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CAN THE ICUS COMMITTEE IV MAKE A "SIGNIFICANT CONTRIBUTION"?

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Discussion Paper

on

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THE STUDY OF DEVELOPMENT IN THE 1980s

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CAN THE ICUS COMMITTEE IV MAKE A "SIGNIFICANT CONTRIBUTION"?

A QUERY

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If our committee on DEVELOPMENTAL EXPERIENCES IN EAST ASIA AND LATIN AMERICA is to hope "to make some significant contribution to . . . theories of development," Turner's sights for the 1980's are indeed a "betrayal" of earlier aspirations. Given our increases in competence as social science modelers working in a multidisciplinary way during the past twenty-five years, it is my judgment that we now are able to do more than posit a "framework of questions" (Turner, 1983, p. 44).

Turner's twelve issues relating to development as "a comprehensive process of socioeconomic change" (ibid, p. 3) creatively encompass old as well as new concerns in both their economic and political dimensions (ibid., pp. 4 & 5). Turner accurately recognizes the great increase in information, as now exists in our data banks. And Turner (ibid., p. 43) is wise in noting that "useful paradigms of development can appear in nations throughout the world." If one grants these gains since the fifties, perhaps Turner's excellent framework of questions may be transformed into more explicit theory through the construction of models. Such simulations would need be national and international in scope, involving modules contributed by workers from all nations, developing and developed, as Turner suggests. Given the increases in our empirical materials, components therein might be tested within national models as well as comparatively. Would mounting a model of development enable us as a committee to make a "significant contribution" in the 1980s?

* See short vita attached.

Could a modeling effort for the study of development be undertaken?

Let us examine an exemplary venture in economics which has succeeded in building cumulatively during the past decade, securing the collaboration of scholars throughout the entire world, capitalist and socialist, developing and developed. Many of you already know the work of Lawrence Klein and Bert Hickman in mounting national econometric models in their meta-model, LINK (Hickman and Klein, 1979). To freshen memories, perhaps the schematic diagram presented in Figure 1 will be of value. As of 1982, LINK consisted of some 31 national models, 18 representing OECD countries, 8 involving centrally planned economies, and 5 from developing nations. To date, as far as I know, only a few of the countries of interest to our ICUS committee have been included in the work--namely Japan and the Peoples Republic of China in Asia and Brazil and Venezuela in Latin America. Like the systems engineers working with the Club of Rome (Meadows, Richardson, & Bruckmann, 1982), the Wharton group so far eschews attempts to incorporate explicitly socio-political considerations within their simulations, but through the use of scenarios they have explored with ease various politico-economic problems.

The impact of the politics of oil as evidenced in price shocks was studied for the 80s by LINK. The computer runs illustrate scenario development, contrasting a baseline outcome with an alternative projection. The script provided, as against a moderate increase in oil prices of about ten percent annually, exogeneously introduced price shocks of an 80 percent increase in 1983 and another 40 percent increase in 1988, analogous to the price shocks of the 1970s. The outcomes are presented in Table 1 for various countries grouped in terms of whether their economies were developing, centrally planned, or developed. In summarizing the outcomes Klein, Pauly, and Voisin (1982, pp. 13 & 14) note they "find an inflationary impact for the

OECD countries, while the average growth rate is only slightly affected. The effects on the trade balances in the different areas are, as expected, quite significant and confirm previous experiences during the 1970s." Given more resources, it would have been possible to explore additional alternative scenarios, such as the impact of price decreases in the 1980s.

Another example of the use of scenarios to check out policy implications of politico-economic processes is found in LINK's study of protectionism versus free trade operating within a liberal commercial system. The Klein and Su (1979) simulation exercises supported the "time-honored propositions of Adam Smith on an international macroeconomic basis" (Hickman and Klein, 1979, p 54). The outcome of this analysis was predetermined of course by the assumptions involved in the LINK model itself. In exercising simulations, as in other theoretical work, one never transcends the limitations set by the original assumptions embodied in the model. If the LINK programs are neo-classical in their contents, then one expects protectionism in its ever varying forms to be disadvantageous economically. In neither of these two simulations-by-scenario-analysis were socio-political considerations incorporated explicitly in the LINK work.

Is there a starting place within the simulations being developed by the more comprehensively oriented social scientists (as described by Ward and Guetzkow, 1979) for the construction of a DEVELOPMENT MODEL which might be used by our ICUS committee?

Let us examine the GLOBUS model, now in progress in the Wissenschaftszentrum in West Berlin at its International Institute for Comparative Social Research (headed by Professor Karl W. Deutsch), under the direction of Dr. Stuart A. Bremer (Bremer, 1980). What is its potential as a vehicle for work by our ICUS committee in the 1980s? GLOBUS consists of six modules, as exhibited in Figure 2. Four are concerned with internal

processes: a "Domestic Economic Subsector" (ECOMOD), a "Domestic Political Subsector" (POLMOD), a "Government Budget Subsector" (GOVMOD), and a "Demographic Change Subsector" (DEMMOD). The nations are linked together via a "Trade Policy Subsector" (TRDMOD) and a "Foreign Policy Subsector" (FORMOD). Qualitatively different modules are being built for developed/developing and centrally planned countries as well as for differing polity types. Data banks are now being assembled for twenty-five nations, including three of those constituting case studies by our ICUS committee, namely: Argentina, Brazil, and Indonesia.

It is interesting to compare the contents of the modules being created by Bremer and his associates (Bremer, 1982) with those components suggested in the Turner framework, as has been done in Table 2. Although in the main there is congruence between Turner's dozen categories and the GLOBUS modules, our development model would need be extended to include cultural and leadership processes. Of the thirteen specific indicators listed by Turner in his four tables (Turner, 1983, pages 10, 14, 18, and 41), all are included in the formulations being made by the Berlin group. Thus, it would seem practical for our committee to begin work on a ICUS DEVELOPMENT MODEL building upon GLOBUS, rather than starting from scratch.

How does the GLOBUS model measure up in terms of Turner's suggestions for the 80s?

Turner (ibid., p. 1) enumerates three important contributions made by scholars working in the 1960s and 1970s:

- they have made "the connection between theory and fact far more explicit,"
- they have shifted "the focus of comparative studies away from [Western] Europe and North America to include the rest of the world," and
- they have allowed "scholars to bring a large, new, and thoughtful literature

to bear...."

It would seem Globus might accentuate a continuation of such contributions in that (1) its embodiment of theoretical propositions in simulation requires the intermeshed use of factual materials; (2) of its twenty-five countries, eighteen are non-Western; and (3) its multidisciplinary thrusts into a "large, new, and thoughtful literature" are dramatic, as illustrated in the work providing infra-theory from which GLOBUS hypotheses are being generated (Cusack, 1982; Kirkpatrick, 1982; Pollins, 1982; Ward, 1982; and Widmaier, 1982). The model is "transdisciplinary," to use the phrasing of Alexander King (1983, p. 20). As Turner advocates, "Development studies is not and should not be a separate discipline; it is fruitful precisely because it brings together economists, political scientists, sociologists, and others, because it works to integrate insights from different disciplines as well as different parts of the world" (Turner, 1983, pp. 44 & 45).

It may well be as Turner suggests, that "conclusions of developmental studies are and will long remain short-range or middle-range at best..." (ibid., p. 45). In their work in the environment of the imperatives of the Club of Rome, the systems engineers have often adopted long-term perspectives, sometimes even beyond a century in magnitude. However, the econometricians, as represented in LINK, have often restricted themselves to the short-term (quarterly and/or annually) and the middle-term (five to ten years). Those working in the transdisciplinary mode (i.e., Bremer and his associates) tend to posture their time horizons in the ten to twenty-five year period, so that long-run trends may be examined in the milieu of short-run processes.

Although the formulations in GLOBUS are not permitted to become unduly complex, Bremer and his associates are taking full advantage of the use of the

computer through their incorporation of feed-back devices in their algorithms, so that the nonlinear character of the developmental processes may be represented with adequacy, as urged by Turner (1983, p. 6).

Thus in a variety of ways it seems that GLOBUS would promote work in a style quite compatible with the contentions asserted by Turner in the introduction and conclusions of his essay on "The Study of Development in the 1980s."

In working with complexities of the magnitude usually encountered in the social sciences, the advantages of creating a more formal construction for ones theories, versus using only a loose framework composed of categories, are significant. Computer mounted models impose internal consistency which often eludes theorizing when one nurtures hypotheses in ordinary language. Further, each scholar is required to produce components which are often quite explicit in their formulation; otherwise they simply cannot be assembled into an operating model in one of the available computer languages. The variables themselves must be conceptualized with some adequacy and their interrelationships clearly specified, otherwise the machine cannot process the model or produce deductive outcomes from its assumptions. Finally, the researcher is induced to develop quasi-quantitative measures of his variables, inasmuch as computers handle cardinalities often with even more interesting outcomes than when one confines oneself to binary (yes/no) and ordinal (none/little/some/much) schemes. In constructing a model, many find it useful to move back and forth, going from an early formalization to the intuitive as expressed in vernacular and then back again to computer mounted statements of theory.

Would not a project on MODEL DEVELOPMENT catalyzed "through the [ICUS]

committee activities" be a "significant contribution?" And were our chairperson to give leadership in this endeavour, might not the project eventually gain a stature equal to that of LINK? Professor Larry Klein has shared some of his thinking about "International Research Cooperation" (Klein, 1979). Per Turner's appreciation that "useful paradigms of development can appear in nations throughout the world, that they are not some exclusive prerogative of the West to be shared like foreign aid with other countries (Turner, 1983, p. 43), Klein indicates that "the research philosophy of Project LINK has been to accept each national or area models as conceived by the investigator in each country or international agency, then to adapt the international trade and pricing relationships according to standardized international linking procedures" (Klein, 1979, pp. 48 & 49).

Are scholars concerned with development in the 1980s adequately motivated to want to collaborate, should ICUS decide to undertake such a project? Klein observes, "A little bit of money, stock of common research results, a great many common interests ... and a great deal of common research methodology bind together a diverse band of international participants from the developed and developing world...." He says, LINK "thrives on the idea that each country can 'do its own thing' towards a common world goal" (Klein, 1979, p. 50).

The Office of Technology Assessment of the United States Congress has recently completed a critique of the work of the systems engineers and econometricians, surveying the benefits and limitations of the use of global models for purposes of public policy (Andelin et al., 1982, pp. 45 & 55). The Office ends its report (pp. 61-55) with a set of strategies vis-a-vis modeling for increasing the U.S. Government's "foresight capability with its policymaking and management activities" which may be applicable throughout the world, if Prewitt's contention holds that there now is a "fundamental

reshaping of the balance of trade in social-science ideas and approaches" between developing and developed societies (Prewitt, 1982, p. 12).

Our Honorary Chairperson Dr. Alexander King wrote, "The scientific method as a systematic and rational means of analysing situations and problems offers great possibilities of helping in many directions and especially, when served by the computer, can provide insights into the workings of many multivariant situations , difficult for the most experienced intuitive thinking to penetrate"(King, 1983, p. 21). Using GLOBUS, can our ICUS Committee IV make a "significant contribution" to understanding development as a "comprehensive process of socioeconomic change?" YES, of course.

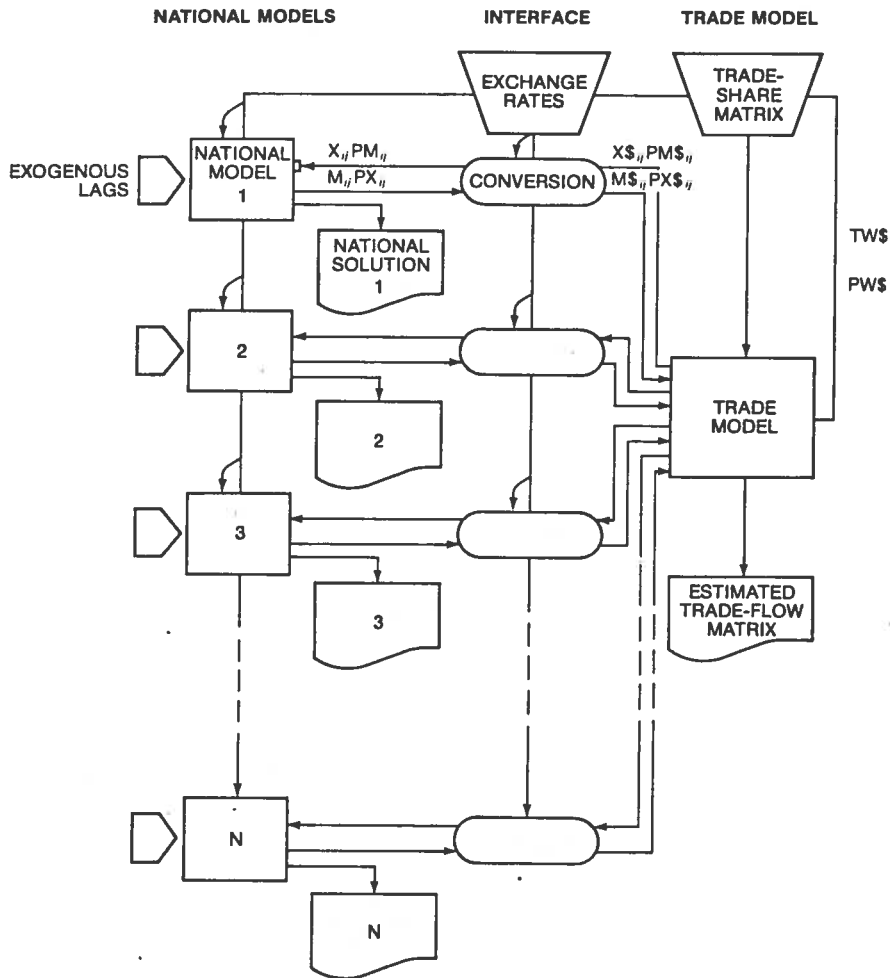
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FIGURE 1
 Schematic Diagram of LINK System
 (Klein, Pauly, and Voisin, 1982, p. 11)



LEGEND
 M_{ij} VOLUME OF IMPORTS, i TO j
 X_{ij} VOLUME OF EXPORTS, i TO j
 PM_{ij} PRICE OF IMPORTS, i TO j
 PX_{ij} PRICE OF EXPORTS, i TO j
 TW WORLD TRADE
 PW WORLD PRICE
 \$ CORRESPONDING VARIABLES IN TERMS OF UNITED STATES DOLLARS

FIGURE 2

The Modular Components of a GLOBUS Nation
 (Bremer, 1983)

<p>ECOMODx</p>	<p>GOVMODx</p>
<p>Determines changes in a nation's aggregate output, personal consumption, savings, prices, capital stock, interest rates, money supply, etc...</p>	<p>Determines changes in a government's taxing and spending policies, including defense, education, health, administration, and foreign aid.</p>
<p>POLMODx</p>	<p>DEMMODx</p>
<p>Determines changes in a population's support and opposition to the government and the government's reaction to opposition.</p>	<p>Determines changes in a nation's demographic structure, including labor force, school and retirement age population.</p>
<p>TRDMODx</p>	<p>FORMODx</p>
<p>Determines changes in a nation's import demand, export prices, and import biases.</p>	<p>Determines changes in a government's reactivity to hostility and cooperation received from others.</p>

TABLE 1
 Effect of Decade Oil Price Shocks
 (average annual percentage changes in real terms for period 1980-1990)
 (Klein, Paul, and Voisin, 1982, p. 14)

	<i>Baseline solution</i>	<i>Scenario</i>
Gross domestic product		
Developed market economies	3.4	3.0
Non-oil-exporting developing countries	5.1	4.0
Oil-exporting developing countries	5.8	5.8
Centrally planned economies	4.4	4.5
Consumer prices		
Developed market economies	5.8	6.4
Non-oil-exporting developing countries	15.1	18.0
Oil-exporting developing countries	7.8	7.6
Centrally planned economies	—	—
Trade balance (absolute dollar values)		
Developed market economies	12.8	-248.1
Non-oil-exporting developing countries	-156.7	-154.7
Oil-exporting developing countries	152.9	391.6
Centrally planned economies	-3.4	11.3

Note: Oil-exporting developing countries are OPEC countries only.

Table 2
CONGRUENCE
in
Development Categorizations

<u>Turner's Components (1983)</u>	<u>Bremer's Modules (1983)</u>
Economic Growth	ECOMOD
Technology	ECOMOD
Distribution of Income	ECOMOD
Level of Demands	ECOMOD & POL MOD & DEMOD
Public Indebtedness	GOVMOD
Military	GOVMOD
Political Stability	POLMOD
Political Participation	POLMOD & DEMOD
Attitudes and Values [i.e., Political Culture]	POLMOD
Foreign Ties, Dependency and the World System	TRDMOD & FORMOD
Cultural Adaptation Leadership	Not given explicit representation