the global waves of opportunities resulting from
technological innovation in the “new world map” and potential strategies
to capture them

- Apply the knowledge and frameworks from the class to develop a project
analyzing an opportunity in an industry of your choice and developing a strategy
to capture it
  • Learn from and be exposed to a variety of emerging opportunities across
industries and geographies.
  • Understand how different players value the opportunities, and how they weigh
the risks and challenges involved in capturing them.

An additional benefit of this class is that it will allow you to gain some basic consulting
skills, including framing and defining the scope of the strategic opportunity to be
analyzed; developing hypothesis and defining the analysis to address them; gathering
the right data and information; synthesizing information to drive key conclusions; and
presenting well-structured recommendations and conclusions.

Class Structure
The class follows a structured sequence around three factors driving future growth waves: a
growing urban unequal world; facing global challenges; and new technologies and
opportunities (see following table). Class time will be split among (i) lectures to develop a
frame of reference on each of these types of waves and the business opportunities they
generate; (ii) case discussions; and (iii) project work and presentations. There will be
lectures in each of the first ten sessions. The last two sessions will be dedicated to having
the groups present their different projects, answering questions, synthesizing what was
learned and receiving feedback from the rest of the class.
<table>
<thead>
<tr>
<th>Session, Date and Topic</th>
<th>Readings (R) and Cases (C)</th>
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<td><strong>A Growing Urban Unequal World</strong></td>
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<tr>
<td>1. Growth Waves: drivers and outlook to 2050</td>
<td>- Global trends 2040</td>
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<td>- Technology (RK)</td>
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<td>- Converging Markets (AM)</td>
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<td>2. Economic development: conditions and patterns (AM)</td>
<td>- The Flatbread Factor</td>
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<td>- Human capital and social stability</td>
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<td>- Consumption and consolidation patterns</td>
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<td>3. Demographic change and urbanization to 2050. (RK)</td>
<td>- The aging population and its effects on business</td>
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<td>Case: Medellin’s Transformation Case (AM)</td>
<td>- Medellin’s Transformation: Towards a More Equitable, Innovative and Participatory Urban Society</td>
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<td><strong>Facing Global Challenges</strong></td>
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<td>4. Climate change: Problems, solutions and opportunities to 2050. (RK)</td>
<td>- IPCC special report: Global warming of 1.5°C summary for policymakers.</td>
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<td>5. Food: Feeding 9 billion by 2050. (AM)</td>
<td>- Case: OCP Africa: contributing to the sustainable development of African Agriculture</td>
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<td>6. Energy: the changing world map (AM)</td>
<td>- Nuclear Energy: an answer to climate change</td>
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<td>Case: Engie—strategic transformation of an Energy Conglomerate</td>
<td>- Engie—strategic transformation of an Energy Conglomerate (Case)</td>
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<td>7. EVs in China: leading the global EV growth wave (AM)</td>
<td>- China Races Ahead in Electric Vehicles</td>
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<td>Case: Tesla Inc.</td>
<td>- Case: Tesla Inc</td>
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### Projects and assignments for Catching Growth Waves: To 2050 and Beyond

*You should form a group of 4 students during the first two weeks of class. These group should be the same for class assignments and the final project.*

#### Reading and case assignments

The readings for each class have been selected to complement and help provide a framework for the case. Students are expected to read both and discuss them in their groups. As preparation for case discussions, you will be asked to prepare one or two slides addressing the key issues of the case. Some of the best slides will be presented in class and used for the case discussion. These assignments will be due at midday on the Monday before the class in which the case will be discussed.

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| 8. Artificial intelligence and the evolution of transportation: Autonomous vehicles and flying cars (RK)  
  Case: Waymo LLC | - Modern automation: Artificial intelligence  
  - Case: Waymo LLC |
| 9. Robots in your life (RK)  
  Case: Shield AI | - Modern automation: Robotics  
  - Case: Shield AI |
| 10. Diseases, pandemics, and the editing of human genes in 2050.  
  Case: Crispr and the ethics of germline editing. | - Machine learning in medicine  
  - [The Gene](#) (watch part 2)  
  - Case: Crispr and the ethics of germline editing |
| 11 and 12. Final project presentations. | Wrap-up  
  - What did we learn from the projects?  
  - Which ones would you choose to invest? |
Project Proposal and Final Project

The aim of the project is to identify and analyze potential business opportunities in a given industry, subject to substantial change and growth due to new technologies and global market needs over the coming decades.

Select an existing or nascent industry that interests you and that you expect to change substantially due to the multiple factors discussed in the course: an increasingly affluent, but unequal and aging, urban population; growing global interdependence to face global warming and satisfy increasing food and energy demands, amidst growing tensions and competition for global power; new technologies providing new opportunities while disrupting entire industries, such as artificial intelligence, robotics, and biotechnology.

1. Examine how you expect the industry to develop or evolve over each of the next 10, 20 and 30 years. Which new technologies may significantly impact it? How will the products and services it offers be different from those available today? Which consumer segments will it impact and how will it change their lives? How will it change industry structure and the business models of companies?

2. Which are the established and potential new key players in this market? What are the capabilities they are likely to need to compete in the industry over each of the next 10, 20 and 30 years? Which of the well-established companies and startups in the industry are likely to fail and survive?

3. Suppose you were one of the companies you expect to survive. Develop a strategy for the company that it should use over the next ten years. Discuss how this strategy is likely to evolve over the following decades.

Each group should prepare a project proposal to be presented to the instructors by the sixth week of the course addressing point 1 above. The instructors will discuss the proposal, provide feedback to the group, and give the go ahead for the final project. Each group will be assigned one of the instructors as a guide. Once the proposal is approved you should schedule at least one meeting with your assigned instructor to receive further feedback and guidance as to how to conduct the final project. All students in a group must be present for the meetings with the instructors.

Deliverables: Each group will:

- Meet with the instructors to present and discuss their project proposals during the sixth week of class (4-5 PowerPoint slides).

- Present their final project to the class during the last two sessions (a 20-minute presentation – around PowerPoint 15 slides)
Grading

Grades will be based on the following areas:

1. Class attendance & participation  20%
2. Group assignments on cases (there will be eight)  40%
3. Midterm project proposal  10%
4. Final project  30%

Total  100%

Class rules: We make every effort to begin class on time and expect you to be ready to start at 8:30 am. If you are attending remotely, keep your camera on for the entire duration of the class. Using cellphones and other devices during the class is a serious distraction. Please do not use these unless the instructor asks you to do so.

Attendance: Given that cases, presentations and discussions are central to the learning, missing any session without a valid reason will lower your grade.

Class participation: We expect you to contribute to the learning of your classmates, both through class discussion and in collaboration on homework and the finals project. Good participation is defined as:

- Active participation in case discussions, based on case preparation.
- Adding insights to discussions from course readings and your own knowledge and experience.
- Being respectful and prepared with thoughtful questions when other students are presenting, or when a guest speaker comes to class.

About the instructors

Rajeev Kohli is the Ira Rennert Professor of Business at Columbia Business School. He has research and teaching interests in marketing and policy issues in emerging markets, product development, pricing, and models of consumer choice. He has taught MBA and Executive MBA courses at Columbia Business School on Catching the Growth Waves in Emerging Markets, New Product Development, Information Technology in Marketing, and Marketing Planning. He also teaches an MS course on Social and Economic Networks and a PhD course on Mathematical Models in Marketing.
Alonso Martinez is a Senior Lecturer in Practice at Columbia Business School. He combines teaching and research with extensive global experience doing strategy consulting, with particular expertise in emerging markets. He gives the Catching Growth Waves to 2050 and Beyond course in both the MBA and EMBA programs and the Winning Strategic Capabilities course to the MBAs. He also teaches and mentors entrepreneurs in the Enterprise Competitiveness in Latin America (ECLA) Program and teaches regularly at the Africa Business School in Morocco.

Professor Martinez is a former Senior Vice President at Booz, Allen & Hamilton, having joined in Brazil in 1982 and subsequently opened and/or managed the firm’s offices in every major Latin American country. He moved to the United States in the year 2000 with global responsibility for major client relationships. Mr. Martinez has worked with many of the world's largest multinationals and leading local groups in the consumer products, media, steel and construction materials industries. His focus has been global growth strategies, including international expansion, mergers and acquisitions and go to market strategies.