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GLENN L. JOHNSON

*Synoptic View**

We are at the end of a full, productive conference ably orchestrated by Professor Ohkawa. I have read and/or listened to most of the papers presented. They are credits to their authors and collectively are a tribute to Professor Ohkawa's leadership and skill in suggesting topics and selecting speakers.

We are also at the end of a delightful stay in Jakarta where we have all benefited from the hard work and conscientious efforts of Dr Birowo and others on the national organizing committee. In these ten days we have been together in Jakarta we have learned much from each other. Equally important is that we have come to appreciate each other's points of view and backgrounds. We have also learned about Indonesia and its people as we have lived here.

At each IAAE conference I conclude anew that it really takes ten days of professional exchanges, social events and, above all, personal conversation really to begin to know each other. I, for one, have long hoped that we will never get so pressured by work, time restrictions and lack of money that we cannot spend ten days together every three years. I believe sincerely that the world is improved because we know each other better and that Leonard Elmhirst and our early leaders were correct about the need to know each other. It seems to me that those of us who are too busy to stay for the full ten days should simply come late or leave early without insisting that those who can stay be deprived of this important opportunity.

I recall with great pleasure the opportunity I had to spend sixteen or seventeen days with a whole new community of scholars in Finland at my first IAAE meeting. The friends and congenial relationships I developed there are still some of the most valued I have attained in my career as an

* This is a 'synoptic view' of all the papers presented at the Eighteenth Conference of the International Association of Agricultural Economists which met in Jakarta, Indonesia, 24 August – 2 September, 1982. Names are used to refer to papers presented by various speakers at the conference. Such references should be adequate in a proceedings volume which will contain most of the papers and will be accompanied by a 'contributed papers' volume, *(IAAE Occasional Papers No. 3)* containing the remaining papers.

agricultural economist. It was important that I had enough time to get really acquainted with such people as Nils Westermarck, Wilfred Cave, Edgar Thomas, Wat Thomas, John Raeburn, Arthur Jones, Finn Reisigg, and A. Eskeland to name only a few.

The synoptic view which I am to present was probably instituted to force Presidents Elect to do their homework. Though I have, indeed, tried to do my homework, I must apologize in advance for the many errors of omission (as well as commission) I will inevitably make. The number, complexity and overall excellence of the papers are such that it is beyond my ability to do them justice in the time available.

In order to be of most help, I believe I should deal with the Elmhirst Lecture, the Presidential Address and the Indonesian presentation, first, and then with the plenary, invited and contributed papers as they have developed our theme of growth and equity.

I turn now to Keith Campbell's Elmhirst Lecture which is not, and was not, intended to be within our theme. As we are interested in what the outstanding individuals we select as Elmhirst Lecturers have to say on a subject of interest to them, we do not expect them to conform to our theme.

THE ELMHIRST LECTURE

Keith Campbell gave us an independent, penetrating, critical paper on our responsibilities and opportunities in connection with the *World Conservation Strategy* report. That report was commissioned by the World Wildlife Fund and the UN Environmental Programme. It was produced by the International Union for Conservation and Natural Resources. After commending the report for not being antigrowth, Campbell stressed its 'exaggerations, quasi-facts and economic disorientations'. He feels we should be challenged by the report's reliance on the 'environmental movement's disregard for facts and economic principles'. Campbell expressed his concern that ecology, once a respectable science, has become a kind of religion. He also regretted that transfiguration (over recent decades) of land economists into resource economists who now, in his view, mainly dispute about externalities, shadow prices and discount rates for future benefits.

Campbell's main concern is that we have ignored the environmental movement rather than been challenged by its shortcomings. He feels we should participate in setting priorities with respect to conservation policy, address the economics of land uses (only one of which is for farming), deal with the anti-technology bias present in the *World Conservation Strategy* report, and do a better job of bringing the powerful tools of economics to bear on issues involving pollution, endangered species and genetic diversity.

In his conclusions, Campbell recognizes that there are important environmental issues in obtaining indispensable agricultural growth in the next twenty-five years but feels that we cannot abandon the policy arena to 'urban-based environmentalists or the scientifically illiterate'. A later

paper by John Mellor underlined Campbell's view that 'ecological diversions' have interfered with agriculturally based development strategies.

THE PRESIDENTIAL ADDRESS

Our President, Theodor Dams, challenged us in his presidential address to strengthen the IAAE as an insitution. He wants us to be innovative while conserving our valuable inheritance from our predecessors by maintaining the right of all our members to express themselves and participate in our activities as individuals regardless of national origin and the vagaries of international political conflicts and ideologies. I note that he who uses force to restrict the individuality of another, automatically sets a precedent for his own repression.

Innovation, Dams indicated, is also needed on the human side of agricultural economics and in analyzing the linkages between the farm and non-farm sectors. He implied a need to deal innovatively with the interrelation among the political, social and economic systems within which farming takes place in all of their 'spiritual, moral and social dimensions'. His comments on rural poverty anticipated those to come later in the programme from Nural Islam. We must, he said, design strategies for farm production and development which will benefit the poor masses without reliance on prohibitively expensive but ineffective 'poverty oriented programmes'.

Dams also stressed the need at our conference for individual respect, an atmosphere of goodwill, the exchange of knowledge and the stimulation of mind, emotion and friendship. The members of our conference have not disappointed Professor Dams – we have taken his advice and we and our discussion groups have profited from it. As Professor Dams hoped, I feel as if I have spent ten highly productive days with family and friends.

THE INDONESIAN PRESENTATION

We all rejoiced as our Indonesian colleagues made their presentation last Friday. After experiencing their kindness and generosity in looking after us, we had another pleasant experience that Friday. We experienced the goodness of seeing a substantial amount of rather newly created human capital functioning in a highly effective manner. We benefited from their analyses, data and explanations about this diverse country; a country so large that it would extend from San Francisco across North America well into the Atlantic Ocean. The book they generated is an important output of the IAAE. It joins that of Judith Heyer on Kenya, at the Nairobi conference, as one of the notable achievements of our Association.

GROWTH AND EQUITY – THEIR MEANING

I turn now to our theme 'Growth and Equity'. In putting together this synoptic view of our conference, I have been impressed with the different meanings attached to the phrase 'trade-offs between growth and equity'. Further examination of the papers indicated wide differences in the meanings attached to the words 'equity' and 'growth'. The English word 'equity' has to do with justified or justifiable distributions of rights and privileges among people. An equitable distribution need not give everyone the same rights and privileges but it must be justified in some sense – legally, morally, by custom, by practicality or on some other basis.

By contrast, the English word 'equality', when applied to the distribution of rights, privileges, incomes, property and so on, deals with how equally they are distributed among people.

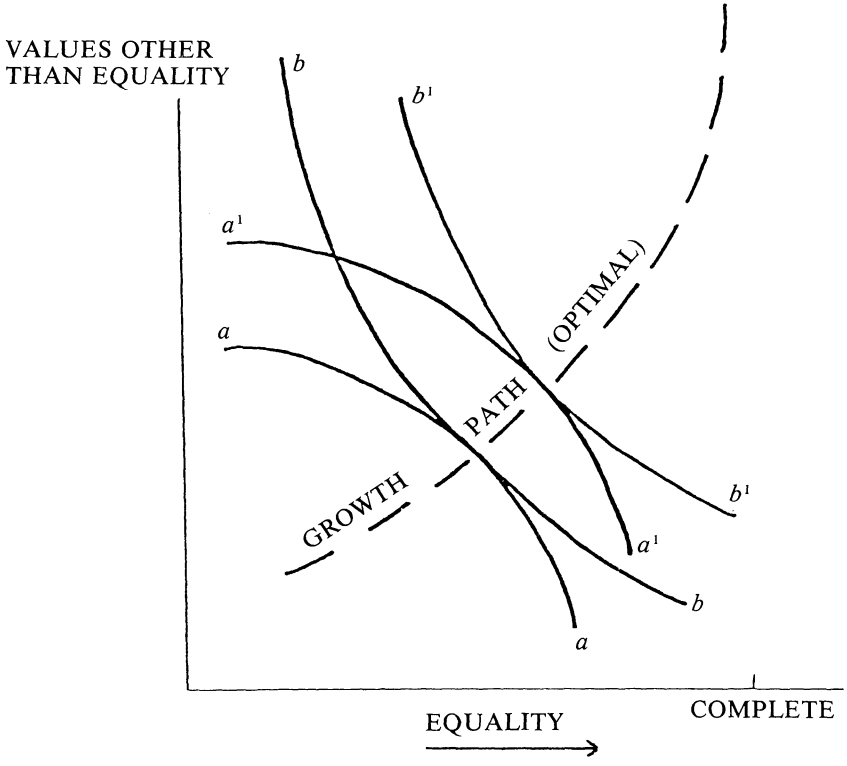
At this conference and the planning of this conference, the word 'equity' has been misinterpreted by most of us, including me, as meaning equality. As I became aware of this in preparing my synoptic comments, I checked with people competent in the French, German, Spanish, Portuguese, Chinese and Russian languages for corresponding terms. In French, I find *égalité* and *équité* – in Spanish *equidad* and *igualdad.* In Portuguese the corresponding words are *eqüidade* and *igualdade.* I find little consensus among my German colleagues. One possible pair of words is *equitat* and *equalitat,* but Professor Dams says those words are not correct. In Chinese I find *shang dung* and *gong ping.* Of the two words given to me by a Professor of Russian using the Latin alphabet, Victor Nazarenko says that one is wrong and that the other is not even a word! This small linguistic excursion underscores the difficulties we have in communicating with each other about 'equity'.

We also have problems with the word 'growth'. This word was sometimes used at this conference to mean the increase in output and sometimes an increase in resources with which to produce output. Typically we are not very specific about what it is we want to attain with growth. Despite the difficulties we have experienced with different meanings for the words growth and equity, I am pleased that we have been able to carry on very useful discussions about growth and equity. This success, however, does not absolve us from responsibility for clarifying our language and concepts.

Before leaving Michigan to come here, I experimented with various diagrams to use in clarifying our discussion. During this conference, I further developed these diagrams in discussions with a number of you. My diagrams which deal with equality, equity and growth are rather similar to those used by Tarditi in opening the discussion of Hayami's paper dealing with trade-offs between growth and equity. Tarditi's use of his diagrams encouraged me to use my own. I hope my diagrams will help provide the kind of perspective you should expect of a synoptic presentation.

In my diagrams, growth is viewed as the creation of increased capacity to attain all the conditions, situations and things which people (as individuals and as members of societies) find valuable. Equality is but one of the

DIAGRAM 1



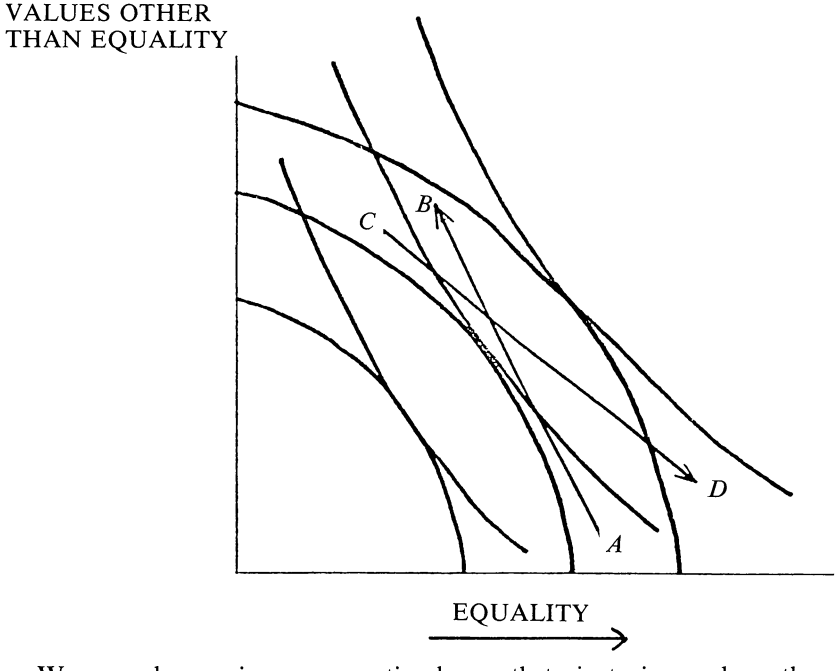
conditions we value. In Diagram 1, equality is on the horizontal axis. At the right end of the horizontal axis is complete or perfect equality. On the vertical axis we find all other values. The capacity of a society can be used to attain various combinations of equality and other values. Using Diagram 1, we can envisage the trade-offs between attaining equality and other values. In this connection, two relationships can be considered: first, there are 'possibilities lines' such as aa or a^1 a^1 which show all combinations of equality and other values which are attainable with a given amount of capacity and, second, there are social indifference curves such as bb or b^1 b^1 between equality and other values. However, there is still a third kind of trade-off between equality and other values. This trade-off involves growth.

Growth consists of increased capacity to attain desirable conditions, situations and things, one of which is equality. The increase in capacity represented by the difference between aa and a^1 a^1 is growth. Such growth makes it possible to move to the higher social indifference curve b^1 b^1 from *bb*.

The dashed line in Diagram 1 can be interpreted as an *optimal growth path* or *trajectory*. It indicates the 'best' proportions between attainment of equality and other values. Upward movements along this trajectory involve

the attainment of both growth and equality. This important relationship is much different than the trade-offs along a possibilities line. Once growth and equality are so viewed, it becomes difficult to conceive of diagrams with growth on one axis and equality on the other. Some of our authors have discussed the relationship between growth and equality along such trajectories while others have discussed trade-offs along opportunities lines in some sort of growth/equity diagram of questionable consistency.

DIAGRAM 2



We can also envisage non-optimal growth trajectories such as those indicated in Diagram 2. The line from point *A* to point *B* illustrates a non-optimal growth trajectory which attains other values while giving up equality. The line from point *C* to point *D* illustrates another non-optimal growth trajectory which gives up attainment of other values in order to attain equality. Obviously, we cannot expect a market involving uncoerced exchanges to find an optimal trajectory calling for coerced redistributions. A 'political market place' wherein government responds to political processes by forcibly redistributing rights and privileges can be conceived of but not without the difficulty of dealing with existing distributions of political power. In a sense, the degrees of equality or inequality found along an *optimal* growth trajectory are *justified* socially and economically by the social indifference curves. The degrees of equality along the optimal growth trajectory *can be regarded as equitable.* This gives us a definition of equity

which is very different from that implied by most of our papers. The relationships between equity and growth cannot be as fully presented and explained in diagrams with growth on one axis and equity on the other.

It must be stressed that diagrams such as these reflect many conceptual and empirical difficulties not the least of which is their gross oversimplification and, even, misrepresentation of the complex phenomena they purport to represent. More attention will be given to these difficulties later. Nonetheless, papers presented at this conference, such as those by Hayami, Rousser and others, have used some of these concepts with success while still other papers can be fruitfully interpreted in terms of this diagram. Some of our papers deal with the shapes of the possibilities lines. Others deal with the nature of the growth paths or trajectories while still others deal with problems encountered in measuring equality and growth. Few, if any, touch on the nature of social indifference curves. In the section which follows, I will use these concepts and such diagrams to interpret the contents of various papers.

THE PLENARY, INVITED AND CONTRIBUTED PAPERS

I will first summarize the world agricultural situation with respect to growth and equity as revealed in various papers presented to us. Following this, I will take up various conceptual and empirical problems considered in other papers.

The world agricultural situation

At our conference, the world agricultural situation was ably summarized in the first third or so of Nural Islam's paper. He stressed the increased production of agriculture in the developed countries, the encouraging productivity of Asian agriculture and the unfortunate situation in Africa where unbridled population growth outpaces agricultural production. Looking to the future, Islam stressed the immensity of the production task ahead for world agriculture and the critical nature of prospective poverty levels, both rural and urban.

Significantly, I believe that no paper reflected an antigrowth attitude. Further, none reflected the serious conviction that the food needs of expanding populations could be solved by feasible redistributions of present levels of agricultural production.

Gustav Ranis's excellent paper on growth and equity dealt with growth through time – with a growth trajectory. He analyzed the success of the Province of Taiwan, China, and the lesser success of Colombia in attaining equality as well as other values by giving the rural poor the opportunity to produce for both domestic and export markets. In effect, he argued that such a trajectory attained much growth with considerable additional equality. By contrast, strategies of countries seeking industrial without agricultural development have generated less growth and less equality.

Van der Meer's very useful and quite empirical paper on experiences in

the developed countries dealt with the growth trajectories of Western European, Oceanic and North American countries. He noted differences among countries in rates of growth from the year 1818 to date. In general, rates of agricultural growth per caput have been little better than GDP growth per worker. Farmers, he found, have suffered recurrent crises when demand for farm products has lagged behind supply. Over the years he finds that vanguard farmers and consumers have been the main beneficiaries of agricultural growth in the market economies. Van der Meer deplores off-farm migration as more disadvantageous than I do. I should point out that I am a landless, off-farm migrant myself – my wife is a land-owning, off-farm migrant. Neither of us regret our migration and we think that goes for most of our fellow off-farm migrants. Three or four sentences in van der Meer's paper about stagnation of US agriculture since 1973 are not quite consistent with the 1981 bumper US crop, the fact that my wife's entire 1981 grain crop sits unsold in government storage and that 10 per cent of her 1982 acreage is idle under a production control programme, the even bigger crop predicted for 1982 and the 20 per cent reduction in US wheat acreage presently requested for 1983. Van der Meer's closing remarks about farm sizes appear very appropriate. In the countries he covered, large but still family operated farms have not lost their comparative advantage to corporate farms employing large numbers of labourers.

Nils Westermarck's paper complements the van der Meer paper. Westermarck concentrates on the question of whether there has been a widening disparity between the incomes of poor and well-to-do farmers in Finland, Belgium, Austria, West Germany, Switzerland, Norway and Japan. In effect, he disaggregates the equality axis of our diagram. Reports from four of these countries indicate that in the decades since World War II, 'technological development' and, I add, the operation of the market, have widened the gap. Public measures have not been adequate to prevent the widening. In Switzerland, partly in Norway and perhaps also in Belgium, government actions to support small farmers and farmers in remote regions have been adequate to narrow the gap.

With respect to Africa, Dharam Ghai finds little of a growth trajectory to discuss. Failure of African countries to invest in land maintenance or improvement, lack of human capital investment, policy failures to provide incentives, adverse weather, and military and social unrest have combined to hold increases in agricultural output near the increases in the rapidly growing populations of Africa. Ghai finds that 'a great majority of the rural population in a large number of African countries must have suffered declines in their real incomes in the 1970s', a conclusion consistent with the high rate of rural migration to African urban slums. These findings for Africa are consistent with Gustav Ranis' analysis of the disadvantages of not including agricultural development in a growth trajectory.

In Southern and Southeast Asia, the first version of V.S. Vyas' paper described an 'all pervasive picture of buoyant agriculture with only a few notable exceptions' but with 'very little impact on the extent of poverty'. His paper describes a near vertical growth trajectory with little increase in

equality. He finds that the high yielding varieties (HYV) did not increase equality despite their labour intensity. This, he found, was because of firstly, population increases and secondly, a lack of knowledge of the new HYVs on the part of the poor and their inadequate access to the inputs necessary to produce the HYVs. In effect, he agrees with the papers by Sanders and Lynam and by Antle that it is too much to expect technological change to redistribute ownership of income producing resources. Such expectations place too heavy a burden on the technologists. Vyas argues that in addition to getting more production with HYVs, the trajectory of growth needs to be modified by institutional changes and investments in human capital to attain more equality. In so arguing he adds a valuable dimension to the Ranis argument. In addition to providing incentives for farmers to produce, Vyas sees the need for redistributions along possibilities lines in order to get to a more optimal growth trajectory for attaining equality as well as other values. Similarly, John Mellor's paper noted that the strategy he and Bruce Johnston advocated in the early 1960s recognized land reform as a possible precondition for agricultural growth. Land reform can be viewed as a movement along a possibilities line to a more optimal growth trajectory.

With respect to Japan, Yamada reports an historical analysis (1885 to 1979) of the growth trajectory of the Japanese economy and its agricultural sector. His conclusions for three periods are too detailed and extensive for succinct summarization. Following a dual economy approach, he analyses how development and policy adjustments have kept ratios of output per worker high in both real and nominal terms while attaining favourable ratios between non-farm/farm household incomes per caput. His conclusions draw on the Japanese experience to indicate how development may proceed in contemporary developing countries. He, as well as Mellor and Khan, stresses the importance of 'family farming units' for production and welfare.

The Sugai/Teixeira paper on Brazil indicates a near vertical growth trajectory of questionable optimality. They report little diminution in relative poverty but perhaps some progress on absolute poverty. Former small disadvantaged subsistence farmers, small tenant farmers, share croppers and squatters (without benefit of human capital investments) have migrated to urban slums despite resettlement schemes, agribusiness employment promotion and new crop development programmes. Children from medium-sized owner-operated farms near urban centres received better educations and have migrated to better urban opportunities. A small group of large livestock farmers has participated in the integration of production and processing to offset production losses. Large commercial crop farmers producing mainly export crops are benefiting from agricultural credits and governmental emphasis on exports. The authors conclude that Brazil will have to change its policies if it wants to get on a less vertical perhaps more optimal growth trajectory which will attain more equality.

Reyes' paper on regional income inequality in Mexico also disaggregates the equality dimension of Diagram 1. It deals with the growth trajectory of a country 'grown out of revolution and committed to equality'; however, since 1940, output per worker has increased threefold while productivity and

income differentials have widened both between rural and urban dwellers and within the rural sector. The growth trajectory has been upward to the left, largely because of exploding populations and regional differentials in government investments which have favoured non-agricultural development and, within agriculture, the more productive regions. Reyes also cites corruption as a contributing factor.

Csaba Csaki discussed growth trajectories for socialized Eastern European countries. He indicates that those countries of the region which have invested in agriculture and have provided incentives for agricultural production have grown more rapidly than those which have not, after taking into account differences in soil and climates. Csaki did not deal with the social, legal and political inequalities in centrally controlled countries. Neither did Nazarenko in his paper. At a later point, I will consider such inequalities.

In his paper which questions whether there is or is not a trade-off between growth and equity, Hayami was not always clear as to whether he was considering trade-offs along different growth trajectories *or* along possibilities lines. Because of this vagueness, there is the danger that his paper may be interpreted as indicating that there is a great deal of complementarity between the attainment of growth and equality along opportunities lines when, for the most part, he was considering growth trajectories involving the attainment through growth of both equality and other values. Hayami's main contribution was the important points he made about growth trajectories. Those points were: (a) technological advance is essential for attaining the necessary increases in production (growth), (b) technological advance is not necessarily a source of inequality, and (c) population increases cancel out the effects of improved technology on income per caput and make it difficult to attain equality and growth. He agrees with Vyas in seeing the need to supplement HYVs with institutional change but goes farther. He sees HYVs as promotive of induced institutional change, though I would question the adequacy, in some instances, of such induced changes. He calls for dialectical interactions between technological and institutional innovation to avoid the Ricardian trap while recognizing the possibility of the malinteractions Andrews and de Janvry stress as having resulted in stagnation and inequality for Argentinian agriculture.

The Johnston/Clark paper maintained a clearer distinction between possibilities lines and growth trajectories than did Hayami's. They saw the need for reforms along possibilities lines in order to get on better growth trajectories. Verbally, Johnston, and the opener, Brandes, noted the danger that attempts to move along a possibilities line may destroy considerable physical and human capital and, thus, cause negative growth. (See Diagram 4 and discussion thereof later in this paper.)

Kahn's paper contained excellent discussion of the possibilities of carrying out land reforms in Asia. The reforms in Japan, the Taiwan area and South Korea were carried out largely by occupying powers without additional destruction of productive capacity. He is not optimistic about the possibility for further such reforms in Asia.

Conceptual and empirical difficulties

Earlier in this presentation, I recognized the conceptual and empirical difficulties inherent in dealing with growth, and the trade-offs between the attainment of equality versus other values. With some misgivings I implied that our concepts were clear enough and our data good enough for us to discuss trade-offs and alternative growth paths. It is now appropriate to consider the papers and authors addressing themselves to some additional conceptual and empirical difficulties encountered in dealing with growth and equity.

We have already seen that a diagram with equality on the horizontal axis and all other values on the vertical axis has been useful in interpreting the contributions of several speakers. At this conference several papers have dealt with the measurement of equality. The 'Gini ratio' measures the degree of equality or inequality in a system. The proportion of people living in absolute poverty (however defined) is another measure of inequality as is the income level which includes the bottom, say, 40 per cent of a population.

The Bhalla/Leiserson paper addressed itself to the question of how to measure income equality. They considered the advantages of per caput versus per household data. Of particular value is their review of research and literature on (a) the relativistic nature of poverty and (b) difficulties involved in defining absolute poverty. They note that studies of 'Gini ratios' or of the incomes of the bottom 40 per cent do not identify the regional or occupational locations of the poor. They believe it is often easier and more desirable to affect incomes for specifically identified groups than for all of the poor in a country. Relative to this point, Johnston and Clark note that while some poverty battles can be won by piecemeal action, attaining the basic goal of overcoming poverty requires strategic and, hence, overall thought and actions. A number of other papers dealt with or pointed out the need to consider regions, subsectors, villages and individual families. Among such papers not already mentioned are those by J. Y. Lee, Tyers and colleagues, the Veemans, de Melo, Sabbarano, Lingard/Wicks, da Silva/Raza, Kada, I. J. Singh, Peters/Maunder and several more. These papers disaggregated aspects of the equality dimension of our diagrams to add much realism. Their contribution was in avoiding the problem of aggregating different kinds of equality. Their weakness was that we still need some aggregation to evaluate the more macro arguments of Mellor, Johnston/Clark, Ranis, and Kahn. These aggregation problems may be a partial explanation of the unfortunate tendency of development assistance agencies to fluctuate faddishly between local (micro) and central (macro) planning without attaining an appropriate balance between the two.

In addition to income equality, there are legal, political and social equality, not to mention equality in the security of one's personal rights, whether those rights are guaranteed or threatened by military and police forces. The equality axis of our figures is also an aggregation of such equalities and inequalities. Aggregation requires a common denominator among the value of such equalities. Utility appears inadequate. Whether or

not knowledge of such a common denominator can exist is questionable.

Frederic Sargent's paper states 'we assume that equity is a public value or goal co-equal with productivity and efficiency'. In addition to raising the problem of whether equity means equality, discussed earlier, this statement raises the problem of measuring attainment of the aggregate of values other than equality. Productivity has to do with attaining both equality and values other than equality. How do you weigh different products together into an overall measure of output? With market prices? If you do, the weights become functions of changing incomes and income demand elasticities, in which case the meaning of the vertical axis of our diagram becomes a function of the variable on the horizontal axis – that is, the meaning of 'values other than equality' becomes a function of the level of equality! This calls into question the whole of Diagram 1. This difficulty would be even greater if growth were on one axis and equality on the other. Perhaps this conceptual and empirical problem can be avoided by using intrinsic instead of exchange values as weights but that requires objective research on values. As indicated in my Nairobi IAAE paper and in Volume 3-2/3 of the *European Review of Agricultural Economics* (pp. 207–34), I personally believe such research is possible.

For modest redistributions we can probably make do with weights based on exchange values but for major redistributions so drastic that real tests of power are required to make them, such as considered by Khan, Johnston, and Brandes, quantifying the vertical axis requires a common denominator valid across such intrinsic values as loss of life, starvation, participation, alienation, clothing, public infrastructures, and national security. Brandes took the position that we must make judgements about such important values. I agree and would stress my conviction that such judgements can be based on experience and logic. I regard value judgements as quite similar to the factual judgements reached in the so-called hard sciences which, incidentally, I view as simpler and easier than the social sciences.

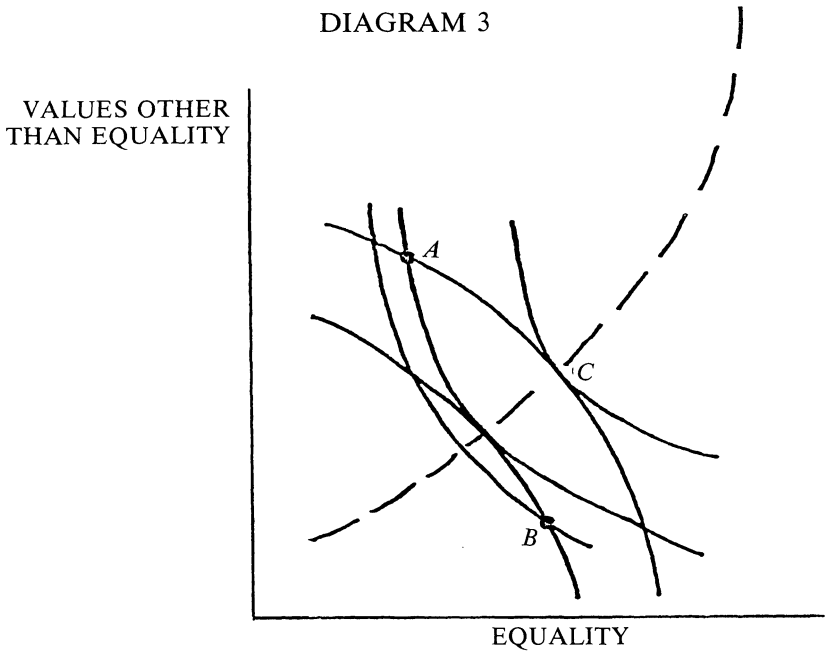
In acquiring knowledge of intrinsic values, experience and logic are supplemented by insight and empathy. Empathy seems to be a prerequisite for communication of all knowledge, positive or valuational. In particular, it is a prerequisite for understanding the badnesses of injustice and inequality and the goodnesses of justice and equality.

While Diagram 1 can be used to gain considerable insight, I have also called it into question in connection with my discussion of power. Shifting conceptually from exchange values which are functions of power distributions to intrinsic values which are less dependent on power distributions represents a conceptual improvement. However, we must also note that the configurations of possibilities lines are likely, in many cases, to be a function of which growth trajectory is followed. This is part of the institutional, technological and human dynamics of growth trajectories to be discussed later. Technological change orientated to the needs of small farmers produces a different set of opportunities lines through time than technological change orientated to the needs of large-scale farmers. The same is true for institutional change and human development activities.

A related conceptual problem involves power. Power comes from ownership of income producing, political, social, religious, civic and military rights and privileges. Power is the source of both equality and inequality, as power is used to maintain the equalities and inequalities which distinguish equity from inequity. In playing such roles power creates conceptual difficulties for measuring both axes of our diagrams. Even if intrinsic as contrasted to exchange values are used in aggregating values, imperfections in knowledge of those values make it necessary to employ power (a) in decision rules in order to resolve redistributive conflicts; (b) as weights in measuring attainment of values other than equality and (c) as a means of avoiding chaos and indecisiveness which diminish productivity.

Part of the difficulty is that attainment of equality involves redistribution of power, yet true power cannot be forcibly redistributed. To the extent that power can be redistributed it is less than power. But to the extent that power is redistributed, the meaning of the vertical axis of our Diagram 1 changes along with the shapes of the opportunities and social indifference curves as power can be used to constrain the shapes of effective social indifference lines. Imperfect knowledge about power leads to tests of power – wars, political and social conflicts and civic and religious disorders. Such conflicts are often destructive of rights being defended or redistributed. Though conflicts are typically destructive, they are not always effective in redistributing power. The important destructive conflicts are between groups with much to lose. Those who have nothing to lose have little with which to fight. Those with much to lose have the power to be destructive.

DIAGRAM 3

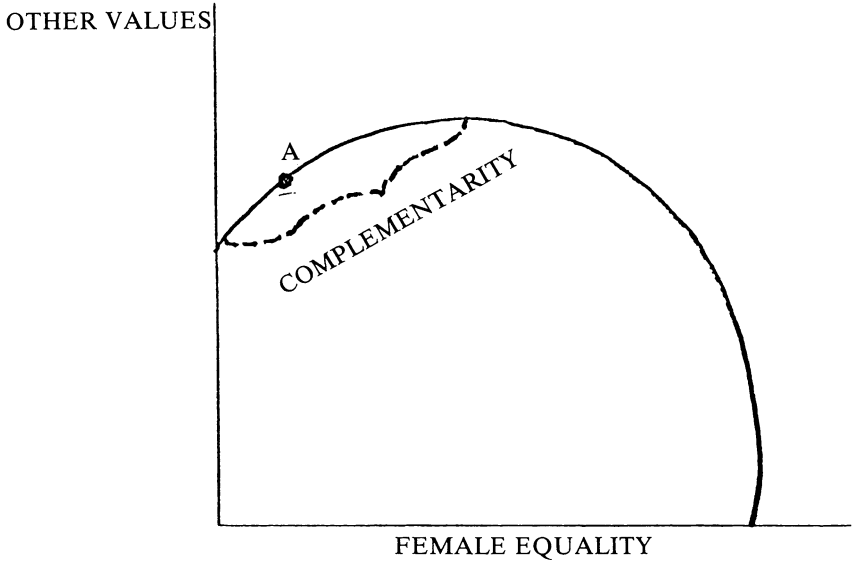


Brandes and Johnston discussed the consequences of destructive redistributions. Our diagrams can be modified to examine such consequences. Diagram 3 is such a modification. In trying to get more equality from point *A* through a destructive test of power, a society may encounter negative growth by shifting to a lower possibilities line and lower indifference curve on a trajectory to point *B* from point *A* with *B* being below the optimal trajectory. Without destruction it could go to point *C* on a higher indifference curve.

Kahn's very interesting paper indicated that the initial land reform in the continental provinces of China was probably regarded by policy-makers as suboptimal. At least they subsequently changed away from rather equal small holdings to large communes. Now, China is again searching for the optimal trajectory by redistributing certain agricultural rights and privileges more equally from the large communes to individuals.

In general, this conference has given less attention to political, social, and civil inequalities than to the inequalities in income which result from unequal ownership of income producing rights and privileges. This was previously noted with respect to the Nazarenko and Csaki papers. Equitable distributions are justified or justifiable distributions, equal or not. Except for justifying distributions as being equitable because they are on relatively optimal aggregate trajectories, as was implied by Mellor, Ranis, and Johnston and Clark, this conference has not dealt with how much of the many forms of equality or inequality is or is not justified.

DIAGRAM 4



Abe Weisblat helped facilitate the organization of an excellent session on the role of women in agriculture which is related to the inequalities almost universally experienced by women. Our unfinished business reveals the need for more attention to legal, social and political as well as income inequalities, including especially those experienced by women. I, for one, am quite convinced there is a high degree of complementarity along the possibilities line between equality for females and the other values. See Diagram 4 which implies that more equality for women and more attainment of other values may be possible from point A through reforms to grant more equality for females. Other diagrams similar to Diagram 4 could be used to envisage the trade-offs and complementarities between various values including those between the values of two different forms of equality such as legal and income equality, *ceteris paribus.*

Income, civil rights, police and military protection (and oppression) and religious freedom are not distributed equally among countries, within countries, between farm and non-farm sectors, among regions within farm sectors, in societies as a whole and among racial and sexual groups within societies. Income inequalities between farm and non-farm sectors have been discussed by van der Meer for the developed countries, Sugai from Brazil, Reyes from Mexico, and Ghai from East Africa.

The OPEC countries have recently exercized new-found power to reallocate income to themselves from both developed and less developed countries with little regard to how such redistributions have both increased and decreased certain international inequalities. This example indicates something about the realities of power. This redistribution was possible as it was not opposed by power distributions capable of preventing it. Still other redistributions are obviously infeasible as opposing distributions of power are either invincible or at least capable of extracting prohibitive costs. Part but not all of what justifies unequal distributions of the ownership of income producing, civil, religious, military and other rights and privileges is the power of the existing distributions themselves. However, there is the surprising long-run power of knowledge of the intrinsic value of equality and of the value of other conditions, situations and things which can be attained in the process of growth. We have done little with the concept and reality of power at this conference. One lesson which can be learned from what we have and have not done in this respect is that the study of equity and power goes beyond economics to political science, military science, sociology, law and philosophy.

There is also the very important dynamics of growth trajectory which I mentioned earlier. This topic has not been entirely neglected at our conference. In addition to accumulation of physical capital, the three prime movers along growth trajectories are (a) technological change, (b) institutional change, and (c) improvements in the quality and, in some instances, the quantity of people (investments in human capital). The technological dynamics of growth trajectories have been explained and indeed defended by Hayami, Mellor, Sanders and Lynam, Byerlee and others. Hillman and

Monke place 'technology at the heart of the development process'. On the other hand, Johnston, Brandes, Vyas and others including Mellor, recognized the importance of policies, institutional changes and reforms but are justifiably cautious about lending support for the conclusion that destructive redistributions are needed.

Other authors went further into the institutional dynamics of the growth trajectory. We had papers by Petit, Sargent, Andrews and de Janvry, and Bromley and Verma (among others) some of which deal fruitfully with this topic. There are, of course, the previously mentioned problems of measurement, aggregation, changing power distributions and of whether knowledge of instrinsic values is possible which are particularly troublesome in dealing with the institutional dynamics of growth trajectories. In my view, the papers on institutional change and, particularly, the latter group of more venturesome papers were important in offsetting a tendency at this conference to neglect the institutional dynamics of growth trajectories. So often the problem is to find institutional changes to obtain more equality along existing possibilities lines without becoming involved in destructive redistributions and negative growth shifts to lower possibilities lines.

The human change element of growth trajectories has also been relatively neglected at our conference. A number of speakers have addressed themselves to the need to control increases in the numbers of people – equality among nations in willingness and ability to control population is an important aspect of the human dynamics of growth trajectories. Reyes, Hayami, and Sugai dealt with the adverse effect of high rates of population increase. However, changes in the quality of people through education may be even more fundamental than controlling numbers. Without scientists a country remains dependent on foreign technologies. Similar dependencies result from shortages of entrepreneurs, government administrators, doctors and, indeed, the teachers so important in the indigenous generation of human capital. Though the Sugai/Teixeira, Antle, Pudasaini and some other papers have stressed the role of education and extension work in improving the human agent, I have the general impression that we have not given as much attention to human capital formation as T.W. Schultz, our first Elmhirst lecturer, would desire.

I believe we need to expand our thinking to try to understand how the opportunities lines and indifference curves of Diagram 1 depend on firstly, which growth trajectory is followed and, secondly, the emphasis placed on technological, institutional and human change and on physical capital accumulation.

Growth trajectories and equity are profoundly and fundamentally affected by the international trading and financial relationships among countries. Important papers on this were given by Buchholz, Hillman and Monke, Longworth, and de Lobáo and Soares. These papers could provide the basis for developing a theme on international trade and financial relationships as they affect agriculture either for an IAAE main conference or for an inter-conference seminar.

CONCLUSION

Let me close by recalling our President's stress in his address on the spiritual, moral and social dimensions of our work.

Reinhold Niebuhr, a prominent Christian theologian, has argued that the fruits of a person's life are his senses of

charity,
proportion,
justice

As most religions of the world are concerned with these same values, I think it is appropriate to stress them here. The theme of our conference has been growth and equity. Equity involves Niebuhr's senses of charity and justice. Many economists subsume the laws of dimishing productivity and of diminishing marginal utility under the single law of variable proportions. Thus, production, consumption and welfare economics are (collectively) concerned with proportion, charity and justice.

Our concerns about growth at this conference have been tempered by our concerns about the relationship of growth to equity – we sought the proper *proportionate* relationship between growth and equity. I believe the fruits of this conference include an improved sense, on our parts, of charity, proportion, and justice. If this is so, I believe it is because our two leaders, Professors Dams and Ohkawa, have provided us with a programme which has strengthened these senses. I thank them for what was referred to in the Presidential Address as 'moral and social leadership' in studying the 'political, social and economic systems' in which agriculture exists.