

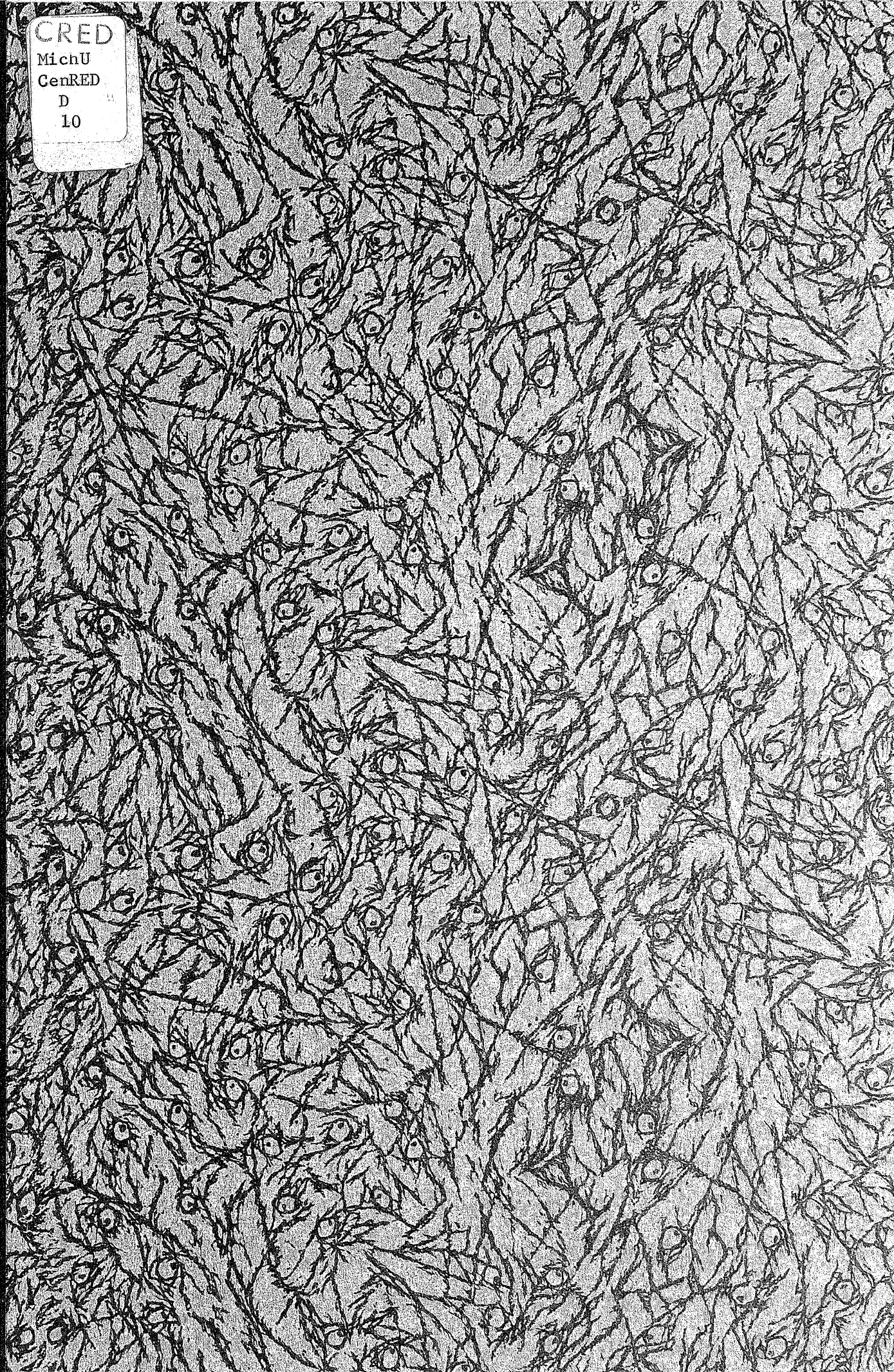
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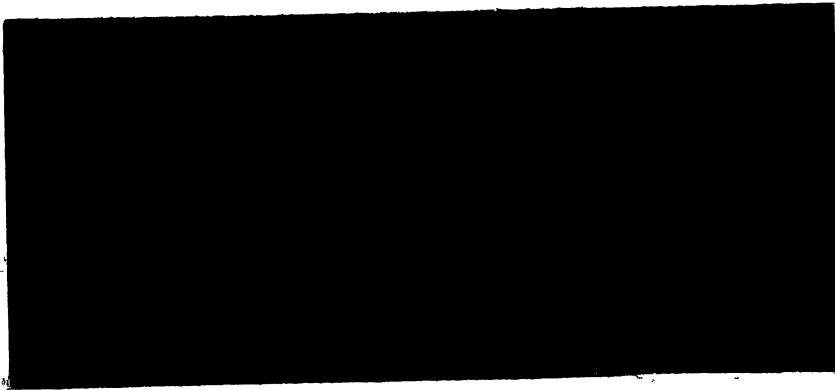
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Limitations of Comprehensive Planning
in the Face of Comprehensive Uncertainty:
Crisis of Planning
or
Crisis of Planners

by
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Erratum

The reference in footnote 10, p. 8 should read, Joseph J. Stern, "An Evaluation of Interindustry Research on Pakistan", Economic Development Report No. 120. Presented at the DAS Conference, Sorrento, Italy, September 5 - 12, 1968. Development Advisory Service, Center for International Affairs, Harvard University, Cambridge, Mass., no date, mimeo.

C o n t e n t s

I. The Policy Irrelevance of Aggregative Models	3
II. Disillusionment and Alternatives	11
(i) Unsatisfactory Growth Rates	12
(ii) The Difference Between Plan and Achievements	20
III. Administrative Considerations	41
IV. Summary	43

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Limitations of Comprehensive Planning in the Face of
Comprehensive Uncertainty: Crisis in Planning or
Crisis of Planners?*

The title of my piece was suggested by Mr. Reginald Green. The subtitle is my own desperate, or if you wish, cynical interpretation of its meaning. There does seem to be a general re-evaluation of what planning is and can do. India, by sheer size of its country and problems, but also by priority in time and intellectual excellence of its planners, has tended to dominate the field of non-Soviet type planning theory and practice. It has been presented frequently as a model of what planning meant. More recently, the difficulties and delays with the formulation and acceptance of the Fourth Plan have been analyzed in a conference and an excellent book on The Crisis of Indian Planning¹ and has suggested my alternative title.

I shall continue to refer to The Crisis of Indian Planning as an argumentum a fortiori: Indian planners "rely too much on bad data...

... overemphasize the big aggregates of heterogeneous items, and neglect detailed and concrete analysis of social and economic microcosms";²

* I acknowledge with thanks the critical help of Professors Ian Little and Paul Streeten, Oxford University, and Elliot Berg, Peter Eckstein, and Richard Porter at the University of Michigan.

¹ Paul Streeten and Michael Lipton, eds., The Crisis of Indian Planning. Economic Policy of the 1960's. Issued under the auspices of the Royal Institute of International Affairs. Oxford University Press. London and New York, 1969.

² Ibid. p. 7

produce sophisticated planning models with questionable connection to
now
facts; have neglected until/cost-benefit analyses in making investment
decisions;³ and have pursued an import substitution policy at the end
of which foreign exchange earnings "scarcely cover the current demand
for raw materials and capital replacements."⁴ Surely if this was wrong
in the supposedly more sophisticated Indian context, it is a waste of
time to seek an "improvement" in Africa by introducing similar procedures
there.

My title is intended to suggest that whether there is a crisis and
whether there can or cannot be "comprehensive" planning, depends very
much on what one expected in the first place. If the problems are
wrongly seen it must be expected that the answers will be wrong or at
best irrelevant, and the world being what it is, this will become
apparent sooner or later. If you think that perfectly real tough prob-
lems can be made to go away by a process of logical incantation, you will
necessarily be disappointed, particularly if your logical incantations
pay more attention to internal consistency than to relevance to reality.
But if you recognize the very severe limitations of reality and would
rather suggest a minor improvement in reality and in the hard life of
the ordinary African or Asian than construct yet another elegant scheme,
then perhaps planning, even comprehensive planning, has an important
place. I suggest that what is happening is a crisis of planners; and
what may hopefully emerge is that attention is directed to the real
problems of development instead of the homemade ones of development
planners.

³Ibid., p. 171

⁴Ibid., p. 75

Perhaps a tentative definition of "comprehensive planning" is in order in this place. Since the rest of my discussion really is a more detailed working out of what I feel the more relevant meaning is, the initial definition must be a little cryptic.

Comprehensive planning involves rational target setting and the prescription of optimal paths to achieve these targets. It also involves a way to deal with general interdependencies, preferable in a precise quantitative manner. Such a definition is so general that one cannot disagree, or be very sure just what it is one has agreed to. Differences come in two major respects. This first is that one view of planning implies that one can know and control the future. This has often the implication, secondly, that planners must have the last word in everything and occasionally even that they should be executors. When things go astray one blames politicians and other unlovely creatures--perhaps imperialists or communist agents, as the case may be.

Now, we can influence--more or less--the future, but it nevertheless remains largely unknown and largely uncontrollable. I prefer to think of comprehensive planning as policy formulation and decision making with the knowledge that not only the future but even the present is largely unknown; that compromises are essential--is not this the real meaning of marginalism?--that decisions should be made by allowing for as many interactions as possible; and that they should be made on as detailed a basis as possible.

I

The Policy Irrelevance of Aggregative Models

Let me start with the widespread preference for aggregative planning

models. There are several related points I wish to make. The first is that they all "rely too much on bad data." The other is that even when the data become better than they are everywhere aggregative models will be of very limited usefulness for decision making for the future (though they may be very useful to explain what happened in the past).

(a) Modern economic growth, as Kuznets and others have pointed out, is the application of science to production. "Science" is a method in which assumptions and conclusions are continuously tested against reality. Too much of what goes on in economics in general and in economic development planning in particular is more akin to astrology than astronomy: there is the same emphasis on pseudo-scientific measurement and models with the same lack of factual basis and true testing, and the same lazy invention of data rather than collection by a tiring (not to say tiresome) process of field work. Streeten and Lipton have stressed the undue reliance on bad data, overemphasis of heterogeneous aggregates, and neglect of essential detail. To this we should add the sheer invention of facts and the pretense of knowledge where none exists.

This is a criticism that applies world wide. It is a criticism of methods of planning as well as of specific applications.⁵

⁵The Economist, Sept. 6, 1969, had a page (41) on American "Monetary Glossary" problems:

"Mr. Henry Wallich has worked out ten separate definitions of the money supply alone. Mr. Paul McCracken said of the money supply recently--...--that: "the figures have fallen apart on us! Mr. Otto Eckstein said: "if it really is the money supply that is to be regulated, there had better be agreement on the figures...who would rest a policy on so weak a statistical reed?"...the Federal Reserve's weekly money supply release...had notations indicating that [the figure for one week ended August 13th] was both 'preliminary' and 'revised'!"

Yet, can any one doubt that there is not one underdeveloped country (and not many developed ones, if any) that has more reliable statistics than the U.S.?

Surely, when "only 11 per cent of the 646,000 (Indian) villages are connected with the rest of the country by all-weather roads, one out of three villages is more than five miles from a dependable road connexion,"⁶ one is entitled to suppose not only that "the spread of new attitudes and techniques as well as the movement of physical goods"⁷ is impeded, but that the knowledge of what goes on in the rural sector--in India as elsewhere in the underdeveloped world much the most important sector--is likely to be woefully bad. Indian agriculture in 1966 may indeed have contributed 115.95 billion rupees to a national income of 241.57 billion rupees⁸ or 48%; but the contribution might just as well have been 150 billion rupees or 60% (for example, if the planners and statisticians had less of an "urban" bias, as Lipton calls it) or perhaps only 100 billion. Moreover, as the OECD publication puts it:

A large number of the basic statistics available is derived from sample enquiries. The results of these enquiries are often contradictory. Moreover, the relationship between the sample-size and the universe-size is little known.

The estimates published by the (Indian) Central Statistical Office do not as yet include data on private consumption, capital formation and saving. Several tentative estimates were calculated for these items by various official agencies and individual experts... Extreme caution should be exercised when using this information which is not comparable to other national accounts data.⁹

⁶ J. M. Healy, "Economic Overheads: Co-ordination and Pricing," in Streeten and Lipton, op. cit., p. 164.

⁷ Ibid.,

⁸ OECD, Development Center, National Accounts of Less Developed Countries, 1950-1966, Paris, July 1968, p. 144.

⁹ OECD, op. cit., p. 140.

I am quoting these points at length for a number of reasons. The first is frankly somewhat personal: it has been suggested that Nigerian national accounts data, for example, are unusually bad, while other data (Indian?, East African?) in the underdeveloped world are much better. I suggest that such differences that do exist are not relevant for the problem before us, and that the Nigerian statisticians should not be downgraded merely for being more open about their product and its weaknesses!

The second point is less personal and hence more serious. We do need quantitative economics, after all, because numbers do make a difference, and sensitivity tests are obviously both necessary and useful. But you cannot argue that the problem of data is adequately dealt with by making such tests. If you find that results are not sensitive to variations in your quantities, they do not seem very useful for policy making. But if your results are sensitive to the data, you surely should not use them for policy purposes unless you are quite sure that they are good.

(b) But I would go much further. Reliance on aggregate statistics makes some sense for policy purposes, when the data are good and have been built up for micro-data in a reliable manner, and when a general policy decision can be relied upon to be translated by thousands of officials, business men, consumers, peasants and workers into the detailed actions that alone are reality. It would make little sense even if the data were much better than they are, to use them as a substitute for policy. Thus aggregate data are used to set targets for the economy and its major sectors. Such targets are in fact "physical" even when

they are expressed in terms of money. Now it does make sense in some respect to set real physical targets: so and so many hospital beds for adults and so and so many for children; or y tons of phosphate fertilizers etc. But here we deal not with this kind of specific physical or monetary target, but with abstractions of little if any real content, such as "output" or "investment," whose very meaning depend on the precise knowledge of their composition. The consistency of such targets become as irrelevant as the targets themselves. The aggregates themselves are concepts that cannot be acted upon. They are at best summaries of past events.

This criticism goes also for the manner in which programming models or input-output methods are used. First, the "sectors" are usually much too crude, they have inherently no reality; there simply is no such thing as "agriculture" as a policy parameter. Even a 100 x 100 table is much too aggregated for policy purposes. Even when the data actually refer to the economy in question rather than being taken from some other economy, input-output data refer to interindustry purchases and not to technical coefficients, and the purchases may or may not reflect efficient operations.

If interindustry purchases are to be used for projecting targets and allocating resources they ought to be economically optimal. When the market works reasonably efficiently, they will be so within practically tolerable limits. They will not be so when the market is imperfect or significantly distorted by deliberate wage, price, or exchange rate policies. Hence it is not permissible to use coefficients derived under such circumstances as a substitute for the market. Communist

planning (which in the past did not use prices as a planning tool) has always been conscious of this problem and has substituted various input and output norms for actual past performance--though not always with outstanding success.

The implications of these criticisms which are, of course, quite well known, are several. First, the ideas which the aggregative models try to quantify are important and must not be neglected: interdependences are important and their neglect will cause trouble. But at best the methods can be used to delineate only some targets for inputs and outputs.

Secondly, however, they can under no circumstances substitute for either the market or deliberate policies.¹⁰ The notion that there is a unique relationship between investments, or more generally inputs, and outputs is faulty on several counts. The efficiency of management varies, and with it the factor (input) proportions and the input-output relationships. Efficient management will in addition react to the circumstances

¹⁰I can refer to two examples. R. S. Eckaus, "Planning in India" in National Bureau of Economic Research, Max F. Millikan, ed., N. Y., 1967, National Economic Planning, pp. 305-369 has a most sophisticated planning model of the Indian economy. Alan S. Manne's criticism of the technical aspects do not concern us here; Edward S. Mason's criticisms do. They are, in a nutshell, that the model is simply irrelevant for policy making purposes, and is likely to remain so for the foreseeable future.

Joseph I. Stern, "An Evaluation of Interindustry Research in Pakistan," unpublished paper presented at the Conference of the Harvard Development Advisory Service, Sorrento, Italy, Sept. 5-12, 1968, (mimeo. pp. 54) tested the performance of input-output analysis for errors in data, in coefficients, in the level of aggregation, and compares results of the more sophisticated input-output analyses with much cruder ones, which sometimes do better and never seem to do noticeably worse.

When economies are wide open and relatively unsophisticated, so that one or a few investments may change all coefficients derived from inversion, it is in any case dubious whether the effort is worthwhile.

into which it is put. If the exchange rate is wrong, it will use imported inputs wrongly. If foreign exchange allocations are used, it will (if the proper price is not charged) make matters worse. By now one has so many examples from India, or the communist world, that one is embarrassed to repeat the point. But it is essential to my argument: what will happen will depend on these other wage, price, tax, exchange rate policies. Hence they must be used to bring about the desired ends. Aggregated models can at best give input and output targets. Direct government intervention can at best insure the "fulfillment" of input targets--and that really only for a few very large scale favored projects¹¹ while their "economic" effect turns all too frequently out to be a more Freudian rationalization. Output targets cannot be achieved in such a manner. Nor can they be effectively set at the usual level of disaggregation.

Despite the fact that the criticisms voiced are really obvious and well known, the planning methods are not considered to be just in an experimental stage (as they would be if we dealt with an equivalent problem in physics or business); rather, having stated the criticisms, one proceeds anyway. The disillusionment is inevitable.

How can one explain that so much time is spent on methods whose effectiveness has nowhere been demonstrated and which everywhere lack an adequate factual base? On a psychological level one may venture the explanation that they seem elegant, hence attractive; but also, as the chief planner in one country surmised, they allow a flight from a politically and socially intolerable reality. On a safer level for an

¹¹This probably accounts for the fact that they are so much favored.

economist, one may surmise that the various comprehensive and aggregative planning methods and models used or allegedly used in India and elsewhere are considered to be the planning methods, the only ones appropriate to mixed and imperfect economies. Setting targets and specifying optimal paths to reach the targets seem to imply the use of the aggregative methods--or else there is nothing. Therefore it seems better to use them and the data, however imperfect they may be, than not to use them at all. It is the argument of this paper that this is not necessarily so. It is one's respect for facts that should make one suspicious of aggregative methods and aggregative data.

Of course aggregative planning projections are useful: but their usefulness depends on the quality of the data underlying the aggregations, the realism of the planners, and the adequacy of the policy prescriptions. They are useful primarily to check the consistency of what it is proposed to do. And there, too, the consistency will be meaningful only if the aggregations allow policy conclusions to be drawn, if the data are based on pains-taking detailed work, and if the policy proposals are suitable as well as feasible.

The main point is however not that the aggregative data are bad and no substitute for policy. It is, rather that one cannot invest in general, one cannot act positively in general. One can try to save in general, since saving is a negative act of refraining from consumption. But investment (and virtually every developmental decision) requires a positive act that must take place at a certain time, in a certain place, and within definite limitations. To link the general act of saving as influenced tax or interest rate policy, say, to the particular act of

investment requires, if things are not to go wrong, detailed knowledge.

Investments are after all wanted for their contribution to future output. Their value derives from that future output. To set targets for investments or for future output becomes impossible without detailed cost-benefit analyses. The aggregative models cannot tell whether input or output targets are economically sensible.¹²

This implies that a scheme that is suitable to describe and perhaps explain the past, is not sufficient to make decisions about the future, which is what planning is all about.

II

Disillusionment and Alternatives

One reason for the disillusionment with comprehensive aggregative planning has been that after considerable efforts, underdeveloped economies are still poor, even if they grew--for a few years--at a satisfactory rate, that actual growth rates fell frequently short of planned rates; that the gap between rich and poor did not seem to close; that many balances of payments showed no significant improvements¹³ and

¹²This is also the point of Ian M. D. Little and James A. Mirrlees, Manual of Industrial Project Analysis in Developing Countries, Vol. II. Social Cost Benefit Analysis. OECD, Development Centre Studies, Paris, 1969. Ch. I summarizes Vol. I Ch. II, on "Plans, Project Choice, and Project Design," pp. 57ff. has a judicious discussion of the relation between a plan and projects, pointing out, with British understatement that "the argument...that a proper analysis of projects itself requires good plans, can be overemphasized," (p. 61). The point is also developed in my Planning Without Facts, Harvard University Press, 1966; and S. Chakravarty, The Logic of Investment Planning, North Holland, 1959, implies as much on a much more austere level of abstraction in his Ch. VI ("The Model in an Open Economy") and Ch. IX ("Prices in the Open Dynamic Model").

¹³It is more than likely that the policies of import substitution necessarily contributed to balance of payments troubles whenever they were planned without proper regard to profitability. But to discuss this here would burst the bounds of this paper.

even deteriorated even after all the "import substitution" that was going on; and that all too frequently what happened bore little relation to what was planned to happen.

(i) Unsatisfactory Growth Rates

Leaving aside the uncertainties of the numbers,¹⁴ why this emphasis of planning for high growth rates in the name of accelerated growth and in the face of substantially slower performance in the past? In criticizing the draft outline of the Fourth Indian Plan, A. H. Hanson referred to this unrealistic target setting as "idolatry."¹⁵ I prefer to call it "hybris." A number of explanations can be suggested, each of them in turn implying a way of looking at planning that is bound to fail.

There is, first, the magnitude of the real problems. It is understandable that compassionate persons should want to achieve high growth rates in the face of a low base. It seems almost inhuman to suggest anything less.¹⁶ The case becomes even stronger when in addition to an accelerated growth, other desirable targets are set. If the average income of the lowest income groups is to rise fast, while at the same time there are limits to the redistribution of income that can be achieved politically or that is desirable economically (because supposedly only the rich save), a high growth rate offers the best way out of

¹⁴OECD, op. cit. suggests that the numbers generally are so poor that reality may differ as much as 50% from the given data!

¹⁵Streeten and Lipton, op. cit., p. 40.

¹⁶This is not self-evident. In the short run there may be a conflict between present and future consumption. It is possible that a further depression of the existing already pitiful standards of living will raise future incomes faster and that a compassionate person may wish to reduce the sacrifices imposed upon present for the benefits of future generations.

this dilemma. The puzzle remains why the practice of planning such growth rates continues in the face of past inability to achieve even half the rates; or why planning for high rates should be considered politically or morally superior to planning for more realistic lower ones.

I forego speculation on the political consequences of the disillusionment that is bound to follow the raising of such unrealistic expectations coupled with policies designed to achieve the impossible. There are obviously other and more important reasons for unfavorable political developments than bad economic policies. I feel certain, however, that in many countries the economic policies pursued contributed to the political difficulties: in Ghana or Indonesia, the patrimony was used up in a vain attempt to raise permanently the level of production, the resources needed to continue the development effort were therefore not generated, and the "dynamic" political leaders necessarily found themselves without the means to continue their "dynamism."

Rather, I would point to a fundamental economic difficulty with such attempts at perspective planning. Planning involves in this view the belief, first, that the present is known; secondly that the future is knowable; and thirdly that one can control events sufficiently to achieve the knowable future. All that is in this view necessary is "the political will" to translate into action what the planners have found need to be done.

By formulating the problem so bluntly, I have already indicated what I believe is wrong with it. The idea that a sufficient will can overcome any obstacles, quickly and almost without caring about the rationality of the actions involved seems to me a belief in magic.

First, the starting point of the planner is obviously and painfully only very imperfectly known. Planning models may be useful to clarify inter-relations and to teach economists how to work with numbers. It does not follow that, if numbers are introduced into an aggregative model, one knows sufficiently for policy purposes where one stands and what needs to be done. What may be good enough for teaching, perhaps even for an explanation of past developments, is most emphatically not good enough for decision making that relates to the future.

Secondly, most of the future is inherently unknowable. Again this obvious statement raises a number of questions. One cannot plan without having some sense of direction. Contingency plans or rolling plans to allow for knowledge as it becomes available are two possible answers. Yet, the further in the future the targets are, the more vague they must become. Specific technical targets are easy enough to set: x mil. kwh to be generated by 1980; or y% of all school-age children to be in school by 1975. There is no difficulty about these kinds of targets, and "all" that remains are the technical difficulties of justifying them economically and specifying the path to achieve them!

A long term perspective plan will include a few of such knowable targets; a short term plan should, of course, be crammed full with them. In both cases, the specific content of the targets and the paths to achieve them should be subject to revision. However whether the electricity target makes sense depends on how it is to be achieved and what it is to be used for; the rationality of the education target depends on its detailed content, and is the more difficult to specify the higher/^{the} education that is planned.

Most targets, however, cannot be so specific and physical. And the paths to achieve them cannot be meaningfully defined by specifying the amounts of investment in general. When the particular programs are to be made concrete, as they must for action to be taken, what can be done now begins to loom very large, and present bottlenecks determine what can be done. Moreover, the prediction of bottlenecks becomes essential, and by the time one has overcome them, one may have arrived at a quite different place from the one planned for--and if technologies have changed, one may be glad one did.

This means, first, that no path may exist from the present to the planned future target, though if the path is not worked out in great detail on a micro level, the planner may not be aware of the phantom nature of the path! It means, secondly, that one need indeed specify the distant future only most generally. But this implies, thirdly, that when it is to be decided just what has to be done specifically, one can and indeed must largely ignore such targets as that savings are to be raised to $x\%$ and investments to $y\%$, and even that investments in a "sector" are to be z million dollars. Overall aggregative planning neglects the time relationship inherent in changing anything. It usually says nothing about such facts of life as that savings in period 3 can be achieved only if certain specific things are done in periods 1 and 2. Attempts to change reality very quickly reveal literally non-dynamic thinking, since a time path is the essence of dynamics. Such planning also tends to neglect the next step in favor of a rosy future by pretending that one can virtually overnight change the structure of the economy and with it solve the hard core of the development problem!

The planning literature is of course not unaware of these problems. The problem of the size of planned expenditures is dealt with essentially

by trying to match available resources with planned targets and by the discussions on how to design an optimal program. The "dynamic problem" is discussed in connection with time lags arising out of different kinds of investments, occasionally in connection with capital output ratios associated with different industries and lags.

But the decision problem is really quite different. In the "present" time there is a certain limited knowledge of where one stands; and an equally limited knowledge of what the available resources are; and a limited knowledge of what could be done. Pushing out these limits will, of course increase the range of possible decisions as well as the resources to implement them. But this ignorance is inherent in reality. The only way to reduce it--it can never be eliminated--is to work on the next step. The only way to make a rational decision for the next step is to make sure that one's decisions lead to an increase in resources and to ensure as far as possible that no feasible and known alternatives are overlooked.¹⁷ The inherent uncertainty about the present and the future can be dealt with by ensuring as far as possible that the future is not blocked. Using up one's foreign exchange reserves while planning for increased foreign aid and no improvement in the balance of payments is an example of a likely blocking of the future. So is an investment pattern that recklessly burdens future savings. Neither of these two examples need be nonsensical, but they are clear and observable danger signals.

But this again means at least two things: some kind of cost-benefit calculation must be made from the very beginning. Only if the net result

¹⁷This includes policies that counteract the possibly stifling effects of "non-resources" on the range of choice, such as the existence of monopolies.

of a disposition of resources is more resources can there be growth. The volume and pattern of investments can only thus be determined and not by setting output targets which then are to be achieved by investments calculated by means of capital-output ratios. For whether the output can be achieved has to be determined in detail, at the same time when it is determined whether it makes economic sense that it should be achieved in the first place.

It means, next, that time path considerations become of the essence. You cannot average out available resources over time. The resources needed two years hence must be available two and not three years hence. If they are not, they will not be available in the third year which presumably required that certain things happened in year 2. If you cannot swim and have to cross a lake, it does not do much good to know that on the average it is only one yard deep, if there are in the middle 25 yards with a depth of 50 yards!

Of course, you could run down previously accumulated foreign reserves or borrow to get through the lean years--provided the use of the reserves or of the additional foreign indebtedness gives reasonable assurance that the higher end could be reached in the specified time. In any case, the needed information is not contained in the aggregative planning; it is not contained in capital-output ratios. It is contained in reasonably thorough cost-benefit analyses and detailed economic evaluations of specific projects. It does not make sense to plan any physical target without such cost-benefit type investigations because neither demand nor cost are independent of prices and wages.

In addition, the ignorance of the present and the unknowability of the future require that a process of experimenting and learning is built

into the planning. Hanson comments scathingly on the strange habit of (Indian) planners to assume that everything will go all right. ¹⁸ And, of course, there is a strong optimism underlying Hirschman's approach to development, which may be characterized as the theory of unbalanced growth. But Hirschman's point is really different: development necessarily proceeds in an unbalanced way (which is most certainly true) and the unbalance will create pressure on the lagging parts of the economy, which the successes in the leading parts have transferred into bottlenecks. But if the "leading" part itself was ill designed or perhaps too far ahead, too tightly planned, the response of the rest of the economy may be much less certain. The "hiding hand" cannot always be relied upon to rescue human frailty, ¹⁹ and even less human conceit.

Indian planners are in this respect no worse or better than their colleagues in other parts of the globe. Yet civil engineers build in safety factors of seven and in electronics they run at least 30%. We have recently seen the success of the lunar landing. But to achieve it, continuous tests were needed and one lunar module was destroyed in an unsuccessful test. If the moon landing had been planned with the same tightness that gets such good marks in economic planning, only one lunar module would have been built, and the program would have failed.

¹⁸"...one is never surprised when some little back-room planning bureau in a Ruritanian-style country comes up with a comically inflated projection of growth. But one is surprised when planners as knowledgeable, experienced, sophisticated and prestigious as the Indians do the same--particularly when the failures of their past exercises in this genre are available for contemplation. Yet the practice of setting 'minimum' objectives, realizable--if at all--only on the supposition that the most favorable possible combination of circumstances actually materializes is evident..." A. H. Hanson, in Streeten and Lipton, op. cit., p. 40. If Indian planners are no worse than others, neither do they appear to be any better. A good argument can be made that economic policies have, on the whole, been better in the supposedly less sophisticated African countries than in Asia or Latin America.

¹⁹A. O. Hirschman, Development Projects Observed, The Brookings Institution Washington, D. C., 1967.

The ignorance of social and economic data is at least as great. Costs have consistently (and with only very few exceptions) outrun estimates, and not simply because the general price level rose.²⁰ Demands have lagged; complementary industries were not finished in time, etc. It may or may not make sense to use "unbalanced growth" as a stimulus to action à la Hirschman or to rely on the benevolence of the hiding hand; it makes no sense to ignore ignorance and eliminate safety factors necessary to overcome the inevitable failures.

It makes no sense to plan on an exhaustion of foreign exchange reserves. It makes no sense to leave no leeway for raising rates in emergencies and to plan budgets without contingencies. It simply is wrong to assume that feasibility studies will be finished in the shortest possible time, that world prices for one's exports will be higher than they are likely to be. Every planner and policy maker can add examples.

A substantial safety factor is also needed to allow for the capacity of the existing civil service and the corresponding personnel in the private (or state enterprise) sector. A plan that cannot be executed is an absurdity. Its supposed stimulating effect is shortlived, more the

²⁰This has been just as true for the American space program or some of the military procurement programs as for underdeveloped countries-- and for similar reasons. There was no precedent for the moon landing, just as there is no real precedent for much of what has to be done in underdeveloped countries. Obviously, there are differences: Dam constructors have accumulated experience, and geologists are highly trained scientists. Yet no matter how many test holes are bored, when the foundation of a dam is built there still are apt to be surprises, and grouting may cost a great deal more than expected. At the same time, there are in both cases procedures of questionable ethics as well as of questionable efficiency: see, The Economics of Military Procurement. Report of the Sub-Committee on Economy in Government of the Joint Economic Committee. Congress of the United States. 91st Congress, 1st Session, Joint Committee Print, Washington, GPO, May 1969.

effect of alcohol than of solid food. The quality and amount of the personnel must determine what can be done and how it is to be done. This problem--which is generally recognized to be central--is also ignored by the aggregative planning from the future to the present.

(ii) The Difference Between Plan and Achievements

So far I have tried to sketch out the central limitation on aggregative overall planning: that it not only presumes a knowledge which inherently cannot exist but that it uses inherently nonoperational methods--appearances to the contrary notwithstanding. I have also already suggested that for meaningful planning to proceed it is not necessary to assume the impossible; indeed I have stressed that it is necessary not to do so. The analysis of the discrepancy between what happens and what is planned to happen may shed further light on how planning may meaningfully proceed.

It is obvious that what will happen depends on what one does, and not on what one plans. "One" refers both to the Government which sets targets and executes some of them directly through Government-owned enterprises; but which executes most of them through policies. "One" refers, however, also to all the people who are to be affected by the Governmental policies and they, too, may be managers of Government enterprises or private persons.

Now it is again comparatively easy to execute specific physical targets, such as the construction of a dam or a mill. All you have to do is to hire a foreign contractor or engage in turnkey operations. It is already with such targets very difficult to make sure that (a) they stay reasonably within the cost estimates; (b) they are finished reasonably

on time; and (c) they are reasonably profitable, i.e. that they fulfill their economic purposes.

When it comes to the economy as a whole, good policies become crucial. Such targets as the raising of Government revenue, the holding of expenditure levels for non-economic or administrative purposes to certain levels; or the earning of a certain amount of foreign exchange and the level of desired import substitution; all of those are essential economic targets which cannot be executed in the manner of physical targets (like a dam or a steel mill) and which depend on good policies--and, to be sure, a certain amount of good luck for that part of the problem over which the country has no control.²¹

Let me illustrate with three examples: agricultural policy; balance of payments policy; budgetary policy; three areas that are at the very center of effective planning, and that are closely related. Agricultural policy is part of general "industrial" policy, but output is usually produced by thousands of comparatively small units, and it is hardly possible to engage in turnkey operations as a substitute for a well thought-through action or as a short-cut to achieve an otherwise reasonable aim.²²

²¹This includes policies of other countries. But it also includes future developments. It is sometimes said that the spectacular economic development of the Federal German Republic was largely due to "luck." No doubt, this is true. But it is really a very great if somewhat unintentional compliment to German policy makers that they grabbed the opportunities that arose. How many underdeveloped countries have shown such flexibility?

²²There are, of course, large farmers, and there may be examples of successful agricultural "turnkey" operations though I am not aware of any one. But the failures of rapid mechanization without the host of other policies, investments, changes in procedures etc. that have to be undertaken to make it successful abound. The failures are, all the more surprising as the advocates of such a rapid transformation usually quote also Hirschman's linkages and the rest.

Agriculture frequently provides most of the export earnings; it supplies most of the food; and it supplies most of the employment. And it does all that for the foreseeable future. Clearly, whatever additional sources of export earnings are developed, there is no sense in destroying or neglecting those one has. Since the elasticities of demand for export products are largely outside the control of a country,²³ it can influence the price only through common international action. But it can do something about the productivity of particular industries (as was not or not adequately done with Indian tea or textiles); it can make a price policy that does not kill the goose that lays the golden eggs (as there is every evidence with palm oil in Eastern Nigeria); and it can make sure that the necessary inputs such as fertilizers, or spraypumps, or insecticides, are forthcoming even if they have to be imported (as there is evidence in Ghana that they have not been). Concern with fluctuations in raw material prices and the elasticities of demand must not allow attention to be diverted from improving productivity as long as the export earnings are worthwhile; or from pursuing a reasonable domestic producer price policy, unless it can be clearly shown that uses of the tax implied in low producer prices are superior from the standpoint of the economy as a whole to allowing a higher farm income. It is occasionally implied that the uses of the tax money have no opportunity cost, that peasants would have "wasted" the money anyway. I find this difficult to believe. Higher producer incomes, even if consumed would

²³ Largely: something could be done by export campaigns etc. to increase the international desirability of the export product.

have expanded the market also for nonagricultural goods,²⁴ while misinvestments burden the future as well as the present.²⁵

West Africa has good export goods in cocoa or palm oil or ground nuts. But even for tea in India, or sugar in Cuba, or coffee in East Africa, -- the last two being commodities for which international agreements exist-- a case can be made that whatever else needs to be done, the productivity of export goods must be increased. It makes you competitive, and at worst it allows you to withdraw resources from the production of goods without reducing export earnings; at best it will make it possible to increase those earnings.

When it comes to food, a country like Nigeria is probably much better off than India; this is not so clear for Dahomey, say, with its rapid increase in population and meager resource endowment. At least, Nigeria need not worry about feeding its population should PL480 food cease to be available. Nor does it apparently have to worry too much about a conflict that may arise between keeping the urban cost of living low while keeping the earnings and incentives of farmers high: even the serious disruptions caused by the civil war have led to only temporary

²⁴The arguments as found in reality seem to imply (a) that farmers do not save. In this case it is implied that consumption as such is inferior to investments no matter how inefficient. Or (b) that increased consumption may go for imports and hence provide no stimulus to other domestic industries. This is a question of fact. But if demand rises sufficiently, it ought to make economic domestic production possible. If it does not, the balance of payments consequences are hardly a reason for not allowing higher incomes. Low producers prices must be defended on the basis of the uses to which the taxes are put.

²⁵This is true in a double sense. Most investments engender future operating cost. Even if they do not-- a road that goes nowhere can be allowed to deteriorate--they still represent a misuse of resources which has reduced the productive capacity of the country below what it could have been.

and local price increases of traditional foods in the territory of the Federal Republic, and in normal circumstances the supply responses of farmers with respect to traditional food stuffs appear to be quick and positive. These are all problems in India or, apparently in Latin America, but also in Dahomey and more generally in countries whose "industrial" and foreign exchange policies have nurtured high cost economies whose efficient integration into the growing world economy has been made increasingly difficult by the very policies that were to solve that very problem. In most African countries the problem is so far one of improving the diet, perhaps insuring that increased incomes that normally go to imported higher grade foods find an adequate cheap domestic supply. Here, too, the Nigerian experience has shown a most encouraging feasibility in substituting higher grade domestic for imported foods at reasonable prices.

Any conflict between the urban and rural policies that remain after reasonable price and wage policies have been adopted can be resolved only through increased productivity. This is partly a technical problem requiring research at all levels, partly an incentive problem to induce farmers to adopt practices that have been shown to be effective. Involved are "packages" with various time horizons, from very long biological-genetic research into proper seed stock and the development of supply and marketing channels, to the development of proper extension services, to a tax policy that allows the adoption of improved practices, to a foreign exchange policy that allows the necessary importation of fertilizers, seed strains, insecticides etc.²⁶ to a tariff policy that in the

²⁶ See the extensive studies on Nigerian agriculture made by CNERD at Michigan State University. Also J. C. Wells, Agricultural Policy and Economic Growth in Nigeria, 1962-68, forthcoming.

attempt to reduce the importation of luxury cars does not at the same time discourage the importation of utility cars and trucks, and so on.

I have mentioned already the quite well documented case of over-taxation of oil palm products in Eastern Nigeria. There are well documented instances of the wrong policies undoing the best (and sometimes not so good) plans in Ghana, India, Turkey and elsewhere. Thus Lipton points out that plans for agricultural crops bear little relation to past experience in India because of the policies pursued. For example, sugar production kept growing too quickly even though it was intended to hold its growth back to free water and fertilizer for food grains.²⁷

Something similar happened with sugar in Turkey: given Turkish price policies, it is just too advantageous to produce sugar. And something similar obviously happens in much soviet-type planning, where the fixed plan prices induce managers to produce the wrong goods, even when gross production plans are supplemented by assortment plans and the rest.

In Ghana, huge expenditures on agricultural machinery reduced output per man and per head below even subsistence levels mainly, one suspects, because the tractors were merrily used to clear land when no thought had been given what to do with the land once it was cleared, so that after a while it just reverted to bush.²⁸ But the evidence accumulates also that even in India, output per acre and perhaps per man is higher on

²⁷ M. Lipton, in P. Streeten and M. Lipton, op. cit., p. 100/101.

²⁸ This, and similar facts elsewhere--the evidence for negative value added in Pakistan, or capacity utilization of 10% and the like--suggest that much subtlety on models to determine precisely what interest rate or wage rate should be used to value a project is somewhat misapplied.

smaller than larger holdings²⁹ while price and balance of payments policies favor larger operators (whether private or state farms).³⁰

I am quoting India because, if this is true even in that land-hungry country, it is obviously much more true in comparatively land-abundant Africa. Yet, despite evidence to the contrary investments are concentrated, nay wasted, on farm settlements and workers brigades, tractors and the like, as if such measures were magical incantations that make thinking about the proper policies unnecessary. Yet on the whole, one is happy to note that Africa has been much better on matters of agricultural policy than other parts of the world.

The failure to "hit upon a combination of policies which will ensure a high and sustained rate of growth in agriculture"³¹ in India and elsewhere has, of course, other serious consequences. To the extent to which the recent studies of Indian agriculture are correct and applicable to other areas, the combination of high taxes on farmers

²⁹ See M. Paglin, "'Surplus' Agricultural Labor and Development," AER, Sept. 1965. Lipton, op. cit. p. 106 makes the same point, though more cautiously.

³⁰ As a recent conference at Glasgow in September 1969, Professor Hla Myint made this and related points most forcefully. It is painfully easy to give examples. In one country I know scarce foreign exchange is liberally allocated to the construction of dams and major irrigation works (which are indeed executed with admirable efficiency) while the Government Department that constructs the minor irrigation works and actually gets the water to the farmers is starved. In Ghana, tractors for state farms were easy to come by while spray pumps were not. Fortunately, there are also examples of the opposite in Nigeria or Pakistan. For an account of somewhat different difficulties which innovation by small operators had to overcome, see Robert L. Samson, "The Motor Pump: A Case Study of Innovation and Development," Oxford Papers, Vol. 21 No. 1, March 1969, pp. 109-121.

³¹ Streeten and Lipton, op. cit., p. 342. World Bank studies indicate that since 1967, when the book was drafted, there may have occurred a breakthrough in this area.

and inefficient spending of Government revenues outside the agricultural sector will aggravate employment problems, even if the failure to raise agricultural productivity and output has no other serious consequences for the economy.

Increased taxation of agricultural output will reduce its returns, hence stifle incentives to expand, and in extreme cases lead to a withdrawal from the money economy. Unfavorable foreign exchange allocations will reduce the incentives as well as the ability to introduce innovations. At the same time, resources spent on ill thought through industrial projects--or for that matter on farm settlements and similar projects--cannot conceivably either create much employment or lead to imitative adoption by farmers at large. The high wage policy in the cities defended on the basis of "need," or on the grounds that they are not really high because they really represent a family income³² increase a wage gradient which leads to an accelerated flow of labor into cities.

If the projects using the resources extracted from the farmers are well designed and economic they will at least not lead to budgetary and foreign exchange problems. If they are poorly designed and noneconomic--which is all too frequently the case--the resources will not generate more resources in the future and will thus lead to a budgetary and foreign exchange problem. Moreover, when "underemployed" farmers become "unemployed"

³² I am not arguing that unemployment or urban problems can be solved simply by proper price and wage policies. There exist population problems about which this paper says nothing. The hard development problems consist in technical changes and modernization. These are the real hard core of the development problem, and they cannot be solved quickly or without pain. On the other hand the price, wage, exchange rate, and investment policies actually pursued make the solution of the hard core problems more difficult, and may even make them insoluble.

urban dwellers there arise additional problems of urbanization, slums, housing, and health which cannot be ignored politically and require further resources. The problem becomes aggravated when urban services are subsidized.

The policy thus feeds upon itself: the unemployed must be helped as cheaply as possible, food prices must be kept down, and the productive sectors taxed. All of which adds up to a further reduction of farm incentives, a budgetary problem, and an aggravation of both economic and social problems. Urban problems become virtually insoluble without a proper agricultural policy.³³

Failure to adopt suitable policies necessarily has direct balance of payments and budgetary consequences. In India, the reliance on PL480 imports makes this painfully obvious. But the problem is of course more general. In Ghana, food prices have risen sharply. Fish output did not rise commensurate with the expenditures on the fishing fleet: hence budgetary expenditures and no export earnings or import savings. (Matters have changed for the better in this industry since the fall of Nkrumah). The expenditures on state farms in Ghana or on farm settlements in Nigeria have seriously burdened the budget, but since there were only inputs which were paid for in cash but no outputs worth talking about, the expenditures had to spill over somewhere, and they necessarily aggravated the balance of payments problem. No "transformation" of agriculture can possibly result from projects that have not been thought through and from policies that are self-defeating. Only political

³³I have pointed this out in my "Social Factors in Economic Development with Special Reference to Nigeria," East African Economic Journal, 1964.

III

Administrative Considerations

Finally, I wish to make two brief remarks concerning the administrative limitations on planning. The one is obvious: if you do not have the manpower to execute decisions, the decisions do not do much good. Hence what can be done will depend crucially on the quality and quantity of the administrative apparatus. Indirection is a means of stretching its capacity. Increasing administrative efficiency is important, but that includes its capability of formulating workable policies which will achieve their desired aims with minimal cost.

Increasing efficiency cannot, from the economic standpoint, be identical with improving the effectiveness of a civil service without regard to the economic policies to be implemented. The worst possible combination is an efficient civil service enforcing a foolish policy. Not much better is a civil service which does not understand how indirection works and sees efficiency merely as a comprehensive system of permissions to be given, quickly and impartially, by an all-wise, but also all-powerful, bureaucracy. Power can be real even if it is not seen. But too few administrators at the top seem to understand this.

This is a general problem. Even if it were solved, a second problem would remain. Comprehensive planners tend to assume that comprehensive planning is possible only if they are firmly in the driver's seat. At times they want to be executors, at all times they want the final say in all economic matters. Frequently the organization of the Indian Planning Commission under Nehru is put up as an example of how things should be done.

The point is logical, but not necessarily valid. Political decisions must be made by the political process regardless of the form of Government. Planners are technicians; they should not be technocrats as well. Bringing in the political level at an early stage may or may not be to the good. But planners should present the political decision makers with clear choices that express the economic gains and cost of each. They should not try to outguess the statesmen and become themselves involved in the final decisions which must be made both on economic and on other grounds. They would thereby compromise one of their major functions in which they are eminently competent, namely to point out the economic cost of non-economic decisions.

If planners try to become executors, the question necessarily arises: what do the executive (substantive) ministries do? It is inevitable that the planners would in such a case get the whole Government set against them, or else they would simply duplicate the rest of the Government. This would not merely be a waste of scarce manpower, it would not solve anything. To the extent that conflicts are purely personal, a centralization of decision-making would get rid of them. But most important conflicts have their roots in a recalcitrant reality. If so, the perfectly real conflicts would simply be centralized, which might even paralyze the planners into a failure to make the necessary decisions. If, on the other hand, planners did their proper job honestly, without trying to play games, their influence could grow even as their power waned. Their function should be a combination of the Bureau of the Budget and the Council of Economic Advisors.

IV

Summary

I can summarize my argument quickly. Uncertainties about the present position and possibilities and about the future are inherent in the real world, and no amount of improvement in statistics or computers will change this. The executive capacity of every administrative service is limited. By definition, the better it is, the more there is to do; almost by definition one has never enough. The brain drain from less to more developed countries should be sufficient proof of this assertion. Were this not so, there would be no problem. There is every sense in striving to improve an existing situation which, being human, has its necessary faults. But there is no sense in pretending that the limitations do not exist. If comprehensive planning is defined so as to demand knowledge and power that cannot exist, it is obviously impossible. Much aggregative planning and many logically persuasive planning models have come to grief on the recalcitrance of reality, and there is disillusionment with comprehensive planning. In this sense there is a crisis of planners.⁵⁰

But there is an approach to comprehensive planning which allows for the fact that planners are not God. By concentrating on detailed investigations, limiting the aims of planning to what can be done now, using policy as the major method to get things done, and using the budget more effectively, overall (even "comprehensive") policies for the economy as a whole can be developed which allow sequential decision-making and

⁵⁰ Professors Streeten and Singer have informed me that there was in the fall of 1969 a conference at Sussex with the title of "Crisis of Planning." I notice with pleasure the parallelism of thinking of which I was unaware when I chose my title and wrote my paper. I do not, of course, know what happened at that conference.

recognize both the need for time to elapse and the need to allow for failures, to build in safety factors. If we have learned this, there need be no crisis in planning.⁵¹

⁵¹Mr. Streeten has suggested to me to add a section on how planners ought to be trained, and to expand the discussion of how planners should be placed in the Government. Both would, however, require separate papers. Mr. Streeten has himself contributed to Kurt Martin and John Knapp, (eds.) The Teaching of Development Economics, Aldine Publishing Co., Chicago, 1967. A. Waterston's Development Planning, John Hopkins, 1965, has become an influential classic in the field. The OECD Development Center has organized meetings on training and research, the results of which have been published.

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