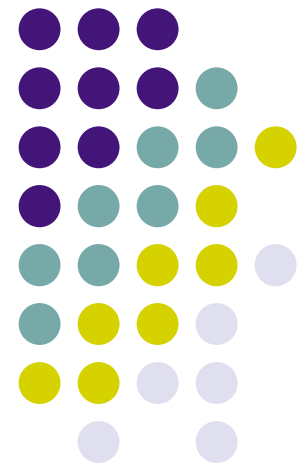


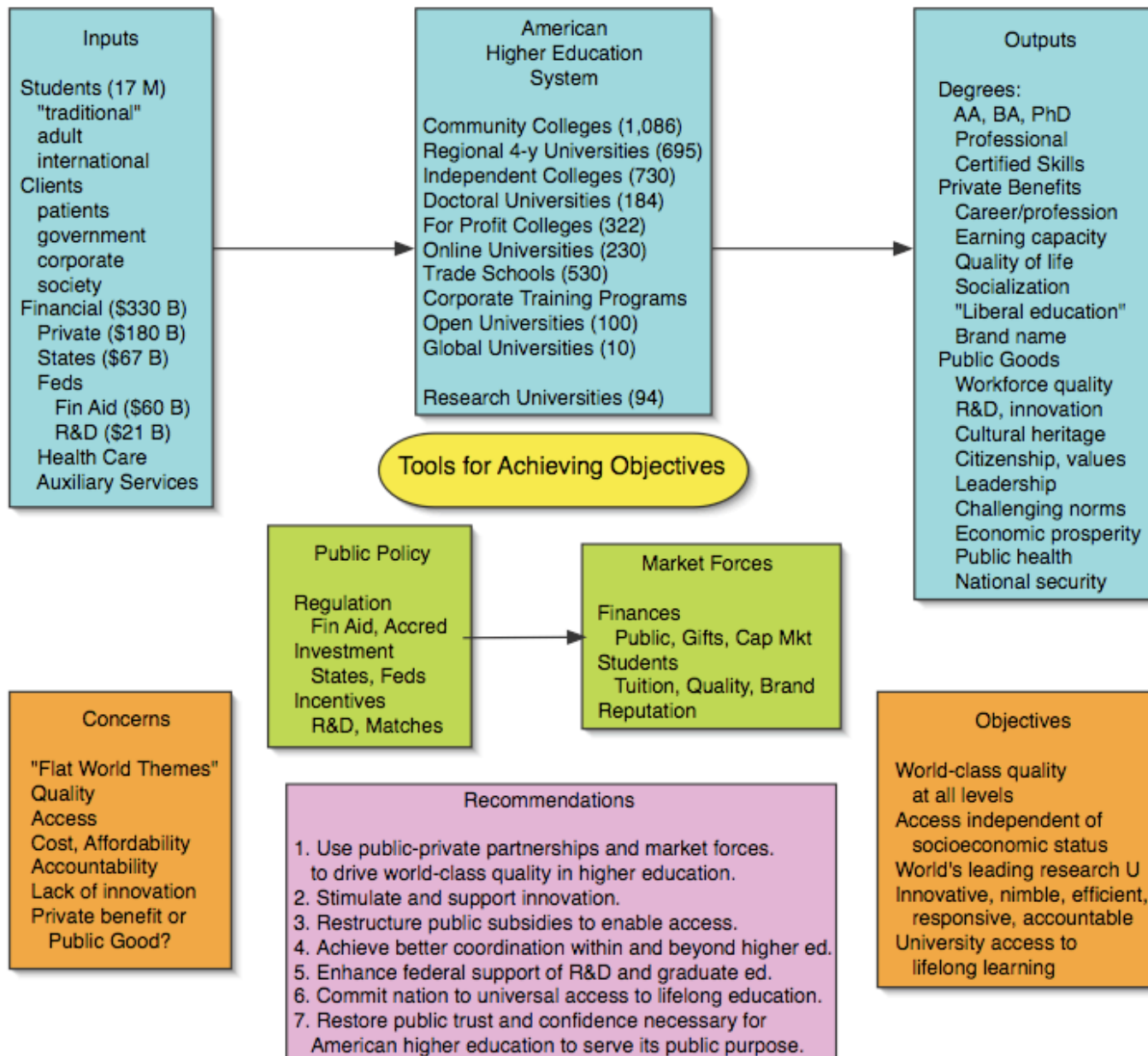
The American University

Challenges for the
21st Century





Aligning American Higher Education with National Priorities



U.S. Colleges and Universities



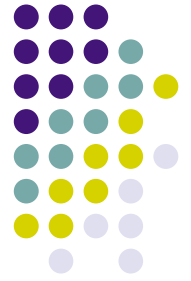
Public 4-year institutions	634
Private 4-year institutions	1,546
Public 2-year institutions	1,086
Private 2-year institutions	118
For-profit institutions	852
Total	4,236

Types of Colleges & Universities



Major research universities	94
Other doctoral universities	184
Regional universities	695
Baccalaureate colleges	730
Community colleges	1,086
Other (religious, specialized, etc.)	1,446

Enrollments



Total enrollments (2003) 17.3 million

Percentage of population
with some college 53.9%

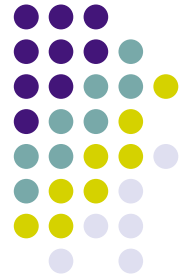
Percentage of population
with BA/BS degree 26.6%

Finances



State support (20%)	\$67 billion
Federal support (25%)	
Student financial aid	\$60 billion
Research grants	\$21 billion
Private support (tuition, gifts) (55%)	\$180 billion
Total support (2.6% GDP)	\$330 billion

Role of Government



Federal Government

No ministry, no national systems, no controls...no policy

\$60 billion/y of financial aid to students

\$21 billion/y of research grants to individual faculty

NOTE: The federal government provides grants to people (students, faculty, patients), NOT to universities

State Government

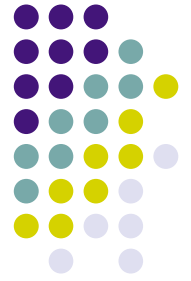
\$60 billion/y to support operation of public universities

Great diversity in state governance, from rigidly controlled systems (New York, Ohio) to strategic master plans (California) to anarchy (Michigan)



Other Characteristics

- The great diversity among institutions and missions.
- The balance among funding sources (private vs. public, state vs. federal).
- The influence of market forces (for students, faculty, resources, reputation).
- Its global character (attracting students and faculty from around the world)
- The absence of a centralized system that leads to highly decentralized, market-sensitive, and agile institutions, students, and faculty.
- Supportive public policies (academic freedom, institutional autonomy, tax and research policies).
- The research partnership between universities, the federal government, and industry.



Other Characteristics

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Quality



“There is no shortage of things to marvel at in America’s higher-education system, from its robustness in the face of external shocks to its overall excellence. However what particularly stands out is the system’s flexibility and its sheer diversity...It is all too easy to mock American academia. But it is easy to lose sight of the real story: that America has the best system of higher education in the world!”

The Economist, September, 2005



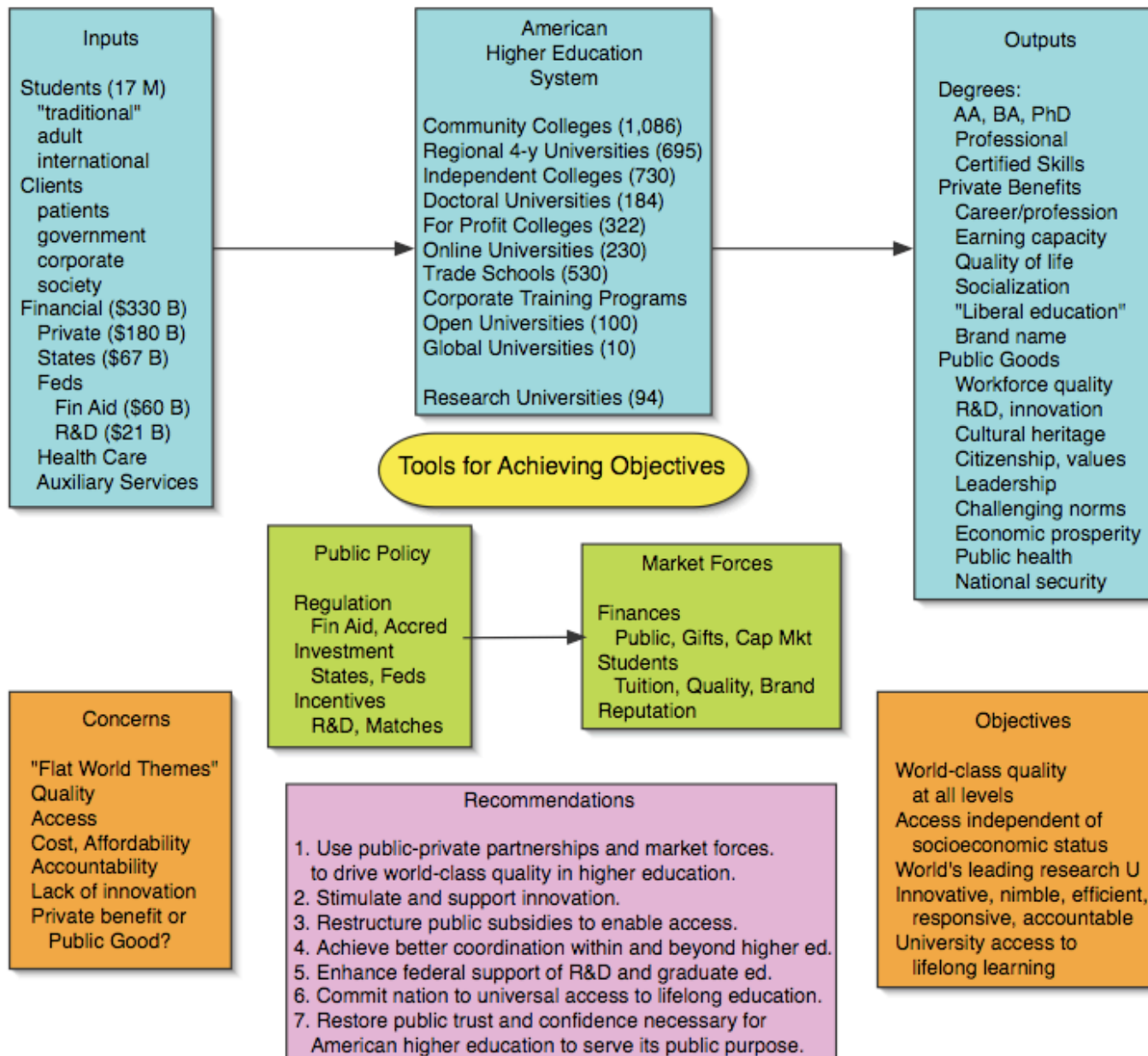
One more characteristic

What is a "university"?

- From French *universite* and Latin *universitatem*, meaning “the whole, or entire”
- Also *universitas magistrorum et scholarium*, “community of masters and scholars”
- John Henry Newman: A “School of Universal Learning”, a school of knowledge of every kind, consisting of teachers and learners from every discipline.

A key feature of American universities: **comprehensiveness**

Aligning American Higher Education with National Priorities

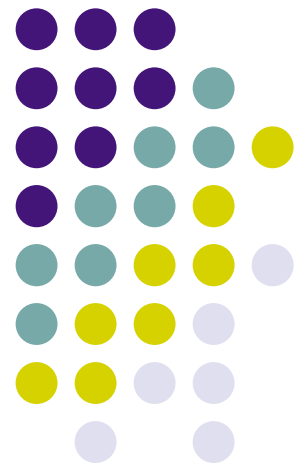


So...what do university presidents worry about these days?



- Money
- Politics
- Students
- College sports (at least for an unfortunate few...)

**Let's try a somewhat
different perspective
than ground-level...**







The World Is Flat

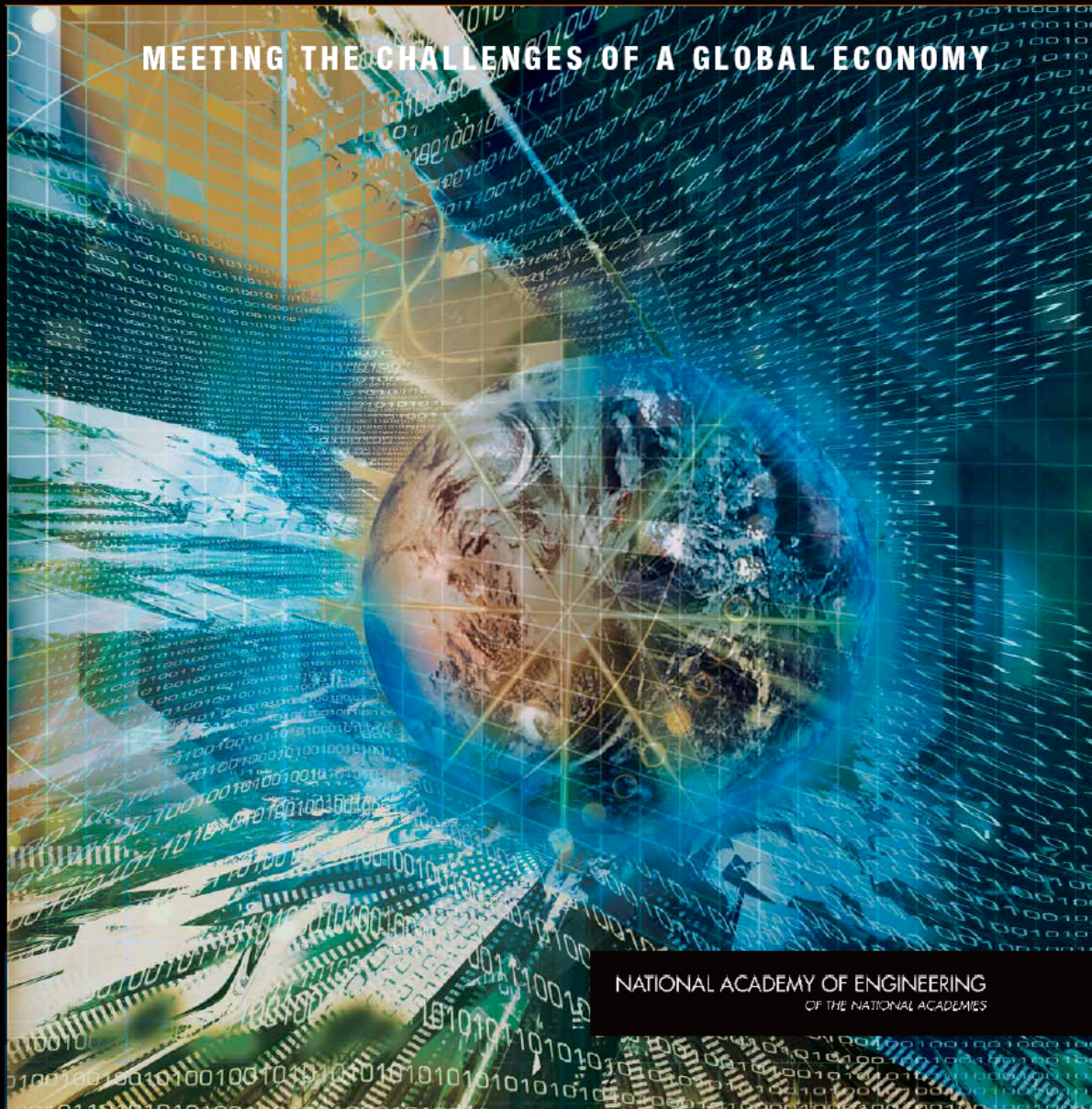
A BRIEF HISTORY OF
THE TWENTY-FIRST CENTURY

Thomas L. Friedman

ENGINEERING RESEARCH AND AMERICA'S FUTURE

MEETING THE CHALLENGES OF A GLOBAL ECONOMY

NATIONAL ACADEMY OF ENGINEERING
OF THE NATIONAL ACADEMIES



EXECUTIVE SUMMARY

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*Energizing and
Employing America
for a Brighter
Economic Future*

NATIONAL ACADEMY OF SCIENCES,
NATIONAL ACADEMY OF ENGINEERING, AND
INSTITUTE OF MEDICINE

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OF THE NATIONAL ACADEMIES



AMERICAN COMPETITIVENESS INITIATIVE

LEADING THE WORLD IN INNOVATION



***DOMESTIC POLICY COUNCIL
OFFICE OF SCIENCE AND TECHNOLOGY POLICY***

FEBRUARY 2006

ISSUES

IN SCIENCE AND TECHNOLOGY

THE NATIONAL ACADEMIES
THE UNIVERSITY OF TEXAS AT DALLAS
FALL 2005

Information Technology and the Research University

Envisioning a Transformed University

Cyberinfrastructure and the
Future of Collaborative Work

The Economic Imperative for
Teaching with Technology

Managing a Rapidly
Changing Environment

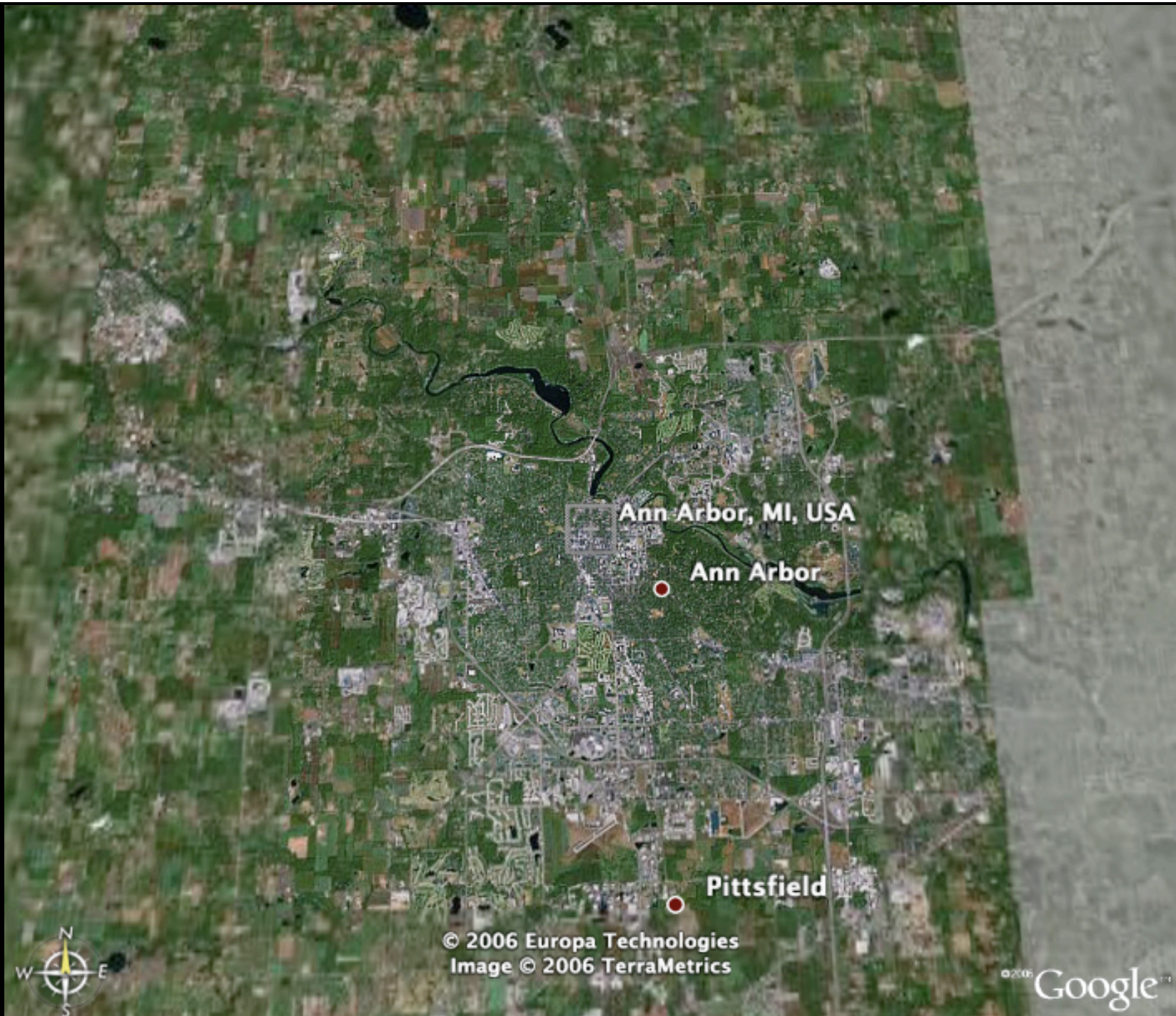
Lessons from Corporations

Also:
The Case for Carbon Capture
and Storage

Preparing for Catastrophes

U.S. \$11.50 / CAN. \$17.50
5 33





Ann Arbor, MI, USA

Ann Arbor

Pittsfield



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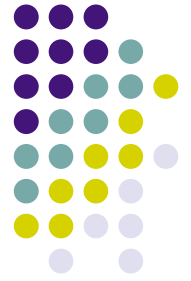
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100,000 feet

- Decline of government support
- Changing educational needs
- Social diversity
- Technology
- Markets



100,000 feet



- Decline of government support - **states**
- Changing educational needs
- Social diversity
- Technology
- Markets

100,000 feet



- Decline of government support
- Changing educational needs - **workforce**
- Social diversity
- Technology
- Markets

100,000 feet



- Decline of government support
- Changing educational needs
- Social diversity - race, ethnic, nationality, age
- Technology
- Markets

100,000 feet



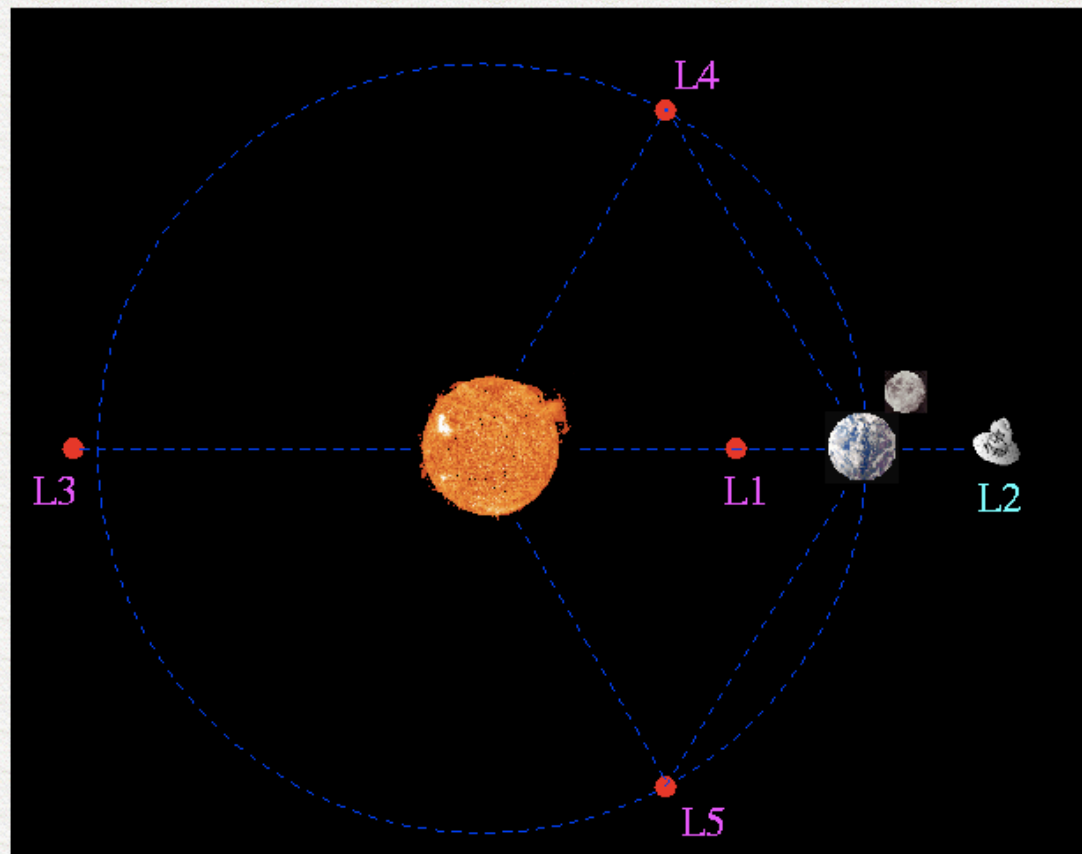
- Decline of government support
- Changing educational needs
- Social diversity
- Technology - information-communication
- Markets

100,000 feet



- Decline of government support
- Changing educational needs
- Social diversity
- Technology
- Markets - more powerful than governments

Of the five Lagrange points, three are unstable and two are stable. The unstable Lagrange points - labelled L1, L2 and L3 - lie along the line connecting the two large masses. The stable Lagrange points - labelled L4 and L5 - form the apex of two equilateral triangles that have the large masses at their vertices.

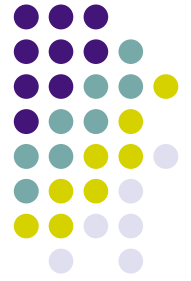


Lagrange Points of the Earth-Sun system (not drawn to scale!).

L-1 Point

- Demographics
- Globalization
- The Knowledge Economy





L-1 Point

- Demographics - aging, diversifying
- Globalization
- The Knowledge Economy



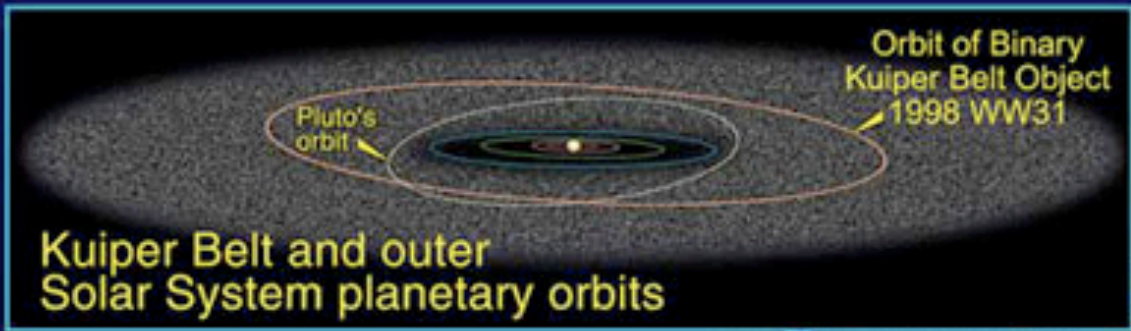
L-1 Point

- Demographics
- Globalization - the "flat world" (Friedman)
- The Knowledge Economy

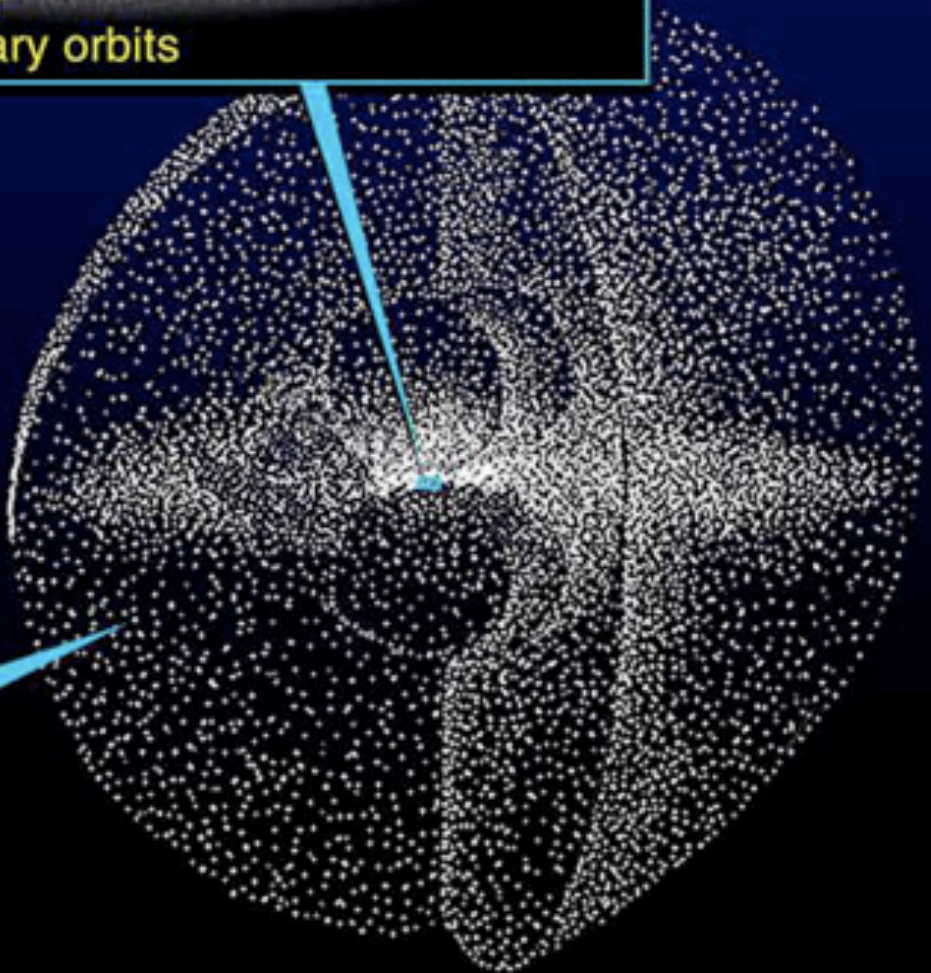


L-1 Point

- Demographics
- Globalization
- The Knowledge Economy - **innovation**



Kuiper Belt and outer Solar System planetary orbits



The Oort Cloud (comprising many billions of comets)

Oort Cloud cutaway drawing adapted from Donald K. Yeoman's illustration (NASA, JPL)

[Kuiper_oort.jpg](#) (71KB, MIME type: image/jpeg)

Artist's rendering of the [Kuiper Belt](#) and [Oort Cloud](#).

The Oort Cloud



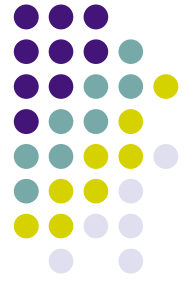
- Global Sustainability
- Exponentiating Technologies
- The Singularity



The Oort Cloud

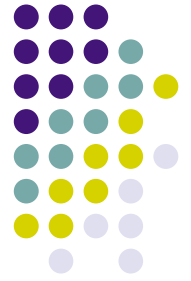
- Global Sustainability - resources, climate
- Exponentiating Technologies
- The Singularity

The Oort Cloud



- Global Sustainability
- Exponentiating Technologies - info-bio-nano
- The Singularity

The Oort Cloud



- Global Sustainability
- Exponentiating Technologies
- The Singularity - Von Neumann

Conjecture



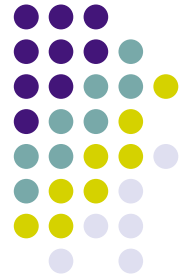
Over the next generation, the university will change so much that it will no longer be recognizable in today's terms:

global universities

"meta" universities

universal access to knowledge and learning

Conjecture



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universal access to knowledge and learning

Think Open Knowledge Initiative, Open CourseWare,
Sakai Project...

Conjecture



Over the next generation, the university will change so much that it will no longer be recognizable in today's terms:

global universities

"meta" universities

universal access to knowledge and learning

Think Open Knowledge Initiative, Open CourseWare,
Sakai Project...and, of course, Google!!!

A historical example



The evolution of the University of Michigan:

1850

1900

1950

2000

2050???



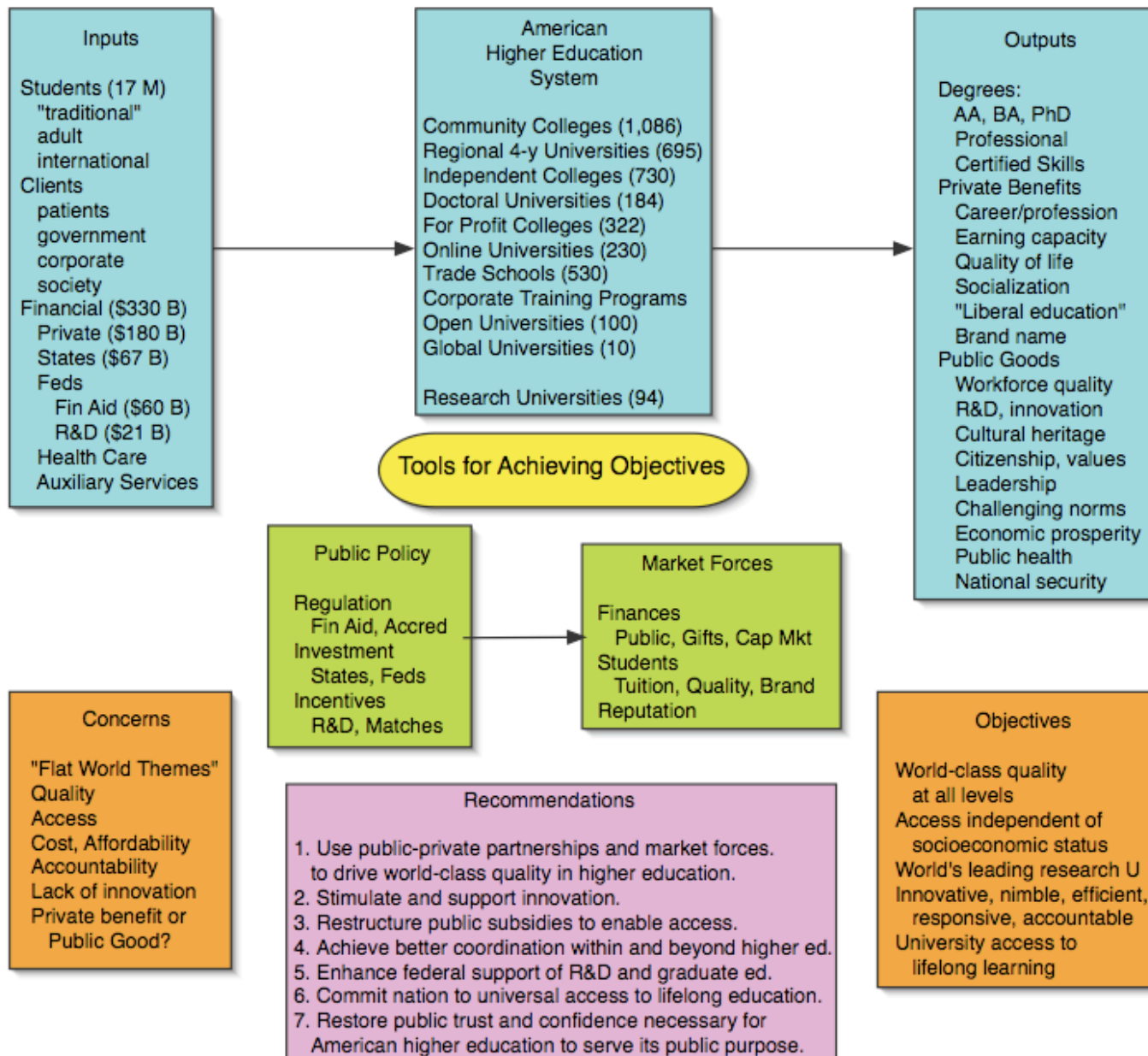
J.M.W. Turner



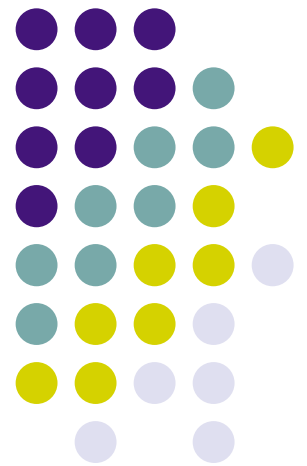




Aligning American Higher Education with National Priorities



**Which brings us to
our second topic...**





RUSSELL MILLER

MARGARET SPELLINGS

CHERYL CHAPMAN