Personal History with Cybernetics

1. **Engineering Cybernetics**

   Chemical Reaction Simulation
   Process Control Simulation

2. **Social Cybernetics**

   System Dynamics
   Distributed Computer Simulation
   Global E-Learning
   Globally Collaborative R&D

3. **Biological Cybernetics**

   E-Healthcare/Telemedicine

Contents

1. Intercultural Understanding for Global Peace

2. Global University System (GUS)

3. Globally Collaborative Environmental Peace Gaming (GCEPG)

   Globally Collaborative Innovation Network (GCIN)

Global Social Transformation

All of us, as a society, are witnessing an extraordinary historical transition between the Industrial Age and the Information -- or Digital Age.

When a society's fundamental technologies change and its economy begins to transform, the political and social institutions inevitably follow.

In this new era, nothing will be as important as education. The current educational systems of the developed world -- suited to the requirements of the masses of the Industrial Age -- is becoming obsolete. We, and our children, need to be prepared.

With multimedia personal computers, learning will become interactive and individualized.

The man-in-the-street and politicians alike are asking the same questions -- where are we and where are we going?

From a flyer of TELECOM Interactivity 97 of ITU

Trends of 21st Century

1. **Shift of Technology**
   Analog to Digital

2. **Globalization of Society, Commerce, and Culture**
   Local to Global

3. **Emergence of New Knowledge/ Cretive Economy**
   Obedience to Creativity

"Creative Destruction"?
Photo taken at Da Vinci Science and Technology Museum, Milan, Italy (March, 2005)

What is peace through culture?

The word "culture" is deriven from the two words "cult" and "ur." "Cult," of course, means cultivation. "Ur" is an ancient Chaldean term meaning "light" -- the creative aspect of the universe. Hence, culture is literally the cultivation of creativity.

Peace is more than just the absence of war. Just as it takes acts of war to make war, it takes acts of peace to make peace. Peace, then, is a structure of positive acts of creativeness that are carried out in a spirit of high idealism.

"Genuine peace must be the product of many nations, the sum of many acts. It must be dynamic, not static, changing to meet the challenge of each new generation. For peace is a process -- a way of solving problems."

John F. Kennedy

Hierarchy
of
Civilization, Culture and Religion

Civilization

Culture

Religion

Fruits, Flowers

Trunk

Root
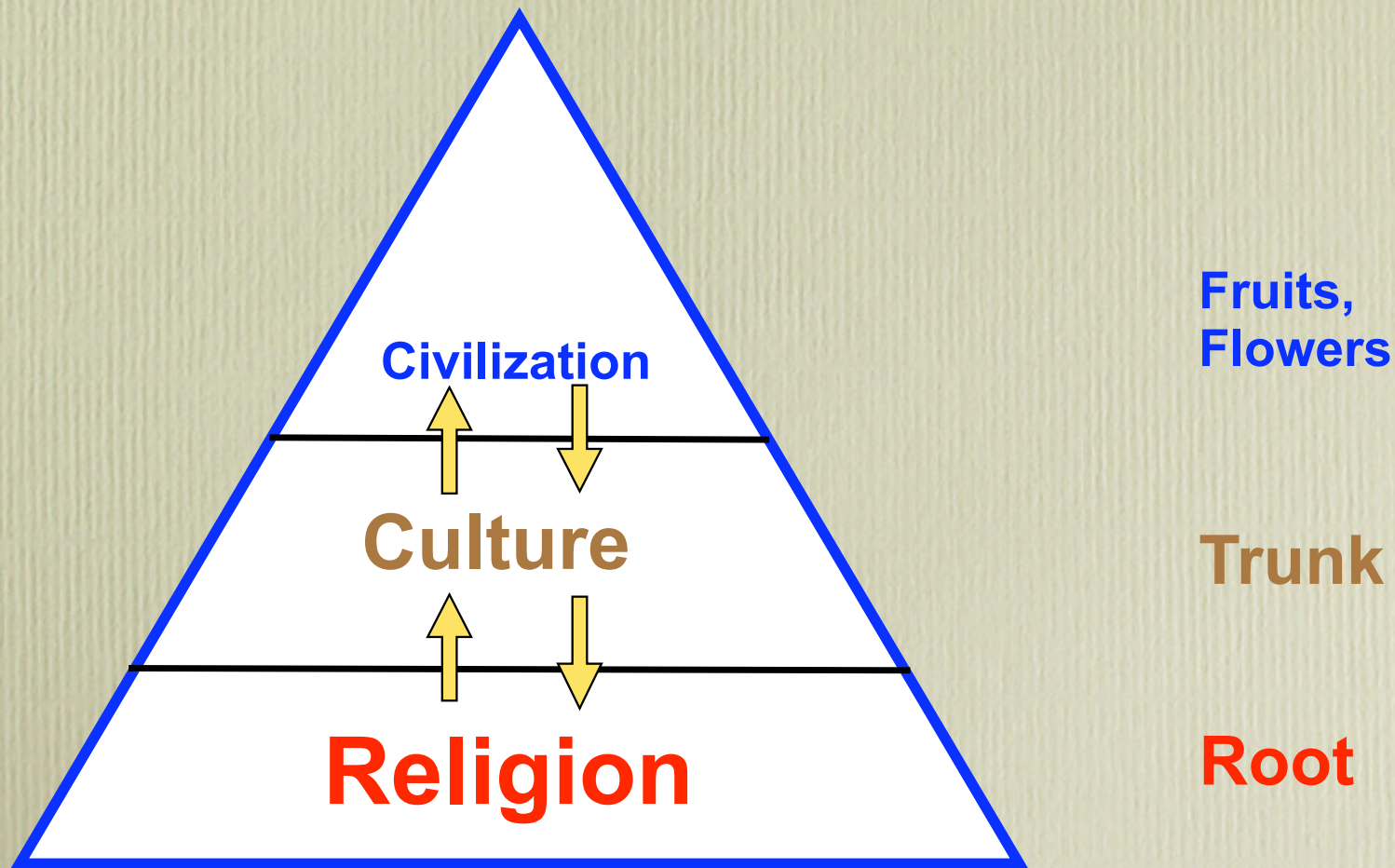
Culture of America
(Unique crucible for innovation)

- Freedom of thought

- Independent thinking

- Immigration of new minds

- Risk-taking

- Non-corrupt bureaucracy

- Financial market and venture capital

These institutions, which nurture innovation, are the real crown jewels of American culture.

Friedman, T. L., "The Secret of Our Sauce," The New York Times, March 7, 2004

8

How to Fire Up The Innovation Machine

BusinessWeek, October 11, 2004, Page 240

At a time of intense division, with deep political and religious fault lines splitting the world, innovation stands out as a powerful integrative force.

It ties countries, companies, and consumers together in creating value, solving problems, and generating wealth.

An innovation economy demands that society be open, dynamic, educated, international, and risk-taking. Given a chance, innovation can improve all our lives.

Financial risk-taking is the fuel that powers the process of change.

Worldwide innovation networks are the new keys to R&D vitality -- and competitiveness.

Global University System (GUS) - #l

The Global University System (GUS) is a worldwide initiative to establish broadband Internet infrastructure for enhancing e-learning and e-healthcare across national and cultural boundaries for global peace.

The philosophy of GUS is based on the belief that global peace and prosperity would only be sustainable through education. The prime objective is to achieve "education and healthcare FOR ALL," anywhere, anytime and at any pace.

Global University System (GUS) - #2

GUS aims to create a worldwide consortium of educational and healthcare institutions and NGOs, particularly benefiting those in remote/rural areas of developing countries for the eradication of poverty and isolation.

Learners in those countries will be able to take courses, via advanced broadband Internet, from member institutions around the world, and receive a GUS degree.

Both the learning (students or lifelong learners) and teaching (professors) at partner institutions will also form a global forum to exchange ideas and information and to collaborate in research and development with the emerging global GRID computer network technology.

Thus, the higher education institutions will close the digital divide, act as the knowledge center of their community and lead their development.
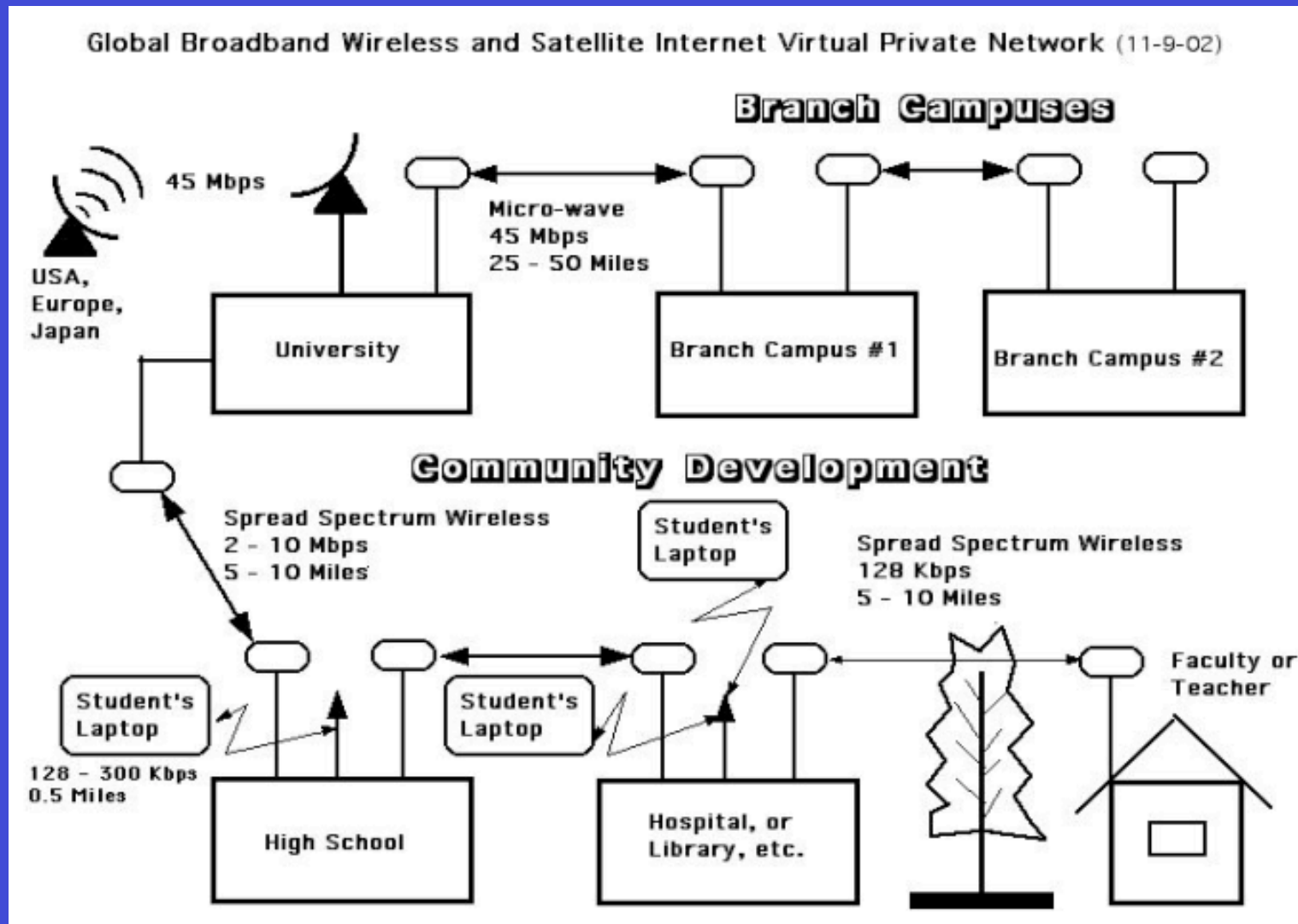
University: Leader of Community in
the Knowledge Society
in the 21st Century

E-Learning
E-Healthcare

University
Knowledge Center

Global
Partnership

Community
Development
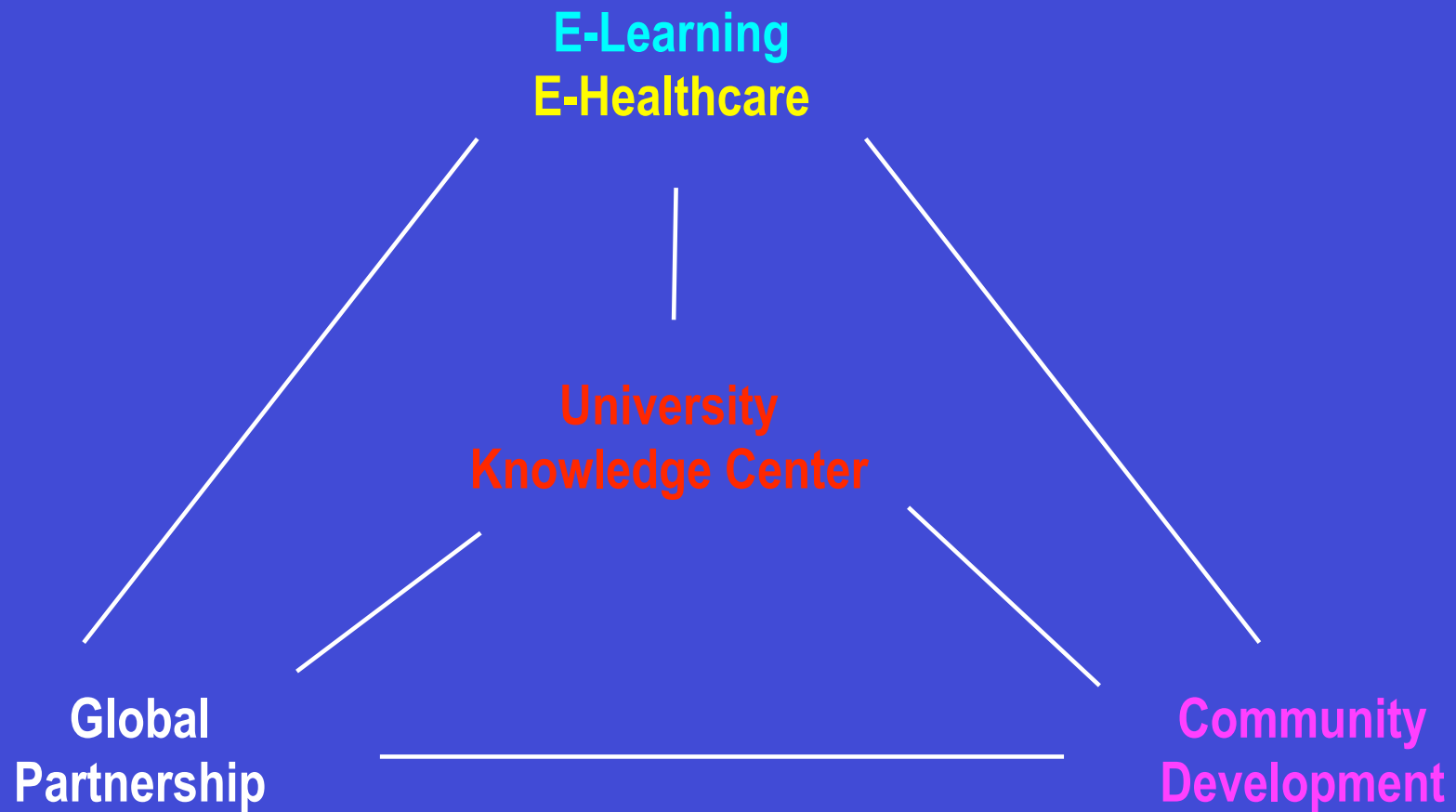
Global Broadband Internet (GBI)
Virtual Private Network with QoS

Global Broadband Wireless and Satellite Internet Virtual Private Network (11-9-02)

Expected Benefits

- Consortium member universities will be able to build the network of facilitators for support of e-learners,

- Learners may take one course from a university of different country to get his/her degree from the GUS, thus freeing them from being confined with one philosophy of a university and a country,

- The broadband Internet will enable web-based teaching with more interaction among/between learners and instructors compared with less interaction in replicating class-room teaching via analog broadcasting satellite, -- thus stimulating global dialogues among them to attain global peace, (continue)

<u>Expected Benefits</u> (continued)

- Learners and faculties at the member universities can promote exchange of ideas, information, knowledge and joint research and development of web-based teaching materials, community development, and many others locally, regionally and even in global scale,

- Researchers in even developing countries can perform joint collaborative Hi-Tech research and development with virtual reality and virtual laboratory of various academic and engineering subjects with colleagues in developed countries.

Globally Collaborative Environmental Peace Gaming

Globally Collaborative Environmental Peace Gaming (GCEPG) with a globally distributed computer simulation system, focusing on the issue of environment and sustainable development in developing countries, is to train would-be decision makers in crisis management, conflict resolution, and negotiation techniques basing on "facts and figures."

With global GRID computer networking technology and Beowulf mini-super computers of cluster computing technology, we plan to develop a socio-economic-environmental simulation system and a climate simulation system in parallel fashion, both of which are to be interconnected in global scale.

Three Necessary Components for Peace Gaming

1. **Telecommunication Infrastructure**

   Packet-Switching Telecommunication

   Internet

2. **Communication Means**

   E-mail

   Multimedia

3. **Game Players**

   Global University System
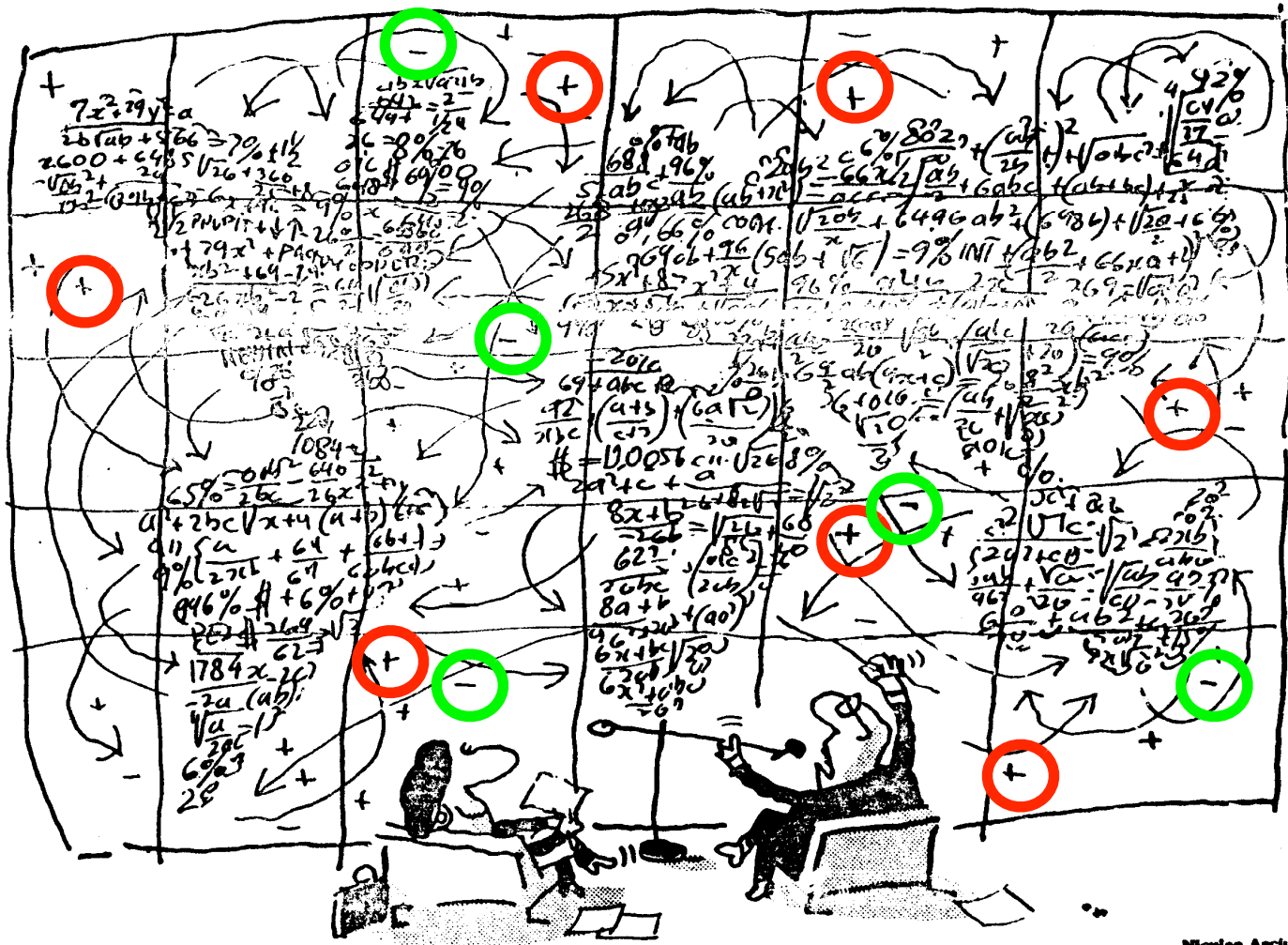
Advantages of Distributed Simulation

1. Increase of **Credibility**

2. Data **Security**

3. **Flexibility**

   a. Use of any language within local simulation

   b. Same for methodology, machine, etc.

4. **Participatory Democracy** with Bottom-up Decision

5. **Cooperation** for Better Understanding

6. **Suitable for Large-scale, Confrontation-prone, Global problems**

System Dynamic Simulation with Cause-and-Effect Analysis and Feedback Loop

- Non-linear, holistic thinking of the whole system instead of linear, narrow, single issue thinking.

- Counter-intuitive, instead of intuitive.

- Learning the system mechanism and its behavior.

- Rational decision making habit based on FACTS and FIGURES.

- GOOD FOR POLICY ANALYSIS OF SOCIO-ECONOMIC SYSTEMS.
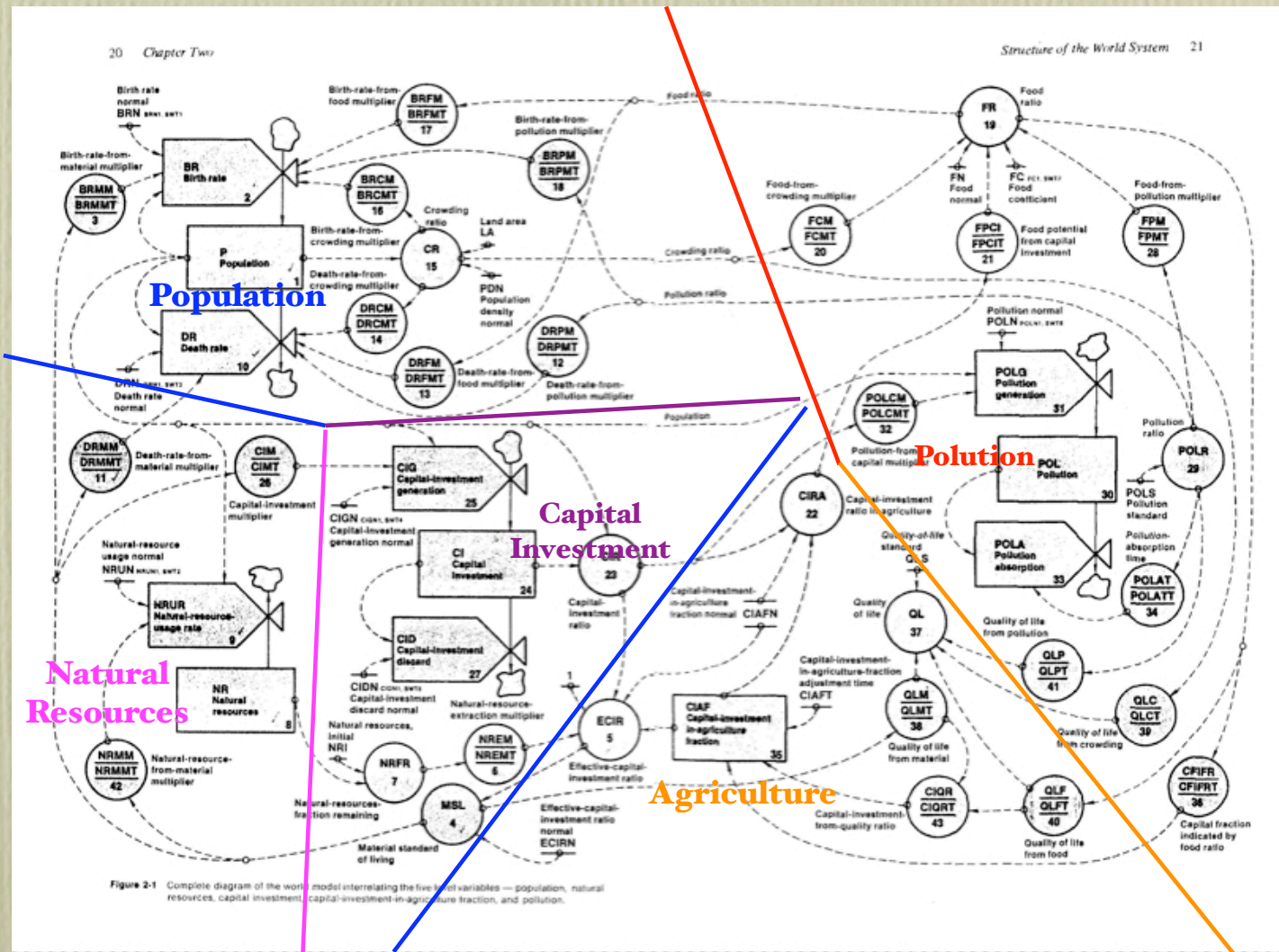
Systems Analysis of the World
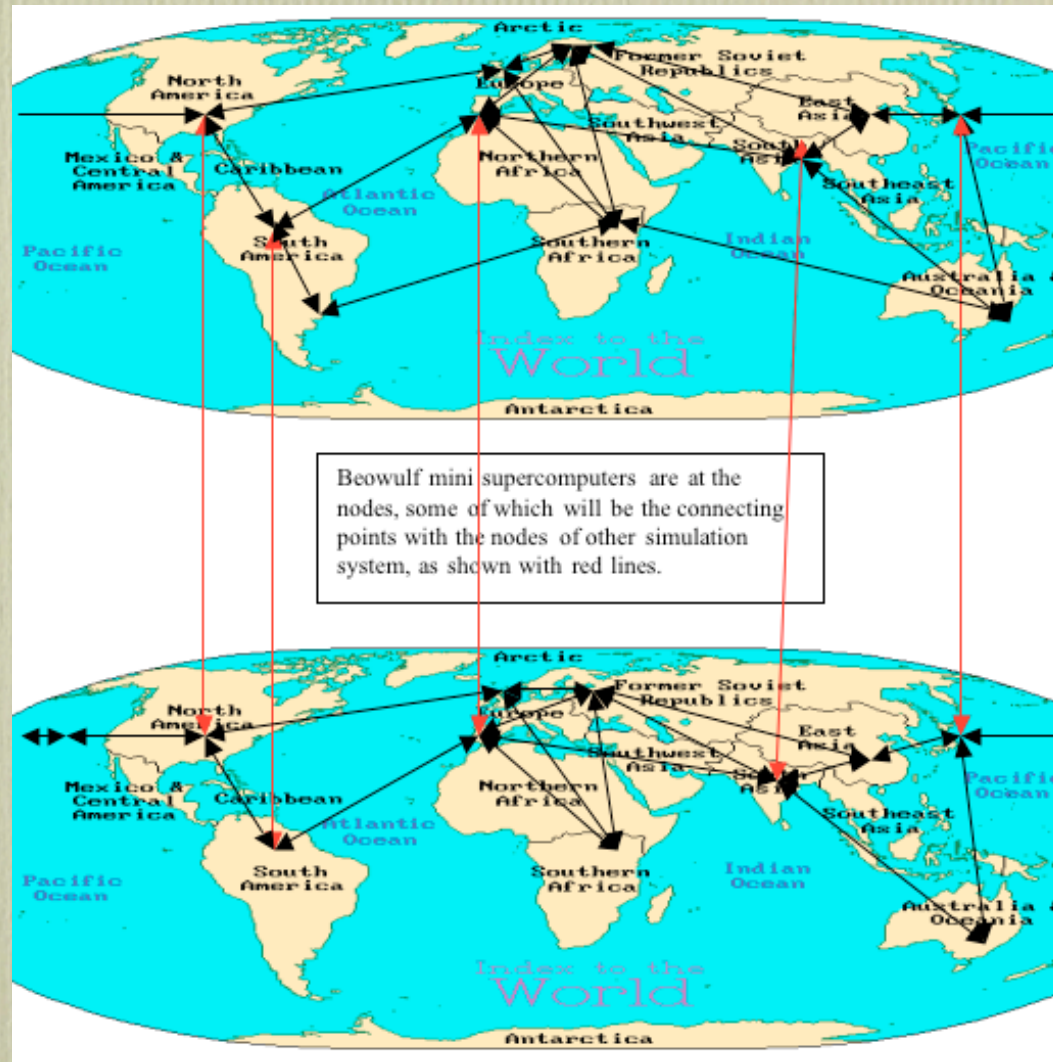

THE NEW YORK TIMES, SUNDAY, APRIL 6, 1986

Cause-and-Effect Diagram
of
World Dynamics Model

Figure 2-1 Complete diagram of the world model interrelating the five level variables — population, natural resources, capital investment, capital-investment-in-agriculture fraction, and pollution.

Globally Collaborative Environmental Peace Gaming (GCEPG)

Globally Distributed Climate Simulation System

Beowulf mini supercomputers are at the nodes, some of which will be the connecting points with the nodes of other simulation system, as shown with red lines.

Globally Distributed Socio-Economic-Environmental Simulation System

Financing

- **During the Okinawa Summit in July of 2000, Japanese government pledged US$15 billion to close the digital divide in developing countries and for the eradication of poverty and isolation.**

- **During the G8 Summit in Canada in June of 2002, and at the Environment Summit in South Africa in September of 2002, they also pledged another US$2 billion to aid education and healthcare in developing countries, respectively.**

Financing
(continued)

- GUS projects will combine (1) the Japanese government's Official Development Assistance (ODA) funds and (2) Japanese electronic equipment with
- (a) the Internet technology and (b) content development of North America and Europe,

- to help underserved people in rural and remote areas of developing countries by closing the digital divide.

Conclusions

Our projects are clearly ambitious due to its scope and nature. Any one group, university, or national government cannot achieve it. They requires substantial collaborative contribution of ideas, expertise, technology resources, and funds from multiple sources.

We invite those who value the visions of our Global University System (GUS) project and Globally Collaborative Environmental Peace Gaming (GCEPG) project to join us in this great and noble enterprise for human survival.

GLOSAS Projects
(GLObal Systems Analysis and Simulation Association in the U.S.A.)

Takeshi Utsumi, Ph.D., P.E.

- Chairman, GLOSAS/USA

- Laureate of Lord Perry Award for Excellence in Distance Education

- Founder and V.P. for Technology and Coordination of Global University System (GUS)

- http://www.friends-partners.org/GLOSAS/

Click "Current Reference Websites" in the home page listed above.

Muito Obrigado

Arigato

("Thank you" in Japanese)

(not alligator)