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SUSTAINABLE DEVELOPMENT
Theory and Policy

Department of Political Science
Fall 2016

Professor N. Choucri
17.181/182 Spring 2016 Choucri

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Week 1
Introduction-Leftover Item

1. INTRODUCTION

- Background
- Early Views

2. WORKING DEFINITION

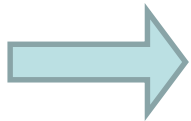
- The Core
- The Extensions
- The Processes

3. THE PROPOSITION

- Statement
- The Implications

4. THE NEW ISSUES

- Climate Change
- Cyberspace



5. THE REALITY QUESTION

The Reality Question

The Multiple Realities:

1. **Situational Reality**

Reality of the situation: which leads us to define and assess the “situation”

2. **Political Reality**

Reality of politics; of power distributions and of leverages; who controls what

3. **Cognitive Reality**

Reality as we see it: catch 22: what we see how we look at it: and then we consider that the reality

Cognitive Reality

Cognitive processes operate to close the gaps:

- **Current situation (self) vs. preferred situation**
- **Current assessment of self vs. other**
- **Assessment of current situation vs. memories of a “better past”**

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Week 2

Evolving Concepts: Growth vs. Sustainability

1. THE LEGACIES

- Post World War II Development Theories
- Scientific Tradition & Social Sciences
- The Assumptions Revisited

2. SUSTAINABLE DEVELOPMENT

- Completing the Logic
- Why Systems Collapse
- What can we do - Elements

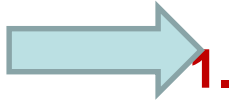
3. THE MASTER VARIABLES

- Population
- Resources
- Technology
- State Profiles

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Post World War II Development Theories

- **Growth driven & speed of reconstruction**
 - **Decolonization and conspicuous poverty**
 - **Absence of precedent – theory gap**
-
- **Various Models**
 - **Labor intensity vs. capital intensity**

Evolution of Theory & Policy

- 1950s Why underdevelopment? Non-technical
- 1960s Optimism, the state manages growth, foreign aid
- 1970s Reappraisal, limits to growth
- 1980s Failure of development theories, aid, and trade
- 1990s Privatization, human dimensions of development
- 2000 Sustainability, cyberspace, new possibilities?

What Lessons?

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Week 2 Outline

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Scientific Tradition & Social Sciences

- **Segmentation for Science**
 - Separation of domains
 - Essential disciplinary approaches
 - Gains and losses
- **Emergent multidisciplinary approaches**
- **New Concepts – or questioning tradition**
 - Increasing returns
 - Forms of rationality
 - “Carrying capacity”
 - Eco-development
 - Complexity

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On Assumptions

Points from the Readings

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The Conceptual Core – High Level Definition

We define sustainable development as:

- **The process of meeting the needs of current and future generations**

Without undermining

- **The resilience of the life-supporting properties of nature and the integrity (or cohesion) of social systems”.**

What are the properties of this definition?

The Fundamentals

Extending this definition further we differentiate among four **fundamentals of sustainability** as follows:

- **Ecological** configuration
- **Economic and social activity** - production and consumption
- **Governance** and politics
- **Institutional capacity** and performance

Dynamic Processes

These are **not discrete outcomes**—which consist of:

- Ecological systems exhibiting
balance and resilience
- Economic production and consumption with
equity and efficiency
- Governance and politics reflecting
participation and responsiveness
- Institutional performance demonstrating
adaptation and feedback

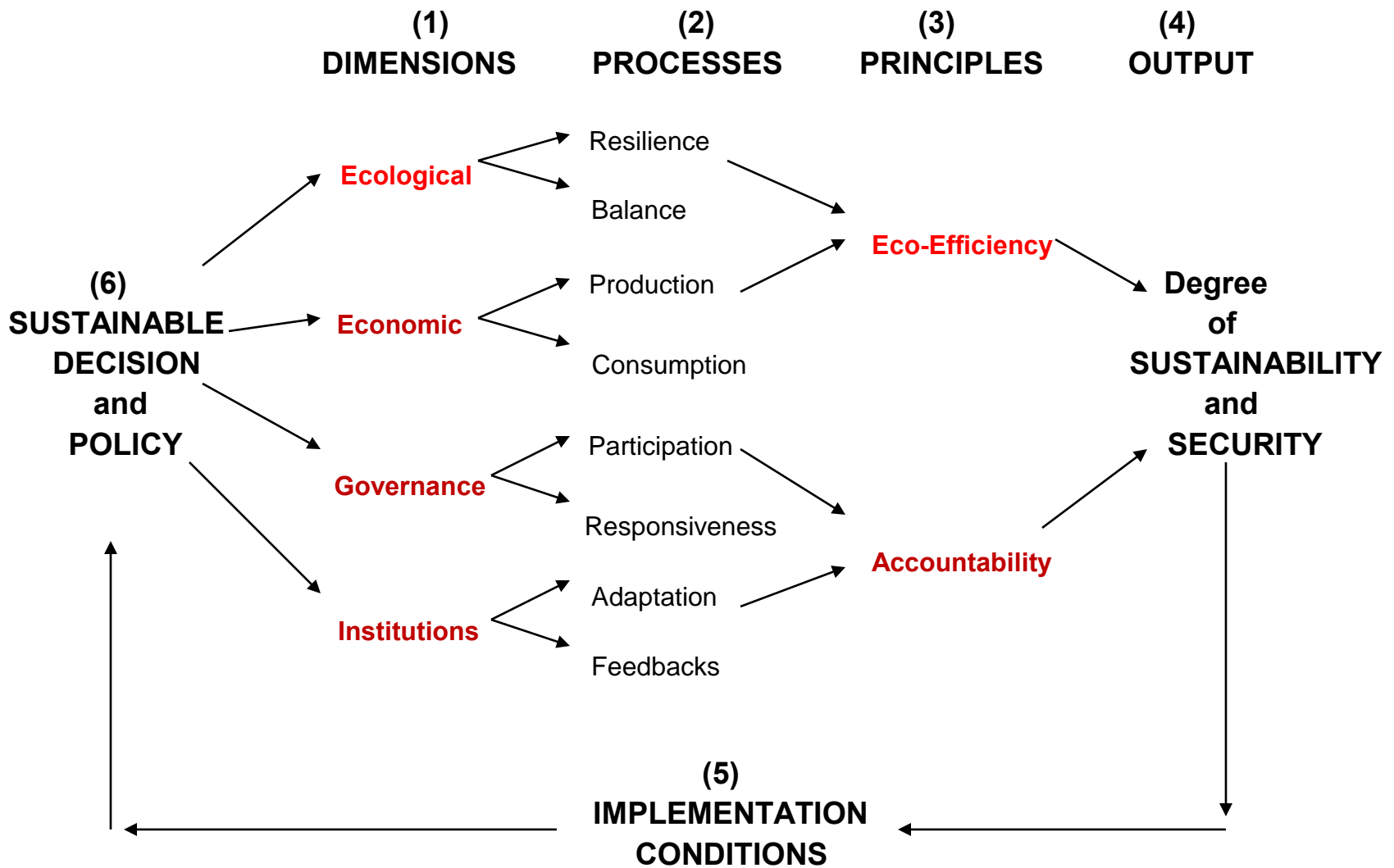
Proposition: The Statement

The core proposition of this course is that:

If all conditions hold, then the system is (or can be) sustainable

Alternatively we can focus on the sources and nature of **non-sustainability**

SUSTAINABLE DEVELOPMENT AS AN INTEGRATED DYNAMIC PROCESS



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How do we anticipate collapse?

- Tainter manifestations of collapse
- Breakdown of central control without an alternative
- Total loss of law and order
- Other?

Themes that Explain Collapse

According to Tainter (Ch. 3)

Each of the items below are listed as separate causal factors in his book (p. 43). As such we cannot see any theory dynamic logic. But if we begin to group the items, and imply some logic, a form of 'theory' emerges*.

(1) *Resource Constraints*

- Depletion
- New resource Base
- Economic Factors

(2) *Social costs*

- Class conflict, elite mismanagement
- Social dysfunction

(3) *Persistent Pressures*

- Catastrophe
- Insufficient responses

(4) *Beliefs & Chance?*

- Mystical Factors
- Chance and events

(5) *External Threats*

- Other complex systems
- Intruders

* Numbered items represent the grouping of Tainter's 11 items, p. 43).

Loads vs. Capabilities

Loads - What? How? When? Why?

Capabilities - What? How? When?

Capabilities of Political Systems

- Regulative
- Extractive
- Distributive
- Responsive
- Symbolic

Source: Almond and Powell

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Alternatives to Collapse –

Proposed to the Class (NC).

- **Knowledge as problem solving**
- **Knowledge as problem creation**
- **Anticipatory tools and behaviors**
- **Technological investments**
- **Increased efficiency**
- **Can we recognize too high marginal costs?**

What can we do to move toward sustainability

- **Extend time horizons**
- **Expand valuation framework**
- **Invest in dematerialization**
- **Focus on equity**
- **Institute policy & performance feedback**
- **Formulate reactive & adaptive mechanisms**
- **Develop relevant analytical tools**

Feedback and Dynamics Complexity

arise because systems are

1. Constantly changing
2. Tightly coupled
3. Governed by feedback
4. Nonlinear
5. History-dependent
6. Self-organizing
7. Adaptive
8. Characterized by trade-offs
9. Counterintuitive
10. Policy resistant

"Systems Dynamic: Systems Thinking and Modeling for a Complex World." © John Sherman. All rights reserved. This content is excluded from our Creative Commons license. For more information, see <https://ocw.mit.edu/help/faq-fair-use/>.

Specific Policy Targets

- **DE-MASSIFICATION**
- **DE-CENTRALIZATION**
- **DE-SPACIALIZATION**
- **DIS-INTERMEDIATION**
- **DIS-AGGREGATION**
- **DE-NATIONALIZATION**

Brown, John Seely, and Paul Duguid. *The Social Life of Information*. Harvard Business Review Press, 2017.
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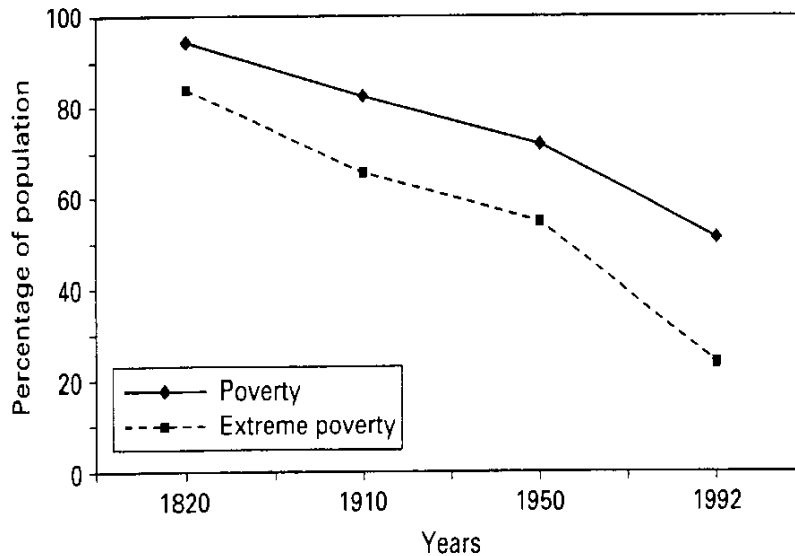


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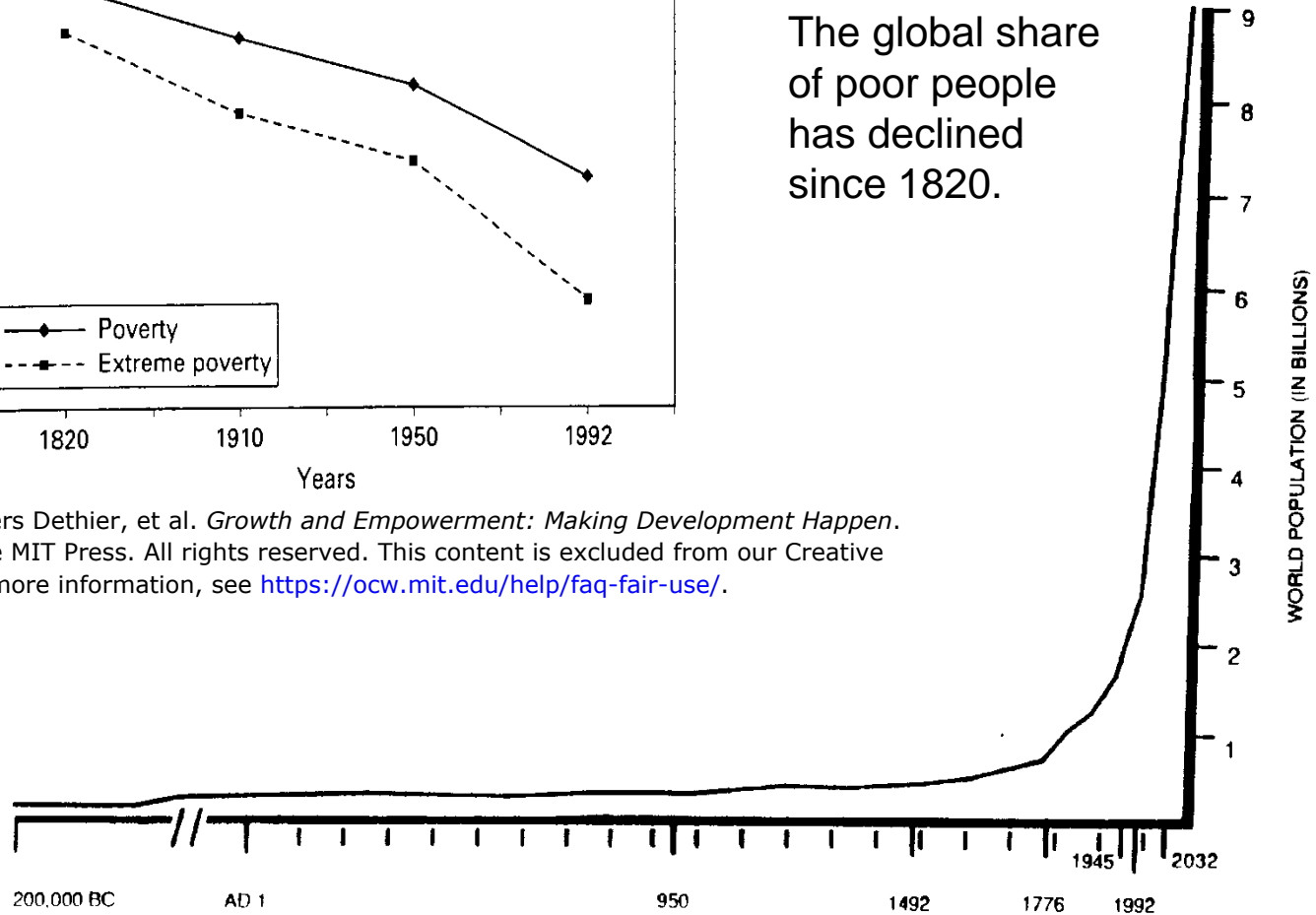
(1) Population Dynamics

- More People on this Planet
- Shifts in Demographic Landscapes
- Massive Migrations



The global share of poor people has declined since 1820.

Stern, Nicholas, J. Rogers Dethier, et al. *Growth and Empowerment: Making Development Happen*. MIT Press, 2006. © The MIT Press. All rights reserved. This content is excluded from our Creative Commons license. For more information, see <https://ocw.mit.edu/help/faq-fair-use/>.



Gore, Al. *Earth in the Balance: Ecology and the Human Spirit*. Rodale Books, 2006. © Rodale Books. All rights reserved. This content is excluded from our Creative Commons license. For more information, see <https://ocw.mit.edu/help/faq-fair-use/>.

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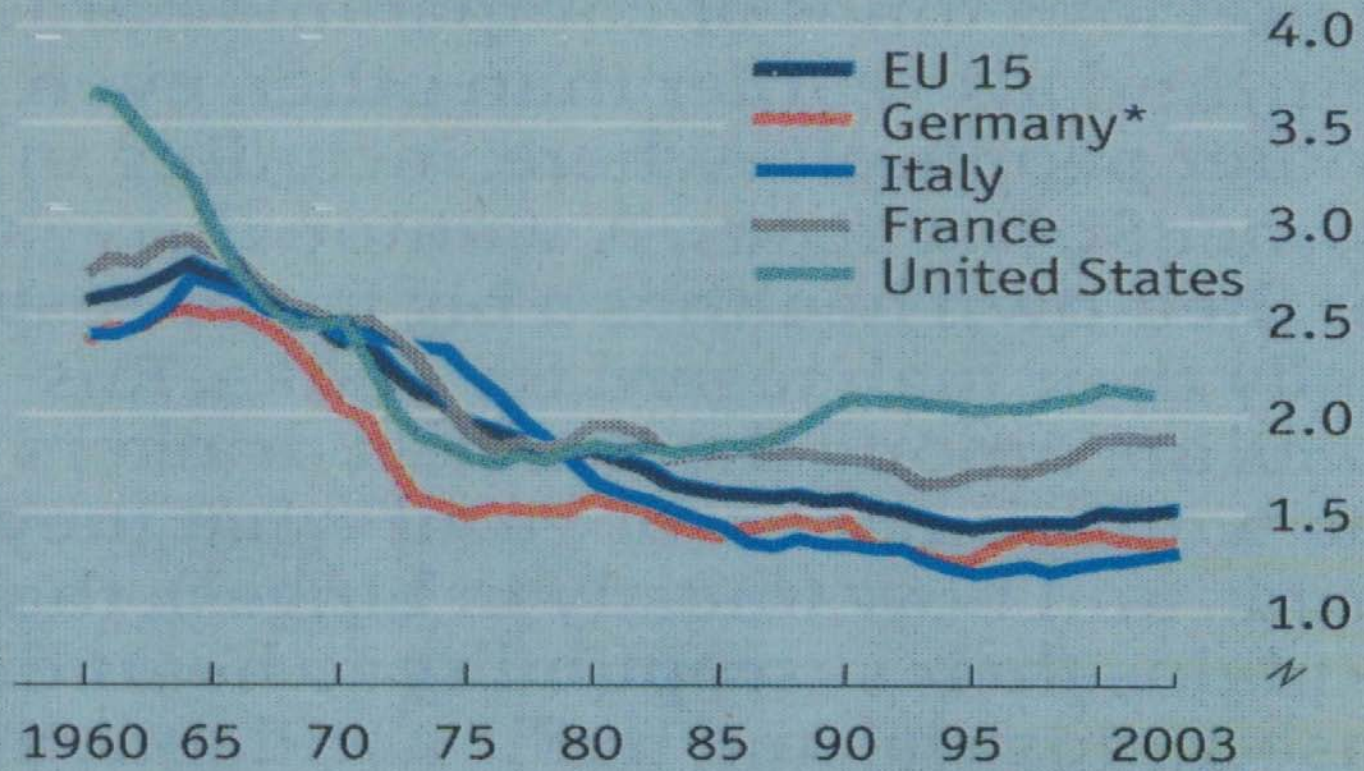
Population - Surprises

- Fertility Declines
- Dilemmas of Dependency
- The “Aging Society”

Boom and bust

1

Fertility rate, births per woman



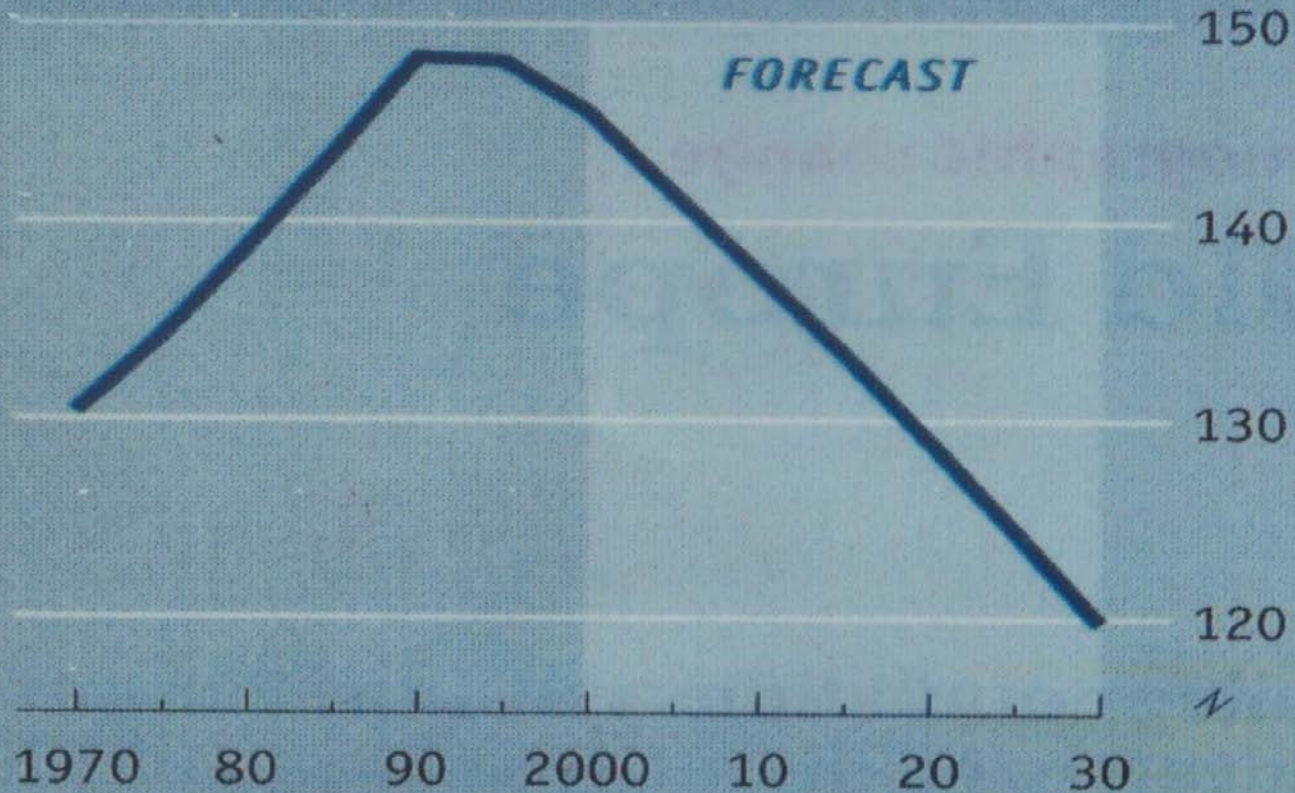
*Including eastern Germany from 1991

Sources: Eurostat; World Bank

"Demographic Change: Old Europe." *The Economist*, September 30, 2004. © The Economist Group. All rights reserved. This content is excluded from our Creative Commons license. For more information, see <https://ocw.mit.edu/help/faq-fair-use/>.

Disappearing Russians

Russian population, m

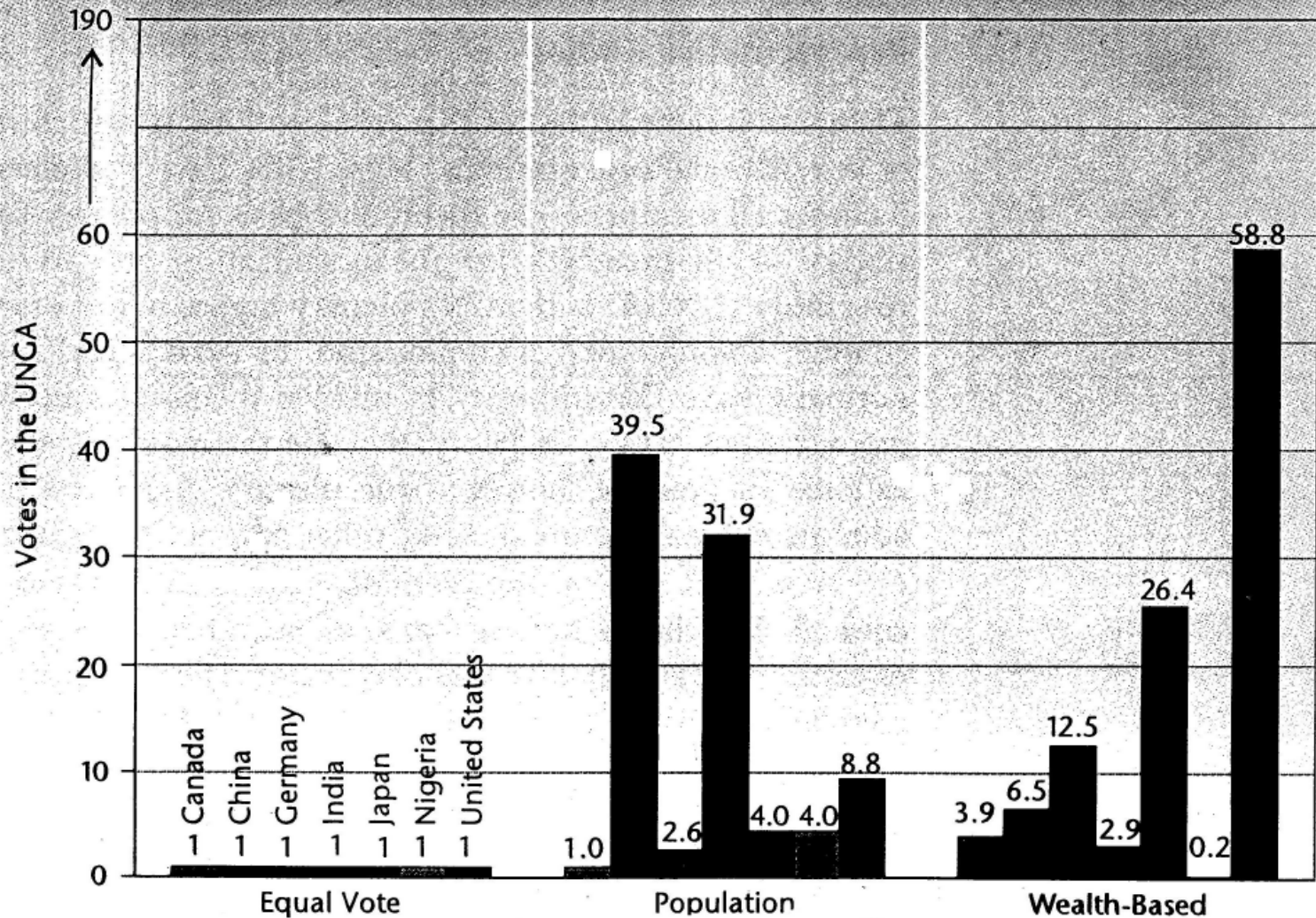


Source: United Nations Population Division

"Russian Demography: Death Wish." *The Economist*, September 30, 2004. © The Economist Group. All rights reserved. This content is excluded from our Creative Commons license. For more information, see <https://ocw.mit.edu/help/faq-fair-use/>.



Figure 9.5 Equal, Population-Based, and Wealth-Based Voting Formulas

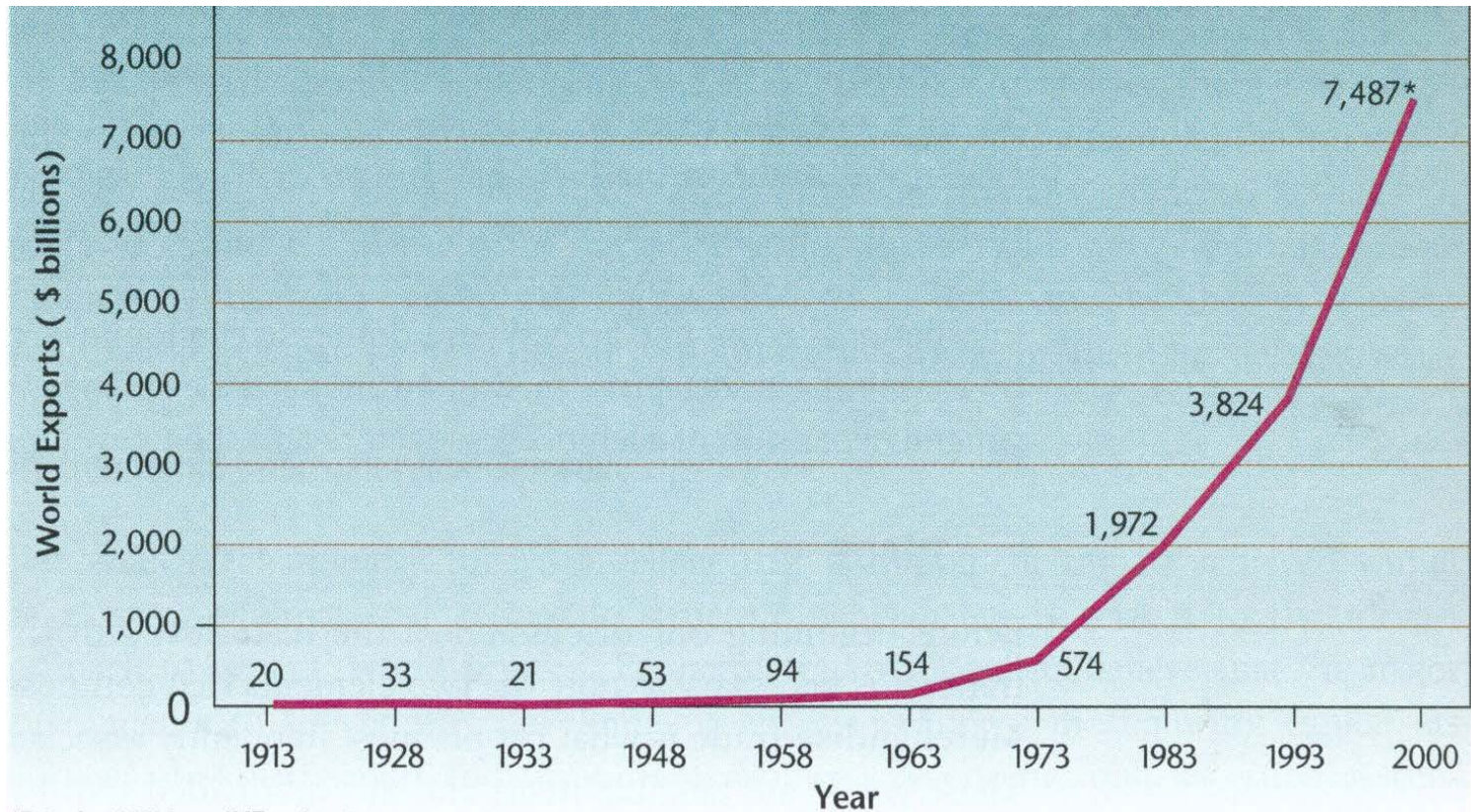


Rourke, John T. *International Politics on the World Stage*. 9th edition. McGraw-Hill, 2002. © McGraw-Hill. All rights reserved. This content is excluded from our Creative Commons license. For more information, see <https://ocw.mit.edu/help/faq-fair-use/>.

(2) Technology - Issues

- Persistent Globalization
 - People Goods, Services, Ideas, etc.
- Crossing Borders
- “Glocalization”
 - Local impacts of Globalization
- Global Race for Knowledge
 - Increased Knowledge Intensity for Wealth & Power
- New “Space” - Cyberspace

Increasing World Trade



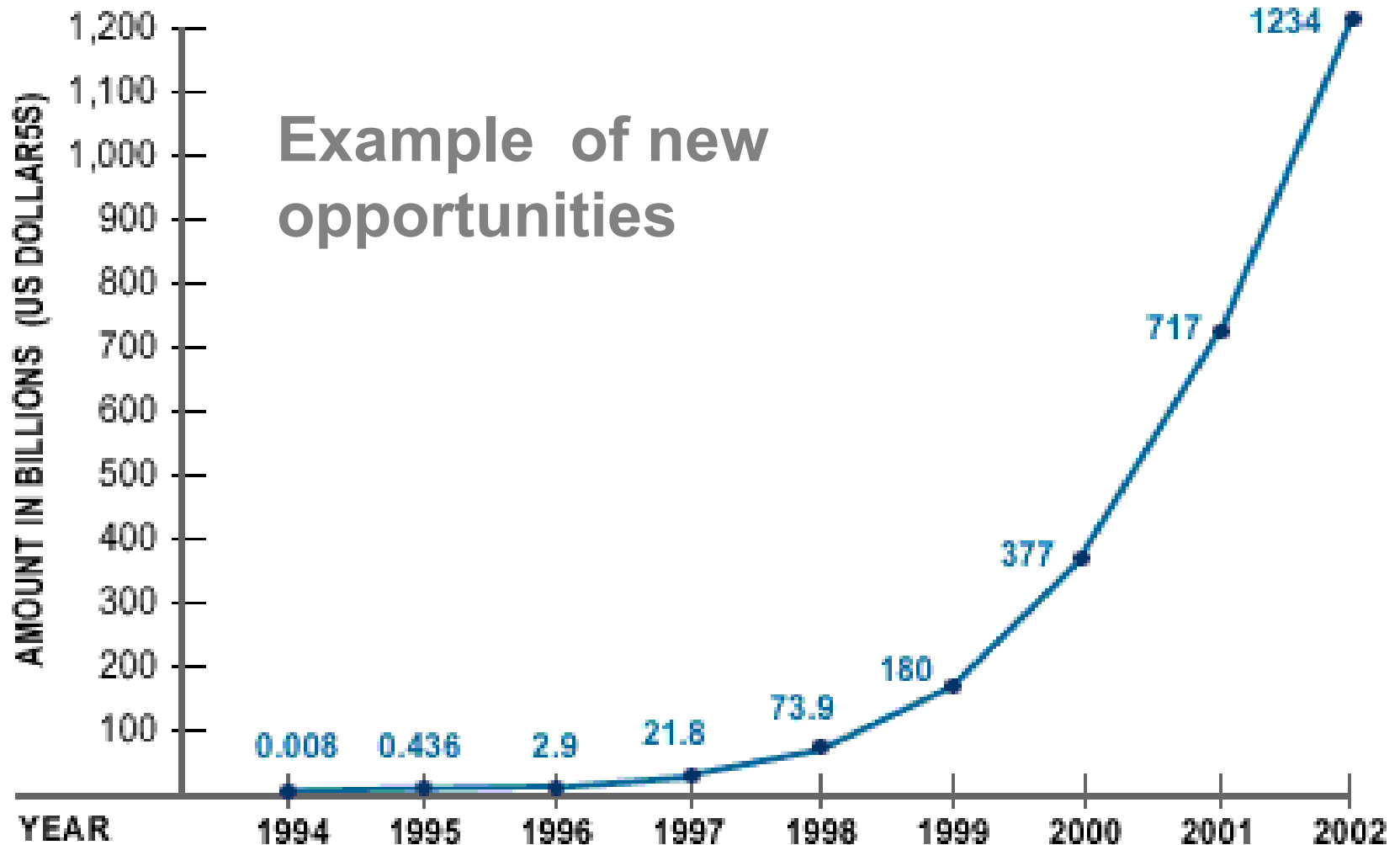
*Data for 2000 is an IMF estimate.

Data source: IMF, *World Economic Outlook*, on the Web at: <http://www.imf.org/>.

Trade, measured here in current dollar exports, has grown meteorically during recent decades. This growth is one sign of the vastly increased importance of international economic relations to the individual countries and their citizens.

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Internet generated revenue 1996 - 2002



Technology - Surprise

- De-materialization
- Construction of cyberspace
- Toward the knowledge economy

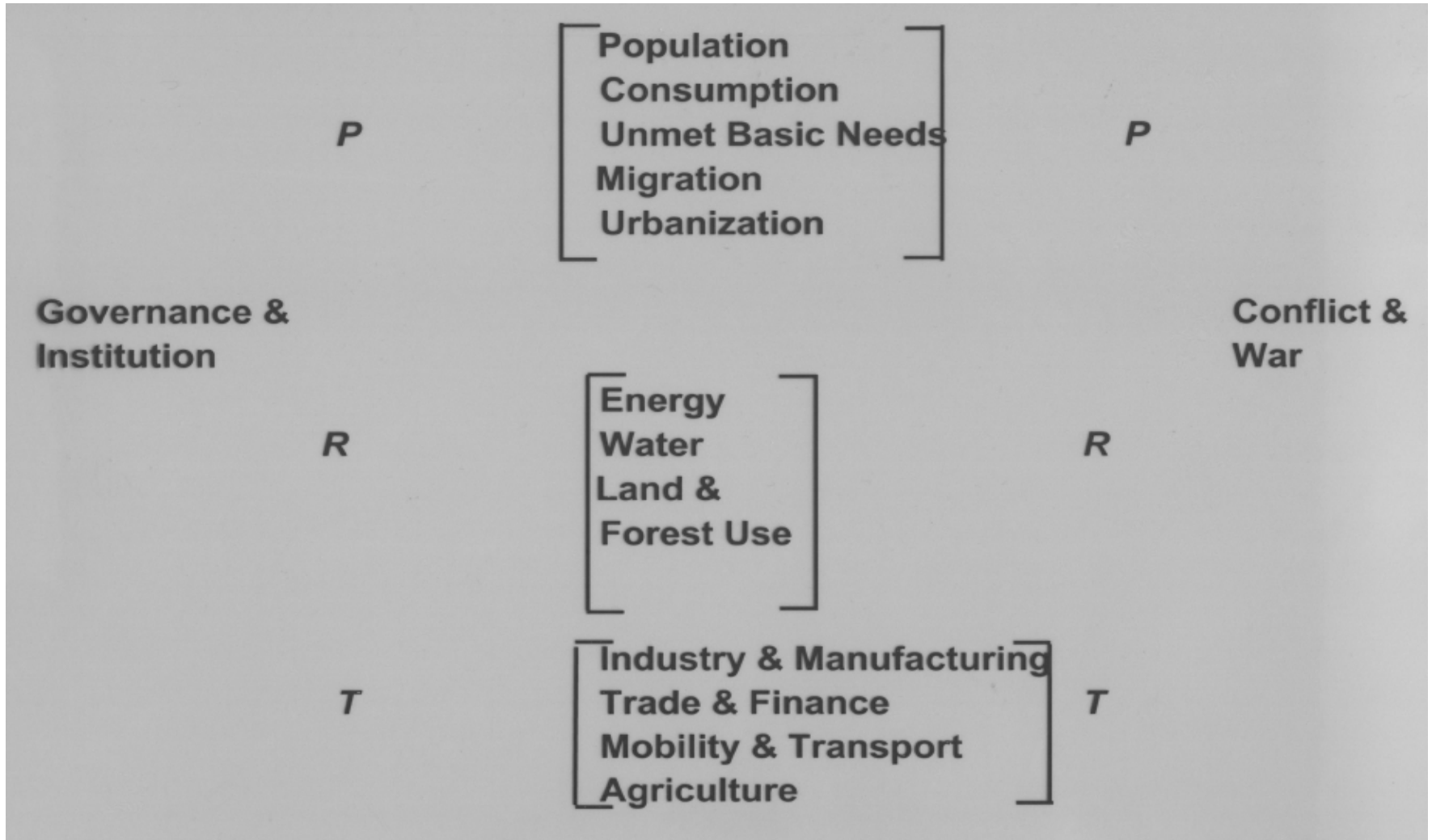
(3) Energy Basics

- Dominance of Fossil Fuels
 - The Usual
- Continued Politicization of Energy
 - Search for Alternatives
 - More serious
- Energy-War Connections
- Environment Impacts

Energy - Surprise

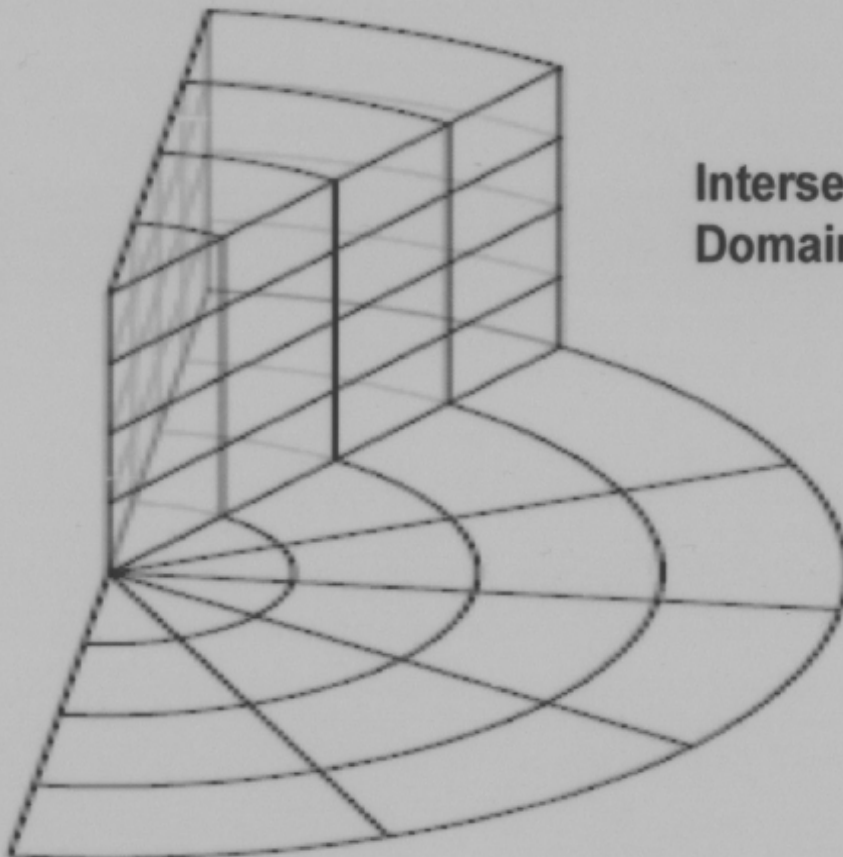
- Breakdown of USSR shifts control of important energy resources
- New state “owners” with new priorities
- Various aspects of the “Nuclear Issue”
- New Uncertainties – Who Controls What?

Knowledge Representation Sustainable Development



The Frame System

Domain – The Topics*



Intersection of
Domain and Dimension

Dimension – The Issues**

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Definition of State Profiles

Group VI:	<i>Technology</i>	>	Population	>	Resources
Group V:	<i>Technology</i>	>	Resources	>	Population
Group IV:	Resources	>	<i>Technology</i>	>	Population
Group III:	Population	>	<i>Technology</i>	>	Resources
Group II:	Population	>	Resource	>	<i>Technology</i>
Group I:	Resources	>	Population	>	<i>Technology</i>

*See Choucri and North (1993) for the original specification; this slide is an update to reflect the salience of technology. See Wickboldt and Choucri (2006) for extension of the logic to differentiate empirically among countries within each of the profile group.

END NOTE

- (1) Sustainability conditions and strategies are **context-dependent**
- (2) Subject to the constraints in **definition** and **system boundary**.
- (3) There are **alternative paths** to sustainability
- (4) We identify some specific **criteria** for process, paths and outcomes

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