CHAPTER II

THEORETICAL EXPOSITION

The theoretical discussion pertaining to small industries can broadly be categorised as under:

1) Gandhist view
   1(i) Socio-political considerations
   1(ii) Employment criterion and
   1(iii) Techno-economic considerations.

Let us elaborate these with a view to obtaining rationale underlying the case for cottage and small-scale industries.

Gandhist view

Gandhi ji and his followers have vehemently pleaded for revival and promotion of small industries. Their arguments can briefly be summarised as follows. In a country where 80 per cent of the population lives in villages, each village should be self-sufficient. Small scale production is the best means to achieve the end of evolving egalitarian society. The solution to the problem of mass unemployment and poverty lies in simplicity and decentralisation. In this form of production "there will
be no room for exploitation, because production will be for immediate use and not for distant profitable market.\(^1\) The machine stands for a great sin since it robs men of their bread. A factory is a great evil. Small-scale production subserves all spiritual and moral values while machine production is opposite of pursuit for spiritual values.\(^2\)

Whether Gandhiji and his followers have been against the introduction of machine or not is a matter of great controversy. According to some\(^3\) Gandhiji was against the use of machines. But others take strong exception to this. They maintain that a careful study of Gandhiji’s views on machines denotes that he was not completely against the machines. As a matter of fact, later on Gandhiji began to favour limited use of machines.\(^4\) He did not object the use of machines as such but the craze for the machinery. To

\(^{1}\) See: Gandhian Plan, Padma Publication Bombay, 1944, pp. 15-17 and also Kedarnath Prasad: Technological Choice under Development Planning, Bombay, 1962, pp. 174-175.

\(^{2}\) Gregg: Economics of Khaddar, Ahmedabad, 1949, p.37.


strengthen this stand following words of Gandhiji are quite often quoted: "...I would rule out all machinery, even as I would reject this very body which is not helpful to salvation, and to seek the absolute liberation of soul. From that point of view, I would reject machinery, but machines will remain because like body they are inevitable..."\(^5\)

Quoting various writings, and observations of Gandhiji, R.B. Gregg concludes that Gandhiji's attitude for all practical purposes is that the use of machinery ought to be limited. The kind of limitation and control which is in the mind of Gandhiji would mean that the majority of all machines should be small, inexpensive, and adaptable to family or individual use, and obtainable by all. The large and expensive machinery like generators of electric power should be strictly limited in amount. Perhaps, they may be owned by the state, and operated only under control of the state for the welfare of the society.\(^6\) This is, in nutshell, the essence of the Gandhian view.

After critical examination of the view, it can be said that one can readily agree with that part of Gandhian


argument that there should be control and regulation of the use of machines. If the use of machine is left free there will be undesirable developments in the economy. It is true that if all cottage and small-scale industries were to be replaced by large-scale industries there would be great misery to millions and lopsided development of the economy. But at the same time one cannot lose sight of predominant line of idealistic thinking in Gandhian view, be it modern or old. From any point of view one can find a strong case for "generation and development of cottage industries as a general programme with a view to attain self-sufficiency for each village".  

If one probes into this line of thinking deeper, one can find that the ideological basis of Gandhian view has been "unsquivocally and vehemently critical of the machine civilisation". There is no doubt about the fact that Gandhian view has been greatly influenced by 'Idea of Tolstoy', that is that the spiritual life of man has very little to do with material circumstances. One can observe the echoes of this idea in Gandhiji's famous book - "Indian Home Rule". It is true, Gandhiji's ideas underwent

changes in his later life. But it should be remembered that this book is still regarded as his testament of faith for the majority of his disciples. After all, what is the main aim of Sarvodaya? It is not economic well-being but the spiritual fulfillment of man. It implies then, that its economics has little if anything to do, with the pattern of technology.

Further, it is implicit in the view that there is a strong plea for a non-profit motive. But this is expecting too much from human nature. A reasonable profit for individuals who undertake risk and uncertainties involved in any enterprise, is essential from a practical point of view. Without reward an entrepreneur cannot perform his functions. Every economic system must sooner or later rely upon some form of profit motive to stir individuals and groups to productivity. The substitution of ideological enthusiasm proves too unproductive. In a broad sense, it can also be inferred that this school strongly advocates the "revival and promotion of cottage and small-scale industries as a part

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of its general programme of reorganising entire socio-economic structure on a decentralised basis, more or less on an old "village community ideals."³

This plea raises a number of questions. Is it ever possible to conceive modern common man, even a great saint, in the absence of goods and services provided by science for both his material and spiritual life? Can modern man be content with sufficient food as a man in Ramayana or Mahabharata or Vedic periods? Would the images of old static social order be successful in attracting the modern man?

Modern man has been endeavouring to come out of the old static set-up of society. The images of primitive social order have failed to attract him. He is not content with sufficient food. He has many wants to be satisfied by goods produced not only in his country but also in other countries of the world. He is aspiring for higher standard of living. He is a part and parcel of highly dynamic world which is moving fastly towards prosperity. Under such circumstances, the ideas like self-reliant village or village community ideals, are utterly unacceptable.

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³ Lakdawala and Sundesara, op.cit., Bombay, 1960, p.64.
An off-shoot of the preceding discussion is that the Gandhi approach to revival and promotion of cottage industries can at best be termed as "socio-ethical" or purely ideological. For, its proponents completely ignore all "pressing problems and renounce all manners of economic calculations." Therefore Gandhist view does not lend for making a really strong case for cottage and small-scale industries.

Socio-Political Considerations

Even today there are some economists who are suspicious about the role of the decentralised sector consisting of small industries. Their main contention is that the basic features of developing economies, no doubt, leave some scope for the decentralised sector. However, they are certain that these industries will wither away when the economy attains momentum. Further, they go to the extent of saying that many types of these industries are surviving in India even today, not because of their economic efficiency but because of artificial props. Students of industrial

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10 A.S.Kuz'min: op.cit., 1969, p.5
history have observed that Industrial Revolution has produced centripetal effects which have resulted in "extreme regional specialisation of industries." Thus in their opinion the trends of the age are against small industries.

But the truth is that many types of these industries are surviving in India and developed countries as well even today without artificial props. Further, it is curious enough to note that the present situation holds exactly opposite trends. Now times are more propitious for a decentralised sector than ever before. Both technology and social sciences have established that a decentralised sector consisting of small units would be most scientific and practical. Recent sociological research studies have pinpointed that small groups and small communities are more desirable than large ones. Similarly, economic operations conducted in small units are better suited in a highly dynamic world. Particularly in the underdeveloped but growth-seeking economies such activities are able to lay a

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strong foundation for building of sound socio-economic order.

Some economists both in India and foreign countries have condemned the decentralised sector as "primitive, wasteful and uneconomic". Surprisingly enough, it is found that now the theoreticians and progressive industrialists generally justify the decentralised sector on both social and economic grounds. Experience has clearly demonstrated that the concentration of industries in any particular place has disastrous effects on society. It has led to the neglect of a variety of regional opportunities. "A paradox of a few prosperous pockets in the midst of an ocean of depressed areas," is the direct outcome of concentration. Broadly speaking, such situation is "strategically intolerable, socially undesirable and culturally impermissible."

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16 M.C.Shetty, Small-scale and Household Industries in a Economy, Bombay, 1963, p.27.

Prof. Gunnar Myrdal, Asian Drama, An Enquiry into the Poverty of Nations, Vol. 1, pp. 1219-20. He strongly emphasised the importance of small industries because, according to him, "South Asian Countries now run the risk of creating petty islands of highly organised western type industries that will remain surrounded by a sea of stagnation."
Further, whatever advantages claimed for large-scale production may be offset by high social and economic costs of concentration. Concentration produces serious difficulties as regards supply of raw materials, labour, water, fuel, power, housing and other overhead facilities. It also results in wastes owing to unnecessary transport cost and cut-throat competition. Therefore, the decision relating to scale of production should be based on the regional development programmes that take note of supply of inputs and future growth pattern.

The significance of the decentralised sector for the

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19 Gregg, op.cit., p.53. He opines that "a big business, keeping service to the public always in mind, must scatter through the country, not only to obtain the least costs, but also to spend money of production among the people who purchase the product."

Also see, Prof. Galbraith J.K., The New Industrial State, 1962, p.393, and the Indian Express, Ahmedabad, Jan.1, 1970. Galbraith, raising his strong voice against the creation of a few giant business corporations, pointed out that they are concerned not with consumer's well-being but their own security, growth prestige and profits. Thus he pleaded for the creation of such industrial state which would become responsive to the larger purposes of the society.
development of agriculture and its role in the early stages of industrialisation in the context of agricultural countries has already been examined in the earlier section. Here it is proposed to discuss some additional points, with special reference to decentralisation.

It is commonly observed that many employment opportunities in the agricultural sector in countries like India are characterised by seasonality. Consequently, a good many persons in the agricultural sector suffer from unemployment in the slack season. Empirical studies in India indicate that a considerable percentage of agricultural labourers are underemployed throughout the year. There are evidences to show that a large number of labourers and small farmers are actually starved for some months in a year. Besides, the increasing pressure of population on land over and above already existing high density of population is one of the causes of subdivision and fragmentation. This is one of the most important factors responsible for comparatively lower productivity in agricultural sector in India.

20 See Table 2, in the appendix to this chapter.

In this situation of Indian agriculture, the real problem of farming is to effect diversification and find avenues for farmers to earn supplementary income. The effective solution to the problem seems to lie in the decentralised production. The decentralised sector consisting of small industries will provide employment to many unemployed and underemployed in the rural area and thereby it brings about sufficient diversification. Further, it should be noted that "as the agriculture has its slack seasons; so also has the industry, the two can be made to fit in together, the result will be more and cheaper goods." The pertinent question is: what are, then, implications of decentralisation of industry? It is maintained that with its implied emphasis on the labour intensive techniques decentralisation entails the continuance of old and inefficient techniques of production. Thus it involves the perpetuation of industrial inefficiency and is an attempt to provide employment to a large proportion of population by such methods that would not yield adequate

23 See Gregg, op. cit., p. 54.
output even for minimum subsistence.  

It is completely wrong to identify the perpetuation of decentralised sector with the continuance of the inefficient primitive tools and implements. "The idea of decentralisation should not be looked upon as an absolute ethical principle like Truth or Non-violence that have to be adhered to an utter end." In fact, it implies the adoption of the most advanced modern technology as well as the continuance of some of traditional techniques with necessary modification and adjustment. It means the adoption of intermediate technology. The experiences in developed countries like Sweden, U.S.A. and U.K., clearly demonstrate that it is possible to devise means to cut down the size of many kinds of large-scale units without substantially reducing their productive efficiency. There are many evidences to show that there is no direct and definite correlation between size of the units and their efficiency. Many small units are as large ones, and even the small steel plants are as efficient as the large ones. Particularly in India


26 The elaborate discussion of intermediate technology is made in the following pages.
there are some traditional, small techniques which can be made as efficient as large-scale ones, with necessary modifications and adjustments.

The type of technology that had been developed in the last century necessitated the adoption of large-scale production associated with big factories and huge centres of population. Innovations in technology in the last decades tend to promote not only small size plant but also their effective operation in a widely dispersed areas. The forces that facilitate decentralisation are found in 1) power, 2) materials, 3) machines and 4) transportation. They are said to constitute second Industrial Revolution. 27

So far as India is concerned, the development of a decentralised sector consisting of small industries is urgently needed. For, it seems to be the best remedy to the pressing problems like the need for regionally balanced industrial structure, 28 economic balance between industry and agriculture, provision of employment opportunities to composite regions and avoidance of unnecessary social and


economic costs.

India is a democratic country. The concentration of economic power in a few hands will certainly squeeze the driving force behind political democracy. In this situation, the true freedom of individual will be curbed. The effective functioning of democracy is not possible. For effective functioning of democracy, economic and political activities must be decentralised. Prof. Mahalanobis rightly observes that "through a policy of industrial dispersal it would be possible to combine the advantages of both economic and political democracy in an effective manner. This would be a solution entirely keeping in view Indian social and cultural traditions."29

Employment Consideration

Nearly thirty years ago, Mr. Gregg, after discussing the views of Marshall, Bellertby, Moriss, Choke, Lipson and others, on employment problems, arrived at the conclusion that "no community can afford to allow its members, though

no fault of their own to lose their power of producing
wealth. Nor ought we to forget the humanitarian aspect of
the problem." In view of this, he made a vigorous case
for revival and promotion of khadi and village industries to
solve the problem of unemployment in India.

During the last two decades or so, political economists
in India as well as in foreign countries and also, the
authors of Indian Five Year Plans, have concentrated much
of their attention on the problem of unemployment. For
instance, the authors of the First Plan pointed out that
"unemployment is not merely an economic problem, it is a
social problem involving human values and has to be
approached from a broad view point." Karve Committee
emphasising wastage of human resources in the unemployment
situation, maintains that unemployment in terms of distribu-
tion, "creates a very large problem of low income groups
much below any recognised subsistence level." The
Committee, realising the remote possibilities of providing

31 Planning Commission, Government of India, First Five
32 Planning Commission, Government of India Report of
Village and Small-Scale Industries (Karve Committee
of Second Plan), 0.16.
for mass unemployment insurance in near future, reiterates the useful functions of small industries as potential providers of employment with their wide distributional effects. Presuming that the substantial proportion of unemployed persons belong to village and small-scale industries, the Committee holds that the provision of relief to such industries is reasonable.

The Kher Committee influenced much by social factors, pleads strongly that "in a society where there is excess of man power on the one hand, on the other a dearth of opportunities for utilising this power, expansion of employment becomes an end in itself." The best means to achieve this objective, in the opinion of the Committee, are decentralisation in the economic field, diffusion of industry, and adoption of labour-intensive production.

Political economists in India as well as in foreign countries, have directed much of their thinking towards this serious problem and have recommended the labour-intensive techniques to solve the problem. Some economists in India contend that employment planning must be accorded

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first priority in terms of capital and organisation. Further, they do not hesitate to opine that "it may be better to allow machines to remain idle rather than to keep human beings unemployed."  

In his very recent work Josef Fajestka looks at the problems from broad social and economic angles. He points out that urban unemployment leads to degradation of man and "pauperisation of many areas, while rural underdevelopment results in perpetuation of socio-economic stagnation and it feeds urban unemployment." Whereas, the former situation, belongs to the category of "social illness" and the latter to the "underdevelopment illness". Holding that modern industry is unable to provide a solution even in the long run, to the problem of unemployment, he advocates labour-intensive production techniques (labour-intensive techniques are generally small industries).

From the above consideration of views of different

35 Mahalanobis, In Sankhya, op.cit., p.16.
economists, it is clear that whole thinking of economists appears to be overshadowed by the problem of unemployment at the cost of growth. Undoubtedly it is more so in over-populated countries like India. In India it is argued that "the choice for a poor over-populated economy is not between employment and growth... but between various degrees of employment expansion and between various methods to achieve it." It is maintained that, from the point of view of social welfare, employment oriented development is preferred even if it means slower economic growth. Besides, official policy in India seems to favour deliberate revival and indiscriminate preservation of traditional methods of production, purely on the score of employment.* Critical study of the above employment considerations for supporting small industries gives rise to three pertinent questions:


also see Madare "Employment opportunities in cooperative Small Industries" op.cit., pp. 57-58.

Dharaj Asharya "The vexed question of Indian unemployment & solution; small enterprise industrialisation op.cit., pp. 3-5."
1) Is it justifiable to favour cottage industries (in India) indiscriminately?

ii) Is it desirable to neglect growth from the long run point of view? and

iii) Can the problem of unemployment be solved permanently, ignoring the problem of growth?

One can agree, without any hesitation, with the statement that the unemployment is not merely an economic problem and it is also a pressing social problem. It is true that the decentralised sector consisting of labour intensive techniques, is the best means to achieve the object of full employment. It is also true that "the key to the success is not mass production but production by the masses." But this, it should be remembered, does not mean that all types of small industries are economically effective and that they can help to solve the problem of unemployment permanently. It also does not mean the deliberate revision and indiscriminate preservation of all traditional industries in India.

39 See, Dr. Schumacher, Resurgence, London, July-Oct., 1969. Here he pleads, in strong terms, for the introduction of Intermediate Technology which would solve the problem of unemployment and growth from the long term point of view.
Because, to preserve or develop old forms of production for their own sake is a "criminal waste". To favour them because they are labour-intensive comes "perilously close to regarding inefficiency as a positive virtue." Here what we want to emphasise is that the case in favour of small industries should be based not only on social or ideological considerations but also on economic facts.

In a country with a scarcity of capital there is the problem of allocating scarce means among alternative ends. The opportunity cost is taken as the basis for allocating scarce means. It follows, then, that the support should be given to those industries whose benefits from the present investment in them must at least be equal to the opportunity cost. At the same time, sound economic principle demand that schemes of protection to small industries should be so designed that they can be ultimately withdrawn.

Besides, resources should be spent on the promotion of those industries which are capable of standing on their own

\[40 \text{ Mrs. Joan Robinson, "Employment and the Plan", Economic Weekly, March, 1956, p.356.} \]

\[41 \text{ Karve Committee, op.cit., p.30.}\]
legs in future. Protection should not place premium on inefficiency. However, it should be noted here that there are many small industries in India which will be capable of standing on their own legs, provided appropriate assistance is given to them. If the funds allotted to these industries are not frittered away in the form of aids and subsidies and if they are utilised only for improving their technology and enabling them to get raw materials at competitive price they will certainly improve their efficiency and competitive strength.

In a country with plentiful labour and scarcity of capital, the argument that the small industries are suitable to solve the problem of unemployment is mixture of truth and error. For, the fact that small units are labour-intensive does not mean that they are capital-light. There are many small units which are labour-intensive as well as capital-intensive. Development or revival of such units does not yield benefits either on score of solving problem of unemployment permanently or saving capital. In fact, they cause wastage of scarce means. Ambarcharkha is the

best example.

The programme of promoting Ambarcharkha and of a few village industries coming under Khadi and Village Industries Commission, is certainly 'ad hoc' measure to the provision for unemployed and underemployed mass. They are not economically viable and are certain to wither away in due course if their technique is not improved. These techniques are characterised by higher capital-output and higher capital-labour ratios. They have negative surplus effects. This means that, instead of contributing to investible surplus, they reduce the surplus created in other branches. This retards the rate of economic growth. "If a certain technique compared to another requires greater volume of capital for securing the same output and also has negative surplus effect, its adoption is the surest way of drastically reducing the rate of growth of the economy." The reduction in the rate of growth will certainly reduce the level of employment in the next period. What is achieved in the initial period will be nullified in the subsequent periods. The economy will remain at the same level and the problem of unemployment will remain unsolved.

43 N.A. Naqvi, "The Economics of Ambarcharkha", The Economic Weekly, July 14, 1956
From the above analysis it is clear that any plan for unemployment without paying due attention to future growth will hardly solve the problem in a permanent manner. It is sure to wither away like rootless tree. The above analysis also shows that any emotional involvement in this problem may result in perpetuation of poverty.\footnote{Bokanathan, "National Growth of Rural Industrialisation", Khadi Gramodyog, Ann. No. 1, 1967.} It may simply mean that one paper scheme replaces another. The ad hoc measures (observable in some Khadi and Village industries) might create the impression of solving the problem immediately. But one should bear in mind that the permanent solution to the problem is more important than the temporary one.

In short, the development or pursuit of labour-intensive techniques consisting of cottage and small-scale industries in India should be handled carefully. The approach to these small units should be "development oriented."\footnote{Ashok Mehta Committee: Village and Small-scale Industries, Report, 1966, and also see C.Subramaniam: A Growth with Social Justice, Yojana, No. 19, October, 1971, p.3} In other words, it should lead to development of a new kind of technology which we call intermediate technology. It should...
Economic Considerations

In case of developing countries like India, the economic criteria that are popularly discussed with reference to any economic undertaking are mentioned as under:

i) Rate of turnover,

ii) The social marginal productivity,

iii) Reinvestment, and

iv) Time preference.

To know the value of any one or any combination of these criteria in making a choice between the alternative techniques of producing a given commodity, thorough discussion of each one of them is necessary.

Rate of Turnover Criterion

The criterion was enunciated by Buchanan and Pollack. It is stated as follows: "If investment funds are limited, the wise policy, in the absence of special consideration, would be to undertake first those investments having a high value of annual product relative to the investment
necessary to bring them into existence.Keeping in view, the foreign exchange difficulties, it is stated that "given the magnitude of capital investment... it is desirable, from the point of view of foreign exchange, to maximise output and thus the rate of turnover..." The growth-seeking economies like India, are characterised by scarce capital, abundant supply of labour, high demand for consumer goods and foreign exchange crisis. In these circumstances, that technique is suitable which has a low capital-output ratio (i.e. the maximum output per unit of capital). This may also help to provide for maximum employment per unit of capital. Hence, the criterion is regarded as very useful for the economic development of these countries.

Defects

However the criterion, as a general guide to investment policy, is not devoid of serious defects. The obvious shortcoming is that high gross rate of turnover may in a number of cases, involve a high rate of depreciation. In such

cases, the net rate of turnover is certainly low. Then it follows that it is the net rate of turnover that is most important for practical purposes. Another defect of the criterion is that it does not take note of the gestation lag associated with the production. However, the most serious defect of the criterion is its total ignorance of the cost of employing labour in operating capital. One can effectively argue that the cost of labour (in terms of opportunity cost) is zero in over populated countries. Hence there is no need of considering the labour cost. But, one should not lose sight of the opportunity cost which is the most important thing for economist. It is, therefore, natural that the additional employment is certain to increase the total consumption of the community. For, the extra-wage bill raises the purchasing power of the community. This may be treated as the marginal social-cost of employment which is equal to wages plus increase in other people's consumption.

Kahn critically examined the above criterion and branded it as a simplistic approach. According to him, the criterion gives different results, provided the social opportunity cost of factors of production is positive. To overcome this defect, he propounded an alternative criterion namely S.M.P. It implies "the net contribution of marginal unit to national product and not simply that part of contribution that goes to private sectors."49

S.M.P. criterion of Kahn is undoubtedly ideological. Therefore, Kahn has to move from the ideological S.M.P. to practical situation. Accordingly he does. In practical situation, he seems to be very close to Buchanan and Pollack. He pleads that in a situation where opportunity cost of labour is almost zero, the rate of turnover criterion is suitable. Further, he maintains that for developing countries his criterion prescribes methods of production with low level of mechanisation.


49 Ibid.
The S.M.P. criterion is also not free from defects. If our main concern is maximising immediate output, then the S.M.P. criterion is quite suitable (presuming in developing countries the labour cost in terms of opportunity cost is more or less nil owing to a large unemployed mass). On the other hand, if one is concerned with the future growth, then one has to look at the rate of growth of income determined by accumulation of capital. The opportunity cost of labour can never be zero in the long run. Hence the cost of labour implies the increase in consumption in response to extra employment. There is no guarantee that the maximum rate of output would also yield the maximum rate of production over and above the current consumption. It follows, then, that the S.M.P. criterion becomes less useful from the long run point of view.

The Reinvestment Criterion

W. Galenson and H. Leibenstein put forward the criterion which is known as "Marginal per capital reinvestment quotient." The criterion lays emphasis on the value of

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A critical analysis of the criterion reveals that it is based on certain oversimplified assumptions.

Its first assumption is that the techniques have same gestation lag. It is needless to say that it is obviously an unrealistic assumption. For, different techniques are associated with different gestation period.

Another assumption of the criterion is that the whole amount of saving is reinvested. It is doubtful. It is wrong to expect that the entire potential surplus can be reinvested. For, there are certainly a number of leakages. Thus equating profits with investible surplus seems to be highly dubious assumption. 52

The last assumption on which the criterion is based is that the amount of initial saving will not change with the changes in the technique. The absurdity of the assumption is clear when the effects of change from an inferior to a superior technique are taken into account. Such change will certainly involve certain cost to society and that cost

definitely reduces the investible surplus. The change from labor-intensive to capital intensive techniques, for example, results in unemployment. There arises a need for subsidising the jobless. This constitutes the part of total cost which reduces saving and investible surplus.

The criterion ignores the impact of imported components of technique on the potential surplus. Developing countries like India are invariably characterised by the foreign exchange crisis. In such circumstances, higher is the import content of the techniques higher will be the cost of such techniques and lower will be the investible surplus. The authors of the criterion do not seem to pay much attention to the fact that in a typical situation, the present income may have more value than future income. If we accept that the present income is preferrable to the future income, then a lower rate of growth and a higher rate of immediate income may be preferred.

Time Series Criterion

The criterion is enunciated by Sen,55 who has emphasized the importance of the time element in the investment criteria. The earlier criteria have ignored the time element. The inclusion of the time element in the discussion of the criteria is the only novelty of this criterion.56 As a matter of fact, in the short period, the criterion is close to the rate of turnover criterion; whereas in the long run, it is close to the reinvestment criterion.

Common Limitations and Conclusions

The criteria discussed above suffer from some common limitations. Among them the most important shortcoming arises from their simplicity. They have been evolved exclusively from a technical input/output point of view. They have emphasized either the present output or future rate of growth governed by investible surplus per unit of capital invested. The undue importance attached to the present or future output is due to the simplistic and presumptuous approach to economic analysis. Growth


depends on the productive capacity determined by such economic factors as investible surplus. The principal fault of this path is that it overlooks the fact that economic efficiency or productive capacity is also a social phenomenon. The social relationships and institutions in the country create typical social phenomenon.

However, one may argue that the social situations are complex and that they enable us neither to have a simple approach nor to "put them into formula form." But it should be remembered that any negligence of the social aspects makes the criteria simple and presumptuous.

Besides, as a matter of fact, there is no universally acceptable criterion suitable to all countries in all circumstances. Different criteria are to be devised depending on socio-economic conditions prevailing in a country concerned. Further, the blind pursuit of western


way of life and the thoughtless application of western technology undoubtedly promote such serious evils as mass migration, limitless urbanisation, army of unemployed people, etc. The primary task of the developing economies is, therefore, to go straight into battle with these serious evils.

Investment decisions or choice between various techniques of production and selection of approaches of development should be in terms of their effects on:

1) Investible surplus
2) Employment and income
3) Raw materials and finance
4) Levels of technical qualifications
5) Pattern of consumption
6) Distribution
7) Balance of payments
8) Primary and tertiary sectors
9) Health social, cultural and psychological developments.
10) Political setup
11) Regional development
12) Pattern of industrial organisation
13) Possibility of marketing at competitive rates.
In short, that technique is the best which minimises investible surplus, employment and income. It must require low capital and production should be from local materials. Its organisation must be simple. Though in the beginning it should require semi-skilled labourers, in the process it should improve level of technical skill. It must effect balanced regional development and the agricultural development.

For practical purposes, input and output matrix can be conceived. On input side all economic factors such as capital investment, technology, low material requirement, market, skill required etc., should be listed. Whereas the output side should cover all socio-economic effects. Social effects consist of effects on employment, income, qualifications of individuals, distribution of income and wealth, health, cultural developments, in the broad frame work of existing cultural heritage, regional development, urbanisation and mass migration etc. The economic effects entail impact on the present output, on investible surplus, progress of agriculture, the balance of payments and commerce.
So far Josef Pajestka, E.F. Schumacher, and the proponents of redistribution of income criterion, have no doubt pleaded for development of new methods of production for developing economies, that could produce some of the effects that we have mentioned above. But they seem to have failed to conceive the comprehensive technique of production for these countries, which goes straight into the battle of all leading issues of development. Our criterion analysed above aims at achieving both social and economic objectives.

Now, a question may be raised: how is it possible to reconcile the social and economic objectives? Those who raise such question may argue that the economic objectives compete with social objectives and they are contradictory and conflicting. The reconciliation of these objectives is difficult, and according to some it is almost impossible.


But we do not think that they are always conflicting and that it is impossible to reconcile these objectives. For instance, in many circumstances they are "supplementary and supportive resulting in a feed-back, most advantageous to over-all progress,"61. For instance, a provision of employment to an individual increases his qualifications which could otherwise, vanish in case of unemployment. This increase in qualification increases his efficiency which in turn expands the productive capacity of the economy. Thus, the employed person becomes an asset to society rather than a liability.

In practice, it is, no doubt, very difficult to measure the socio-economic effects of the investment decision based on the above criterion. The estimation of changes in the level of qualifications, or the extent to which other sectors in the economy obtain benefits from particular investment programmes, for instance, cannot be easily calculated. Thus in the present circumstances, it becomes inevitable to resort to averages and or rough estimations of the effects.

The policy in this behalf should be to adopt i) regional approach to development and ii) conscious efforts to develop what might be called intermediate (indigenous) technology suitable to socio-economic circumstances of developing countries. So far, as the first is concerned we have thrown much light in the earlier pages (while discussing decentralised pattern of development.) Therefore, we focus our attention on the issues relating to development of intermediate technology.

Intermediate (indigenous) Technology.

It is unfortunate to observe in every society that there are many persons who are totally unable to imagine anything that they are not already used to it. There are countless well-known experts in all parts of the world who cannot conceive the possibility of industrial development unless the paraphernalia of western way of life are not provided in advance. In short, basis for economic progress, for them, is electricity, steel, cement, gigantic plants etc. It is not, then unnatural that these people may pose such questions as:

1) Does a plea for intermediate technology mean a return to an out-dated system?
ii) Does it not mean a rejection of modern efficient devices?

iii) Is it not a formidable task for underdeveloped countries to develop such new techniques?

iv) Is it not a rigid protectionist policy?

At the outset, we strongly believe that the development of intermediate technology does not mean a blind return to an out-dated system or primitive technology. On the contrary, it means a gamine movement into altogether new territory. This may lead to development of new type of technology or improvement of already existing primitive technology.

The type of technology we contemplate to develop does not mean outright rejection of modern technology or devices. What we want to suggest is that the new technology should be sufficiently handy and simple. At the same time, its cost must be as much low as possible, so that it will be within the reach of a common artisan. This type of technology should be applied to every ordinary processes of

production in all sectors, except those sectors (e.g., key and basic industries) which are irrevocably committed to western way of life.

The belief that the development of intermediate technology is a task of exceptional difficulties is undoubtedly unfounded. On the technical side, there exists already a wealth of usable materials, particularly in countries like India. As a matter of fact, the results of design studies of a number of small industries in India, are nothing short of sensational. The products of these industries of intermediate technology are found to be fully competitive as compared with those of western technology. Further, khadi and village industries commission, All India Handloom Boards, All India Handicrafts Board, Small-scale Industries Corporation, small industries service centres, have been endeavouring constantly to invent and innovate new technology and to improve the existing methods of production. However, they are, perhaps, working half-hearted way. The basic short-coming in the working of these institutions is absence of down-to-earth business sense.

Our advocacy for intermediate technology can never be with that of rigid protectionist policy. It is not concerned with keeping alive all small units (which may consist of
some cottage industries in India) which lack utterly economic viability. Introduction of intermediate technology means conscious efforts to create new essential viability to these small industries. The expected essential viability may be attained either by upgrading the traditional technology or by down-grading western technology. Either of these approaches may be feasible depending on the cases under consideration. At the same time, it can be denied that devising of altogether new approach may become inevitable in some cases. But the fact is that the new design should have to be derived from a sound knowledge of basic tenets of business venture.

There are also critics who vehemently attack the idea of intermediate technology. They go to the extent of saying that it is non-sense to advocate a technology that requires much less capital per employee, neglecting how much it will produce per unit of capital invested. According to them, research has shown that the most modern machinery produces much more output per unit of capital invested than the labour

intensive less sophisticated machinery. Hence they suggest that if quickest rate of economic growth is to be achieved, then the scarce capital should be invested in modern advanced technology instead of wasting it on inefficient ones.

At the outset, it is not difficult to see the narrow outlook in the above criticism. It is true that the latest western methods of production do produce more manufactured wage goods, but not the agricultural wage goods, which are the pressing needs of the developing economies. Further, one can not deny the fact that they create more capital and more output for capital invested. At the same time they can do so with much exhorbitant social costs and less employment in the industry. The intermediate method of production on the other hand, offers maximum employment, with minimum social costs in the industry. It stimulats, (if these industries are spread in the rural area) agricultural growth more directly and in turn leads augmentation of wage funds. Above all, it entails the force of eliminating the existence of dual economic system which is expanding in developing economies like India.

Another complaint of the critics is that it is easy enough to make strong claim for new intermediate technology that is yet to be invented. It is exactly the arm-chair
economists complaint. For, their contention is hardly supported by the historical evidences. Hong Kong's industrial success and industrial development of Japan were largely credited to their ingenuity in applying labour intensive methods without raising capital-output ratio. In India itself, research studies with cost and price calculations have established beyond any doubt, that intermediate methods of producing some thirty types of agricultural implements, processing goods and consumer goods are actually cheaper and more efficient than the latest machine products. 63

On account of these historical evidences it is apt to hold that the complaint of arm-chair economists appears to be dubious.

At this stage a question may come up: how to develop the intermediate technology suitable to developing economies? It is, perhaps, a problem of applied economics. Even then, it is not out of place to suggest certain lines of developing intermediate technology which may assist technicians in one way or the other. To develop best suited technique under the given conditions, any one or combination of the

following procedures can be pursued:

i) Scaling down advanced capital intensive technique to simple labour intensive technique.

ii) Scaling up handicrafts methods which promote the efficiency of artisans.

iii) Inventing or innovating altogether new crafts and methods of production.

iv) Existing techniques can be modified or existing tools or equipment can be improved or modified.

v) Machines, tools or equipment, either invented or innovated or improved should be plain, simple and cheap so that even a common artisan with less skill and education could afford to purchase and operate.

We feel it appropriate to conclude this part of the theoretical discussion in words of Prof. D.R. Gadgil, the doyen of Indian economists. These words are quoted from his paper submitted to the seminar on "Intermediate Technologies" held by the Indian planning commission at the S.I.T. Institute, Hyderabad, in January 1964. "Everything thus points to the desirability, may, urgency, of initiating widespread industrial development in all regions of the country which
will prevent accentuation of dualistic features within
the country and make for concerted and uniform economic
progress. The scientists and technicians must be made
fully aware of what is expected out of the adoption of the
intermediate technology."

Against this theoretical background, one can make
really a strong case for cottage and small-scale industries
based intermediate technology in developing countries like
India, from the socio-economic point of view. As already
mentioned, there are also economists in India who think that
the case for fostering small industries through protection
depends primarily on humanitarian grounds. As a matter of
fact, on strict economic considerations there is no case for
protection. Further, they hold that it is injurious to
economic growth in India where a policy involves preventing
or discouraging improved technology.

It is not very difficult to understand that this line
of thinking of the most of economists has been based on
certain unrealistic assumptions. They are: (1) there is no
interrelationship between economic and social effects.
The growth of small industries does not produce much favoura-
ble effects on other sectors of the economy, particularly
agriculture. (2) Cottage level producers save very little
and sometimes do not earn enough income to make both ends meet. (3) Non-wage income can be collected neatly and is reinvested but not wage-income. Mass production is the most effective instrument for the rapid accumulation of the surplus wealth. This surplus will then percolate to other sectors which absorb unemployed mass. (4) The policy of promoting small industries does not effect changes in organisational set up and does not involve modification and adjustments in technology.

Obviously the first assumption is over-simplified. For, an interrelationship does exist between economic and social effects. The agricultural sector does obtain benefits from the growth of small industries. Provision of employment, for instance, results in improvements in the qualification of the individuals, which, in turn, has favourable effects on growth. Similarly the growth of small industries, with widespread employment and distributional effects helps to bring about improvement in agriculture through diversification and supplementing agriculturist's incomes.

The second assumption is logically false. The surplus per unit in some cottage industry may be lower. But it
does not mean that the aggregate surplus is also lower.\footnote{Lakdawala and Sundesara, op.cit., p.5, and also the Kunungo Committee Report, Vol.II. Annexure E, pp. 75-82.}
The total surplus of all units taken together is perhaps larger. However, it is true that owing to institutional drawbacks the small savings in India are not mobilised properly.

The third assumption is dubious. It raises a number of questions. Is the non-wage income so easily tapped? How much of the profit will be transmitted abroad? How much will be distributed to and consumed by the families of capitalists? How much will be reinvested by the firms to which it accrues instead of going into the plan.\footnote{Mrs. Joan Robinson, op.cit., Economic Weekly, June 23, 1955, p.717, and also see Schumacher, Resurgence, London, July-October, 1969.}

Thus, equating profit with investible surplus is an absurd assumption. Besides, universal experience demonstrates that no circulation takes place in the mass production so as to reduce the unemployment. On the other hand, it has created a dual economy in which the rich has become richer and poor have become poorer. Evidences in India and in

\footnote{Lakdawala and Sundesara, op.cit., p.5, and also the Kunungo Committee Report, Vol.II. Annexure E, pp. 75-82.}

other developing countries of the world aptly support this view.

The last assumption is untenable in view of the fact that one of the main objectives of developmental planning is to bring about improvements in organisational set up and adjustment and modification in technology. The developmental planning also aims at developing indigenous technology intermediate technology suitable to local conditions.66 Besides, it should be noted carefully that many techniques in cottage industry sector are far from 'optimum' not because of their inherent technical inferiority but because of the organisational deficiencies.67

In this context, we take a step further and hold that it is not merely the organisational deficiencies which explain the lower earning and/or lower saving. But there are also social and individual factors which are also responsible for this present phenomenon in the cottage industry. Lack of experimental outlook, other worldly philosophies, high preference for leisure, lack


of enterprise, low diligence among the producers and workers, inefficient and weak Government administration, defects of legal or customary barriers to innovations, low social mobility and monopoly control over the industry by a few producers, are some of the factors which are important hindrances for efficient production. They are causes of rigid organisational set up. They also cause lower income and lower saving. At the same time these social and human factors are, also effects of lower income. For instance, laziness are causes of lower earning, and in turn they are also sometimes the effects of the low reward for their hard and honest work. A vicious circle is thus set up. Here we can notice the absence of any distinction between social and economic factors. On the other we can observe the vicious circle between these two factors. The social factors are obstacles to economic progress (for higher income-saving) and economic factors are barriers for social reforms (to increase diligenoy, or sincerity or avoid monopoly control). Thus the vicious circle recoils perpetually.

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One should not take it for granted the merit of creating surplus to sustain the rate of growth, and the advantage of economy in capital use in the case of all small industries. There are certain techniques in the cottage sector which need to be developed and modified. There is also a need to develop such type of intermediate technology which aims at maximising growth and employment. Therefore, the intensive study of each small unit in the cottage and small industries sector should be made while determining its place in the economy. It is quite interesting to refer to Kuz'min's empirical study of cottage and small-scale industries in India. On the basis of his comprehensive survey, he arrives at the following conclusion:

i) "... the small-scale production in India is characterised by a higher 'gross output-capital' ratio than factory enterprises." 70

ii) "... it is possible to increase output further by using optimum technological modes within small-scale production." 71


71 Ibid. p. 42.
iii) "... data used by us confirm the fact that the highest dimensions of value added per unit of invested capital are observed specially in the less mechanised production units." 72

iv) "... the highest profit norm is realised not in the production with the highest capital-output ratio but in the factory production unit with non-automatic mechanical looms where capital output ratio is lower." 73

Lastly he points out that there is an urgent need for "transmitting the socio-economic situation" in these industries. For, they (at present) reduce the economic effectiveness of the small industries.

However, these higher indicators of small-enterprises in the production of gross and net output need not be found in the entire small industries sector. Kuz'min himself has admitted this and has cited the example of Ambarcharkha. 74

72 Ibid, p.42.
73 Ibid, p.46
PART II
Appendix to Chapter II

Table 2
Estimates of Rural Underemployment in India

<table>
<thead>
<tr>
<th>Year</th>
<th>Total No. of persons underemployed in rural area (in million)</th>
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<tbody>
<tr>
<td>1954</td>
<td>19.4&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>1957</td>
<td>22.8&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>1959</td>
<td>70.0&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>1961</td>
<td>15.18&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Source: Compiled from data quoted in the book in Rural Manpower and Capital Formation in India by Sunil Guha, pp. 18-19.

Note: a) This figure does not include seasonal unemployment.

b) The figure consists of those suffering from real underemployment.

c) It refers to persons having work of less than half a day in a week on an average in rural area.

d) This is mentioned in the Third Five Year Plan and the break-between urban and rural areas was not available.
The estimate (based on results of National sample survey) shows that of the total of 10 million unemployed in the country, nearly 8 million were found in rural areas. Females accounted for 47 per cent of the rural total unemployed as against 15% in urban areas. Persons below 27 years of age were worked to 45.6 per cent of the total employed in the rural areas.

It is observed that the unemployment and under-employment in the rural area is largely concentrated among the landless agricultural labourers and among the younger age groups. Therefore any short-term programme assisting rural communities has to be concentrated on these groups.