

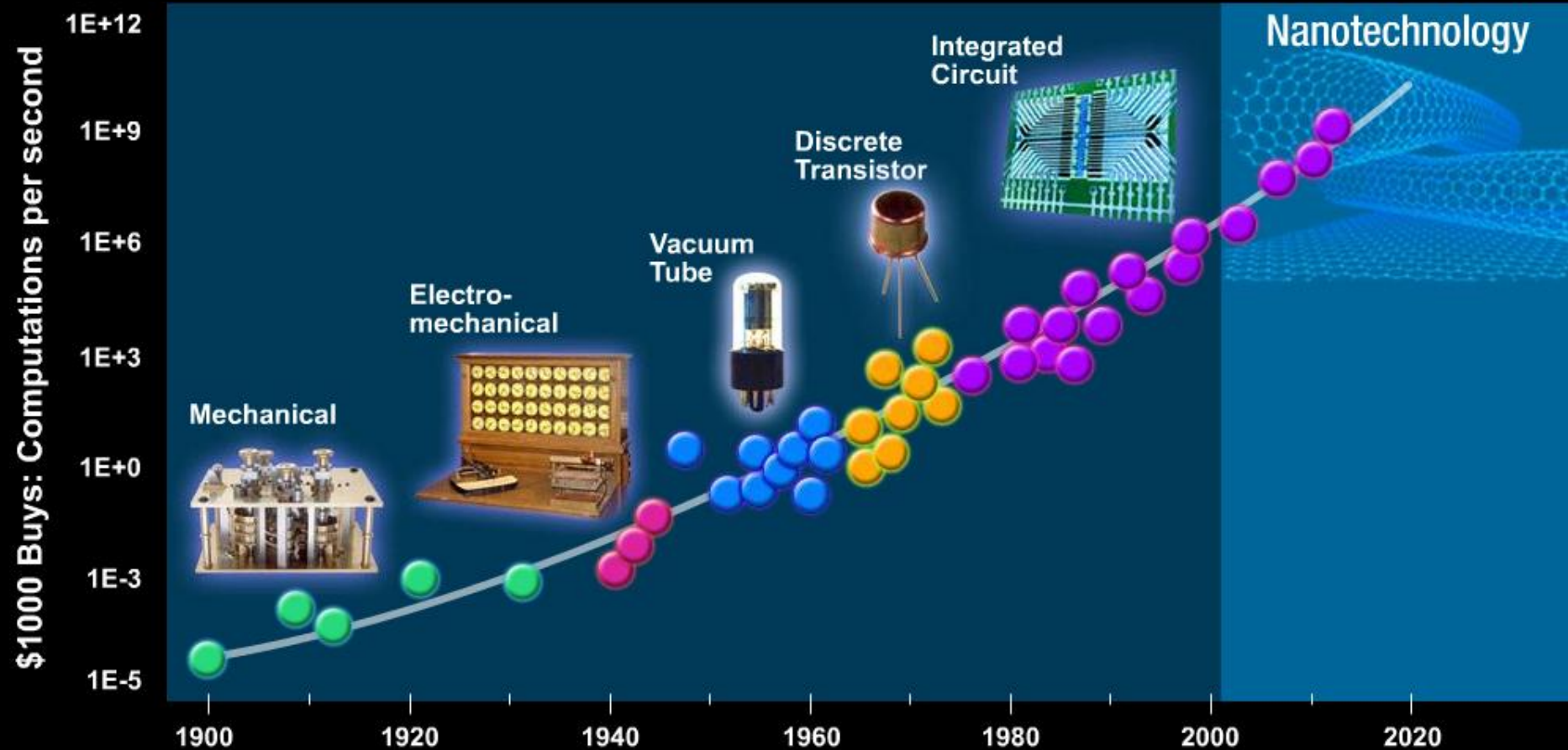
The background features a dark blue gradient with a complex network of thin, glowing blue lines and arcs, resembling a digital or neural network. A bright, multi-colored light source (white, blue, and green) is positioned in the center-right, emitting several beams of light that fan out towards the right. On the right side, there is a large, semi-transparent blue sphere. Overlaid on this sphere are the words 'Society', 'Business', and 'Technology' in a white, sans-serif font, arranged vertically. The sphere also contains faint, repeating binary code (0s and 1s).

On the Transition from the Industrial to the Knowledge Economy

A point of view inspired by Adam Smith

Irving Wladawsky-Berger

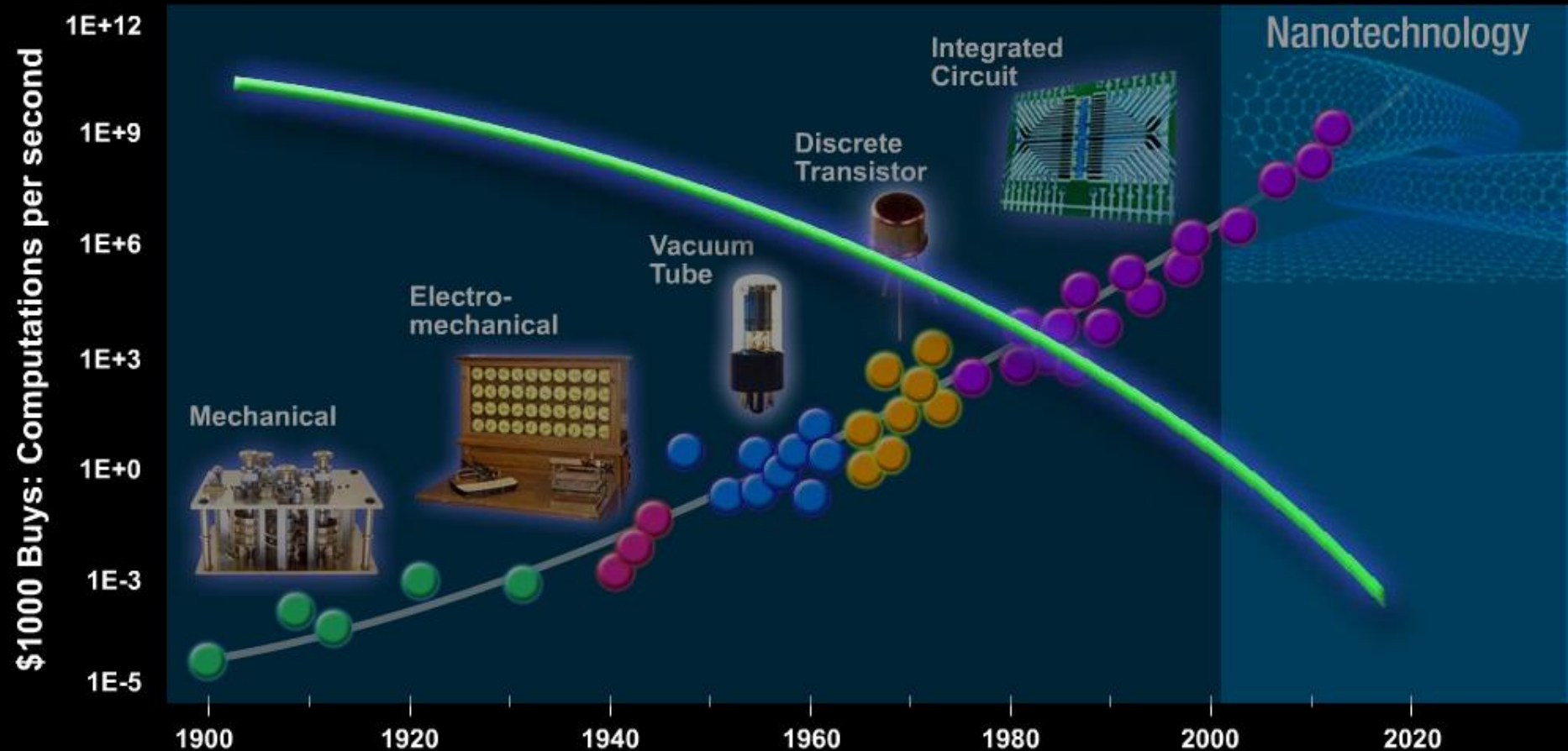
Accelerating Advances in Technology



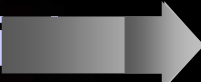
Source: Kurzweil 1999 – Moravec 1998

Accelerating Advances in Technology

Driving Costs Steadily Downward



Source: Kurzweil 1999 – Moravec 1998

The Internet: Industri  Knowledge Economy



Evolution of Systems

Business



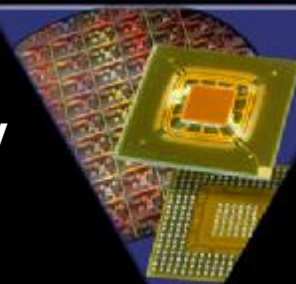
Applications



Products



Technology



Market Facing Systems



Back Office Systems

People and Services



Machines and Products

Intangible Assets



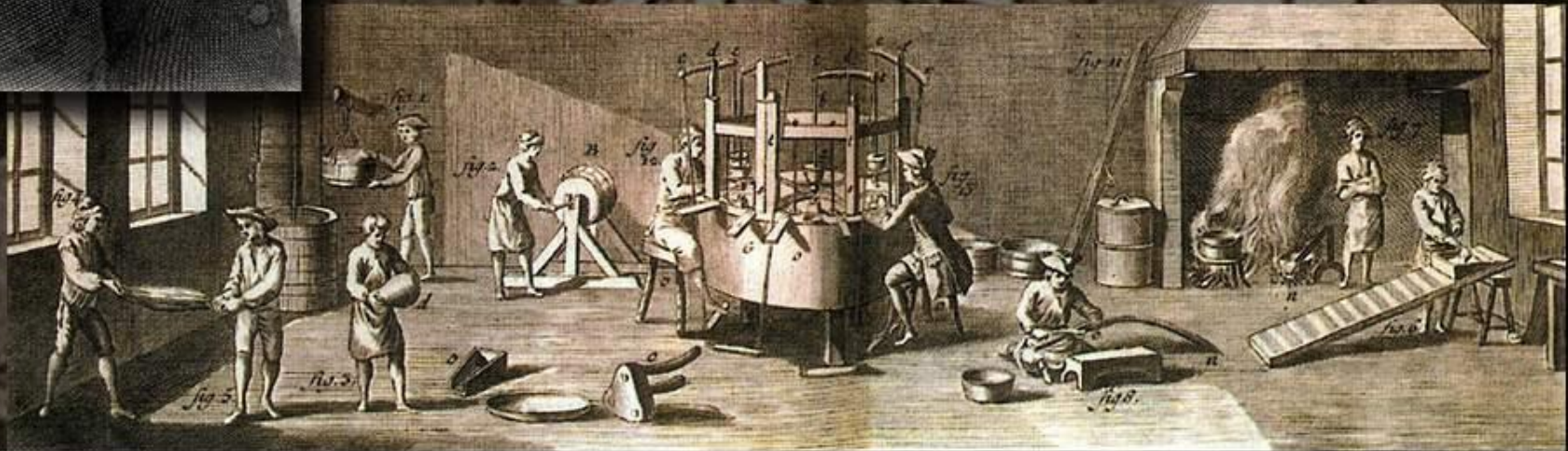
Tangible Assets

How can you think of something as “cosmic” as the industrial and knowledge economies?

Go Back to the Source: The Father of Economics



ADAM SMITH 1723-1790



How can you think of something as “cosmic” as the industrial and knowledge economies?

A Framework inspired by Adam Smith

§ Division of Labor

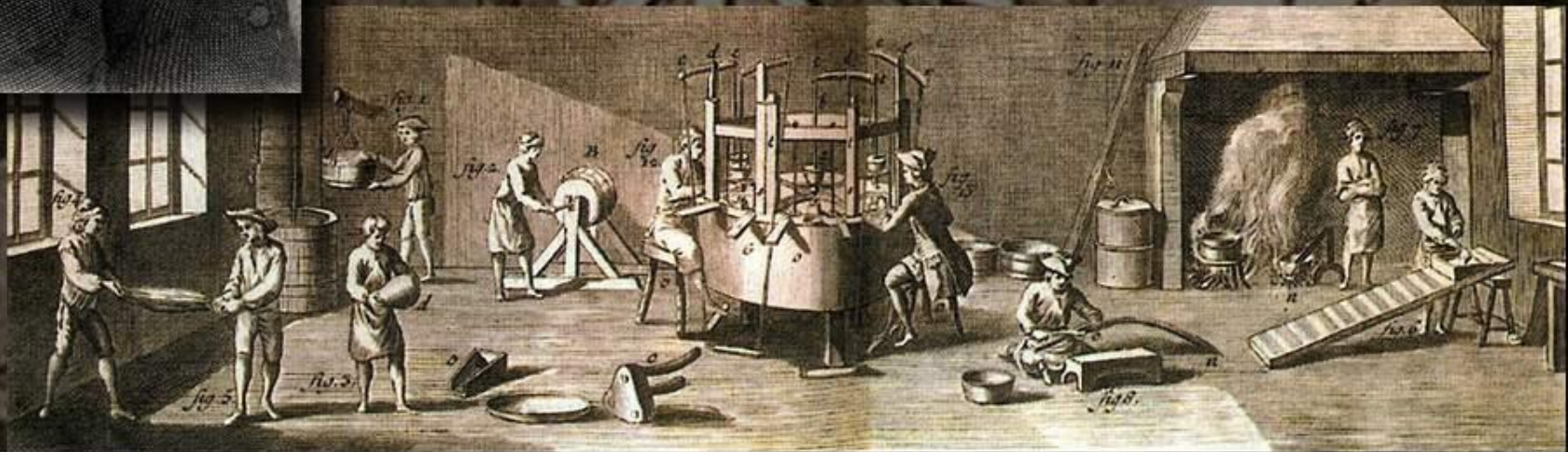
§ The Invisible Hand

§ Moral Sentiments

Division of Labor



ADAM SMITH



Division of Labor

Smith lists three causes, arising from division, of improved productivity:

- à the labourer's dexterity - due to specializing, year-round, in a specific task
- à time not wasted passing from one task to the next - as in agriculture - as well as the more consistent and focused effort when working in just one area
- à the machines and tools that have evolved in conjunction with increasingly specialised labour

It is the size of the market that determines to what degree the division of labour will take place. In a small economy, a person would not see the benefits of specialising in just one employment since he could not reap the benefits through trade for other goods and services with others.

Wikipedia – Adam Smith

Computer Assisted Engineering Systems

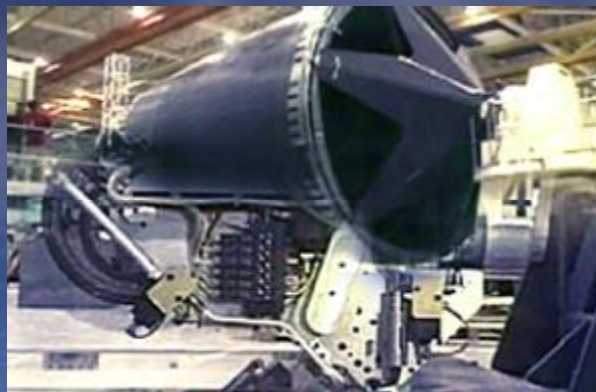
**Strategy
Collaboration**



**Design /
Simulation**

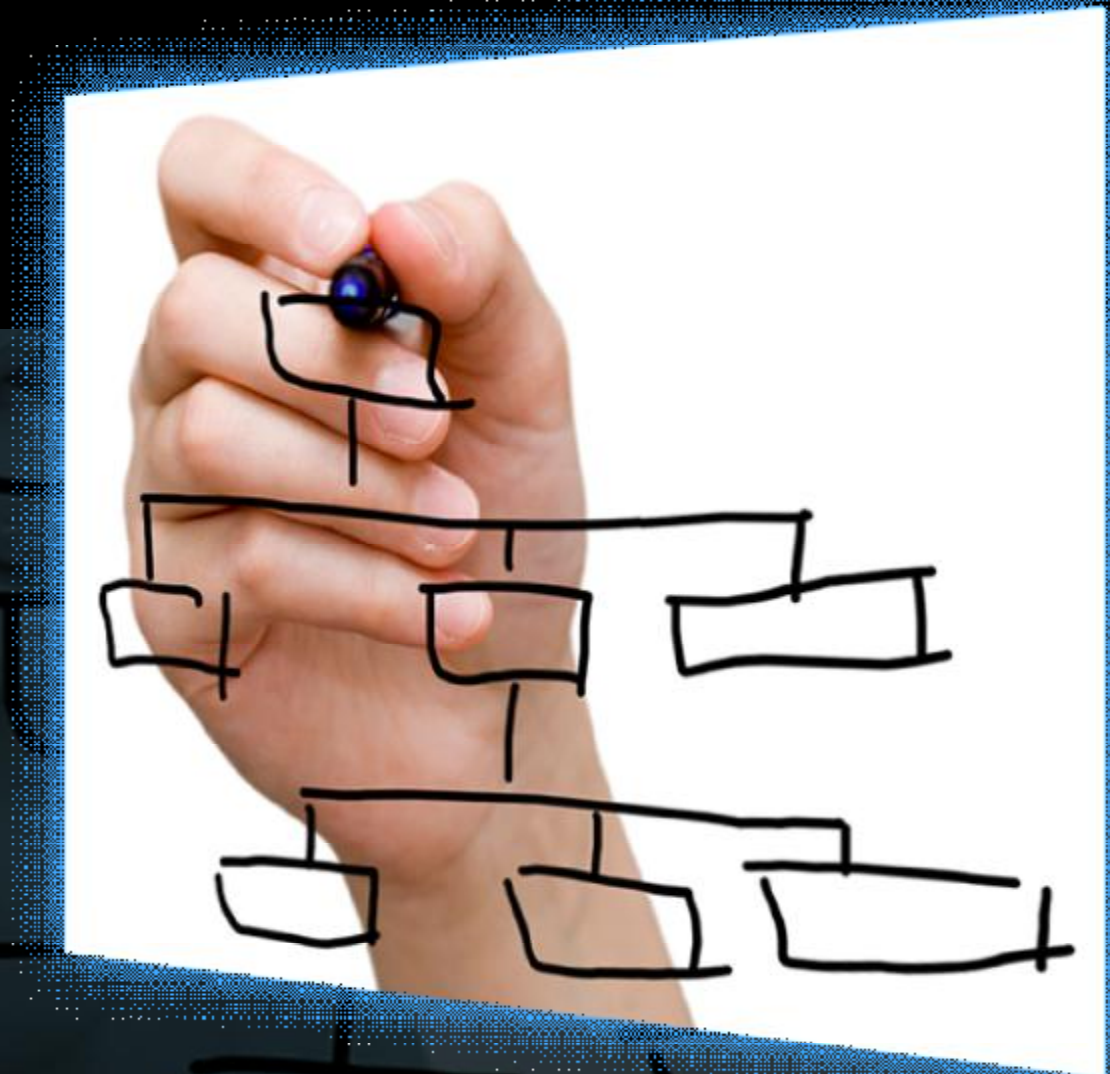


**Operation /
Maintenance**



Manufacturing

Division of Labor



Computer Assisted Business and Organizational Systems

Strategy Collaboration



Operation / Feedback-loop



Business Designs and Architectures

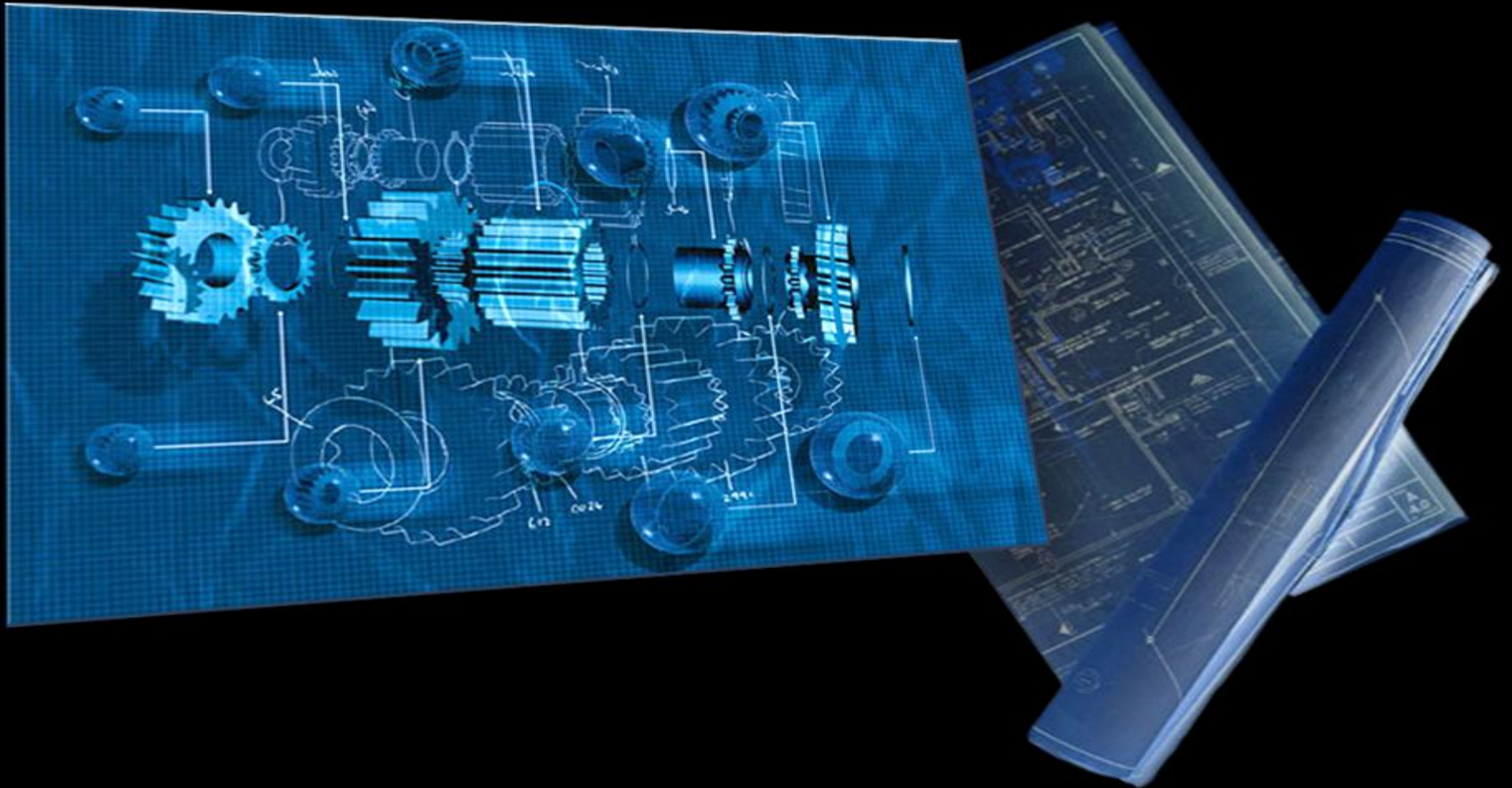
Transformation View	Manage Customers		Merchandising	Store/Channel Operations	Supply Chain & Distribution	Finance Administration	Business Administration
	Channels			Store/Channel Strategy			Planning
	CRM		IPT	Labor	SCM	Financial Planning	Alliances
	Insights		Vendors	Store Design	Distribution	Market Mgt.	LOB Planning
Tactics	Customer Sat.		Supply/Demand	Inventory	Logistics		Perf. Mgt.
	Promotions		Space Mgt.				MI
Execution	Order Mgt.		Vendor Mgt.	Store Mgt.	Distribution Ops.	Finance	Process Design
	Customer Accts.		Item Mgt.	Store Services	Transportation	Treasury	Legal/Reg
	Customer Directory		Product Directory	Inventory		Back Office	Procurement
						Accounting	Real Estate
							HR
							IT

Implementation (SOA)

Services Sciences, Management and Engineering (SSME)

Computer Assisted Business and Organizational Systems

Architectures, tools, processes, modeling, simulation, analysis, . . .



The Invisible Hand



The Invisible Hand

As every individual, therefore, endeavors as much he can both to employ his capital in the support of domestic industry, and so to direct that industry that its produce may be of the greatest value; every individual necessarily labors to render the annual revenue of the society as great as he can. He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it.

By preferring the support of domestic to that of foreign industry, he intends only his own security; and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention. Nor is it always the worse for the society that it was not part of it.

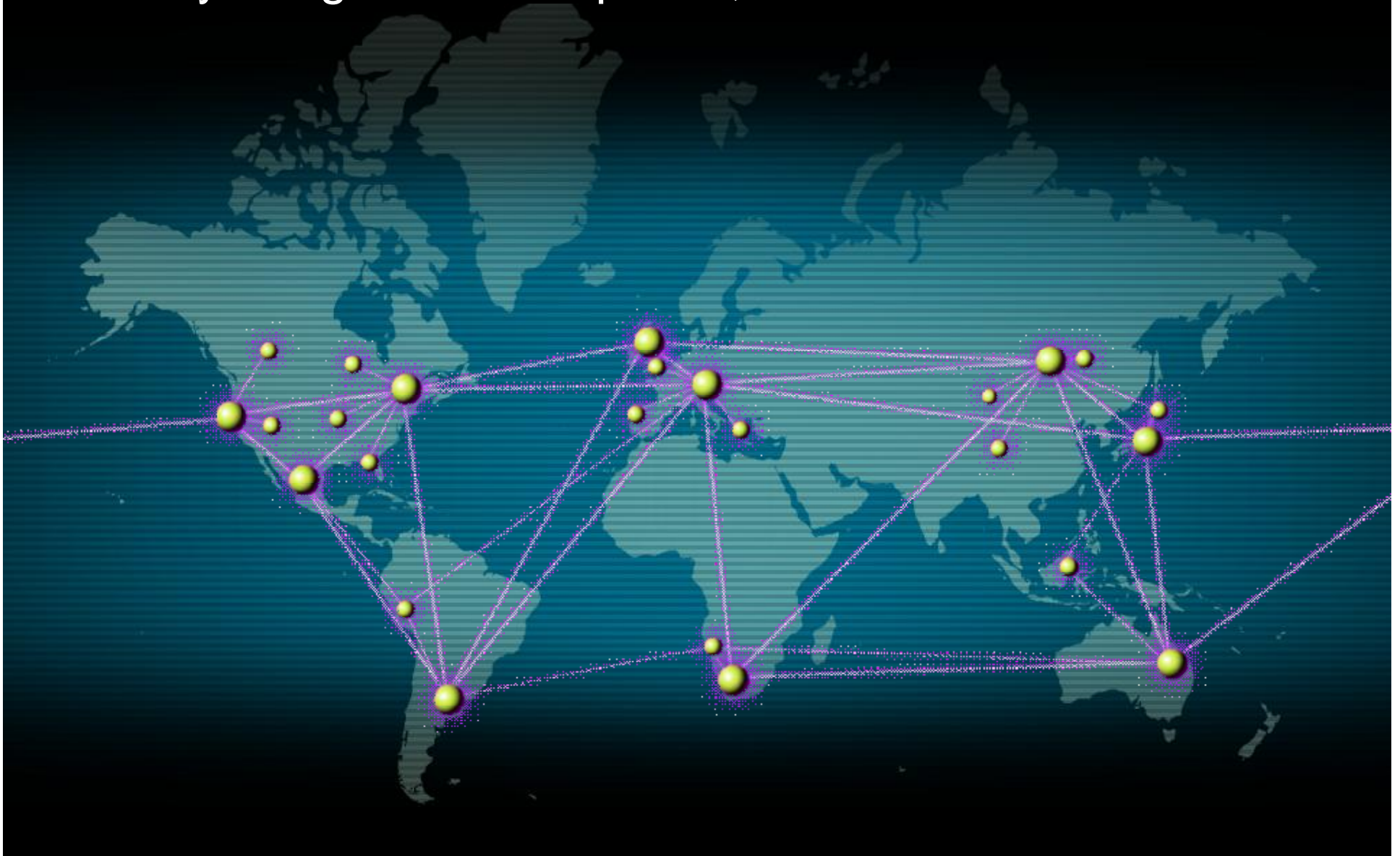
By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it. I have never known much good done by those who affected to trade for the public good. It is an affectation, indeed, not very common among merchants, and very few words need be employed in dissuading them from it.

The Wealth of Nations – Adam Smith (1776)

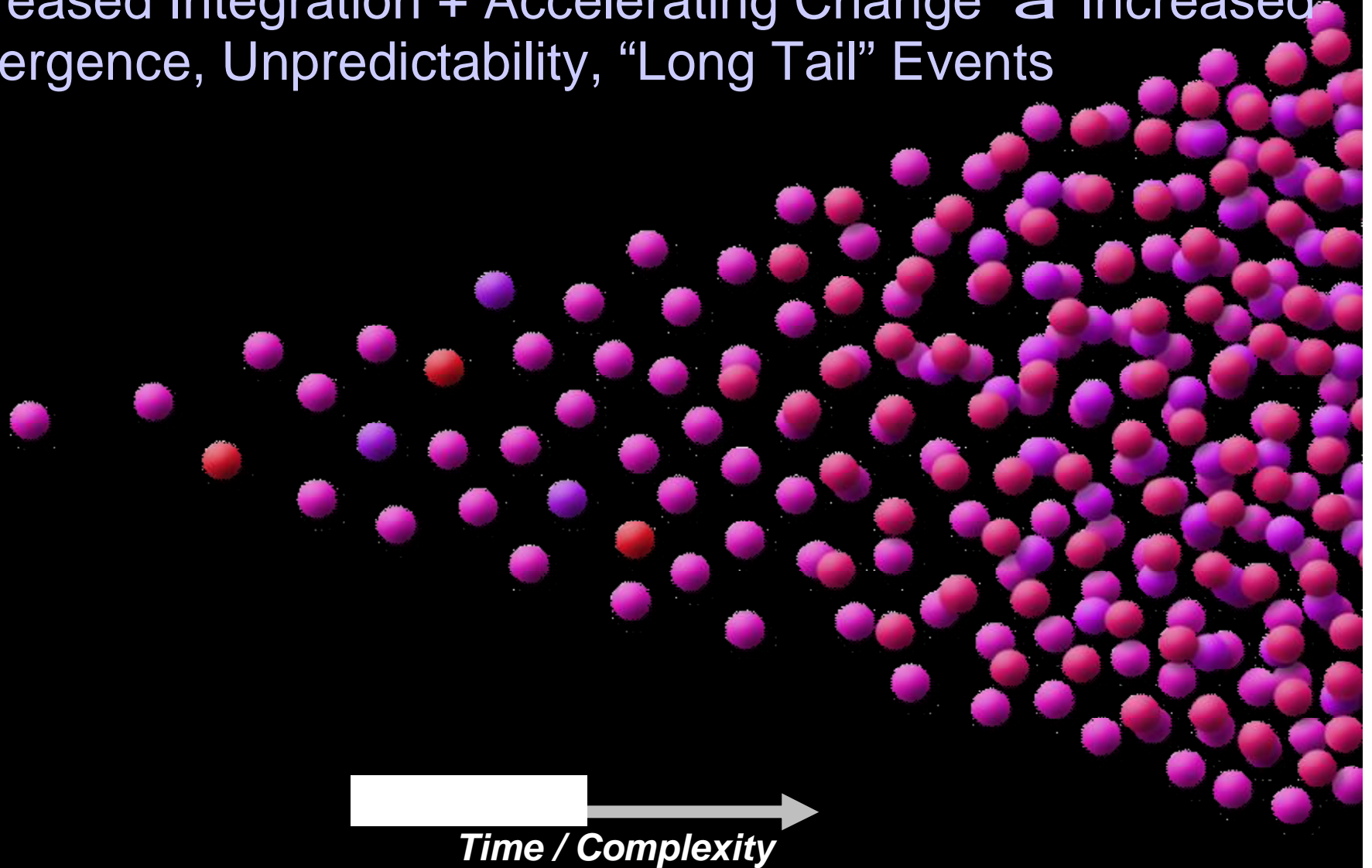
The Invisible Hand



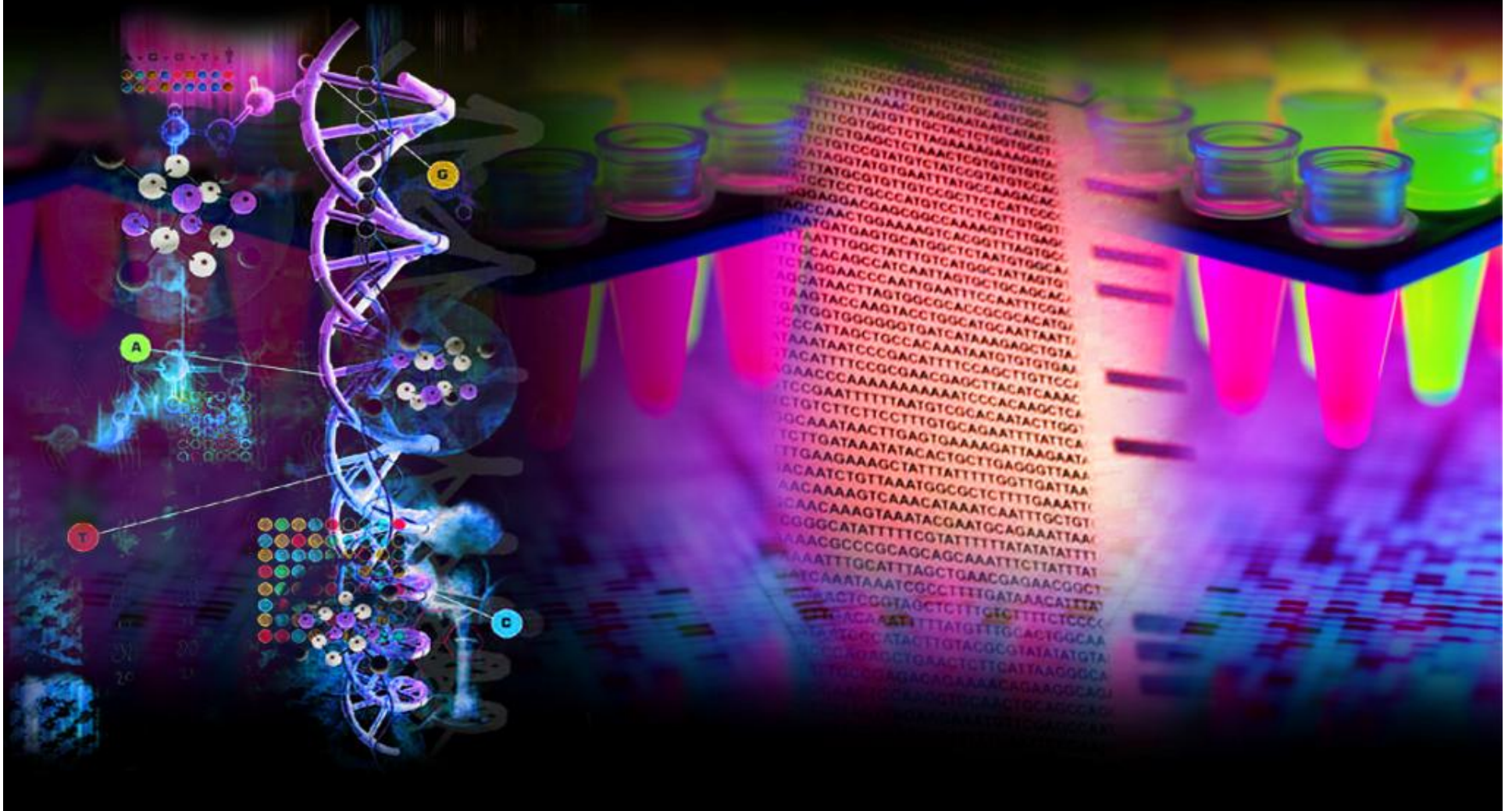
Globally Integrated Enterprises, Industries and Economies



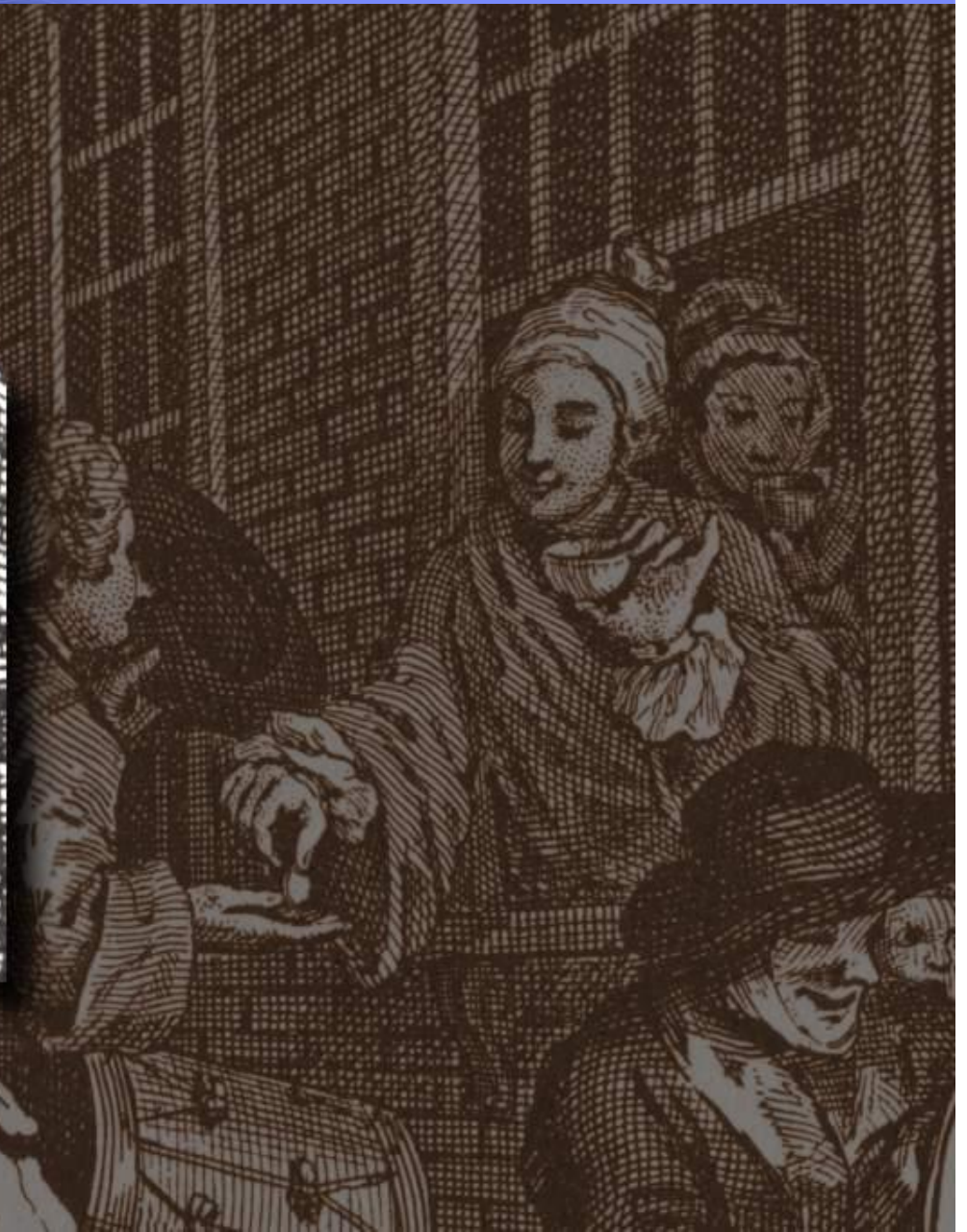
Increased Integration + Accelerating Change → Increased Emergence, Unpredictability, “Long Tail” Events



Information-based Decision Support and Management



Moral Sentiments



Moral Sentiments

How selfish soever man may be supposed, there are evidently some principles in his nature, which interest him in the fortunes of others, and render their happiness necessary to him, though he derives nothing from it, except the pleasure of seeing it.

Of this kind is pity or compassion, the emotion we feel for the misery of others, when we either see it, or are made to conceive it in a very lively manner.

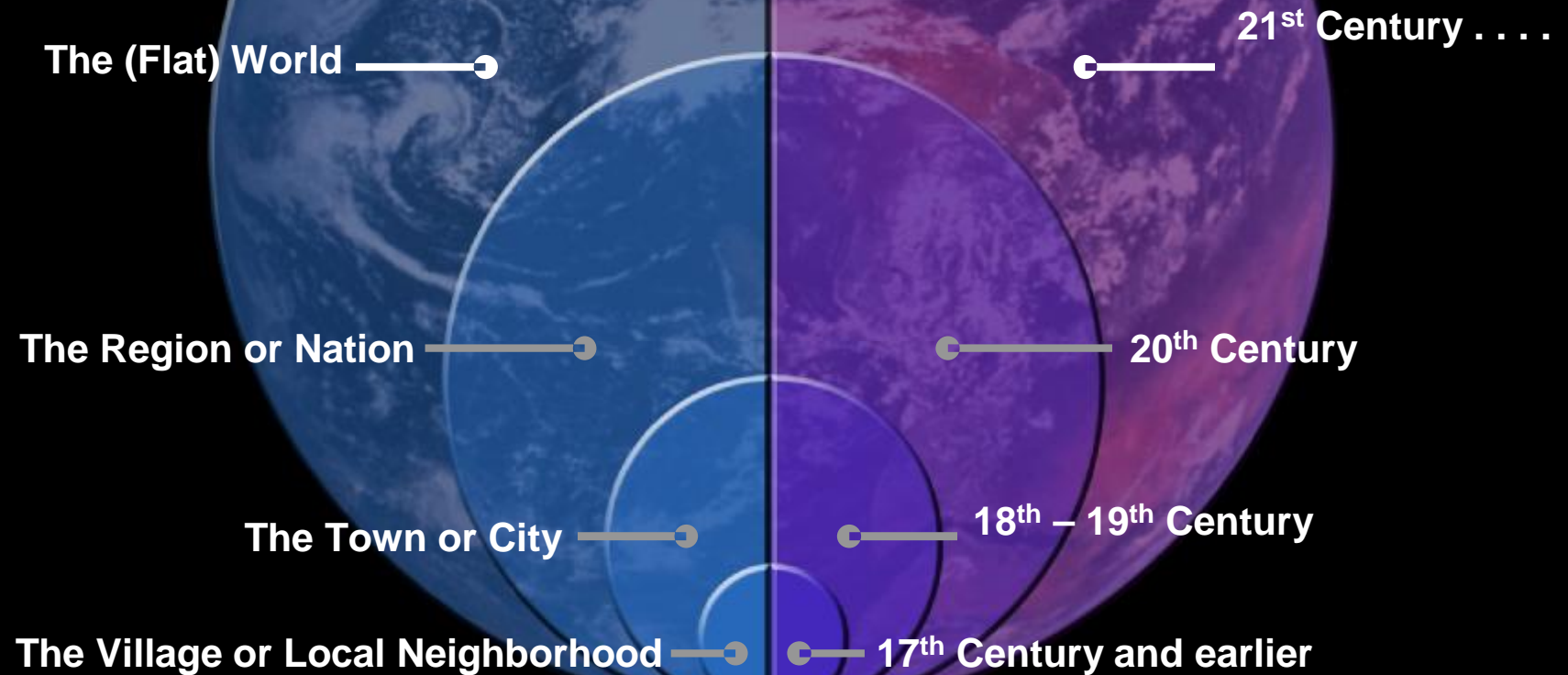
That we often derive sorrow from the sorrows of others, is a matter of fact too obvious to require any instances to prove it; for this sentiment, like all the other original passions of human nature, is by no means confined to the virtuous or the humane, though they perhaps may feel it with the most exquisite sensibility. The greatest ruffian, the most hardened violator of the laws of society, is not altogether without it.

The Theory of Moral Sentiments – Adam Smith (1759)

Moral Sentiment



Can you have moral sentiments in a global, digital economy?



Evolution of the Web



Social Networks

People from all over the world self-organizing into communities



Collaborative Innovation

People from all over the world self-organizing into a commons-based, peer- production system



Knowledge Economy



Industrial Economy

Information Technology Revolution

*Information Technology is to the Knowledge Revolution as
Steam Power was to the Industrial Revolution*



Transition to the Knowledge Economy

**Deepening Integration of IT
into all aspects of
Business and Society**

Business, Societal and Lifestyle Innovation

**Accelerating Advances
in Technology**

Ø How can you extend Adam Smith's framework from the industrial to the knowledge economy?

à *Talent is more important than ever*

§ Division of Labor

- Ø Services Sciences
- Ø Complex Engineering Systems

§ The Invisible Hand

- Ø Information-based Decision Support and Management
- Ø Predictive Analysis and Simulation

§ Moral Sentiments

- Ø Social Networks
- Ø Collaborative Innovation
- Ø Corporate Social Responsibility

A Stream of Disruptive Innovations

Software as a Service

Services Sciences

Web 2.0

Offshoring

Game players

SOA

iPods

Virtual Worlds

Petaflop supercomputers

GIE

Mashups

Cloud Computing

Flat World

The background features a dark blue gradient with a complex network of thin, glowing blue lines and arcs, resembling a digital or neural network. A bright, multi-colored light source (white, blue, and green) is positioned in the center-right, emitting several beams of light that fan out towards the right. On the right side, there is a large, semi-transparent blue sphere. The sphere is labeled with the words 'Society', 'Business', and 'Technology' in white, bold, sans-serif font, arranged vertically. The sphere also contains faint, repeating binary code (0s and 1s) in a lighter blue color.

On the Transition from the Industrial to the Knowledge Economy

A point of view inspired by Adam Smith

Irving Wladawsky-Berger