Globally Collaborative Environmental Peace Gaming (GCEPG)

Contents

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.

SIMULATION IN THE SERVICE OF SOCIETY (S^3)

John McLeod • Technical Editor Suzette McLeod • Managing Editor

Big Game!

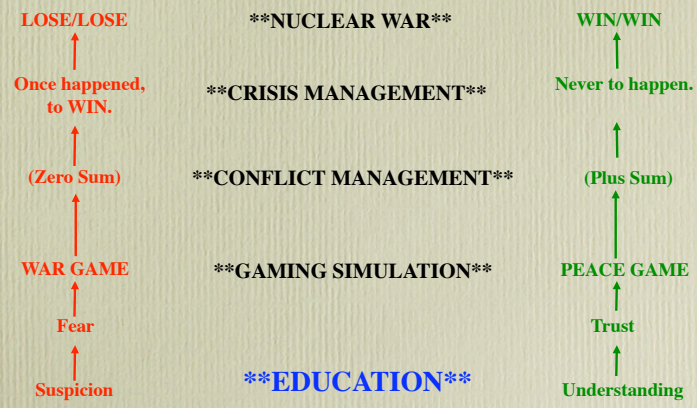
The push for understanding is going "out of this world" — literally. It is going to satellites and back. With feedback. That's the big game, a Global Game, today. So let's see where it's coming from.

Many moons ago, more than 200 in fact, there was great interest in world models. Those were the days of Jay Forrester, Dennis and Donella Meadows, Yoichi Kaya, Aurelio Peccei and the Club of Rome. Even your Ed. had visions of developing a world model when he started the World Simulation Organization — too soon. That effort fell on its face because the required infrastructure was inadequate and the push was too feeble.

Today the technology required to support the infrastructure is here, or nearly so, and one man who has been pushing hard for 18 years is making demonstrable progress. That man is Dr. Takeshi Utsumi, who has given his time, talent, and considerable personal money to the effort.

War and Peace Games

Peace Game is for Global Understanding



Cold War to Environmental Calamity

Global Changes

- In a few generations humankind is in the process of exhausting fossil fuel reserves that were generated over several hundred million years.
- Nearly 50% of the land surface has been transformed by direct human action, with significant consequences for biodiversity, nutrient cycling, soil structure and biology, and climate.
- More nitrogen is now fixed synthetically and applied as fertilizers in agriculture than is fixed naturally in all terrestrial ecosystems.
- More than half of all accessible freshwater is used directly or indirectly by humankind.
- The concentrations of several climatically important "greenhouse" gases, in addition to CO2 and CH4, have substantially increased in the atmosphere
- Coastal wetlands have also been impacted by human activities, with the loss of 50% of the world's mangrove ecosystems.
- Extinction rates are increasing sharply in marine and terrestrial ecosystems around the world; we are now in the midst of the sixth great extinction event in Earth's history, but the first one caused by the activities of a biological species.

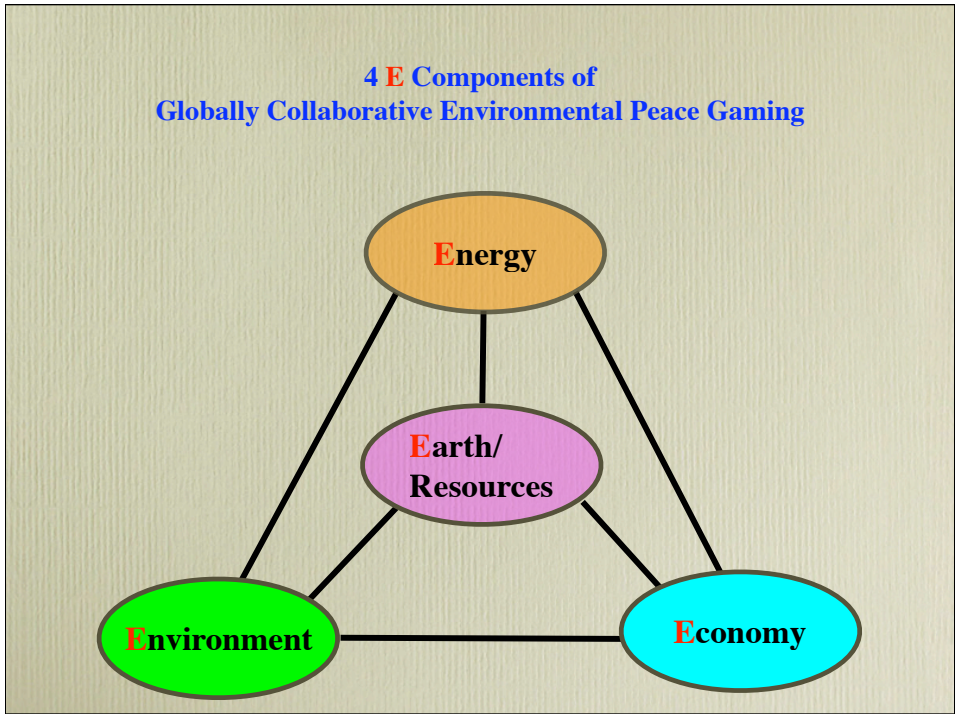
National Academies/International Geosphere-Biosphere Programme (IGBP)
http://www.igbp.kva.se/cgi-bin/php/frameset.php

Hans Blix, the chief inspector of United Nations Monitoring, Verification and Inspection Commission (UNMOVIC):

"…on many [other] issues the United States must be multilateral: … To me the question of the environment is more ominous than that of peace and war. We will have regional conflicts and use of force, but world conflicts I do not believe will happen any longer. But the environment, that is a creeping danger. I'm more worried about global warming than I am of any major military conflict."

The New York Times, "QUOTE OF THE WEEK: Hans Blix's Greatest Fear," March 16, 2003

4 E Components of
Globally Collaborative Environmental Peace Gaming

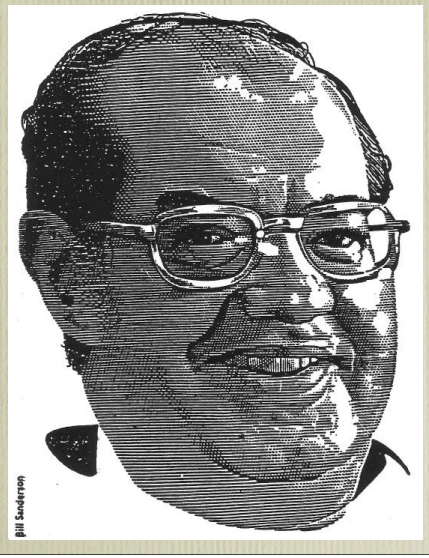


Three Necessary Components for Peace Gaming

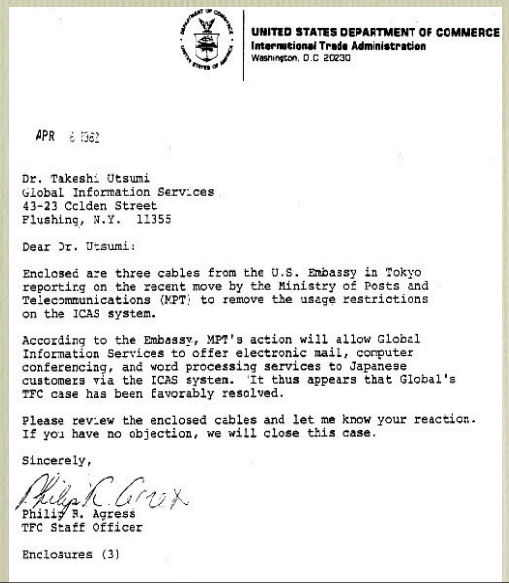
1. **Telecommunication Infrastructure**
   - Packet-Switching Telecommunication
     - Internet
2. **Communication Means**
   - E-mail
     - Multimedia
3. **Game Players**
   - Global University System

Paul Baran

Inventor of
Packet-switching Data Telecom Technology



Deregulation of Japanese Telecom Policy for the Use of Email



UNITED STATES DEPARTMENT OF COMMERCE
International Trade Administration
Washington, D.C. 20230

APR 6 1982

Dr. Takeshi Utsumi
Global Information Services
43-23 Colden Street
Flushing, N.Y. 11355

Dear Dr. Utsumi:

Enclosed are three cables from the U.S. Embassy in Tokyo reporting on the recent move by the Ministry of Posts and Telecommunications (MPT) to remove the usage restrictions on the ICAS system.

According to the Embassy, MPT's action will allow Global Information Services to offer electronic mail, computer conferencing, and word processing services to Japanese customers via the ICAS system. It thus appears that Global's TFC case has been favorably resolved.

Please review the enclosed cables and let me know your reaction. If you have no objection, we will close this case.

Sincerely,

Philip R. Agress
TFC Staff Officer

Enclosures (3)

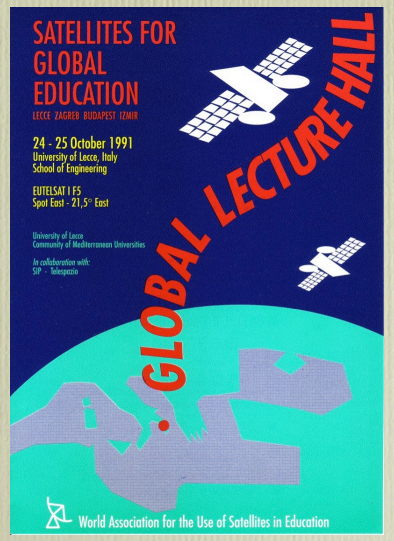
Users of E-mail

(750 million as of 2003)

Business Week, June 27, 1994, page 6

Global Lecture Hall (GLH)

Lecce, Zagreb, Budapest, Izmir
University of Lecce, October 24-25, 1991



Global University System (GUS) - A

The Global University System (GUS) is a worldwide initiative to create telecommunications infrastructure for access to educational resources across national and cultural boundaries for global peace.

GUS aims to create a worldwide consortium of universities to provide all world citizens, with special emphasis on the under-developed world, with access to 21st Century education via Internet technologies.

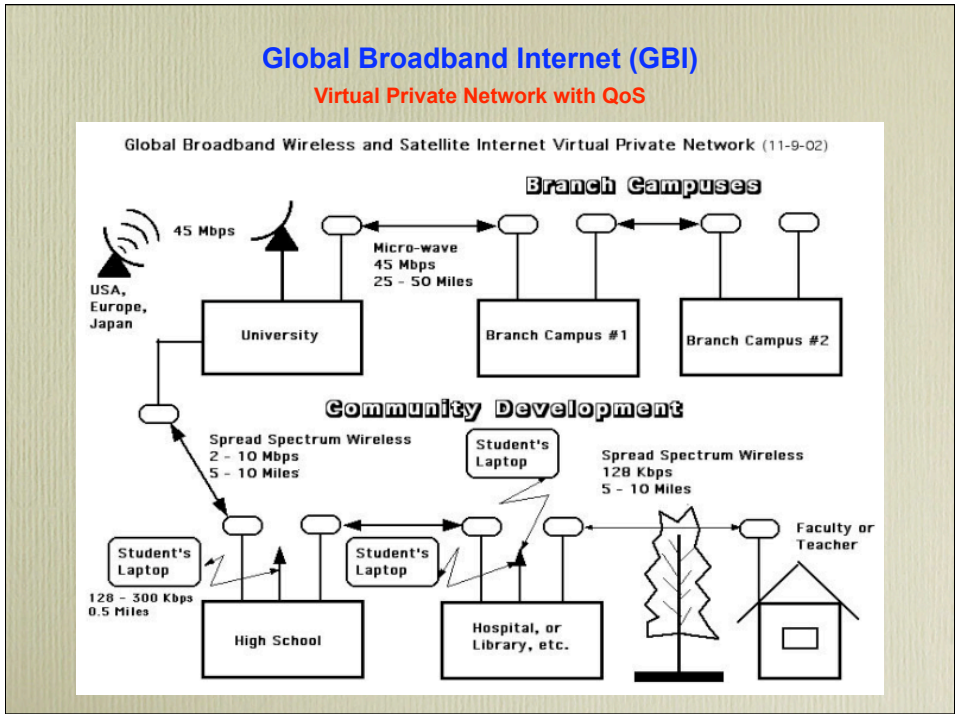
Global University System (GUS) - B

The GUS works in the major regions of the globe with partnerships of higher education and healthcare institutions.

Learners in these regions will be able to take their courses from member institutions around the world to receive a GUS degree.

These learners and their professors from partner institutions will also form a global forum for exchange of ideas and information and for conducting collaborative research and development with emerging global GRID computer network technology.

The aim is to achieve "education and healthcare for all," anywhere, anytime and at any pace.



1. Satellite linkage:

GUS will be based on regional satellite hubs, typically located at a major university, that connect via high-speed satellite (~ 45 Mbps) to educational resource cites in the E.U., U.S., and Japan. In a sense, the regional satellite hub is to be the major Internet Service Provider (ISP) for not-for-profit organizations in the region, and the gateway to the outside world.

2. Microwave linkage:

Regional hubs link to branch campuses or other regional educational institutions via micro-wave (~ 45 Mbps) over relatively short distances (25-50 miles).

3. Community Development Network:

Communication from the hub and branch campuses to local sites, over distances up to 10 miles, is to be achieved by spread-spectrum wireless (~ 2 -10 Mbps) Internet networks, which do not require licenses in most countries.

4. Wi-Fi connection:

The buildings with a broadband Internet connection will then also become relay points for the low-cost "Wi-Fi (wireless fidelity)" networks at 10 Mbps that are now rapidly appearing in Japan, USA and Europe.

Necessary Systems to Construct

- Globally distributed computer simulation system,
- Globally distributed decision-support system,
- Global neural (GRID) computer network 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

Modeling, Simulation and Gaming

- **MODELING:** should refer to the gathering and structuring of data in such a way that the values of the parameters, the initial values of the variables, and their interrelationships are formalized.
- **SIMULATION:** (Real-World oriented, Mathematical Model) should be reserved to the use of a model to carry out "experiments" specifically designed to study selected aspects of the simulant, i.e., the real-world or a hypothesized system that has been modelled.
- **GAMING:** (Decision making oriented) refers to man-machine-simulation in which human judgement is exercised to influence the dynamics of the model during the course of a study.

Reference: McLeod,J.; "Simulation Today - and Yesterday ";Simulation Today, No. 1, p.3 (Appearing in SIMULATION, Vol 18, No. 5, May (1972))

Three Modes of Simulation

1. **MAN-SIMULATION:** Human beings model a simulant of the real world or of a hypothesized system and the descision-makings are entirely made by them with computer conferencing systems.

2. **MACHINE-SIMULATION:** The structure and activity as well as the decision making functions are entirely embedded in computer software.

3. **MAN-MACHINE-SIMULATION:** Computer software is used to model part of simulant, the decision-making apparatus is divided in some manner between a human being and a computer.

GAMING (interactive) SIMULATION
implies to MAN-MACHINE-SIMULATION

Methodologies of Socio-Economic Simulation

1. **Dynamic Methodologies:**
   - **a. Econometrics**
   - **b. System Dynamics**

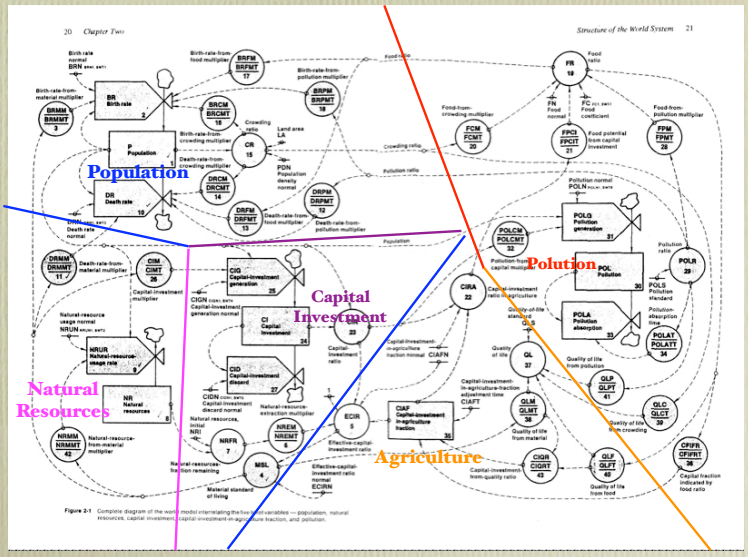
2. **Static Methodologies:**
   - **a. Input/Output Method**
   - **b. Linear Programming**

3. **Communication-oriented Methodologies:**
   - **a. Policy Delphi**
   - **b. Cross-Impact Matrix Analysis**
     (Probabilistic System Dynamics)

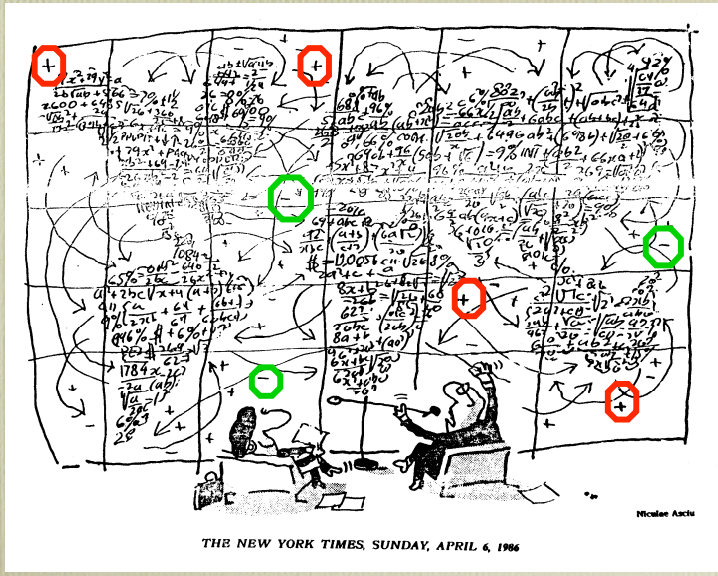
System Dynamic Simulation with Cause-and-Effect Analysis and Feedback Loop

- 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.

Cause-and-Effect Diagram of World Dynamics Model



Systems Analysis of the World



THE NEW YORK TIMES, SUNDAY, APRIL 6, 1986

Initiation of GRID Concept

Excerpt from
SIMULATION IN THE SERVICE OF SOCIETY (S3), Simulation, September 2000
John McLeod A Technical Editor **Suzette McLeod** A Managing Editor

Power (?) Grid! **Mission Earth (M/E)**

As readers may have noticed, this writer has been interested in the desirability/possibility of someone, or some agency, developing a global communication network since my first discussing the matter with **Tak Utsumi** in **1972**. At the time Tak and I were both primarily interested in the use of such a network for the **distributed simulation of "Peace Gaming,"** as contrasted with the war games so widely used by the military of all countries. However, my early enthusiasm had to be redirected from personally contributing to such an undertaking when I realized the enormity of the technical problems. But **Tak has persevered and has successfully demonstrated many components of a necessary infrastructure.**

Tak and his colleagues have had to raise funds from any sources that they could, as well as pushing back the technical frontiers. But recently several powerful publicly funded organizations have entered the picture. NASA of course has a worldwide communication network which is necessary in support of its space program. However, I understand--perhaps mistakenly--that it is to be made available commercially. More on that when I learn more.

And now we have the following article describing a communication network which it seems to me is misnamed, and I wonder how many others, think of a power grid as a network for the distribution of electrical power. Be that as it may, the description seems to be that of an information network, and the list of participants seems to indicate that it is supported largely by the National Science Foundation. -JM

Building an Information Power Grid ....

http://makeashorterlink.com/?H241159B9

Global Neural Computer Network

In 1981, I coined the phrase "Global Neural Computer Network" in which each participating game player, with his/her own desktop computer, database and sub-model, would correspond to a neuron, router to synapses, with the Internet serving as nerves in a global brain.

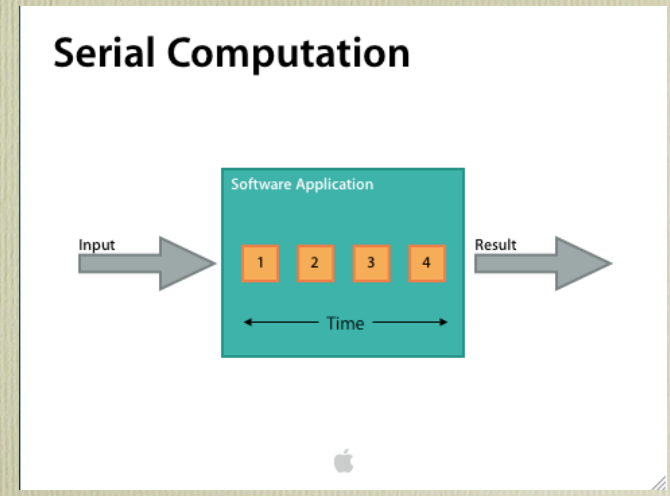
Vice President Al Gore

"The Department of Defense is investing well over $1 billion in the development and implementation of networked distributed interactive simulation.

This technology, which allows dispersed learners to engage in collaborative problem solving activities in real time, is now ready for transfer to schools and workplaces outside of the defense sector."

January 11, 1994
Speaking to communications industry leaders

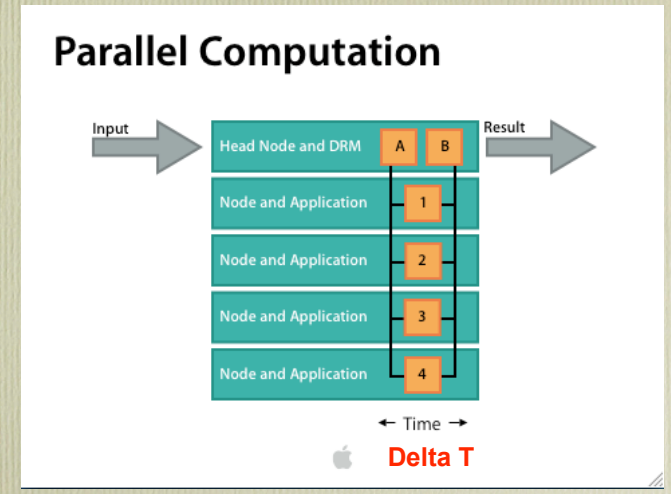
High Performance Computing (#1 of 2)



Getting Started with High Performance Computing
Webcast - hosted by Apple.

http://seminars.apple.com/seminarsonline/hpc/apple/index1.html

High Performance Computing (#2 of 2)



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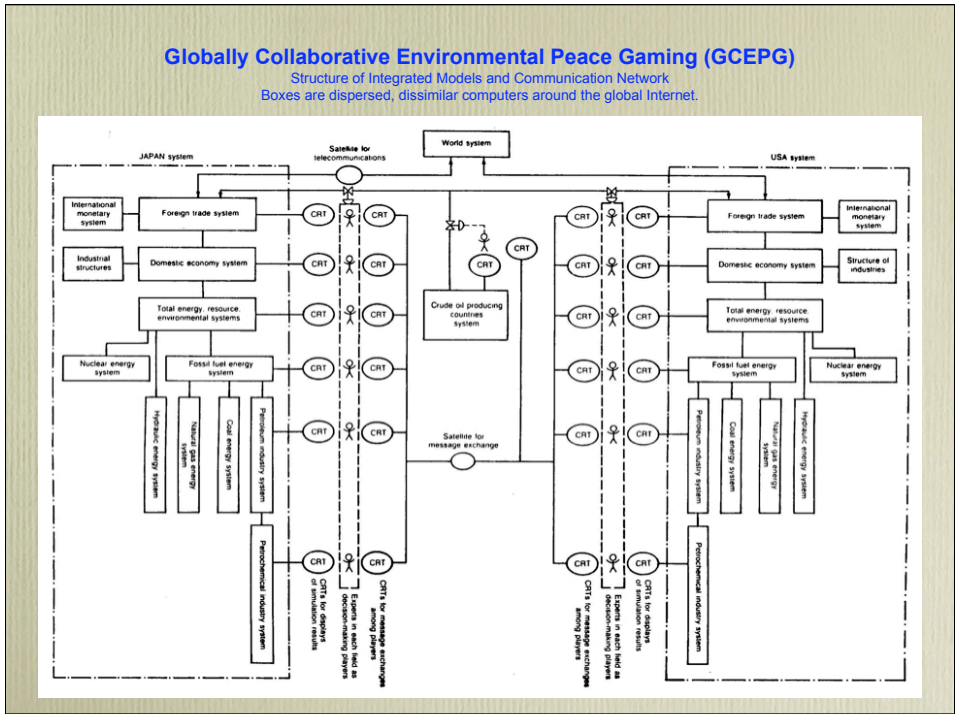
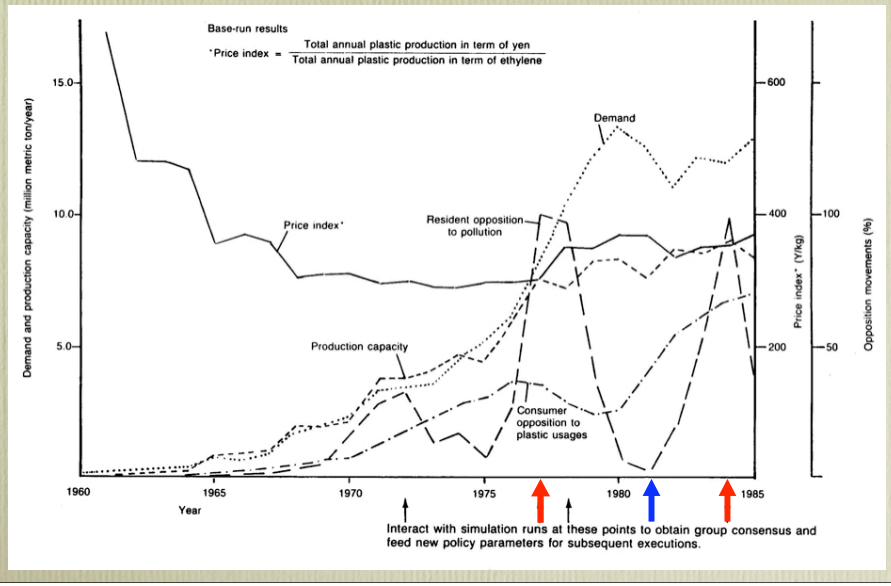


Global Peace Gaming for Oil Crisis

I once proposed a global peace gaming to cope with the oil crisis in early 1970s in response to Meadows' "Limit to the Growth." An outline of the hierarchical structure and distributed components of an integrated, interactive peace gaming/simulation system for energy, economics, and foreign trade in the USA and the Japanese sides was depicted in this diagram. Each block in the figure represented dissimilar computers in those countries interconnected through data telecom network (e.g., Internet nowadays). These computers included simulation models designated in each block. All models would be executed in concertedly via satellite and terrestrial telecommunication links.

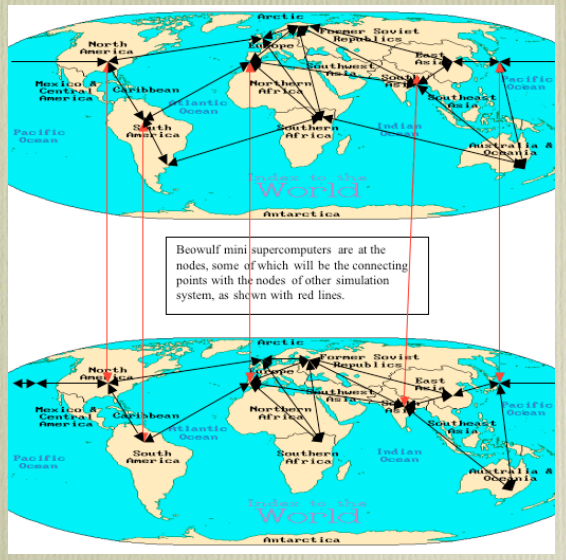
Growth of Japanese Petrochemical Industry



For example, suppose pollution in Japan exceeded a certain allowable level, say, around 1977 on this graph, the Japanese expert watching it on the display unit would stop the entire simulation. All participants, wherever they were located, would then try to find, with the use of the conferencing system, a consensus on a new set of pseudo-alternative policy parameters which would be executed until a new crisis appears, say, around 1984 on the figure. The process would be repeated for rational policy analysis, based on facts and figures, and with international cooperation of experts in both countries.

Globally Collaborative Environmental Peace Gaming (GCEPG)

Globally Distributed Climate Simulation System



Globally Distributed Socio-Economic-Environmental Simulation System

We face a basic dilemma on the conduct of GCEPG Project. Namely, decision-makers must be concerned with the issues and matters of their constituents within the boundaries of regions, countries, municipalities, and counties for which they are elected and have their jurisdictions. Even though distributed simulation models we advocate may represent their concerns, they will be confined within their boundaries and borders. On the other hand, climate simulation cannot, by nature, regard the boundaries and borders, i.e., they have to be continuous phenomena. For example, dust storm from Sahara often causes trouble to Amazon rain forest or coral in the Caribbean sea; the other dust storm from Gobi desert causes respiratory disease in Korea and Japan; or forestry and fishery in Scandinavia are dying due to acid rain caused by industrial smoke from European countries, etc. Problems are now too intertwined to be well resolved in a system consisting of nation-states, in which citizens give their primary, and near exclusive, loyalty to their own nation-state, rather than to the largely global community.

The best remedy and hope to cope with this modeling difficulties stemming on the basic difference between discrete, boundary-oriented socio-economic-environmental simulation and continuous climate simulation would be to accomplish distributed computer simulation networks of both of them with dispersed mini supercomputers in parallel fashion and both networks to be interlinked at appropriate locations (red lines in this diagram). The network of dispersed mini supercomputers (each of them with socio-economic-environmental model of their localities) will work as a single simulation of global economy. In a similar fashion, another network of dispersed mini supercomputers (each of them with climate model of their region) will work as a single simulation of global climate. Both networks can be linked in such a way that global socio-economic-environmental simulation will work closely together with global climate simulation. The decision-making parameters can directly be fed into nearby mini supercomputers for its regional socio-economic-environmental simulation model, yet having effects on both global simulation networks. This will be a perfect democratic participatory of global simulation. This will then eliminate the need of such a giant Earth Simulator of Japan (US$350 million and 4 tennis courts size).

Enabling Distributed Learning Communities Via Emerging Technologies #1

Dr. Chris Dede, Harvard University
T.H.E. Journal, September, 2004

"Distributed learning" is a term used to describe educational experiences that are distributed across a variety of geographic settings, across time and across various interactive media.

Enabling Distributed Learning Communities Via Emerging Technologies #2

Dr. Chris Dede, Harvard University
T.H.E. Journal, September, 2004

A culture of learning in which everyone is involved in a collective effort of understanding. Its four characteristics are;

- **Diversity of expertise among its members who are valued for their contributions and given support to develop,**
- **A shared objective of continually advancing the collective knowledge and skills,**
- **An emphasis on learning how to learn, and**
- **Mechanisms for sharing what is learned.**

This is a radical departure from the traditional view of schooling, with its emphasis on individual knowledge and performance, and the expectation that students will acquire the same body of knowledge at the same time.

Enabling Distributed Learning Communities Via Emerging Technologies #3

Dr. Chris Dede, Harvard University
T.H.E. Journal, September, 2004

To fully prepare students for 21st century work and citizenship, the education system must transform to provide support for inquiry-based learning in classrooms, in homes and in communities since this is how complex skills such as systems thinking, creativity and collaborations are acquired.

Future Steps of Global Development

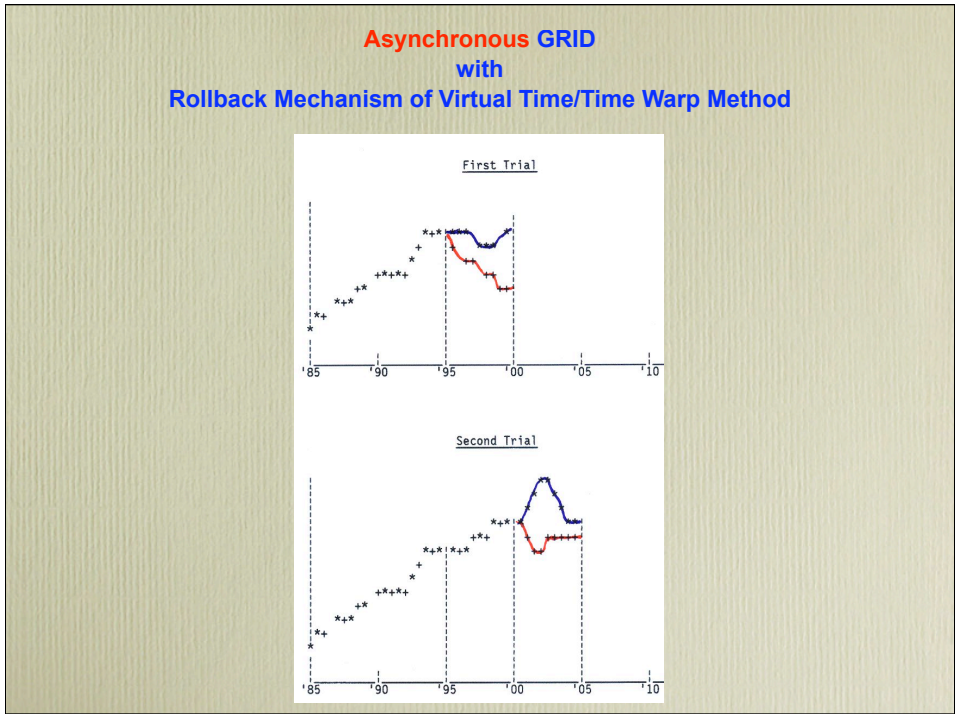
- Evolution of distributed gaming simulations, as splitting each country submodel of FUGI to its country expert and location,
- Globally distributed computer simulation system,
- Emergence of a public database of existing submodels,
- Interface of these dissimilar submodels.

Problems Solved or To Be Solved

- Need for interconnection of dissimilar models.
- Interconnection of distributed databases.
- Integration of simulation models and databases.
- Advanced programming languages.
- Synchronous and asynchronous communication networks.
- Rollback mechanism for asynchronous scheduling.
- Its integration with global economic and other forecasting submodels.

Unavoidable Conditions of Global Peace Gaming

- **Time difference among game players due to the roundness of globe**
- **Latency of signal of distributed simulation models to/from geo-synchronous satellite**
- **Head-scratching time of game players for democratic decision-making with consensus**



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Donal B. Straus (Former President of American Arbitration Association)
Computer Assistend Negotiation Session of World Future Society, July 15, 1986

We could then try, bit by bit, to see where and why there are diffeences, whether these differences are caused by different experiences, assumptions, or values; and whether some or all of these differences can be reconciled. We could next try to develop precise definitions of what are the residual differences. And finally, we could try to build a common model of the issue we are discussing, with differences flagged and throughly understood. When a computer model has been built collaboratively in this manner by parties with different interests, it becomes in effect a commonly understood "Gestalt" of the problem.
When we have finished, there will still be different interests and tough bargaining ahead, but the pool of feasible alternatives should be greater, our ability to play an inofrmed game of "what-if" with different solutions should be better, and the dangers of picking a lose/lose solution should be considerably less.

He then propposed the "Centers for Decision Making Processes and Tools." Each center would have a staff of experts in decision making processes and in the tools that can make these processes work better. When "clients" of decision makers come to the Center, their problem will be analyzed and then suggestions will be made for the processes that could be most helpful, and the kinds of computer tools that could give the most assistance at different stages in the process.

GCEPG and ELeGI Projects

GCEPG project could be a complete and powerful demonstrator of ELeGI Project to show:

1. **the advantages coming from using advanced technologies (i.e., GRID for accessing to computing resources and collaboration environments) for supporting simulations execution, data analysis, etc., and**
2. **simulations for learning through the definition of innovative pedagogical models (i.e., socio-constructivist contextualized learning approach), and**
3. **to show all the benefits coming from the harmonized and synergistic use of advanced technologies together with innovative pedagogical models for learning (i.e., ELeGI).**

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

Clearly, our GCEPG Project is ambitious due to its scope and nature. Any one group, university, or national government cannot achieve it. The program will however need substantial collaborative contribution of ideas, expertise, technology resources, and money from multiple sources.

We invite those who value the vision of this Globally Collaborative Environmental Peace Gaming Project to join us in this urgently necessary project for human survival.

COMPUTER SIMULATIONISTS OF THE WORLD UNITE!!

Tak Utsumi, December 2003

To build:

Global Neural (GRID) Computer Network

For:

Globally Distributed Decision Support System

With:

Globally Distributed Peace Gaming Simulation

Conclusion

The GUS program is a comprehensive and holistic approach to building smart communities in developing countries for e-learning and e-healthcare/telemedicine. Initiatives are underway to create the necessary infrastructure and educational liaisons, and some near-term educational access is expected. Early efforts have included international teleconference technology workshops that have tested the satellite/wireless technology that will be used in GUS.

GUS is clearly an ambitious program, one that cannot be achieved by any one group, university, or national government. The program requires substantial collaborative contribution of ideas, expertise, technology resources, and funds from multiple sources. Those who value the vision of GUS are invited to join this great and noble enterprise.

Three Arts

医術: Art of Medicine

To heal illness of individual human

仁術: Art of Wisdom/Virtue

To heal illness of nation and globe

武術: Art of Peace-Making

To attain global peace

武: 戈 (sword) + 止 (stop) = Peace

士: Samurai = Chivalry

武士: Takeshi = Chivalry of Peace

Muito Obrigado

Arigato

("Thank you" in Japanese)

(not alligator)