

TECHNOLOGICAL CHANGE
AND THE ECONOMICS OF
AGRICULTURAL DEVELOPMENT

by

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ABSTRACT

This essay discusses the role of technological change in Agricultural Development Economics. The problem is to discover what the concept of technological change means within the context of theoretical economics. The definition of technological change as "a residual which causes shifts in the production function" is not thought to be adequate - it tends to make technological change appear too mysterious. An attempt is made to uncover a less mysterious definition of technological change.

The approach used in the essay is to examine the role of technological change in certain critical segments of economic theory (i.e. in resource theory, demand theory, and market theory). The method of procedure is to review literature in each of these segments in order to explain: (1) how technological change has become an important explanatory variable; (2) why it has taken so long for technological change to be given a meaningful role within the theory. No attempt is made to advance a general theory explaining technological change. Problems of measuring technological change are not discussed. The aim is to develop a consistent interpretation of technological change

throughout the theory, in order to remove unnecessary confusion and to understand the theoretical implications which arise when technology is not assumed to be held constant. Once these theoretical implications have been discussed, the essay utilizes the conclusions in a discussion of two policy problems in agricultural development: (1) the problem of barriers to development; (2) the problem of selecting appropriate efficiency and investment criteria.

The essay concludes that technology symbolizes human activity, and that technological change is a term for "discovery" - the discovery of new processes or new human activities. It is concluded that technological change is not compatible with a theoretical framework where certainty and static processes are assumed - in fact, technological change forces theory to grapple with the reality of uncertainty.

Technological change, by stressing uncertainty, suggests: (1) that so-called "barriers" to agricultural development should not be stressed (in fact, they may act as aids to development); (2) that activity analysis, cost-benefit analysis, and indexes of interaction, potential predict relevant criteria for establishing development strategies, on the basis that these criteria reveal the greatest number of repercussions relevant to

a decision maker. The importance of technological change for agricultural development is stressed, provided that technology is utilized as a substitute for land rather than for labor.

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1. INTRODUCTION

This essay consists of a basic question framed in the context of the problem of agricultural development. "What is technological change?": indeed this is the basic question to be discussed. The answer suggested in this essay is that technological change should be identified with the process of discovery.¹

The status of the concept of technological change appears somewhat ambiguous in economic literature. In the same article, it can receive medals for distinguished performance and then be ingloriously dismissed as an unknown entity. In some works, technological change can be credited for causing some precise percentage of a given growth - and then the reader is told that technological change represents "the unexplained residual". Because of this paradoxical status, technological change has begun to appear mysterious and capable of being comprehended by only the most esoteric of economists. Is it possible to explain the present status of technological change in economic theory? Is it possible to remove some of the mystique? This essay attempts to outline a positive answer for

¹The term "discovery" is deliberately chosen in order to embrace the invention-innovation distinction.

both of these questions. As will be explained in the next section, the discussion will be framed in the context of agricultural development economics, but the problems are not peculiar to this particular field of study.

The question is not "What really is technological change?" - there is no attempt to conduct an essentialist debate. The purpose of this inquiry is to discover what the concept symbolizes within the realm of economic theory. The question can then be asked: "Is this symbol useful for economic theory?" (In this sense the question has an answer. It is important to realize that there could be no answer to the question if it was asked in the essentialist spirit - this fact in itself points to one major source of confusion concerning this topic.¹)

Second, it must be stressed that this essay deals specifically with the problems of agricultural development economics. Therefore, the question becomes: "What is the role of technological change in agricultural development?"

To outline this problem, the writings of three

¹K. Popper, The Open Society and its Enemies (New York: Harper & Row, 1963), II, pp. 9-21.

different groups of economists will be discussed: economic historians, agricultural development economists, and "pure theory" economists.

The concept of technological change is not new to economic historians: in fact, their explanations of modern industrial development are often based on this concept. Deane writes:

One thing that is clear about modern economic growth is that it depends on, more than anything else, a continuing process of technical change. What the industrial revolution did was to increase substantially the flow of innovation embodied in the nation's economic activity and to turn it into a continuous if fluctuating flow. In a pre-industrial economy technical progress tends to be exceptional and intermittent.¹

One of the most important aspects of this technological change has been its impact on the resource structure.

The most important achievement of the industrial revolution (in Britain) was that it converted the British economy from a wood-and-water basis to a coal-and-iron basis. Wood was a dwindling resource with a strictly limited future as a construction material in an industrial context. Water-power and wind-power were only partially under the control of their operators and had a very limited potential.²

¹P. Deane, The First Industrial Revolution (London: Cambridge University Press, 1965), p. 118.

² Ibid, pp. 129-130. See also L. White, Medieval Technology and Social Change (Oxford: Clarendon Press, 1963). Here, the impact of technological change is discussed in the context of a more tradition society. It should not be thought that technological change only became important with the advent of the industrial age.

However, it is ironic to note that the pure economic theory which developed to explain this modern industrial economy tended to recognize technology as a ceteris paribus (a concept too vague or unimportant to be given much attention) and primary resources as static or scarce. Only in recent years has this prejudice been removed, under the pressing need to explain economic growth.

In agricultural development economics, a central problem is to transform traditional agriculture, that is, to develop the vast farming community of the underdeveloped world where ways of behaviour have continued with little change from generation to generation for centuries. This community's state of arts, state of preferences, and motives have remained constant for a long enough period to remove any desire to acquire new agricultural factors as sources of income - the factors of production are "traditional" in form.¹

Development economists can generally agree that their main goal is to raise the per capita incomes for the members of this traditional community. But, there is wide disagreement as to whether or not incomes should

¹T. Schultz, Transforming Traditional Agriculture (New Haven: Yale University Press, 1965), chap. 2.

be raised by means of a "more efficient allocation of resources" or by means of "technological change".

This debate centers on the question: "Are traditional farmers efficient?" Some economists think it is a contradiction to claim that these farmers are "efficient" - obviously, inefficiency exists, because incomes are relatively low and labor does not work "very hard". For these economists, the solution is to remove primitive cultural and institutional barriers which prevent the "market" from allocating properly - technological change is viewed as a red herring which everyone can talk about and nobody can comprehend. Other economists disagree - they point out that traditional agriculture is characterized by low levels of utilization of certain resources, low levels of productivity (compared to developed areas) and yet high levels of efficiency (in the sense that traditional farmers are doing the best that they can to maximize returns, given their techniques). From this viewpoint, the only method of improvement is to introduce technological change.¹

Is it possible to decide who is right? Has economic theory devised a critical test to resolve this debate?

¹T. Schultz, op. cit., chaps. 1, 2 and 3.

In modern theory, technological change is most often defined to be "any shift" in the production function.¹ There are, of course, a multitude of factors which could give rise to such a shift, and thus technological change has been called the "residual", or that part of increased output per man which is left over after increases in capital per man have been accounted for. The literature involves a debate centered around the various types of production functions available. Important questions are: can constant elasticity of factor substitution be assumed; is technological change "neutral"; can one distinguish technological change and economies of scale; can purely organizational changes be distinguished from "technical" changes (the "embodied-disembodied" debate)? These questions will not be discussed here.

There are two issues which arise out of these studies: (1) What do we learn from a "residual"? (2) Is it logical to suggest that technological change involves utilizing "given" resources more efficiently?¹ Surely the residual is merely a measure of our ignorance, the null-set of our knowledge. Similarly, can

¹Ibid, pp. 72 and 48. See also E. Heady, Economics of Agricultural Production and Resource Use (New Jersey: Prentice-Hall, 1965), p. 804.

there be an upward shift in the production function "given resources"? This terminology only contributes to the mystery-making - for, by definition, a production function only shifts when inputs shift.¹ Since economic efficiency has traditionally been defined only within the framework of fixed resources and static technology, it is difficult to understand how technological change involves utilizing given resources more efficiently.

Thus, the problem to be discussed in this essay emerges. A large body of economists attach great importance to technological change as a pre-requisite for the development of traditional agriculture. Many economic historians concur in this opinion - on the basis of their studies of past economic development, technological change has been selected as a critical explanatory variable. Yet, despite these demands, pure economic theory still tends to view technological change as a mystery, beyond human comprehension. Is it possible to explain why economic theory has been so tardy in giving analytic prominence to technological change? Does the problem lie inherently in "technological change" itself - or does the problem lie with the concepts and assumptions which the economist uses

¹Z. Griliches has based his research on this point, and has attempted to specify all inputs which lead to an increase in output.

to explain economic phenomena? It is the contention of this paper that the latter is more correct than the former - that "the fault, dear Brutus, is not in our stars, but in ourselves." Until the mystery label is removed from technological change, it is impossible to refer to our economic discourse as "scientific". If science is "theory tested by observation and experiment"¹, our present studies concerning the residual have served to refute existing theory rather than to explain "the unknown residual".

It appears that the problem of technological change arises most clearly when the problem of growth is discussed. A long time ago, Mercantilists worried about growth. However, Mercantilism was swept aside by Classical economics - in the process of reaction, the central issues for discussion became "division of labor" and "efficient market allocation". It is a contention of this paper that to understand our present theoretical problems, we must try to understand the implications behind this Classical viewpoint - the implications involved in the stress on "given resources", "given rational wants", the goal of "efficient allocation", and the danger of government planning which might upset the natural harmony of the economic universe.

¹K. Popper, op. cit., p. 289, note 36.

The essay will be divided into four sections: (1) an examination of the concept of resources, introducing technological change; (2) an examination of the concept of demand, introducing technological change; (3) an examination of the concept of a market, introducing technological change; (4) an examination of two policy problems in agricultural development economics. The essay concludes with a general conclusion.

2. TECHNOLOGICAL CHANGE AND THE CONCEPT OF RESOURCES

There was a strong tendency for the Classical tradition to answer the question "What are resources?" by saying: "Resources are the exogenous givens which man must use in order to satisfy his wants. Land and labour are the two most basic of these givens, and capital is merely a product of land and labour." Our answer to this question is quite different: "Resources are not exogenous givens, but endogenous variables - at least, in the long run context of growth. Furthermore, without man there can be no resources - resources are not things, but the results of processes or inter-relationships."

This different answer flows from a different viewpoint. The Classical tradition stressed physical matter - in the form of land (i.e. an area) and human beings (i.e. amount of labour). Physical matter produced satisfaction for men - to produce more satisfaction, more physical matter would be needed. The concept of discovery seemed to apply to geographical movement only. The role of intellectual discovery was downplayed. Questions such as "How did man come to know how to save, to produce, to use capital, etc.?" seemed

too obvious, since any rational man performed these acts. However, in our analysis intellectual discovery is stressed, and we are less prone to centre our attention on physical matter.

There are at least two radically different ways of inquiring about the existing economic system:

- (1) to see whether or not it conforms to an ideal:
- (2) to try and understand why it performs the way it does.

Utilizing the second approach, research begins when a "barrier" or problem area is discovered. Assuming that people act for a reason, an attempt is made to discover why the so-called barrier has resulted from human action - an attempt is made to understand the function of the barrier. The first approach, however, tends to dismiss any attempt to understand the functions of barriers - there is a tendency to label all deviations from the ideal as obviously irrational. In economics, the classical tradition has tended to set a rational ideal. In this way it has tended to restrict examination of the function performed by barriers which create situations deviating from the ideal. Our analysis will assume that the economist's principal task as a social scientist is to understand the existing system, and then to discover ways of improving the system's performance in the light

of that understanding.¹

The analysis which follows differs therefore from Classical analysis in that we attempt to be more critical about what has been accepted as obvious. Also, as Barbara Ward has pointed out, our generation is less skeptical than the Classical generation concerning the possibilities latent in technological growth. Classicists tended to suspect that the revolutionary phenomena of industrialism just could not continue.²

2.1 Resources seen as Processes Defined by a Technology

The concentration on single tangible phenomena in nature creates the false impression of resources as something static and fixed. Actually, "they are as dynamic as civilization itself They are a living phenomena, expanding and contracting in response to human effort and behavior."³ The word 'resource' presupposes a person - it is an abstraction reflecting human appraisal, and implicitly this concept refers to a function which a thing may perform. Resources are inseparable from human wants and capabilities - and they change as human wants or capabilities.

¹R. A. Macdonald, "An Evaluation of the Economic Analysis of Unionism," Industrial and Labor Relations Review, XIX (April, 1966), p. 347.

²B. Ward, Toward a World of Plenty? (University of Toronto, 1963), pp. 15-20.

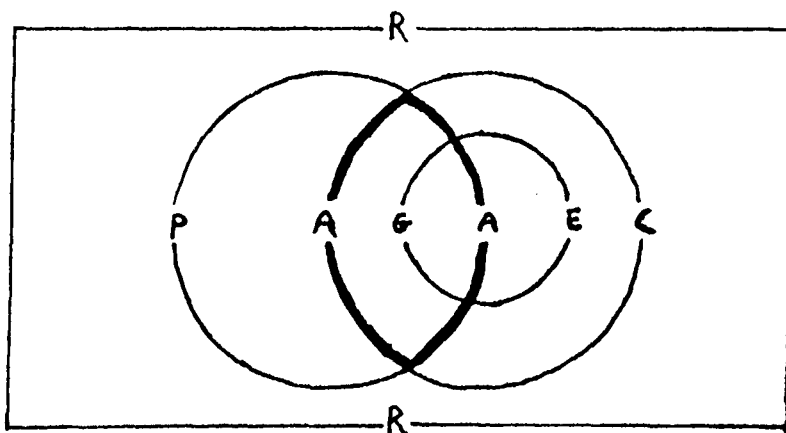
³E. W. Zimmerman, World Resources and Industries (New York: Harper & Row, 1951), p. 7.

change. "Resources are not, they become".¹ Barnett and Morse, among others, point out the fact that:

Resources can only be defined in terms of known technology The notion of an absolute limit to natural resource availability is untenable when the definition of resources changes drastically and unpredictably over time.²

In short, a "culture without wants" has no resources - and different cultures, with different wants and different technologies, have different resources.

We can think of resources, then, as a "man-mind-land" relationship, which in a Venn diagram will look slightly different from the Classical description.³



Source: W. Firey, Man, Mind and Land (Illinois: The Free Press of Glencoe, 1960), p. 99.

¹Ibid., p. 11.

²H. J. Barnett & C. Morse, Scarcity and Growth (Baltimore: John Hopkins Press, 1963), ch. 1.

³W. Firey, Man, Mind and Land (Illinois: The Free Press of Glencoe, 1960), pp. 98-101.

Let "R" be a rectangle representing the whole universe of resource processes possible; "P" be the set of resource processes which are physically possible in a given organic and physical environment; "A" the set of resource processes which are adoptable by a given population; "G" the set of resource processes which a given population considers to be "gainful", in the same sense that such a process is advantageous to an individual resource user in some subjective sense; "E" the set of resource processes which are efficient for the members of a given population; "C" the set of resource processes which are culturally available to a given population.

Note, this diagram contains only resource processes. The "P" set composes the "physical aspect" of a resource process - that is, it is the set of possible processes, from a natural science viewpoint. To some extent, this set then reflects the scientific knowledge of the person who appraises the area. The set "C" composes the socially defined activities which enter into the resource process - the wants, organizations, and production techniques which the people of the area presently have. The non-coincidence of C and P reflects the (normal) possibility that not all of the socially defined activities of a people will necessarily be possible in a given habitat. It is only the

set "A", therefore, which is adoptable, given the area's cultural and physical possibilities - this "A" set being the intersection of P and C. From this viewpoint, a natural resource is seen to be a resource process from the P set with which certain cultural activities from the C set have been combined. This combination has the potential effect of decreasing the magnitude of scarcity which attaches to a peoples' activities. Firey says:

We can distinguish: (1) those resource processes which are adoptable by a population but are not used (i.e. potential); and (2) those resource processes which are actually employed by a population. In both senses, resources can be developed."¹

Before we discuss why adoptable processes might be adopted, let us note how the adoptable set might change over time. Clearly, new elements must enter either the P or C set, creating instability. If either P or C is unstable, there would be an unstable "environment", which would produce stimuli situations that could give rise to a sequence of exploratory responses. From experiment, the adoptable

¹Firey, op. cit., p. 136. The problem of choice will be elaborated below. In this context, it is useful to think of Firey's "gainful" and "efficiency" sets as being based on some formal criterion of efficiency similar to that found in Classical economic theory - it is meant to represent pure "self-interest maximization" without reference to the welfare of others. The "G" set is only the adoptable part of the "E" set.

set could be expanded. Thus, the factors of instability in P and C "represent stimuli in what is essentially a perceptual learning situation. They are necessary, though not necessary and sufficient, for the development of any natural resource."¹ Population growth, environmental change, scientific research, changes in the want structure or numerous other factors could create such instability.

2.2 Motivation and Resource Use

Although a resource process is potentially adoptable (i.e. within the "A" set), it need not actually be adopted. Why is a particular resource process adopted? W. Firey proposes an answer which we will note, before proceeding further. This is a problem of motivation.

It is a fact of history that not only "personally gainful" (set "G") processes are adopted - some non-gainful processes are adopted by people; and not all personally gainful processes are adopted by people. Firey suggests that people willingly adopt a given set of resource practices for two different motives; (1) the motive to use gainful resource practices solely because they bring direct personal satisfaction; (2) the motive to use "likely" resource processes,

¹Ibid, p. 160.

which will conform with the morals and outlook of the culture within which the resource user lives. This latter motive, the incentive to inhibit the quest for gainful resource practices, and to willingly engage in additional practices which are known to be inefficient from a purely personal viewpoint,

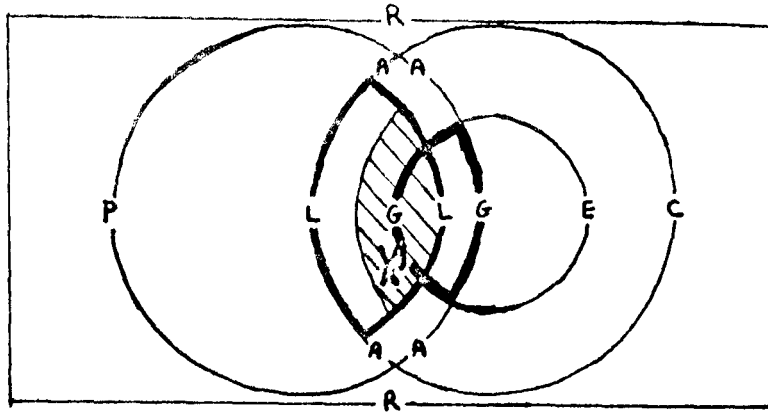
has its origins in the phenomena of strategic compromise among resource users. If individuals were to heedlessly put to use all resource processes that happened to be gainful to them, or were to allow their neighbour to do so, they would bring upon themselves a long-run injury far greater than that incurred by setting bounds to their own and their neighbour's incentive for further gainful processes. But by compromising with other individuals and interests, and settling for processes that are somewhat less gainful to them, they enjoy a measure of security in that modicum of gainfulness."¹

Diagrammatically², specify the set "L" of resource practices which have the property of appearing to the resource user as being more likely to be performed by his fellows than are other practices (for the above given reasons). Not all adoptable processes will be likely, but only adoptable processes can be likely - thus, "L" intersects with "G", but not all of set "L" is in "G".

The set of resource practices which will then come to appear in a stable resource complex, set X^1 in

¹ Firey, op. cit., p. 191.

² Firey, op. cit., p. 105.



Source: W. Firey, Man, Mind and Land
(Illinois: The Free Press of
Glencoe, 1960), p. 105.

the diagram, can be hypothesized to be: (1) a proper subset of "L" and (2) include all those elements of "G" which "G" has in common with "L". In this manner, a resource complex can be viewed as the result-
ant of two contrary sets of forces.

To summarize: there are two attributes of a resource process, its gainfulness (G, -G) and its likelihood (L, -L). A resource user is governed by two incentives, which result in G being chosen over -G, and L being chosen over -L. Logically, then, there are the following combinations of distinct pairs of components (G, -G, L, -L): (1) processes which are both (G, L); (2) processes which are (-G, L); (3) processes which are (G, -L); and (4) processes which are (-G, -L). Clearly, the fourth will never knowingly be chosen - and a stable resource system can only occur if the first two conditions hold for the various

resource users.

This analysis is only a beginning. It is highly abstract, and somewhat static in presentation - but it emphasizes how a society determines its own resources and resource processes, and it suggest motives to be considered. If, in development economics, we are concerned with non-police-state methods of promoting resource use change, we must accept the fact that a necessary condition for success is the consent of the resource user. Thus, motives are important - and, to Firey's motives others can be added if they are significant. Clearly, resources are endogenous variables - their existence is to a large extent determined by technology.

2.3 The Meaning of Specific Resources: the problem of scarcity.

Let us proceed a bit further, and discuss the meaning of specific types of resources - namely, the traditional land, labor, capital classification. In this discussion, the role of technology will become clearer.

2.3.1 Land. -- Land is the resource which many people assume to be "most inelastic", or fixed. Here, we will discuss this resource only in relation to agriculture. In a recent book, Ester Boserup has pointed out that land can be viewed in a different manner than economists

are accustomed to viewing it.¹ She drops the distinction between fields and uncultivated land (the intensive and extensive margin concepts) and places emphasis on the frequency with which land is cropped. Here, there is no temptation to regard soil fertility exclusively as a gift of nature, permanent, etc. Soil fertility, instead of being treated as exogenous or even as unchangeable "initial conditions" of analysis, becomes a variable, closely associated with changes in population density and methods. The key to this viewpoint is to resist the temptation to focus only upon what happens in the cultivated field, as distinct from the whole group of activities that are needed in a given system of agriculture - fallow land, pastures, animal husbandry are to be considered. Implicitly, this approach says: do not ask, "How do changes in agriculture affect population growth?", but ask, "How do changes in population growth affect agriculture (i.e. the resource system)?" In other words, let us ask whether or not the "land resource" is inelastic to demand increase.

Ester Boserup's analysis can not be examined in full here. She finds that land, rather than to be

¹Ester Boserup, The Conditions of Agricultural Growth (Chicago: Adline Publishing Co., 1965).

"newly discovered" as population expands, tends to be used more frequently. When a given area of land comes to be cropped more frequently than before, the purposes for which it was hitherto used must be taken care of in a new way, and this often creates additional activities for which new tools and other investment is required. The point is made that we "cannot apply continuous production functions of the usual type when we wish to consider effects of demographic changes in pre-industrial agriculture", for we cannot assume that additional labor resulting from an increase in the rural population could be utilized as marginal additions to the input of labor in the existing field (i.e. by ploughing more carefully or weeding better).¹ Population growth will not result in small marginal increases in inputs, with a very limited effect on output.

Instead of such changes . . . short-fallow cultivators are likely to take to annual cropping on a part of their land The additional labour is likely to be used as a means to undertake a radical change of the system of cultivation in part of the area, while no change is made in other parts of the area.²

An important point to consider is that, as new systems are introduced, a vast amount of additional

¹Ibid, pp. 26-27.

²Ibid

labour is required - and, due to a strong preference for leisure or non-cultivating work, various peoples have only adopted more intensive cultivation under the extreme pressure of population growth. Virtually all new methods introduced have been "known" long beforehand - they become widely used only under population pressure. Since more intensive cropping requires more land under cultivation at one time and more labour per acre, labour productivity per hour does not increase. The student of history, who sees the end results of the new systems and holds them to be "obviously an improvement", fails to recognize

that the advantages of dense and permanent settlement, which are undoubtedly large, are not reaped from one day to another. They appear very slowly, while the disadvantages of concentration appear immediately in the form of harder and longer working hours spent on cultivation and on investment in land improvement.¹

In the long run, unknown to the farmers when they change systems,

the gradual adaptation to harder and more regular work is likely to raise the efficiency of labour both in agricultural and non-agricultural activities; the increasing density of population opens up opportunities for a more intricate division of labor.²

¹Ibid, p. 73.

²Ibid, p. 75. In the past, technology has often been introduced to prevent a fall in productivity.

Thus, it is shown that, in a given area, the scope for further food increases may be large even if there is no "virgin land" to be broken. Land scarcity is a very relative concept - relative to a given technique of land use. Movement from one stage of land use to another stage is prompted (at earlier stages of development, anyway) by land "scarcity". In this sense, it is unrealistic to regard agricultural cultivation systems as adaptation to "different given" natural conditions - agricultural cultivation systems are more a result of differences in human wants and techniques, which in turn are often determined by population density.

2.3.2. Labour. - Boserup mentions how labour can develop skills over time - can "learn by doing". Classical theory viewed labour as an exogenous factor which was almost a pure "exchange commodity" - like a good it could fluctuate freely from place to place, going to the highest bidder. It was recognized that a "work-leisure" trade off was necessary - but this concept was not a very vital part of the overall "market analysis". How often does the opportunity cost doctrine, and the "production possibilities" curve, reflect the fact that a worker could work less for the same real income rather than work the same amount and earn more in commodities. "Real Cost" doctrine has attempted to get at this problem,

but to little avail. But, it is important to note that throughout the development of farming, the demand for leisure has played a very important role. Perhaps this should cause economists to hesitate before drawing production possibility curves based on "fixed resources" - to be realistic, such a curve must reflect the current labour demand for leisure (at different prices), as well as a technical production possibilities schedule.¹

Modern theorists, however, have begun to talk of labour as a "quasi-fixed factor",² which has "overhead costs for a society". It is realized that, in order to "keep labour in existence", certain fixed costs must be met - furthermore, the productivity of labour can change as a result of a direct investment in the labourer himself. People can enhance their capabilities as producers and consumers by investing in themselves, which implies that not all of their capabilities are exogenously given to them at birth, or even when they start work. "These capabilities are developed through activities that have the attributes of an investment."³ Realizing this, economists

¹C. P. Kindleberger, International Economics (Illinois: R. D. Irwin, 1963), p. 642.

²W. Oi, "Labor as a Quasi-Fixed Factor," Journal of Political Economy, LXX (December, 1962), 538-555.

³T. W. Schultz, "Reflections on Investment in Man," Journal of Political Economy, LXX (October, 1962 Supplements).

have now begun to examine the economic value of education, on-the-job training, specific training, general training, and the costs of search for jobs and information.¹ These studies cannot be elaborated on specifically here - besides, they are becoming well-known. The critical thing to notice is how these studies are altering traditional modes of thought about: (1) the proper boundaries for economics; (2) the real motivations for economic activity; (3) the gauges of economic efficiency (i.e. the problems of economic choice). Invariably, as reality creeps into the analysis, simple prescriptions crawl (slowly) out.

Thus, both labour and land can be seen as endogenous rather than exogenous variables. Both change over time, develop over time, in reaction to basic human wants and abilities. It is important to notice that the above analysis goes far beyond the traditional admissions that labour and land are not in themselves homogeneous - that they differ in quality. The point is that they not only differ in quality for exogenous reasons, but also for very important endogenous reasons, which can be explained. Classical theory, while occasionally admitting quality differences, implicitly

¹See the entire October, 1962 Supplement of Journal of Political Economy, with the synthesis by Becker.

assumed that these differences were exogenously determined (along with quantities).

2.3.3 Capital. - What about the nebulous resource called "capital"? Classical economics realized that the quantity of capital was not determined by humans (i.e. endogenous) - but the quality of capital was not discussed much. Here, too, modern theorists are pointing out that the modern invention process advances at a rate proportionate to the determined effort expended on "basic research".¹ Innovation and applied research are clearly as much a part of the "economic system" as the savings process itself.

2.4 Conclusions

What does this mean, now that we are coming to think of land, labor, and capital as endogenous variables, capable of manipulation over time? It is not clear what implications are involved. However, it is clear that we can no longer think of resources as "fixed things" - we must realize that resources are in fact defined by a technology (which encompasses both wants and abilities), and that this technology changes over time. In the light of this, many modern writers talk of man's "scarce resource of knowledge and ability."

¹K. Shell, "Towards a Theory of Inventive Activity and Capital Accumulation," American Economic Review, LVI (May, 1966), 63-68.

Noylan writes: "We probably need to fear, not the exhaustion of physical resources, but the dangers of inadequate or belated utilization of our intellectual abilities."¹ Barnett and Morse have stated that the key task today must be the establishment of a criterion of choice - for it will be the effectiveness of man's decision making procedures that will mainly determine the shape of his total welfare over time.

This viewpoint leads to a stress on development strategy rather than efficient market allocation. In this vein, Hirschman writes:

Development depends not so much on finding optimal combinations for given resources and factors of production as on calling forth and enlisting for development purposes resources and abilities that are hidden, scattered, or badly utilized What is gained by considering resources and production factors latent and conditionally available rather than outright absent or scarce? The advantage appears to be that in this way attention is properly focused on the essential dynamic and strategic aspects of the development process. Instead of concentrating exclusively on the husbanding of scarce resources such as capital and entrepreneurship, our approach leads us to look for 'pressures' and 'inducement mechanisms' that will elicit and mobilize the largest possible amounts of these resources In this view, then, planning for development consists primarily in the systematic setting up of a series of pacing devices.²

¹T. Noylan, "The Inexhaustible Resource of Technology", Perspective on Resource Conservation (Baltimore: John Hopkins Press, 1961), p. 66.

²A. O. Hirschman, The Strategy of Economic Development (Yale University Press, 1958), pp. 5-6.

"During a prolonged phase the essence of development strategy consists in maximizing induced decision-making."¹ (From a slightly different angle, Koopmans suggests the same point in a more general way, when he writes that "the notion of a strategy is the key to the study of competitive or antagonistic social situations"² - a suggestion which points in quite a different path than that of Classical theory. In the same book Koopmans talks of a shift away from demand and supply functions as tools of analysis.

The emphasis is entirely on the existence of some set of compatible optimizing choices. This question can be answered without making assumptions that cause unique choices to be associated with any prevailing prices, a precondition for the definition of a single-valued demand and supply function. The problem is no longer conceived as that of proving that a certain set of equations has a solution. It has been reformulated as one of proving that a number of maximizations of individual goals under interdependent restraints can be simultaneously carried out.³

This is not really relevant to our topic here, but it may be tangential).

All of this leads to the conclusion that our concept of resources and our concept of technology are highly interrelated. If we have a static notion of resources, we will have a similar notion concerning

¹Ibid, p. 44.

²T. C. Koopmans, Three Essays on the State of Economic Science (New York: McGraw-Hill, 1957), p. 176.

³Ibid, p. 60.

technology. A technology is defined as a process whereby inputs are used to create a certain output.¹ Thus, the activities which correspond to the basic methods of production constitutes technological knowledge and experience. The choice of a production process is not just the choice of "resources" - it is the choice of an entire technology, an activity. The economic problem is not just to "allocate scarce factors", but also to choose the right techniques.

Someone might still ask, "Well, what is technological change?" The answer is, "It isn't anything". This is merely a name we have conjured up to describe a process that is observed to occur. Is discovering a new land technological progress? Is discovering a new resource technological progress? Is discovering a new method to find new land technological progress? Is discovering a new mode of organization, of thinking, technological progress? If each of these bring "progress" (which I deliberately leave vague!), why not call them by the same name. We observe a process, which involves discovering something new, which changes our existing framework, which forces us out

¹Ibid, pp. 73-77. Also, R. S. Eckaus, "Technological Change in Less Developed Areas", Development of the Emerging Countries (Washington: The Brookings Institute, 1965), pp. 25-26.

of a static situation - for the sake of convenience (and not purity), we can call it technological progress. To the extent that there is no discovery, physical scarcity becomes important.

However, it is "primitive" to view change as such as a "mystery" today. As has been shown above, analysis has progressed along many fronts to demonstrate that supply factors are not exogenous, that the determinants of growth are not to be found solely in physical matter (i.e. supply), that humans can (and do) act as though technological change was a variable. As such, technological change has costs (in terms of effort, frustration, capital, etc.) and benefits - and rational choices can be (and are) made as to the "most sensible" courses to follow. However, as will be pointed out in the next section, certainty and simple normative economic presumptions are not possible.

We can now deal with some particular conclusions from our analysis.

First, to the extent that only capital theory has recognized that the supply of capital depends on the expected future flows involved (i.e. to the extent that capital theory is the only theory of investment), then all resource theory has become capital theory. This is not a problem of what is "essentially capital" -

It is a problem of analyzing an endogenous variable's change over time (or, in the context of time).

Second, it may be possible now to understand better conflicts in the literature concerning whether or not a "surplus" exists in an underdeveloped country. When Schultz says "there is no surplus", he is talking of how the situation stands if techniques do not change. When Hirschman stresses that there is no scarcity, he is stressing the fact that "physical scarcity" is not going to prevent advance, provided there is technological progress. It is ridiculous to debate whether or not technological progress involves a change in "techniques" rather than a change in "organization" or "decision making procedures" - all of these changes involve the process of discovery. In fact, it is dangerous to think in terms of a change in "techniques of production" without realizing that a change in organization (work roles, living patterns, leisure time, etc.) is usually involved¹ - the discussion of "technical production possibilities given resources" may be misleading, since resources are never really "given", but are determined by human activities.

¹Eckaus, "Technological Change in the Less Developed Areas", op. cit., p. 147.

Third, what does this analysis imply about the traditional concepts of "land, labour, and capital"? Surely, it is obvious that these are the most simplistic of tools, which no economist would utilize in serious research today. At one time these concepts may have had meaning, in as far as they referred to the division of the national income among different groups of people. But, at this level of abstraction, little definite can be learned about processes.

Fourth, what about the "labour-saving" - "capital saving" distinction regarding different techniques - is this relevant?¹ In a general way, it is relevant - but not as the myopic central issue which it has become (i.e. the issue often makes it seem as though "real" labor and capital exist - the modern discussion about human capital, however, is making the issue confusing enough to remove the older biases). Boserup points out that the introduction of mechanized equipment and chemical inputs could be either labor-saving or land-saving, depending on the demand for food.² Many of the important issues lying behind this debate can be raised without the overly simple "two factor" diagram, which

¹Eckaus, "Notes on Invention and Innovation in Less Developed Countries," American Economic Review (May, 1966)

²Boserup, op. cit., p. 113.

avoids the major problems of complementarity.

Finally, we will mention the "need for savings" argument, in order to dismiss it. The argument suggests that "people with low incomes cannot save, and therefore cannot invest, and therefore cannot grow". The argument is inappropriate to the underdeveloped countries. As Schultz has shown, these people do save and invest - they just do not invest in income streams that produce growth. Hirschman points out that in underdeveloped countries, investment and savings depend far more on the opening up of investment opportunities and on the removal of various obstacles to investment activity than on increased income.¹ Finally, Boserup notes:

The question is not whether the cultivators are able and willing to restrain consumption in order to invest. The question is whether an increasing family provides sufficient incentive to additional work and whether the system of land tenure is such that the cultivators have access to additional cultivable land or sufficient security of tenure to make land improvements a worthwhile investment.²

Thus, to say that "capital originates in savings, which depend on income" is to concentrate on the tree to the exclusion of the forest - the issue is, "why do people suddenly take a different attitude toward the future, work harder, and invest their new savings in important new activities?"

¹Hirschman, op. cit., p. 32.

²Boserup, op. cit., p. 88.

3. TECHNOLOGICAL CHANGE AND THE CONCEPT OF DEMAND

Along with resources, economists have tended to take the "want structure" as given (exogenous) - the revealed preference idea, coupled with a "desire to be scientific and not question human wants", strengthened this tendency. However, from the viewpoint of development economics, wants can be no more "static" than can resources - both are affected by technological change.

3.1 Demand seen as a Product of the Economic System

Some years ago, J. M. Clark worried about this point. He came to see that demand and wants were as much a product of the economic system as a given. Wants could be adapted or directed so as to be satisfied by existing things - wants could be denied, or rationed, by society by means of the legal and political systems. In short, if production economics was to be relevant, he thought it had to do more than deal with the orthodox problem of adopting material things to satisfy human wants.

From another angle, Clark made the same point when he wrote about the bias of the market which

"cultivates certain kinds of needs and neglects others".¹ Many of man's most crucial wants "are not commodities one buys in a market, or that markets can be expected automatically to supply. Yet they are things that the markets affects, for better or for worse".² Clark made these points in order to stress that balanced judgment (of the optimum between various conflicting goals) was more basic to economics than the mechanical equilibrium of the market.

3.2. Demand and Supply in Terms of Characteristics

Lancaster has recently made progress in the direction of understanding the "want structure". He stresses that goods are "not the immediate objects of preference or utility or welfare, but have associated with them characteristics which are directly relevant to the consumer."³ In his analysis, goods are viewed as inputs into a process of which characteristics are the output (i.e. often a single input for a joint product). The core of his analysis is the jointness of this product - there is no "one-to-one" relation between goods and characteristics (i.e. an apple does not produce appleness, but a joint product of

¹J. M. Clark, Alternative to Serfdom (New York: A. E. Knoff, 1948), p. 11.

²Ibid, p. 21.

³K. J. Lancaster, "Change and Innovation in the Technology of Consumption," American Economic Review, LVI (May, 1966).

characteristics). A person can get the same characteristics from many different goods.

Lancaster points out that efficient choices are required for this "production process" (note: the consumer now becomes producer) - ignorance and lack of "managerial skill" can be sources of inefficient choices. Thus, actual choices (i.e. revealed preferences) cannot be assumed to be "the desired choice". Furthermore, he writes, there is little guarantee that the market mechanism will produce efficiency in this "consumption-firm". (A relatively static technology would be one where efficient activities become known and traditional).

From the viewpoint of this analysis it becomes clear that a producer is ultimately selling characteristics, not goods - thus, ultimately the supply of resources, particularly labor, is determined by characteristics. Since labor is an activity, it will have some characteristics associated with it that are shared by goods - that is, the work itself may produce some "satisfaction", and may help determine the person's demand for goods. Thus, the value of leisure and of work is stressed as being an intimate part of economic analysis - a point very relevant to development economics which is trying to transform work and consumption patterns. The implication is that the planner must

comprehend exactly what satisfaction a person is deriving from his present occupation and consumption pattern - for this satisfaction cannot be labelled "un-economic", since it involves a form of "production-satisfying-wants". As Gambs pointed out:

The venturing economic theorist is necessarily preoccupied with the question of goals. In large part, they determine everything he does. The other large part is the economists' theory of human behaviour. Without goals and without some concepts of the psyche, economists are without the raw materials of their science.¹

Thus goals, psyche and culture determine not only the relevance of "characteristics" but also their existence.

3.3 Conclusions

The following conclusions can be stated:

(1) it is incorrect to view wants as given and fixed - they are an endogenous variable to a significant enough degree to be capable of deliberate change over time. The want structure is susceptible to technological change. (2) If people desire characteristics and not goods, every "consumer" is really a "producer", a firm. Thus the traditional leisure-goods and production-consumption dichotomies may be misleading. (3) Technological change (i.e. the process of discovery)

¹J. S. Gambs, Beyond Supply and Demand (New York: Columbia University Press, 1947), p. 69.

provides a powerful link between supply and demand. Samuelson and Solow, among others, have argued that supply changes, by affecting expectations, can influence demand.¹ L. Boland, in a recent work, presumes that demand for a particular recreational activity is appreciably influenced by the existence of the supply of that activity - his planning model involves the planner in an exercise of "learning while doing in a piecemeal manner."² (i.e. No attempt is made to predict demand in advance.) Warren Nutter has stressed the same point: "Economic growth is as much a process of search and discovery as it is movement towards goals seen in advance."³

¹P. Samuelson and R. Solow, "Analytical Aspects of Anti-inflation Policy," American Economic Review, L (May, 1960), 177-194.

²L. Boland, An Unorthodox Solution to the Problem of Planning Regional Recreation Sites: Learning While Doing, Department of Economics and Commerce, Simon Fraser University (Vancouver: By the author, 1967)

³G. Warren Nutter, "On Economic Size and Growth," Journal of Law and Economics, (October, 1966), 172.

TECHNOLOGICAL CHANGE AND THE CONCEPT OF MARKETS

It is traditional to view the market in a static context - as an allocator of goods and services, given present knowledge and technology. This conception has often lead us to stress "existing scarcities", and the need for "reallocation of resources". However, it might be more useful to view the market as a source of learning, of discovery, and thus of technological change. To the extent that the market is a method of communication which acts to govern activities, it is a learning device - it permits people "to discover" what they did not know before, and then to plan their actions. Thus, the market produces change, and can provide information vital for technological progress. If everything was certain and known, and no discovery was needed, no market would be required.

Before proceeding, it is necessary to clarify certain problems regarding uncertainty, disequilibrium, economic efficiency and expectations.

4.1 The Problem of Uncertainty and Disequilibrium

Classical economics created a market system of static harmony where all was known, and all were happy. (Ironically, the traditional society of underdeveloped

economies should best fit these assumptions). It is extremely difficult to move beyond these assumptions.

Koopmans writes:

Perhaps the outstanding example is the overextended belief of the liberalist school of economic thought in the efficiency of competition markets as a means of allocating resources in a world of uncertainty. To my knowledge, no formal model of resource allocation through competitive markets has been developed, which recognizes ignorance about all decision makers' future actions, preferences, or state of technological information as the main source of uncertainty confronting each individual decision maker.¹

Schultz, taking his idea from Kaldor, suggests that under conditions of certainty, no competition market is needed - in fact, one integrated market is required, and only one firm necessary. The market exists and functions to deal with uncertainties!²

4.2 The Problem of Defining Economic Efficiency

Some adjustments are clear. As Becker has pointed out, earnings or wages need not be equal in a market, because of the impact of various types of investment in human capital.³ Investment is only undertaken if the benefits exceed the cost - present returns

¹Koopmans, op. cit., p. 146.

²T. Schultz, The Economic Organization of Agriculture (New York: McGraw-Hill, 1953), p. 254.

³Becker, op. cit., p. 24. Oi, op. cit., makes the same point.

become only a part of a long run stream, and thus "meaningless" as such (i.e. regarding efficiency criteria). Thus, the optimality conditions of Classical welfare theory do not hold.

Keynes attempted to break out of the constraints of comparative statics analysis. In a recent article, Clower attempts to show the importance of Keynes' impact on theory (i.e. his changing of assumptions for the analysis).¹ Clower's point is that "realized" and "planned" transactions need not be identical for people, yet realized transactions impose a constraint on the economic system, forcing it to change. Classical theory fails to provide a general theory of disequilibrium states because: (1) it yields no direct information about the magnitude of realized as distinct from planned transactions under disequilibrium conditions; (2) it tacitly assumed that the forces tending at any moment to change the prevailing market prices are independent of realized transactions at the same moment. Clower concludes his analysis by noting that the supply and demand functions of traditional analysis are not relevant to the formation of market prices in situations where disequilibrium transactions are significant,

¹R. Clower, "The Keynesian Counterrevolution: a theoretical appraisal," The Theory of Interest Rates, ed. F. H. Hahn and F. Brechling (London: Macmillan, 1965).

since realized current receipts impose restraints on current consumption plans (i.e. the planned consumption as expressed in effective market offers to buy will necessarily be less than the desired consumption as given by the demand functions of orthodox economics).

The important point to note is that without making assumptions about so called "non-economic" behavior (i.e. wage rigidities, unions, etc.), it is suggested that the Classical world is not our world - that, in reality, the economic system provides no guarantee of perfection, of full employment, or of harmony. The market system provides signals, gives information, facilitates decisions, and thus "allocates" (in the sense that it affects human action) resources and goods - but this is an allocation based on the given situation, and there is no reason to believe that this situation is optimum (i.e. what people ultimately desire). The market, like humans, does the "best it can" - it does not promise perfection.¹ Thus, as Joan Robinson puts it, Keynes brought the problems of time and morals back into economics. Perfection is not something we

¹Clower bases his analysis on the need for a "dual-decision" theory. Perhaps Koopmans makes the same point when he talks about a "set of compatible optimizing choices", and the fact that we do not need to make "assumptions that cause unique choices to be associated with any prevailing prices", Koopmans, op. cit., p. 176.

are to be given. "We are left in the uncomfortable situation of having to think for ourselves."¹

4.3. Keynesian Theory of Expectations: Liquidity Preference

Aside from the direct issue of perfection, Keynes dealt specifically with the problem of "introducing" time into economics - he too pointed out that capital does not now (in the present) get its marginal productivity. However, there is one aspect of his theory of expectations which is particularly relevant to agriculture in an underdeveloped country. Keynes deals with the question, "Why is a community poor in its accumulated capital assets?" Classical theory suggests that this is because of peoples' "unwillingness to wait", due to their preference for present over future satisfactions. This same viewpoint is frequently echoed in literature about underdeveloped agriculture. However, Keynes explicitly disagreed with this answer. He held the key factor to be "the high liquidity premiums formerly attaching to the ownership of land and now attaching to money".² Specifically, in reference

¹ Joan Robinson, Economic Philosophy (Suffolk: Penguin Books, 1964), pp. 80-93.

² J. M. Keynes, The General Theory of Employment, Interest and Money (London: Macmillan & Co., 1964), p. 242.

to primitive communities, Keynes thought that the possession of land would be characterized by a high liquidity-premium - and the desire to hold land would play a role in keeping the rate of interest up at too high a level.

The competition of a high interest-rate on mortgages may well have had the same effect in retarding the growth of wealth from current investment in newly produced capital-assets, as high-interest rates on long-term debts have had in more recent times.¹

Thus, the reason for low capital formation is not that people prefer present consumption to future consumption, but that people are extremely worried about future consumption - worried enough to place a high premium on holding liquid assets, which of course have relatively low income producing potential. (Perhaps this is the reason why land has such a high "social" position in primitive communities - if so, this is a suggestion as to the power of expectations and the desire for future security.)

In short, a market is a vehicle for coping with a basic motivating factor in human behaviour - uncertainty. Analysis of technological change forces us to deal with

¹Ibid, p. 241. Note also: "the destruction of the inducement to invest by an excessive liquidity-preference was the outstanding evil, the prime impediment to the growth of wealth, in the ancient and medieval worlds." Ibid, p. 351.

uncertainty - but many other economical problems have long since centered our attention on this facet of life.

4.4. Conclusions

It is questionable whether or not technological change could have an important position in a world where perfect knowledge, perfect foresight and perfect equilibrium tend to be assumed. The process of discovery contradicts these basic assumptions - it removes the possibility of providing a clear-cut definition of economic efficiency. While the traditional theoretical framework of economics may have required assumptions which ignored technological change, modern literature provides ample support for removal of these assumptions if we are to understand economic behaviour.

It has been said that, "The economic theorist appears like a man who should observe only the second hand of his watch: he counts the seconds with care, but is hardly in a position to tell what time it is."¹ In any other field but economics, it is stressed that "man is never satisfied", that "nothing human can be perfect". While economists today realize that the Classical market does not guarantee perfection, it is

¹C. H. Cooley, quoted in Gurchy, Modern Economic Thought: The American Contribution (New York: Prentice-Hall, 1948), p. 348.

not always recognized that only in a truly static situation will man be interested in "allocation within the existing situation". Man has an inherent desire to change situations. If man's goals constantly involve changing a given situation, it is clear that he will not be overly concerned with attempts to find the perfect allocation (i.e. efficiency) in the given situation - a necessary condition for progress is the discovery of new techniques, new modes of action.

Technological change does not force the economist to become unconcerned with setting guides for economic action. Without guaranteeing perfection, the economist can contribute to the vital problems involved in the strategy of decision-making by: (1) helping to discover the variety of different possibilities which are inherent in a situation, so that a meaningful choice can be made; (2) helping to discover learning devices which unveil the degree to which progress is being achieved by a given course of action.¹

¹R. Lipsey, Positive Economics (London: Wardenfield and Nicholson, 1965), pp. 536-544.

A. K. Sen, Choice of Techniques (Oxford: Blackwell, 1962), p. 144.

L. Boland, op. cit.

5. TECHNOLOGICAL CHANGE AND TWO POLICY PROBLEMS IN AGRICULTURAL DEVELOPMENT

It may be fruitful to discuss some of the implications which this analysis suggests for two major debates in the field of agricultural development in underdeveloped countries.

5.1 Barriers

This analysis would suggest that the "listing of barriers" approach to development is an exercise in pessimism, guaranteed to discourage discovery of fruitful possibilities.

The economist has a tendency to describe all barriers as the result of some mystical "non-economic" forces which frustrate growth. Surely this is an unscientific approach. The existence of a barrier must suggest that the hypothesis has failed - that further research into the processes of the particular area is needed.

One approach the economist could take would be to consider each so called barrier as a signal for further research. A barrier must imply that certain demand and supply factors are at work, resulting in an equilibrium. This requires a study of the motives (preferences)

and various possibilities open to those who are creating the barrier - only if these are changed will the barrier be removed. Schultz in effect suggests this approach in The Economic Organization of Agriculture, when he talks about a market being a field of activity where the possible and the preferred interact. To the extent that this is correct, the economist must realize that a so-called barrier actually reflects an existing equilibrium which can only be removed if the forces creating the equilibrium are shifted. Equilibrium as such should not be confused with "efficient allocation" - as Keynes, Clower and others have shown, there is no guarantee that a market in equilibrium reflects an optimum situation.

In this context, it is worthwhile to note what has been written about incentives. As Firey point out, and Boserup¹, Hagan², Hirschman³ and others also stress, there can be very rational reasons for resisting social change - one very important such reason being community tradition and pressure. In terms of Firey's analysis, the "likely" (i.e. strategic compromise)

¹Boserup, op. cit., pp. 75-88.

²E. Hagan, On the Theory of Social Change (Illinois: The Dorsey Press, 1963), ch. 3.

³Hirschman, op. cit., pp. 14-25, p. 138.

overrules the privately gainful. Here it becomes clear that an individual's preference structure can be something which is based on his present expectations as to the behaviour of others - if these expectations shift, his preference structure shifts. As Hirschman points out, the existence of this inter-relationship of preference structures is one important reason for utilizing community projects in underdeveloped areas.

So-called barriers may be important short term phenomena. Boserup claims that population growth must reach the point where it is worthwhile (in terms of a leisure-work choice) for farmers to change to a more intensive system. A system of low farm prices, rapid movement of people out of farming, food imports and low taxes could well aggravate the problem of farm development from a national viewpoint. Schultz, in The Economic Organization of Agriculture, makes the same point indirectly when he notes that slow farm development in France was accompanied by a slow rate of increase in real industrial earnings, a low birth rate in rural areas, manipulation of the terms of trade for farm produce, and a low rate of technological development within agriculture.¹

¹Schultz, op. cit., ch. 8.

Hirschman similarly makes use of strategic conditions which will call forth, in spite of various imperfections, development decisions.

Finally, the non-existence of a barrier should not be a signal for instant action when the problem is one of long term growth. Some economists, believing "surplus" to be an important attribute of traditional agriculture, have talked in terms of moving this "surplus" out of agriculture. However, what is a surplus today might become valuable labour later, when the state of the arts is transformed within agriculture. To the extent that any surplus labour is moved out of agriculture, more capital is needed to develop agriculture. Mellor has discussed how rural labour could be utilized as a primary force in farm development - certainly it is clear that many "modern" techniques appropriate (in terms of cost) to the underdeveloped countries, will require vastly increased labour inputs, without necessarily raising labour marginal productivity by immense amounts.

5.2 Efficiency and Investment Criteria: Problems of Priority

In development economics, the uncertainty of the future must somehow be reflected in present actions - this leads to the abandonment of traditional "efficient allocation" principles (where present marginal revenues

need not equal present-marginal cost - only "discounted" revenues and costs "should" be equal).

In this context it would appear that we must become accustomed to what Firey would call "willing conformity". In one sense, every act I do is "willing"- it reflects the fact that I make decisions and "conform" on the basis of my given situation. However, I need not be satisfied with that situation. I may be efficiently performing my allotted hours of work within the framework of Simon Fraser's rules, regulations, etc. - but, although I view my actions as "efficient" on an hour-to-hour basis, I may view them as highly inefficient and undesirable on a long term "ideal" basis. Given the opportunity, I would try to move out of my short term efficient equilibrium.

Thus, there can be two levels of efficiency - the short-term, and the long term. A person could be inefficient at either - but, what matters from the viewpoint of motivation is whether or not the person is satisfied. If the farmers of a given area are in "long term equilibrium" with their basic desires, etc., it will be much harder to motivate change than if a so-called "frustrating" short-term equilibrium existed.¹

¹Schultz and others make this point when they suggest technological change (long run development) is needed, not more efficient allocation of existing resources.

To the extent that the market merely allocates present goods "efficiently", it may not tell us much about the long term - it may fail, as a communicating device, to convey the relevant information. If this is so, then development economics must devise complements (i.e. information agencies, investment programs, extension services, etc.) to fulfill this task. Furthermore, to the extent that market prices merely reflect short-term considerations, we can not expect them to initiate long term action (i.e. mobility of "fixed" labour, investment, etc.). When the costs of transportation, search, mobility, and labour training are considered (plus problems of age), it is not clear what would indicate an "efficient market". Perhaps, rather than search for "efficient markets", it would be more profitable to set clear goals, see if the present system fulfills these goals, and, if "barriers" to fulfillment exist, attempt to discover means of alleviating them.

Our approach continually suggests "action", "decision", and "strategy" for development all based on the notion that such developments lead to new and better processes of production (i.e. technological change). But, there is little said about how to choose the best approach! Is it impertinent to ask: "Is there a 'best' approach?" (in a technical sense).

First, for the economist per se, choice-making is not a problem - he is not the judge, but merely a "team of advocates". The economists' job is to know the most relevant questions to the problem at hand, the most relevant information, and a variety of relevant indicators which view the problem from different angles, giving the final decision maker as clear an idea as possible of what choice he must make.

Sen gives an excellent description of one such approach in his discussions evaluating different techniques for the cotton weaving industry in India.¹ He estimates capital costs for each machine, as well as output and value added (noting four possible problem areas). He calculates labour costs using different wage rates, and then applies a useful criterion to evaluate the techniques - the criterion of "maximum rate of surplus". This criterion necessitates the estimation of consumption and saving patterns for those who receive factor returns from the various machine processes. Finally, the results are altered by adding in working capital, taxation, foreign exchange and marketing considerations. No clear cut answer emerges - but this is Sen's point, that he is not dealing with a

¹A. K. Sen, op. cit., Appendix "B".

purely technical question of choosing the most "efficient" method of weaving cloth. "It is ultimately a human problem, not an engineering one."¹

Thus, although we talk about technological change as being vital to economic analysis, we are not implying that economics must become a problem of engineering efficiency. As a rule, it could be suggested that a technique for evaluating techniques is one which reveals the greatest number of relevant repercussions. For this reason cost-benefit analysis may have merit - for the very reason that it refuses to "simplify" the question into a one line answer. As Sen writes, "The object of the exercise is not perfection, but minimization of imperfection."²

Hirschman is not satisfied with the traditional investment criteria. He emphasizes the need for experiment, for a tension between goals and ignorance, for the creation of a learning process - he thinks that such a process is more valuable than a cost-benefit appraisal. He makes an interesting distinction, however, between: (1) substitute choices and (2) postponement choices. When two processes are substitutes, it may be useful

¹Ibid, p. 114. Sen's distinction between output and rate of surplus goals is useful.

²Ibid, p. 57.

to apply the Sen approach (i.e. the investment criterion approach). But, Hirschman stresses that such an approach is not useful for technical complements (which Schultz, Mellor, Hirschman and others stress as being vital to development)¹. For choices between complementary techniques, he suggests that the economic choice be based on which of the two is more predictably likely to induce the other's creation. Under this framework, the comparative productivity of the two processes is likely to be a rather minor factor in the decision. To compare productivity increases would be an insoluble problem, both in theory and in practice.² The problem is one of "economy" over time, not present maximization of revenue or minimizing of costs.

This same approach is hinted at by Lee Martin³, who stresses the importance of an "index of interaction potential", which would serve the same purpose as Hirschman's analysis of postponement choices. It could be suggested that such a concept must underlie any evaluation of investments in schooling, soils, irrigation, etc.

At this point, it might be appropriate to comment on the "Capital vs. Knowledge" debate. At times,

¹Hirschman, op. cit., p. 76.

²Ibid, p. 79.

³L. Martin, "Basic Considerations in Transforming Traditional Agriculture," Iowa State, op. cit.

this debate is similar to the "need-for-savings" discussion. It is pointed out that high inputs of knowledge are of little use unless "capital" is available - the insinuation being that the planner must choose between putting his money into "capital" or into "knowledge". However, these hard classifications may be more fluid in practice - as Mellor suggests, much of the "capital" development in agriculture could conceivably be done by the existing rural population, working longer hours and utilizing local resources more effectively. It cannot be assumed that all non-human-non-land input is the equivalent of "capital" - capital can be the result of local labour and local "land" resources.

Heady notes that:

Capital is not the dominating restraint on all farms which employ techniques resulting in low productivity of particular inputs. If capital were expanded moderately on the average cultivator unit in Southeast Asia, for example, restraints in technical knowledge would soon dominate. Capital and technical knowledge can be substituted for each other only to a limited extent.¹

The provision of knowledge is not free. Rather than view "imperfect knowledge" as a barrier, it should be

¹E. Heady, "Priorities in the Adoption of Improved Farm Technology", Economic Development of Agriculture (Iowa State University), op. cit., p. 160.

examined as an economic good, having value (due to its scarcity) and costs of production, for which there are various preferences and possibilities. We are interested in economic possibilities and costs, not degrees of perfection.¹ In this respect, knowledge involves more than facts - it includes the relevant management and planning abilities.

In accordance with the stress on "knowledge - capital" complementarity, theories have been developed to describe the optimum allocation between capital and knowledge at various stages of development. Heady, on the basis of input-output studies, states that economies of scale are generally small or lacking when high capital and labour prices encourage a labour type of agriculture. This implies, he thinks, that little is to be gained from increasing farm size in countries where labour is abundant relative to capital - in such countries there is a greater need for investments which substitute capital for land rather than for labour. In this sense, he makes a valuable point - the technology appropriate in a particular country will depend on relative prices of the inputs required by these technologies.²

Useful as such analysis is, it is important to note all that is implied. When the term "capital"

¹Schultz, The Economic Organization of Agriculture
op. cit., pp. 273-275.

²Heady, op. cit., p. 172.

is used, it refers explicitly to inputs which demand "money capital" (i.e. place a pressure on the capital market). It would be wrong to infer that this was the only means of investment open to underdeveloped economies. Mellor, for instance, argues that:

agriculture can make a major contribution to the over-all development effort because it can be developed in large part with relatively low opportunity cost resources, the use of which increases agricultural production very greatly and provides a high rate of return to the use of those necessary resources which are drawn in competition from other sectors.¹

The key to Mellor's argument is that in the transition phase - between traditional agriculture and the technologically dynamic high capital intensive agriculture - conditions exist which "call for a type of agricultural development which at one time was not possible but which is now facilitated by modern science."² During this phase, the emphasis is on increasing yields per acre of crops and per livestock unit. In part, this is done through the use of innovation which is directly yield increasing. But:

it may also occur in part by increasing efficiency in the use of nonland resources and by putting the resources saved back into the production process. For example, technology may save labor which can be reapplied to produce more intensive cropping patterns.³

¹J. W. Mellor, The Economics of Agricultural Development (New York: Cornell University Press, 1966) p. 223.

²Ibid., p. 225.

³Ibid., p. 225.

Thus, simple dichotomies can be deceptive - as Boserup hinted, more intensive cropping patterns often require more labour. The transformation of traditional agriculture does not appear to involve a one-step process (i.e. introduce capital, increase yields, save labour, ship labour to industrial sector!). Rather, the transformation process is similar to a faulty winch - labour can "hoist" agriculture to one stage, but if it goes away, the winch is liable to slip, and the progress will be lost. It is imperative that, after one stage is completed, the labour be reapplied, until the "load" (agricultural development) has been raised to the desired plateau and secured firmly. This dynamic process does not consist of introducing one given set of innovations and reaping a once-and-for-all benefit:

It is a phase in which a stream of innovation is generated by the process itself The use of capital is very sparing and is not substituted for labour unless the labour can be put back into the production process in such a manner as to achieve an increase in production.¹

Obviously, the new inputs used need not be labour saving - they can, in fact, be complementary to labour in increasing production. It is a drastic mistake to consider all technological advance as "labour-saving".

There is not time to comment here on Mellor's

¹Ibid, pp. 225-226.

lengthy analysis. It is important to note the importance that he attaches to institutional change, incentives and education. Two comments specifically are worth repeating:

A progressive agriculture is characterized by the constant appearance of new alternatives, the acceptance of some, and just as important, the rejection of others. A degree of variability within agriculture due to differences in physical resources, past practices, and current management, renders it inadvisable to make blanket recommendations regarding new alternatives.¹

Thus, the need for local educational services is stressed. Also, it is interesting to note his comment that:

The nature of the scarce resources of agricultural development is such that efforts to determine social marginal productivity and cost-benefit ratios do not normally provide meaningful information,²

This is a point which ties in with earlier observations of this paper.

Thus, it is important not to visualize "capital formation" as something in which only bankers and financiers indulge - all resources are capable of being "invested" in, and rural labour can today invest in both itself and the land in a manner similar to the way that our forefathers invested in themselves and their land. It is a mistake to think that investment is not required and possible in agriculture, even though

¹Ibid, p. 233.

²Ibid, p. 234.

"funds" are scarce.

Of course, the people who warn about "mis-allocated resources" have a point when they talk about wasted funds spent on education in developing countries. The key thing to note, however, is not that the money was spent on education - but that it was spent on the wrong education. It is important to achieve the most relevant level of investment in man suitable to a given stage of development, in the context of some specific development plan.¹ One study shows that those countries have developed fastest which gave a high priority to both education and physical investment, with the note that returns to education appear to be greatest where the technology is most developed.² However, aside from "returns", some form of educational investment appears to be a necessity for significant development of primitive agriculture. It should not be important that a certain degree of "consumption" is involved in education any more than that a certain degree of "consumption" is involved in any work - such theoretical quibbles are irrelevant. The important point is the effectiveness of the investment. One observation is worth noting here - educational

¹0. Gish, Investment in Education (The Hague: Institute of Social Studies, 1967), ch. 2.

²Ibid., ch. 4.

supply will have a tendency to follow economic demand, even if that demand is not suited for development needs. Thus, unless precautions are taken, an educational investment may produce only drop-outs and lawyers!¹

The vast problem of co-ordinating agricultural and industrial development cannot be commented upon here to any meaningful extent. However, models which base their reasoning upon a present "surplus" of labourers in agriculture, and infer that this surplus can be readily exported to the industrial sector, should be treated suspiciously. Aside from the fact that the existence of such a surplus is hard to prove, a present surplus need not imply a future surplus (i.e. once agricultural development has begun). If Mellor is correct, agriculture can be developed by utilizing the large supply of rural labour - otherwise, agriculture must place demands on the same capital which is needed for industrial development. If Boserup is correct, the removal of rural surplus may remove a major incentive for agricultural development. In addition, such models require a vast administrative scheme which would maintain the "institutional wage" in the rural sector and remove surplus food supplies to the urban sector. And finally, there are numerous problems of incentives,

¹Ibid, ch. 4.

cultural training, and community ties which may retard the movement of the surplus labour except at high cost in terms of either money or resentment.¹ There is substantial evidence that overall development is a process which involves the simultaneous (not necessarily balanced) development of both agriculture and industry.²

¹Hagan, op. cit., pp. 252-270.

²Ibid, Appendix pp. 500 and following.

6. GENERAL CONCLUSIONS

Technology symbolizes human activity: the way in which man attempts to satisfy his wants. A particular technological activity is the sum total of all that the activity entails: physical inputs, organizational inputs, objectives, various outputs, etc. If anyone of these components changes, the activity changes.

Technological progress is neither incomprehensible nor mysterious - it appears everyday in the life of every person. It simply is a term for "discovery" - the discovery of new processes or activities that are in some way "better" than previous activities. In order to have technological progress, it is necessary to discover only one new aspect for a given technology - a new input, or a new objective for example. Thus, it makes sense to state that "The notion of a 'technological change' is in essence a consequence of either adding, or dropping, or changing at least one factor of production"¹ - provided that a very liberal view of "factors" is taken. However, it is not clear that "A technique of production is an integral part of one or more factors"² - a technique is a process, or an

¹Schultz, Transforming Traditional Agriculture, op. cit., p. 133.

²Ibid, p. 133.

activity, and is not embodied in any one part of the whole process.

In traditional analysis, there was little place for "discovery", except in so far as the market was recognized to be a place where participants discovered the relevant given preferences, techniques, and scarcities. When discovery is discussed in the context of changes in technology, traditional analysis is forced out of a theoretical framework where "certainty" appeared to be assured. Resources, seen as processes rather than things, cannot be assumed to be static - the problems of planning over time become a central concern. Although resources and wants become endogenous variables, it is important to realize that no attempt is made to claim certitude for an analysis which incorporates technological change - the key to such analysis is that it is forced to grapple directly with the reality of uncertainty.

Technological development is different from capital development, in that technological development does not involve "more of the same". The problem of measuring technological change should be viewed as analogous to the problem of choosing the best of competing techniques. Activity analysis is designed to deal with both problems. Conventional two-variable

diagrams, coupled with conventional definitions of resources, are not suitable tools. Such questions as "Has the quality of the resource changed?" should not arise. Aside from the uselessness of asking "When labour is still labour" (and thus can be put on a homogeneous scale), this question avoids the specificity of inputs.

Objections can be raised to this way of viewing the role of technological change in economic analysis. However, it is hoped that objections will not be based on the fact that "technological change only makes our analysis more indefinite, less economic". This objection is paramount to a denial that economics should have any relation to the world of human activity. Technological change introduces uncertainty - because it is claimed that uncertainty is a reality that must be explained. Technological change forces economics to explain the process by which wants change - but is this "beyond the competence" of the economist? What is the economists' range of competence? Production functions are basically engineering studies, utility functions belong to the realm of sociology and psychology - what remains? Economists' claims of "no competence" appear to be more the result of custom than of logic.

In the same vein, it may be claimed that traditional analysis provided a "norm", which was a starting point for discussing economic activity. However, this essay has often tried to point out that the so-called classical "norm" of efficiency has not been that useful a tool - it has tended to blind economists to the useful functions performed by so-called "market imperfections". Discussion has tended to become tautological, rather than scientific.

This essay would tend to stress certain lines of research. There is a need to study the actual functions of existing markets, rather than to concentrate on whether or not such markets conform to an ideal allocative role. The division of resource research into two separate categories - quantity and quality - would be avoided. The study of objectives and the problems of evaluation would be stressed.

In regards to this last point, it has often been stated that the key task in economics today is to establish a criterion of choice, to provide the development economist with a strategy for decision making. Here, technological change forces economic theory in an interesting direction - the direction of "learning while doing" planning models, which are based on the planner's need to cope with his uncertainty regarding the ultimate path to growth.

Thus, by introducing technological change into economic theory, the notion of "the true, the one and only, efficient point" is nudged out. The famous American judge Cardozo once said that "Law never is, but is always about to be." In the same sense, "economic maximization never is, but is always about to be." The following was written about political theory, but it might equally well be applied to economics.

If history does not have a direction like a river but only a meaning, not a truth but only errors to be avoided, if practice is not deduced from a dogmatic philosophy of history, it is not superficial to base a politics on the analysis of the political man . . . the principles of a philosophy of history are dead letters as long as you cannot re-create them, in contact with the present. But in order to succeed we must possess the capacity of living history . . . the truth of politics is only the art of inventing what will later appear to have been required by the times.¹

¹M. Merleau-Ponty, "The Crises of the Understanding", The Primacy of Perception (Illinois: Northwestern University Press, 1964), p. 210.

A. L. Hirschman, op. cit., p. viii, for a similar statement.

BIBLIOGRAPHY

- Barnett, H. J. and Morse, C. Scarcity and Growth.
Baltimore: John Hopkins Press, 1963.
- Becker, G. "Investment in Human Capital: A Theoretical
Analysis," Journal of Political Economy, LXX
(October, 1962 Supplemental).
- Boland, L. "An Unorthodox Solution to the Problem of
Planning Regional Recreation Sites: Learning While Doing", Department of Economics and
Commerce, Simon Fraser University. Vancouver:
By the author, 1967.
- Roserup, E. The Conditions of Agricultural Growth.
Chicago: Adline Publishing, 1965.
- Clark, J. M. Alternative to Serfdom. New York:
A. E. Knoff, 1948.
- Clower, R. "The Keynesian Counterrevolution: a theo-
retical appraisal," The Theory of Interest
Rates, ed. Hahn, F. H. and Brechling, F.
London: Macmillan, 1965.
- Deane, P. The First Industrial Revolution. London:
Cambridge University Press, 1965.
- Eckaus, R. S. "Notes on Invention and Innovation in
Less Developed Countries," American Economic
Review, LVI (May, 1966).
- Eckaus, R. S. "Technological Change in Less Developed
Areas," Development of the Emerging Countries.
Washington: The Brookings Institute, 1965.
- Firey, W. Man, Mind and Land. Illinois: The Free Press
of Glencoe, 1960.
- Gambs, J. Beyond Demand and Supply. New York: Columbia
University Press, 1947.
- Griliches, Z. "Agricultural Production Function,"
American Economic Review (December, 1964).
- Griliches, Z. "Sources of Measured Productivity Change:
Capital Input," American Economic Review, LVI
(May, 1966).

- Gish, O. Investment in Education: with Particular Reference to the Semi-Industrialized Countries of Europe and Latin America. Unpublished M.A. thesis, The Hague: Institute of Social Studies,
- Hagan, E. On the Theory of Social Change. Illinois: The Dorsey Press, 1963.
- Heady, E. Economics of Agricultural Production and Resource Use. New Jersey: Prentice-Hall Inc., 1965.
- Heady, E. "Priorities in the Adoption of Improved Farm Technology," Economic Development of Agriculture, Iowa State University, 1965.
- Hirschman, A. O. The Strategy of Economic Development. Yale University Press, 1958.
- Keynes, J. M. The General Theory of Employment, Interest and Money. London: Macmillan & Co., 1964.
- Kindleberger, C. P. International Economy. Illinois: R. D. Irwin, 1963.
- Koopmans, T. Three Essays on the State of Economic Science. New York: McGraw-Hill, 1957.
- Lancaster, K. J. "Change and Innovation in the Technology of Consumption," American Economic Review, LVI (May, 1966).
- Lave, L. Technological Change: Its Conception and Measurement. New Jersey: Prentice-Hall Inc., 1966.
- Lipsey, R. Positive Economics. London: Weidenfield and Nicholson, 1965.
- Macdonald, R. A. "An Evaluation of the Economic Analysis of Unionism," Industrial and Labor Relations Review, XIX (April, 1966).
- Martin, L. "Basic Considerations in Transforming Traditional Agriculture," Economic Development of Agriculture, Iowa State University, 1965.
- Mellor, J. W. The Economics of Agricultural Development. New York: Cornell University Press, 1966.

- Noylan, T. "The Inexhaustible Resource of Technology," Perspectives on Resource Conservation. Baltimore: John Hopkins Press, 1961.
- Nutter, G. W. "On Economic Size and Growth," Journal of Law and Economics (October, 1966).
- Oi, W. "Labor as a Quasi-Fixed Factor," Journal of Political Economy, LXX (December, 1962).
- Popper, K. The Open Society and its Enemies. New York: Harper & Row, 1963.
- Samuelson, P. and Solow, R. "Analytical Aspects of Anti-inflation Policy," American Economic Review, L (May, 1960).
- Shell, K. "Towards a Theory of Investment Activity and Capital Accumulation," American Economic Review, LVI (May, 1966).
- Schultz, T. W. "Reflections on Investment in Man," Journal of Political Economy (October, 1962).
- Schultz, T. W. The Economic Organization of Agriculture. New York: McGraw-Hill, 1953.
- Schultz, T. W. Transforming Traditional Agriculture. New Haven: Yale University Press, 1965.
- Sen, A. K. Choice of Techniques. Oxford: Blackwell, 1962.
- Ward, B. Toward a World of Plenty? University of Toronto Press, 1963.
- Zimmerman, E. W. World Resources and Industries. New York: Harper & Row, 1951.

THE PROCESS OF URBANIZATION
IN CANADA,
1600-1961

by

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ABSTRACT

This essay analyzes the process of Canadian urban development from 1600 to 1961, with the aim of attempting: (1) to determine the causes and degree of Canadian urbanization; (2) to discover to what extent Canada has ever been a rural society. An attempt is made to discover the extent to which the process of Canadian urbanization has been distinct from the European and United States experience. To the extent that a distinction exists, new theoretical questions can be raised concerning the process of urbanization.

Urbanization in this essay is identified as the process by which an area is effectively united by an urban centre. The essay's method of procedure is to analyze separately the historical development of urban centres in each of Canada's five major regions (the Quebec, Ontario, Atlantic, Prairie and British Columbia regions). Both statistical data and historical analysis are utilized. Comparisons are made with United States urban development. Concentration is centred on analyzing the development of an urban, as distinct from rural, society -- therefore little attention is given to the most recent problems of urban development.

The essay concludes that Canada has been fundamentally an urban society since its conception, even though exceptions to this statement can be found for the cases of the Atlantic region, Ontario and Saskatchewan. Geography has played a significant role in promoting Canadian urbanization -- but geography has not been the only force. Canadian development has been based from the beginning around export staples -- thus, unlike Europe and like the United States, diversification has tended to follow specialization in Canada. This, coupled with the fact that a market economy has always been presumed in Canadian experience, has tended to increase the ability of Canadian urban centres to effectively unite a wide area. Canadian urbanization has also been distinct from that of the United States, in that Canadian metropolitan power has been more directly centralized and more immediately apparent. Thus, urbanization has been a distinctive feature of the Canadian identity and the Canadian process of urbanization suggests questions for future study.

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1.

INTRODUCTION

Is it correct to say that Canada has suddenly become urbanized within the last two decades? Certain statistics give credence to this statement. Since World War II, a rapid decline in Canadian farm employment has been recorded, suggesting a decline in rural influence. In recent years, statistics have outlined the emergence of an urban housing problem fostered by a rapid rate of urban growth. However, this essay suggests that, although a new form of urbanization may have appeared during recent decades, it would be incorrect to conclude that urban cultural and economic influence has suddenly asserted itself. On the contrary, this essay claims that the leadership provided by urban economic interests has always been a critical facet of the Canadian identity.

It is traditional to view the process of urbanization as the gradual evolution of trade and specialized functions out of a subsistence agricultural community. This viewpoint is based on European experience. However, Douglass North and others have argued that the American development pattern was essentially different from that of Europe. America was exploited in large part as a capitalist venture, in contrast to the

experience of Europe "where a market-oriented economy emerged only gradually from the predominantly local economies of the manorial system."¹ In many American regions, development was based from the beginning around one or two exportable commodities -- diversification followed specialization, rather than vice versa. "In Europe a subsistence or village economy with local markets was built into the social and economic structure for centuries. In America, subsistence was only a frontier condition to be overcome as rapidly as means of transport could be built."²

This paper will show how Canadian development was similar to the American rather than the European experience. However, it will be suggested that Canadian development was different in one important aspect from American development. While both countries developed to a large extent on the basis of export staple exploitation, metropolitan or urban influence showed itself more clearly in Canada than in the United States -- compared to the United States, Canada's metropolitan power was more directly centralized and more immediately

¹D. C. North, "Location, Theory and Economic Growth", Regional Development and Planning, ed. Friedmann and Alonso (M.I.T. Press, 1965), p. 242.

²Ibid, p. 253.

apparent.¹ If it can be said that the frontier was developed by metropolitan centers of dominance (which supplied capital, organization, transport, and marketing), then recent manifestations of the urbanization process may appear to be a less radical development.

To discuss this topic, it is necessary to discuss briefly the meaning of the phrase "process of urbanization". Then, the development of cities in Canada's major regions will be discussed in rough chronological order of birth. The discussion will be historical, attempting to explain the processes which urban statistics hint at. After a brief discussion of modern developments in Canada, a general conclusion will be presented.

¹J. M. Careless, "Frontierism, Metropolitanism and Canadian History," Canadian History Review, XXXV, (March, 1954), pp. 18-20.

2.

THE "PROCESS OF URBANIZATION"

The critical question is, "what is an urban society?" Is it merely a society within which a certain percentage of the population lives within the geographical confines of legal entities called cities? Or does the phrase "urban society" refer to the way of life of a society -- the underlying forces which give meaning to the statistics?

This essay assumes that the statistical percentages (i.e. of the "degree of urbanization") are not in themselves conclusive. A large city does not guarantee the development of industry -- and a small urban population does not preclude the possibility that the entire society is directed, motivated, and inspired by the urban community. The "urban-rural" statistics talk only of residence location -- they do not describe the social, political or economic nature of urban life. However, the statistics provide a factual base to guide analysis.

In order to determine the essential factors underlying the urbanization process (i.e. the factors which produce the urban-rural statistics) it is useful to ask, "Why are we interested in the process of urbanization?" John Friedmann claims that the importance of

urbanization lies in the historical results which have been associated with this process.¹ Above all else, urban growth has produced cohesion and inter-connection over wide geographical areas. From social, economic or political viewpoints, the area of effective interaction has been enlarged, creating what Friedmann calls "effective" social, political and economic spaces. Unless broad areas are effectively united in this manner, "progress" is impeded -- freedom, improved standards of living, leisure etc. will be less likely to emerge. Thus, the process of urbanization is important because it has tended to lead to the creation of these all-important united or "effective" social, political and economic areas, which in turn have permitted progress to occur.

Following Friedmann, we can study the urbanization process by trying to observe the process by which an area is effectively united by an urban centre.² To the extent that the critical values for an area's population are derived from a single urban cultural tradition, a stable political equilibrium should be easier

¹John Friedmann, "Cities in Social Transformation", Regional Development and Planning, ed. Friedmann and Alonso (M.I.T. Press, 1965), pp. 349-60.

E. Lampard, "The History of Cities in the Economically Advanced Areas", Regional Development and Planning (M.I.T. Press, 1965), p. 321.

²Ibid.

to obtain. Until an "effective political space" exists (i.e. the uniting of an area under one effective administrative order, and the emergence of effective law, taxes and public planning for the entire area), integration and development of advanced economic functions (i.e. a market, long range planning, industrialization) should be impeded.

The idea that is being advanced here suggests that a city is more than a finite area or number of persons -- these aspects are not even major aspects of a city. A city produces a particular spirit -- a particular way of life and frame of mind is created by its social heterogeneity. A city is usually the seat of power, the prime exponent of rationality and complex organizations, and a source of immense cultural vitality. These various social and political forces need not be confined to the city's legal limits -- they can, and often do, effectively pervade the surrounding area, uniting this area into one effective social and political space. This process of producing cohesion within a region has traditionally been associated with the process of urban development -- it can, in short, be analyzed as the process of urbanization itself.

Since a city acts as a force tending to organize an area into specialized units which are functionally

differentiated and yet effectively integrated, urban growth can be seen as "simply the concentration of differentiated but functionally-integrated specialisms in rational locales."¹ A society is urban, not to the extent that its population lives within the city limits, but to the extent that it is functionally specialized and integrated over space by urban forces.

Intellectuals, administrators and entrepreneurs are the city's agents in this task. With their success in organizing the life of a society, both as a pattern of activities and as a pattern of space, the traditional notion of a city as a place having definite geographic limits will tend gradually to disappear . . . the former distinction between town and country will become blurred.²

Utilizing the Friedmann and Lampard conception of urbanization, this essay will study the degree to which Canadian urban centres have effectively directed overall regional development. In this sense, it shall be shown that the distinction between Canadian "town and country" has often been blurred from the beginning of Canadian development -- that Canada has been, in the Friedmann and Lampard sense, quite urbanized in nature long before the transformation of the last few decades.

¹Lampard, op. cit., p. 332.

²Friedmann, op. cit., p. 360.

3.

THE QUEBEC REGION

A statistical summary of the process of urbanization in the Quebec region shows: (See Table 1)

- A) Pre 1760:
- 1) Montreal and Quebec city contained slightly more than 20% of the area's population in the 1760's -- a percentage drop from the 1660's, when over 30% of the population had lived in these two cities.
 - 2) Although the total population was small, (just over 60,000 in 1760's), the urban centres were restricted only in absolute size -- not in the percentage of the total population which they contained. (This can be compared to New England, where nine-tenths of a much larger population lived on farms).
- B) 1760-1860:
- 1) In 1860, Montreal and Quebec city contained slightly less than 20% of the province's population -- a drop since 1760, although the total population in the Quebec region

TABLE 1

MAJOR CITIES IN THE
QUEBEC REGION, 1663-1961

A: Population of Incorporated City and Metropolitan Area (in units of one thousand)																
	1663	1666	1685	1759	1763	1780	1800	1831	1851	1861	1881	1891	1901	1921	1941	1961
Montreal (c)	.4	.6	1.2	8.0	8.5	17.9	32.6	43.7	77.1	120	141	220	268	619	903	1191
" (m)											177	257	371	738	1138	1905
Quebec (c)	.8	.6	1.1	4.0	5.5	36.0				51	62	63	69	95	151	172
" (m)													90	124	202	356
Three Rivers (c)		.5		.8						6			10	22	42	53
B: Percentage of Regional Population Living in Incorporated City and in Metropolitan Area																
	1663	1666	1685	1759	1763	1780	1800	1831	1851	1861	1881	1891	1901	1921	1941	1961
Montreal (c)	10	17	11	14	13			8	9	11	13		16	26		22
" (m)													20	30		36
Quebec (c)	20	11	10	7	8			6		5	5		4	4		4
" (m)													6	5		7
Three Rivers (c)		13		1						.6						1

Note: c = incorporated city

m = metropolitan area as defined by 1956 census. Data for periods before 1961 are approximate estimates, and probably underestimate.

Sources: For information before 1901: M. Q. Innis, An Economic History of Canada (Toronto: Ryerson Press, 1935), pp. 19, 97, 198; D. G. Kerr, A Historical Atlas of Canada (Toronto: Thomas Nelson and Sons, 1960), pp. 24, 48-50; Canada Year Book, 1918 (Ottawa: Queen's Printer, 1918), pp. 93-4; R. Tanghue, Montreal Economique (Montreal: Editions Fides, 1943), pp. 11-101.For information after 1901: Census of Canada, 1961, Bulletin 7.1-2.

had grown to 1,112,000.

- 2) Montreal was by far the largest and most important city in Canada. However, there is a suggestion that the provincial community itself had become more rural, agricultural and subsistent -- although the province itself had a larger percentage urban population than any other Canadian region.

c) 1860-1960

- 1) After the 1860's, Montreal began to increase its share of the provincial population -- by 1901, it accounted for 20% of the population, and by 1961 it accounted for 36% of the population.
- 2) Quebec city continually held approximately 6% of the province's population during this period.
- 3) In 1961, Montreal and Quebec city were the only incorporated cities in the Quebec region with a population over 100,000 -- as metropolitan areas they accounted for approximately 60% of the province's

urban population. There were only 15 other incorporated cities with a population over 30,000 in 1961. (See Tables 1A, 3A)

- 4) The percentage of the population that was urban rose from approximately 40% in 1901 to 75% in 1961. The province's ten-year rate of urbanization has been consistently above the U.S., Canadian and Ontario percentage increases since 1911. (See Tables 1A, 2A)

These statistics suggest that the urban influence has always been important in this region, although urbanization may have suffered a set-back between 1760 and 1860. It is clear that cities have not developed slowly out of a subsistent, rural economy -- if anything, they have been a major factor in developing the rural economy. Yet, it is also clear that the process of urbanization has increased considerably in the last century.

Is it possible to explain the forces that lie behind these statistics? To do this, it is necessary to discuss the origins and development of the urban centres in this region.

Quebec city was founded by a man who had one

purpose in his mind -- Champlain wished to make effective the legal monopoly which he had been granted for fur trading in the region. Earlier, he (and others) had tried to establish a fur trading post in Acadia -- but it had been impossible to enforce the monopoly. Acadia was too near New England to be safe from attack. More important, the geography of the area prevented effective monopolistic control. "The relatively small land mass is cut into segments by arms of the sea There were hundreds of entrances and exits."¹ In such an area it was impossible to control the activities of the fishermen and fur traders who operated from the harbours. From the first, in this Maritime area, small and independent communities developed, and the establishment of central authority was difficult. Furthermore, great forests presented difficult barriers for any inland penetration.

Champlain chose Quebec as the site for his trading colony because this site overcame all the geographical problems presented by the Maritimes. The great steep cliffs of Quebec offered a natural fortress, commanding a major river that offered an easy route inland. Furthermore, the St. Lawrence River

¹W. MacNutt, The Making of the Maritime Provinces, 1713-1784 (Ottawa, 1955), Canadian Historical Association, Booklet No. 4, p. 5.

narrowed just below Quebec -- permitting sailing ships to reach the harbour, but not points further up river. This was a site from which a fur trade monopoly could be enforced, be profitable, and be safe from English invasion.

Colonization did not occur naturally in the fur trading colony -- in 1644 there were only 300 people living around two trading posts, Quebec and Three Rivers. The fur trading monopoly as such had no need for settlers. After 1641, the colony did grow at a slightly faster pace, partly due to the fact that France experienced a wave of religious feeling which unleashed a great missionary effort -- "Montreal, for example, was launched as an enterprise that was primarily religious."¹ Also, there was a rapid development of an upper class which devoted its time to the fur trade and occupied itself with public affairs. By 1666, the region's population had grown to 3,418 inhabitants, of whom almost half lived in towns.

After 1663, settlement increased significantly in the colony, largely due to the fact that the French crown revoked the charter of the fur trade monopoly, and proceeded to rule the area as a French colony. The fur trade at this time was languishing from Iroquois

¹G. Fregault, Canadian Society in the French Regime, (Ottawa: 1959), Canadian Historical Association Booklet No. 3, p. 6.

incursions; the Crown itself wished to establish settlement. To serve both ends, the Carnigan-Salieres Regiment was sent out to subdue the Iroquois and then to settle as a disbanded regiment on grants of land along the Richelieu River, thus protecting the colony from invasions up this river. Women were sent out to be brides, and government policy favoured a high birth rate. The Intendant, Jean Talon, began a rapid development of the economy, seeing "quite clearly that commerce was the only activity which would keep in the colony a middle class which had little interest in agriculture."¹

But, when Talon left, his work perished. The governor, Frontenac, provoked crises with his political egoism. Also, agricultural settlement did not grow rapidly. The seigneurial system, which was used to settle the agricultural lands along the banks of the St. Lawrence, "required the minute supervision and coercive force of the state."² For a long time the state prohibited villages within the seigneurial system - in fact, this form of settlement along the river discouraged the growth of minor villages.

The failure of New France to develop a self-supporting agricultural community had wide repercussions.

¹Ibid, p. 7.

²M. Trudel, The Seigneurial Regime (Ottawa: 1960), Canadian Historical Association Booklet No. 6, p. 16.

As a result, the colony's prosperity depended on the export of furs, and the colony's governing class (unable to live on the produce of the seigneuries) was supported by the network of trading posts and forts which commanded the trade routes of New France.¹ This in effect meant that New France could not maintain itself without further development and expansion of the fur trade -- and New France could not expand without coming into collision with British North America. This expansion, with its complimentary military problems, imposed an immense strain on the colony. By 1745 the farms were producing a modest surplus -- but the sale of agricultural products occupied only a small place in the colonial economy, especially "by contrast with the situation in the centrally located British colonies and even in New England where nine-tenths of the population lived on the farms."² Industry expanded to some greater degree -- with state aid, warships were built at Quebec, leading to the increased development of naval dock yards. An iron works was started near Three Rivers, but was not successful.

The population remained small in the colony, a result of the Canadian climate and French economic and social conditions, which did not promote immigration to

¹G. Fregault, op.cit., p. 8.

²Ibid, p. 11.

the colonies. In 1754, roughly seventy-six per cent of the population lived in the rural areas.¹ Within the colony, the major towns exerted such a strong pull on the rural population that, in 1749, the Intendant took rigorous measures to prevent peasants from settling in Quebec city. In 1759 twenty-five per cent of the population lived in towns. The increasing participation of colonists in the fur trade weakened the restraints of rural society -- the fur trade provided an outlet for youth, a force which broke down the isolation of scattered settlements and extended to an even greater degree the effective influence of the major towns. Thus, the fur trade, coupled with geography and the defence needs of the colony, prevented European feudalism from taking any hold in the colony.

Montreal emerged as the chief trading centre. It was the focus of major river routes, being near the junction of the Ottawa and St. Lawrence Rivers, as well as near the entrance of the Richelieu River into the St. Lawrence. Being a natural geographical centre for trade, Montreal also marked the western extremity of the settlements extending up the rich St. Lawrence Valley lowlands

¹Ibid, p. 12. It is estimated that total permanent French immigration to New France did not exceed 10,000 people (prior 1763). This is found in R. N. Lower, "The Growth of Population in Canada", Canadian Population and Northern Colonization (Toronto: University of Toronto Press, 1962), p. 45.

(the point where the Laurentian and Appalachian ranges close together). An active labour market for youth developed in the city -- the westward and southern extension of the fur trade itself involved a shift from individual enterprises to large commercial enterprises, employing a steady labour force. Starting about 1720, and definitely by 1783, Montreal became a metropolitan centre independent to a considerable extent of the resources of rural communities. According to one writer:

For the first time, there emerged a clear distinction between urban and rural society, and, as the urban became more sharply defined, the rural attained a greater degree of maturity.¹

Quebec, the capital of all New France, continued to develop as a political centre and the seat of culture -- here, a powerful bureaucracy developed. Three Rivers remained the third largest cluster of population in the colony -- but, by 1763, this town accounted for only 1% of the population. Tadoussac, a small area located before the mouth of the St. Lawrence River, stood out as an example of a very old community that never developed. Although its waters were free of ice all winter, it lacked any significant hinterland (for furs), agricultural land, or natural capabilities for defence.

¹S. D. Clark, The Developing Canadian Community (Toronto: University of Toronto Press, 1962), p. 38. However, Fregault, op. cit., p. 13, talks of Montreal exporting grain from the area by 1737.

The ultimate defeat of the French colony in 1763 should not be understood to mean that New France was in some way "primitive and rural". We have seen how geography, enterprise, commerce and military forces helped to determine the location of the two major French-Canadian cities. From these cities a slow settlement of the rural areas was executed -- a settlement which continued to be governed and regulated closely by the state government located in Quebec. Even though these farms eventually produced a small surplus, the major force in the colony continued to be the Montreal based fur trade. Thus, despite the large proportion of the population which lived in rural areas, the society was highly urban -- in origin, and everyday political, social and economic affairs. It should be noted the dominant role played by the two major cities -- out of their womb a rural society developed, not vice versa. Even in terms of its population, Montreal appears to have contained over 12% of the colony's population -- a larger percentage than the city of Toronto possessed of Ontario's population during its first one hundred years (i.e. until the early 1900's¹). (See Table 3.)

The French colony collapsed largely due to the fact that its highly specialized economy was neither

¹Fregault, op. cit., p. 15. French Canada was urban -- the problem was that it was very small.

diversified nor populous enough . Also, it was not intimately bound to the motherland, France. The economic basis of this society was a luxury trade which constituted over two-thirds of the value of its exports.

Here, as in the fishery, the French, members of a continental, self-sufficient country, desiring to secure luxury goods for home consumption, were at a severe disadvantage as against the English, whose economic life depended upon a supply of foreign goods and therefore upon the production of cheap trade goods with which to secure them.¹

The effect of the conquest (1763) upon this French society is not clear. Many seigneurs sold out and returned to France. There appears to have been a great influx of trade with the advent of the British -- the volume of shipping sharply increased. Control of the all-important fur trade passed into the hands of Scottish and American merchants located in Montreal -- soon, the great fur trading route into the heart of the prairies was established. However, despite the continued importance of the major cities, and the development of new small towns, there is evidence that the conquest tended to curb the influence of the major cities over the rural areas. One historian writes:

Eliminated from politics, from commerce, and from industry, [French] Canadians turned back to the soil. If they came to boast that they were 'children of the soil', it was because defeat had affected not only their material civilization but also their ideas. They had had higher pretensions

¹M. Q. Innis, An Economic History of Canada (Toronto: Ryerson Press, 1935), p. 30.

when their community was more complete.¹

This tendency, coupled with a high rate of natural increase, tended to decrease the urban influence within Quebec between 1760 and 1860.

Although Montreal may have regressed between 1760 and 1860 in terms of its urban influence within Quebec, this city continued to be the major urban centre for Canada up until the present day, serving as a financial, commercial and communication centre for Canadian development. Thus, this city grew especially rapidly after 1860. With the advent of the steamship, Quebec city no longer remained as the major port for ocean going ships, and Montreal's harbour increased in importance. Quebec city did remain important in later times, however, as the seat of government for the province, as the terminal point for the Canadian National Railway, and as a site for factories in modern times (close to hydro-electric power). It was not until the 1870's that the city of Toronto surpassed Quebec city in size, to become Canada's second largest city. It should be noted that Montreal and Quebec have, since the 1890's, accounted for over twenty-five per cent of the province's population -- Montreal's share alone has continually increased, and has been over twenty per cent

¹Fregault, op. cit., p. 15.

since 1901 (see Table 1, p. 9). This perhaps is an indicator of the process of urbanization within the province itself during recent years.

Finally, a recent study has thrown some light on modern urbanization in Quebec.¹ It has been shown that high food prices during the war (1939-45) provided farmers with the possibility of using their farm income to raise their levels of living. Rural people became aware of urban levels of living, by means of the communication media at the very time when they could expect to reach higher levels of living. A drop in food prices after the war forced many farmer to choose between emigration out of rural areas or a return to subsistence farming. All these urban forces have tended to break down the rural value system and to promote a more effective urbanization of rural areas.

¹R. Fortin, "Social Effects of the Evolution of Canadian Agriculture", Resources For Tomorrow, Volume I (Ottawa: Queen's Printer, 1961), p. 143.

THE ATLANTIC REGION

Large cities have not developed in the Atlantic region. However, overall population growth has been very slow in this region -- in 1961 the combined population of the four Atlantic provinces just equaled the population of metropolitan Toronto. The geography of the Atlantic area, which has already been described¹, tended to generate several small independent and widely scattered settlements, and did not provide the resources for a very large population base. Larger centres that could exercise social, political and economic control over the area emerged very slowly.

Urban development -- indeed settlement of any large scale nature -- began hesitantly in this region. The fur trade was reduced to secondary importance -- fishing for export was the region's first major industry. "Fishing and agriculture (settlement) were hostile to one another."² Unlike the fur trade, which became increasingly dependent upon participation by local colonists, fisheries were exploited by interests who operated from a large number of European bases (both French and English) from which the necessary labour and supplies were secured. These European interests fiercely

¹Supra, p. 12.

²MacNutt, op. cit., p. 4.

opposed colonization, fearing that this would promote the competition of local capitalists and labour. Furthermore, the nature of fishing differed immensely from that of fur trading -- it forced a far higher degree of mobility upon its participants.

An additional element introduced instability into the region. The close proximity of English and French fishing fleets, plus French interests in guarding the entrance to the St. Lawrence River, promoted military problems and battles. The British, in their military tactics, stressed the development of their navy, and thus did not try to establish major landed garrisons. The French, however, did favour landed garrisons, and this led to some French interest in colonization. For this reason the French built the great fortress of Louisburg on the eastern tip of Cape Breton, and developed a very small agricultural settlement on Prince Edward Island.

The English finally erected the colony of Halifax in 1749 (the only colony in America ever founded by the direction of the British Government) with the aims of: founding in Acadia a centre of British population; creating an important military and naval base; and establishing a centre for the British fishery. This decision arose out of the events of a war between France and

England (1744-48). During this war the British captured Louisburg, with substantial support from New Englanders. However, the French managed to regain Louisburg peacefully over the bargaining table in Europe when peace was restored. It was this peaceful restoration of Louisburg which prompted the construction of Halifax -- it became necessary to create in Acadia a power which could confront Louisburg, if only to satisfy New England which had been incensed at the peaceful restoration of the fort to the French.

Halifax's population at the start consisted of only three to four thousand people. It was situated on an area of poor soil, and, until trade developed, the only source of wealth for the town was its function as a government centre and naval base. The British attempted to build agricultural colonies -- but, due to the demands of fishing interests, local industry and trade were alike discouraged. This check to free economic enterprise not only reduced the agricultural communities to a state of economic self-sufficiency but prevented the rise of any towns except those which were the centres of government and military garrisons. Thus, for French and English alike, settlements were extended primarily to supply fishing bases or to check foreign encroachments, and thus remained little more than outposts

of empire or temporary bases of New England.¹

Settlement as a free economic enterprise occurred only after 1760, with the collapse of the French empire in North America and the expansion of New England into Nova Scotia. This settlement was not rapid, however. The small settlements which developed shared in the economic expansion of New England. Halifax continued to languish, deriving its income mainly from the government and the military. The influx of village communities was largely independent of any urban influence from the provincial capital of Halifax. In 1775, the population of the whole far-flung, broken region was considerably less than twenty thousand.² (The population of Montreal at this time was about 18,000.)

The American Revolution effectively cut these village settlements off from their established markets and lines of communication (i.e. in New England). This, plus the centralizing influence of war and trade after 1776, tended to emphasize Halifax's strategic position. "She seized the trade with the out-settlements and with the Dutch West Indies which formerly had been controlled by New England."³

Finally, Halifax developed an effective urbanizing

¹Clark, op. cit., pp. 44, 46.

²MacNutt, op. cit., p. 12.

³Clark, op. cit., p. 63.

influence over the surrounding area. The Loyalist migrations to the Maritimes helped to further weaken established rural influences, and to accentuate the importance of the central government administration in Halifax. In 1783 and 1784, by reason of the doubling of the population and the political reorganization which followed, the Maritime Provinces of Nova Scotia and New Brunswick came into existence. New Brunswick was most distinctively the product of the circumstances of these years.

In 1806, 140,000 people lived in the Atlantic region. By 1860, the population had grown to 787,000 people, of which 59,000 lived in the cities of Halifax (25,000), St. John (27,300) and Charlottetown (6,700). Halifax accounted for 8% of Nova Scotia's population, St. John held 11% of New Brunswick's population, and Charlottetown held 9% of Prince Edward Island's population. (See Table 2. In comparison, Montreal held 11% of Quebec's population in 1861).

New Brunswick had begun to develop rapidly after 1800 with the rapid expansion of the timber trade which attracted additional immigrants, helped develop a ship-building industry, and encouraged agricultural expansion. St. John, on the St. John river, played an important organizing role in this expansion. By 1901, 15% of the provincial population lived in St. John -- approximately

TABLE 2

POPULATION OF ATLANTIC REGION, BY PROVINCE AND BY MAJOR CITIES, 1806-1961

Province	Date	Provincial Population	Percentage of Provincial Population that is Urban	Major Provincial City	City Population	Percentage of Provincial Population Located in Largest City
Nova Scotia	1806	68,000		Halifax		8
	1861	331,000		"	25,000	11
	1901	459,600	28	"	51,000	14
	1921	523,800	44	"	75,500	25
	1961	737,000	57	"	183,900	
New Brunswick	1806	35,000		St. John	27,300	11
	1861	252,000		"	50,000	15
	1901	331,100	26	"	60,000	15
	1921	387,900	35	"	96,000	16
	1961	597,900	49	"		
Prince Edward Island	1806	10,000		Charlottetown		9
	1861	81,000		"	6,700	11
	1901	103,300	14	"	12,100	13
	1921	88,600	19	"	12,300	17
	1961	104,600	32	"	18,300	
Newfoundland	1806	27,000		St. John's	89,000	19
	1861	123,000				
	1901	221,000	52			

Note: City population is not based solely on the legal definition, but also on an approximate estimate of metropolitan area as defined in the 1956 census.

Sources: For information before 1901: M. Q. Innis, An Economic History of Canada (Toronto: Ryerson Press, 1935), p. 53; D.G. Kerr, A Historical Atlas of Canada (Toronto: Thomas Nelson and Sons, 1960), pp. 24, 48-50.
For information after 1901: Census of Canada, 1961, Bulletin 7.1-2.

the same percentage as in 1961. Since 1900, smaller towns have developed in this province -- the urban percentage of the population has grown from 26% to 49%.

Industrialization eventually brought development to Nova Scotia, and by the 1920's Halifax had surpassed St. John in size. In 1901, 11% of the provincial population lived in Halifax -- by 1961 this city accounted for 25% of the provincial population. From 1901 to 1961 the percentage of the provincial population which is urban had doubled, from 28% to 57%.

Charlottetown, unlike the other major cities in the Maritime region, has consistently accounted for over 50% of its province's urban population. This can probably be explained by the size of Prince Edward Island, coupled with the fact that the island's economy is agricultural in nature. In 1961, Prince Edward Island had the smallest percentage of provincial urban population in Canada (32%) -- yet Charlottetown accounted for 17% of the provincial population, a higher percentage than Regina had of Saskatchewan's population (Regina held 12% of Saskatchewan's population).

In conclusion, it would appear that urbanization has played a minor role in the Atlantic Region. Military, geographic, commercial and political factors played distinctive roles in limiting the urban influence. However,

urban centres have not always "developed out of" subsistent rural economies -- some cities have, to varying degrees, directed provincial development. The Atlantic region today has the lowest percentage of urban population in Canada. This region has also tended to display very low rates of urbanization (with the exception of Newfoundland, 1951-61. See Tables 1A, 2A). Although the region's absolute urban population is small, the percentage of the provincial population located in the region's major cities compares with the percentage that Calgary, Edmonton and Regina have of their provincial populations (i.e. 25% or less of the provincial populations live in these cities). Clearly, small cities and towns (i.e. with a population under 30,000) are more influential in the Atlantic region than in any other North American region. (See Tables 2A, 3A.)

THE ONTARIO REGION

Ontario, unlike Quebec, took

its rise from several settlements, not one or two. Ethnically, its people from the beginning are drawn from several stocks. These have no religious unity and little occupational . . . immigration from the ends of the earth becomes a social phenomenon of the first magnitude.¹

Within the settlement of Upper Canada [Ontario] in the early nineteenth century, there emerged the first distinctively agricultural frontier in British North America.²

In other areas of Canada, agriculture did not become a dominant activity until other resources (fish, fur, timber) had been developed. In the Ottawa valley an important timber industry developed -- but this was considerably isolated from the major areas of settlement in Ontario.

The Loyalist migrations hastened the organization of Upper Canada in 1791 and led to the adoption of a policy encouraging settlement. But this population influx was unrelated to the activity of any dominant set of economic interests within the colony -- the fur trade merchants of Montreal were thinking of a commercial empire, not of agricultural settlement. The State supported agricultural settlement largely only for military defence.

¹Lower, op. cit., p. 49.

²Clark, op. cit., p. 63.

Transportation facilities were geared to the needs of defence rather than markets and the limitations of economic self sufficiency sharply restricted settlement.¹

Within this self sufficient society, towns slowly emerged along the shore of Lake Ontario. "For the most part, the towns exerted little influence beyond their immediate surroundings. They were garrison centres of the Empire in Upper Canada."²

The 1812-14 war marks a significant change in Ontario's development. The war re-emphasized the strategic military position of Upper Canada - development after the war stressed Upper Canada's importance as an economic frontier within the British colonial system. Also, after the war soldiers were disbanded and settled in strategically favourable areas. In England, fears of overpopulation had arisen, and emigration was encouraged. The final impetus to this new wave of immigration came from the development of the fur trade. The merchants of Montreal had shifted their interest from furs to timber (by 1820, the fur trading companies operating westward from Montreal had ceased to exist). Timber, unlike furs, was a bulk cargo, creating major shipping needs if it was to be exported to Europe. The

¹Ibid, p. 64.

²Ibid, p. 66.

immigration from England thus provided a full cargo on ships heading from England to Quebec, at the same time as the merchants of Montreal were developing timber to fill the ships on the trip back to England.

A few additional words should be said about this timber industry, for this industry points out the urban influence of Montreal.

It was a metropolitan industry, involving large capital outlays -- the timber merchant -- and a regular labor force which increasingly became differentiated from the rural population and came to constitute rather a part of an urban proletariat.¹

The workers for this industry chiefly came from Montreal and the surplus population on French Canadian farms on the St. Lawrence.

The evolution of the town of Kingston demonstrates the development forces in Ontario. This town was founded in 1784, entirely the result of Loyalist immigration. By 1820, Kingston's population still exceeded the population of the provincial capital (York, or Toronto) and far outstripped the other river and lake towns in the region.

Kingston, in fact, had been the real, though not the titular, capital of the early province of Upper Canada, the province of the Loyalists, with its concentration on the upper St. Lawrence. And the solid advantages which had given it this early pre-eminence lasted stubbornly on, long after settlement had begun to spill into the rich peninsula between Lakes Erie and Huron, and the whole centre of gravity of the province

¹Ibid, p. 68.

was shifted slowly westwards.¹

This town stood at the head of the St. Lawrence, guarding the entrance to the immense, interconnecting system of the Great Lakes. Naval, military, commercial and political interests all attached a high priority to such a location. This town was the British naval base on Lake Ontario. It was also the capital of four very populous and prosperous counties. The town's mills processed timber (by 1820) from the woods of the north.

It had become the little commercial metropolis for all the eastern part of the province; and it was a major point of transshipment on the northern trade route which extended from England and the ports of Europe across the Atlantic, up the St. Lawrence and the Great Lakes system and far into the interior of the continent.²

In the early 1830's, Kingston still flourished -- the Rideau canal was completed, a great fortress was being built, and the government decided to build the provincial penitentiary nearby. Business flowed into the district from the whole eastern part of the province. In 1841, Kingston was chosen as the seat of government for the new province of Canada (Ontario and Quebec), even though the city's population still did not exceed five thousand people. But, in 1843 fortunes changed --

¹D. Creighton, John A. Macdonald, The Young Politician (Toronto: Macmillan Company of Canada, 1956), p.2.

²Ibid, p. 9.

it was decided to move the seat of Canadian government to Montreal. From then onwards the city of Toronto became the effective, as well as the titular, capital of Ontario.

Toronto enjoyed certain geographical advantages which were critical for its development. It had an excellent harbour (for Lake Ontario) and was situated at the junction point between the developed lowlands of the southern part of the province, the developed east which stretched along the Ontario lake shore to Kingston and beyond Kingston to Montreal, and the huge frontier of the northern part of the province. From earliest times it had been on the portage route between Lake Ontario and Lake Huron in the north. In short, the city was well situated to become the financial, administrative and trade centre for the entire province. However, unlike Montreal, Toronto only became an important urban centre once immigration had filled its hinterland with a rural population. Toronto did have some influence (through early governors, such as Simcoe) upon settlement -- but the influence was minor compared to the influence of Montreal and Quebec. (See Table 3)

"The growing trade in wheat, and railway building, increased commercial expansion which produced the town [in Ontario] ".¹ Rural culture became very prominent

¹Clark, op. cit., p. 80.

TABLE 3

MAJOR CITIES IN THE
ONTARIO REGION, 1818-1961

A: Population of Incorporated City and Metropolitan Area (in thousands)									
	1818	1831	1851	1861	1881	1901	1921	1941	1961
Toronto (c)	1.2	4.0	30.8	44.8	86.4	208	522	668	672
" (m)						272	647	951	1,825
Ottawa (c)				14.7		60	108	155	268
" (m)						96			430
Hamilton (c)			14.1	19.1	36.0	53	114	166	274
" (m)						79	153	206	383
Kingston (c)		4.7			14.1	18	22	30	54
Provincial Total	120	237	953	1,396	1,927		2,934		6,236

B: Percentage of Regional Population Living in Incorporated City and in Metropolitan Area

	1818	1831	1851	1861	1881	1901	1921	1941	1961
Toronto (c)	1	2	3	3	4	9	18	18	11
" (m)						12	22	25	29
Ottawa (c)				1					4
" (m)									7
Hamilton (c)			1	1	2				4
" (m)									6
Kingston (c)		2			.7				1

Note: c = incorporated city
m = metropolitan area as defined by 1956 census. Data for periods before 1961 are approximate estimates, and probably underestimate.

Sources: For information before 1901: M.Q. Innis, An Economic History of Canada (Toronto: Ryerson Press, 1935), pp. 19, 97, 198; D. G. Kerr, A Historical Atlas of Canada (Toronto: Thomas Nelson and Sons, 1960), pp. 24, 48-50; Canada Year Book, 1918 (Ottawa: Queen's Printer, 1918), pp. 93-4.

For information after 1901: Census of Canada, 1961, Bulletin 7.1-2.

in Ontario. It was the intrusion of additional forces from outside the region (world demands for food, the commercial influence of Montreal, the opening of the West) which spurred regional development and urbanization. Due to national protection by the Canadian government, manufacturing centres in Ontario were kept alive until after 1900, when the expansion of population into the West provided the all-important impetus to proper industrialization. The building of the Canadian Pacific Railway also opened up the northern part of Ontario, permitting the development of mining and pulp and paper industries within the pre-Cambrian shield. The widespread industrialist-capitalist expansion which emerged was done under the leadership of the dominant industrial and financial centres, especially Montreal and Toronto.

In 1961, the influence of Ontario's early rural character could still be seen. Its population exceeded Quebec's by about one million persons (it has exceeded Quebec's population since the 1850's). Its urban development was founded on a broader base than was Quebec's. In both provinces, one major urban centre existed -- but Montreal accounted for a larger share of its provincial population than Toronto did for Ontario. In Quebec there was only one other metropolitan area (Quebec city) with a population over 250,000 people,

and only a total of seventeen cities with a population over 30,000 people. In Ontario there were two cities other than Toronto with populations exceeding 250,000 persons, two cities within the population range of 100,000 to 250,000 persons, and a total of twenty-one cities with a population over 30,000 persons (see Tables 3, 1A, 3A). *The multitude of factors which led to rural development in Ontario have lead to the growth of a comparative multitude of urban centres. It is this multitude, as opposed to the dominant influence of Toronto, which consistently gives Ontario a higher percentage of urban population than occurs in Quebec (see Tables 5 and 1A).

Ontario and Quebec show opposite processes of urbanization. Quebec begins as an urban community, and then (for many reasons) develops a large rural community -- although Montreal maintains an immense, dominant urbanizing influence over the entire country. Ontario begins as a predominantly rural community which gradually becomes urbanized. In the beginning, cities in Ontario contain only minute fractions of the provincial population (Table 3). It would appear that this rural development (i.e. the development of a large population base) provided the basis for later large scale urban development -- a pattern similar to that of the New

England states in America, and more similar to European urbanization than the development pattern in any other part of Canada. Absolute population size, coupled with industrial development, explains Ontario urbanization -- rates of urbanization themselves have been unspectacular (i.e. consistently below the Canadian average decennial rates since 1901 -- a pattern which is similar to New England decennial rates since 1880, compared to the United States rate). (See Table 2A.)

THE PRAIRIE REGION

The prairies were populated on the basis of vast European immigration, especially during the period 1896-1914.

Railway and continually improving transportation were as essential as rain and sun to progressive settlement on the Canadian prairie (markets for wheat were an essential pre-requisite) . . . what the birch canoe was to the fur trader, the railway is to the farmer of Western Canada.¹

Branch lines were all-important -- by 1931 eighty per cent of Saskatchewan's farmers lived less than ten miles from a railway station. The railway both stimulated settlement, and received an impetus from rapid settlement.² For ten years, starting in 1905, there was an average of 30,000 immigrants moving to Saskatchewan each year from outside Canada.

Urban centres were created in direct relation to the railroads and the convenience of elevators for grain shipment; e.g. approximately eight miles apart with loading platforms four miles . . . larger centres flourished at divisional points located approximately 110 to 130 miles apart, depending on accessibility of water and the efficiency of engines, at which engines and trains were changed.³

¹G. Britnell, The Wheat Economy (Toronto: University of Toronto Press, 1939), p. 11.

²Ibid., p. 13.

³The influence of railway needs can be seen in northern Ontario also. Major towns of the region developed at points where engines had to be re-fueled or changed. The later advent of the diesel engine (which does not require frequent re-fueling) destroyed the major economic base for many of these towns.

The largest cities were dependent on the location of branch lines and junction points, of terminal points, and the stimulus to population afforded by government buildings, educational facilities and wholesale houses. Settlement in Western Canada differs fundamentally from settlement in Eastern Canada and in the old world.¹

Britnell writes that both Saskatoon and Regina failed to develop major attributes of metropolitan centres, and only were dominant urban centres for their provincial regions. Winnipeg, as the "gateway to the West", and as the mother settlement in the west, developed the critical commercial, financial and communication institutions needed. Once developed, duplication in other western cities was not required. The result was that "the province of Saskatchewan has provided a large part of the hinterland necessary to the growth of Winnipeg to metropolitan stature."² In recent times, the advent of the automobile has provided the central western cities with an additional urbanizing force -- many villages and towns decreased in size and importance as distributing centres when rural people had easier access to the more sophisticated major cities.

Despite the agricultural economy of the West, it is not at all apparent (with the possible exception

¹Britnell, op. cit., p.23, as quoted from Innis without specifying the source.

²Ibid., p. 23.

of Saskatchewan) that a "rural" society developed. Between 1901 and 1906, urban population grew tremendously in the West -- Winnipeg increased from 42,300 to 90,150 people; Edmonton climbed from 2,600 to 11,200 people. In 1901, Winnipeg accounted for at least 16% of Manitoba's population -- today it accounts for over 50%. (See Table 4) The west has been developed under the direction of Toronto, and Montreal -- and has been locally governed by major metropolitan centres on the prairies. With the exception of the depression years, rates of urban population increase have continually (since 1901) been high (see Table 2A). The economy has been largely urban in the sense that its agriculture was based from the beginning upon export surplus marketed by urban interests.

In recent years, a fundamental change has occurred in the prairie region. New resource industries (oil, gas and potash) have developed in Alberta and Saskatchewan, counter-balancing the decline in farm labour requirements and thereby reducing out-migration pressures from these provinces. In addition, Edmonton has seized the initiative of serving as a gateway to northern development. As a result, Alberta and Saskatchewan have displayed extremely high rates of urbanization -- urban population in Alberta increased 93% between 1951 and 1961

TABLE 4

MAJOR CITIES IN THE PRAIRIE
AND BRITISH COLUMBIA REGIONS, 1881-1961

A: Population of Incorporated City and Metropolitan Area (in thousands)						
	1881	1891	1901	1921	1941	1961
Winnipeg (c)	8.0	25.6	42.3	179	222	265
" (m)	9.3		48.5	229	302	476
Edmonton (c)			2.6	58.8	93.8	271
" (m)						327
Calgary (c)		3.9	4.1	63.3	88.9	216
" (m)						277
Regina (c,m)			2.3	34.4	58.2	112
Vancouver (c)		13.0	27.0	163	275	384
" (m)				194		790
Victoria (c)		16.8	20.9	38.7	44.1	54.9

B: Percentage of Regional Population Living in Incorporated City and in Metropolitan Area						
	1881	1891	1901	1921	1941	1961
Winnipeg (c)	13	17	16	29	30	29
" (m)	16		19	38	41	52
Edmonton (c)			4	10	12	20
" (m)						25
Calgary (c)			6	11	11	16
" (m)						21
Regina (c,m)			2	9	6	12
Vancouver (c)		13	15	31	34	24
" (m)				37		48
Victoria (c)		17	12	7	5	4

Note: c = incorporated city
m = metropolitan area as defined by 1956 census.
Data for periods before 1961 are approximate estimates, and probably underestimate.

Sources: Canada Year Book, 1918 (Ottawa: Queen's Printer, 1918), pp. 93-4.
Census of Canada, 1961, Bulletin 7.1-2.

(See Table 2A), and Saskatchewan urbanization will probably increase steadily as potash development progresses. Both these provinces appear to have a broader urban base than does Manitoba, having at least two major cities as compared to only one major city in Manitoba. (See Table 3A). Winnipeg appears to be in danger of becoming the "Kingston" of the prairies -- a major centre for early development, but a centre which recedes in importance as economic activity shifts further west. However, this city should continue to completely dominate Manitoba -- in 1961, 52% of the provincial population and 79% of the provincial urban population lived in this metropolitan area (see Tables 4, 1A). No other Canadian city displayed a higher degree of control over its provincial population.

THE BRITISH COLUMBIA REGION

In British Columbia there was no easy transition from a frontier to a diversified economy. In many respects, the mining society (of the gold rush era, 1850's and 60's) was swept aside before a new society could be erected. Other industries, such as farming and lumbering, grew up around mining and eventually came to supplant it in large part, but the labour force and capital structure fostered by the mining boom could not be supported by these secondary economic activities, and adjustment involved the painful process of depopulation and economic recession.¹

By the latter part of the 1800's, the sweep of the industrial-capitalist (urban) forces generated in eastern Canada was wide enough to embrace the Pacific region. Economic growth took place as the result of links forged by the Canadian Pacific Railway. Prior to the completion of the railway, immigration to British Columbia was slow and costly, requiring a 118-day steamship voyage from England in the 1870's. The influence of the CPR was immense. In 1888, two years after the railway was finished, the population of the province had increased by 11,000.²

"It was the coming of the transcontinental railway which decided the evolution of Vancouver."³ Prior

¹Clark, op. cit., p. 92-3.

²Innis, op. cit., p. 265.

³T. G. Taylor, Urban Geography (London: Methuen and Co., 1961), p. 265. It was not until 1877 that the railway was continued to Vancouver itself, and docks were built.

to 1870, hardly a house could be found in Vancouver's later location. By 1890, despite an immense fire in 1886, the population of the city was 13,000 people. (Victoria, the capital since 1886, had a population of 16,800 in 1890 -- it had developed on the basis of naval interests coupled with those of the Hudson Bay Company). In 1867, the first trans-Pacific cargo ship entered the port of Vancouver, and a brisk trade with the Orient began. Vancouver became primarily an export and processing centre. The locational advantages of the site were important: it was the terminal point for two transcontinental railways; its excellent harbour never had to be dredged; it was situated on a vast delta of good agricultural land; it had access, by means of river valley routes, to the valuable resources of the interior; and its climate was mild.

From the beginning, the process of urbanization has been coupled with British Columbia's development. In 1891, Vancouver and Victoria accounted for thirty per cent of the province's population. By 1911, Vancouver alone accounted for twenty-five per cent of the total population, and fifty per cent of the province's urban population. The speed of Vancouver's growth has been phenomenal. In 1901, this city did not contain 30,000 people -- by 1911, it contained over 100,000

people, and by 1921, over 160,000 people (see Table 4). As a province, British Columbia has always had a highly urban population, in terms of residence (see Table 1A)-- but this could be explained by the fact that the province has little more arable land than Prince Edward Island. The important point is to realize the dominant role played by Vancouver and Victoria in shaping the social, political and economic life of the province, and to note how these urban centres developed (i.e. from without, rather than from within). These urban centres developed the rural hinterland. In 1961, 77% of the provincial population lived in urban areas and 76% of this urban population lived in one concentrated area. (Table 1A, 3A)

8.

MODERN DEVELOPMENTS IN CANADA

Only two studies will be mentioned here -- D. W. Slater's analysis on trends in industrial locations in Canada, and I. B. Anderson's analysis of internal migration in Canada. These studies are presented here only in order to place the urbanization process in the context of overall Canadian development -- up to this point, urbanization has been discussed only in a regional context.

Anderson's study states that war and depression, coupled with the use of modern capital equipment on the farm, have caused a large out-migration from farms in recent decades.¹ Urban population has increased at a faster rate in Canada than the United States (see Table 2A), even though rural non-farm population has grown rapidly in certain areas (namely Ontario and British Columbia, reflecting the growth of suburbs). In every province there has been intraprovincial migration between rural and urban areas. In the prairies, Quebec and Atlantic Provinces, there has been rapid migration out of rural areas; there has been rapid migration into urban areas in the prairies and Quebec, and a low rate of migration into urban areas in the Atlantic Provinces

¹I. B. Anderson, Internal Migration in Canada, Staff Study No. 13, Economic Council of Canada (Ottawa: Queen's Printer, 1966), pp. 1-3.

(an exception is Newfoundland in the 1950's).

Slater points out that the concentration of the urban population into bigger cities has not increased since 1941 (probably since 1931). There has been a massive diffusion of manufacturing activities, in aggregate, from centres toward the periphery of major city industrial areas apparent in all parts of Canada (mainly since 1948)¹. Slater suggests that the improvement of medium-distance communications has greatly increased the area which can be effectively integrated into the industrial complex of the metropolitan centres. Also, there has been a rapid growth in demand for services which are almost inherently the products of cities -- it appears that there has been a process of centralization of non-manufacturing city jobs since 1941. Slater points out that while dispersion of industry could have been greater, there are inherent advantages in a plant remaining in a centralized location. Such a location provides more flexibility, expertise, and proximity of market -- thus helping to deal with the problems of risk and uncertainty. Concern over water and air pollution may produce greater diffusion of industry in the future.

In recent years, interest has been concentrated

¹D. W. Slater, "Trends in Industrial Locations in Canada", Resources For Tomorrow (Ottawa: Queen's Printer, 1961), p. 413.

upon developments within the urban society -- the problems of dispersion, diffusion and suburban growth. Urban, social, political and economic control has long since been established in most parts of the country. Our concern now is the internal process of urbanization, rather than the development of a basically urban (as opposed to rural) society.

CONCLUSION

To say that Canada has been fundamentally an urban society since its conception is not to say that Canada has always been a developed, industrial society.

Urbanization is not identical to industrialization, and

it was not until the end of the [nineteenth] century that urbanization and industrialization joined forces, and industrial concentration -- and industrial cities -- became a dominant feature of Canadian life. This development was made possible by the sudden opening up of new resources of industrial capitalism [resulting from urban forces] -- in the West and in the North -- which called for large scale organization and mass production in manufacturing.¹

The process of urbanization has been viewed in this essay as the process by which an area is effectively united by an urban centre. Canadian urbanization has been marked by metropolitanism, an advanced stage of urbanization.

Metropolitanism is at root a socio-economic concept It implies the emergence of a city of outstanding size to dominate not only its surrounding countryside but other cities and their countrysides, the whole area being organized by the metropolis, through control of communication, trade, and finance into one economic and social unit that is focused on the metropolitan 'centre of dominance'.²

Canadian metropolitanism has stressed effective control rather than outstanding city size. Canadian

¹Clark, op. cit., p. 101.

²Careless, op. cit., p. 17.

economic history has been characterized by a succession of export staples. It is important to note that the successive drying up of particular resources or loss of markets has led to a shift to new economic activities, rather than to a prolonged economic recession. New techniques of production have been developed. This has been possible due to the urban or metropolitan influence within Canadian society.

Canada's existence has been based on commerce and on certain geographical features which promote commerce. For Canada, the Atlantic was never a barrier -- rather it, along with Canadian rivers and lakes, can be seen "as a linking network of waterways that served an international and intercontinental economy."¹ This communication and transport system was used to transfer immigrants, ideas and impulses in one direct channel from Europe deep into the heart of the continent. Costly and complex, this transport system was controlled in large urban centres. The major Canadian cities, especially Montreal, rose to metropolitan stature very rapidly -- they became large enough and important enough to dominate not just the surrounding countryside but other cities and other regions. These metropolitan centres of dominance developed the frontier, supplying its capital, organizing

¹Careless, op. cit., p. 15.

its communications and transport, and marketing its products. The frontier, in other words, flowed from the metropolitan centre, rather than vice versa. In this respect, the Canadian process of urbanization has been distinct from the European pattern.

Has Canadian urbanization been distinct from that of the United States? It is claimed here that metropolitanism has shown itself more clearly in Canada than in the United States -- that Canada's metropolitan power has been more directly centralized and more immediately apparent.

Before 1860, Quebec and Montreal tended to direct Canadian development, with the possible exception of the Atlantic region. Although this essay has not dealt directly with early United States immigration rates, it is apparent that these rates were well above immigration rates to Canada. This fact, coupled with the relative abundance of fertile acreage for agricultural settlement in the United States, allowed Canada's neighbour to develop a significant rural population. The presence of this large rural population appears to have reduced the urban influence within the early United States. In Canada, however, a smaller population lived in a harsher climate and was forced to play a more subservient role to major European powers. These factors tended to increase the urban influence in Canada as compared to the United States. The control exercised by Montreal is evidence that metropolitan

power became centralized at a comparatively early date in Canada. This to some extent was a result of Canadian geography which emphasized the importance of this city's location on the St. Lawrence River.

Since the mid 1800's, Canada may have appeared to a casual observer to be a less urbanized country than the United States. The United States has had a bigger population, and thus much bigger metropolitan centres.

But in the United States also has many more large centres, each organizing its own regions, though ultimately subordinated to New York. Canada, however, has only three first-ranking metropolitan centres today: Montreal, the greatest, Vancouver, which by organizing effective communications has extended its hinterland eastwards into the prairies, and Toronto, which controls wealthy southern Ontario and is steadily advancing its empire in the mining North.¹

From this essay, it should be clear that throughout the last one hundred years, major Canadian cities (Montreal, Toronto, Winnipeg and Vancouver) have exercised leadership and provided cohesion over vast areas. In comparison to the United States, the decennial rate of urbanization in Canada has been consistently high since 1900 (See Table 2A), while the percentage of the population which is urban appears to have been about the same in the two countries (See Table 5). Given these statistics, Canada's urban population appears to have been more heavily concentrated in the major metropolitan centres

¹Ibid, p. 20.

TABLE 5

URBAN POPULATION AS PERCENTAGE OF TOTAL POPULATION,
CANADA AND UNITED STATES, BY REGIONS

	1870	1910	1950
United States ^a	25.2	45.7	59.0
New England	44.4	73.3	74.3
Middle Atlantic	44.1	70.2	74.0
Great Lakes	21.6	52.7	65.7
Southeast	9.5	19.4	42.5
Plains	18.9	33.2	49.9
Southwest	6.9	22.5	55.5
Mountain	13.9	40.7	51.8
Far West.	31.2	56.0	62.7
	1901	1911	1951
Canada ^b	34.8	41.7	62.9
Quebec	38.2	45.9	67.0
Ontario.	43.6	52.8	73.4
British Columbia	46.4	50.9	70.8
Manitoba	24.9	41.7	56.6
Alberta	16.2	29.4	48.0
Saskatchewan	6.1	16.1	30.4
Nova Scotia	28.8	38.0	55.3
New Brunswick	26.3	29.9	42.6
Prince Edward Island	14.5	16.0	25.1
Newfoundland			42.7

^aH. S. Perloff et al., Regions, Resources and Economic Growth (Lincoln: University of Nebraska Press, 1960), Table 4, p. 19.

^bG. W. Wilson et al., Canada (Toronto: University of Toronto Press, 1965), Table 3.24, p. 136. The 1956 definition of "urban" is used.

than has been the case with the United States urban population. There has been a smaller urban base of medium-sized cities in Canada compared to the United States (See Table 3A). With the exceptions of the heavily populated Ontario region and the scarcely populated Atlantic region, a major Canadian metropolitan city tends to completely dominate its region -- there are few competing or supporting cities of any significant size, and a clear majority of the region's urban population tends to be located in the metropolitan centre. (See Table 1A). In this regional sense, as well as in the broader national sense (i.e. the dominant role played by Montreal), it is possible to argue that metropolitanism has shown itself more clearly in Canada than in the United States. In this sense it is also possible to talk about the highly urban character of the Canadian identity.

This analysis does not seem startling once Canada's geography and historical background are considered. It is clear that the process of urbanization does not follow a universal pattern, even within the confines of Canada. However, this study does raise questions concerning how urbanization is to be detected. How relevant is city size? What is signified by the percentage of urban population to total population?

Would it be possible for area A to be "more urbanized" (but not necessarily more industrialized) than area B, and yet have smaller cities and a lower percentage of its population living in urban cities? How should the most recent phase of Canadian urbanization be interpreted? With the growing influence of the suburbs, is the city being drained of its ability to produce effective unity over a wide area? These questions flow out of this essay, suggesting themes for further study.

BIBLIOGRAPHY

- Anderson, I. B. Internal Migration in Canada. Staff Study No. 13: Economic Council of Canada. Ottawa: Queen's Printer, 1966.
- Britnell, G. The Wheat Economy. Toronto: University of Toronto Press, 1939.
- Canada. D.B.S. Census of Canada, 1961. Bulletin 7.1-2.
- Canada. Canada Year Book, 1918. Ottawa: Queen's Printer, 1918.
- Careless, J. M. "Frontierism, Metropolitanism and Canadian History," Canadian History Review, XXXV (March, 1954), 18-20.
- Clark, S. D. The Developing Canadian Community. Toronto: University of Toronto Press, 1962.
- Creighton, D. John A. Macdonald, The Young Politician. Toronto: Macmillan Company of Canada, 1956.
- Davis, Kingsley. World Metropolitan Areas. Berkeley: University of California Press.
- Fortin, R. "Social Effects of the Evolution of Canadian Agriculture," Resources For Tomorrow, I (Ottawa: Queen's Printer, 1961), 143.
- Fregault, G. Canadian Society in the French Regime. Booklet No. 3: Canadian Historical Association. Ottawa: 1959.
- Friedmann, J. "Cities in Social Transformation," Regional Development and Planning. Edited by Friedmann and Alonso. Cambridge: M.I.T., 1965.
- Innis, M. Q. An Economic History of Canada. Toronto: Ryerson Press, 1935.
- Kerr, D. G. A Historical Atlas of Canada. Toronto: Thomas Nelson and Sons, 1960.

Lampard, E. "The History of Cities in the Economically Advanced Areas," Regional Development and Planning. Edited by Friedmann and Alonso.

Lower, R. M. "The Growth of Population in Canada," Canadian Population and Northern Colonization. Toronto: University of Toronto Press, 1962.

MacNutt, W. The Making of the Maritime Provinces, 1713-1784. Canadian Historical Association, booklet No. 4. Ottawa: 1955.

North, D. C. "Location, Theory and Economic Growth," Regional Development and Planning. Edited by Friedmann and Alonso. Cambridge: M.I.T. Press, 1965.

Perloff, H. S. et al. Regions, Resources and Economic Growth. Lincoln: University of Nebraska Press, 1960.

Schnore, Leo. and Petersen, G. B. "Urban and Metropolitan Development in the U.S. and Canada," Annals of the American Academy of Political and Social Sciences, Vol. 316 (Philadelphia: March, 1958), 60-68.

Slater, D. W. "Trends in Industrial Locations in Canada," Resources For Tomorrow. (Ottawa: Queen's Printer, 1961), 413.

Stone, L. O. Urban Development. (1961 Census Monograph Dominion Bureau of Statistics), Ottawa: Queen's Printer, 1967.

Tanghue, R. Montreal Economique. Montreal: Editions Fides, 1943.

Taylor, T. G. Urban Geography. London: Methuen and Co., 1961.

Trudel, M. The Seignorial Regime, Booklet No. 6: Canadian Historical Association. Ottawa: 1960.

Wilson, G. W. et al. Canada. Toronto: University of Toronto Press, 1965.

APPENDIX
REFERENCE TABLES

TABLE 1A

DIVISION OF PROVINCIAL POPULATION AND REGIONAL POPULATIONS INTO SELECTED CATEGORIES, 1901-61

Province or Region	Date	Provincial or Regional Population	Percentage of Canadian Population ^a	Urban & Share of Area's Population ^b	Percentage of Population in Size Group ^a		Percentage of Urban Population in Size Group ^a	
					100,000 and over	30,000 to 99,999	100,000 and over	30,000 to 99,999
Quebec	1901	2,005,800	30	38	20	not known	49	not known
	1961	5,259,000	29	75	51	6	68	8
Ontario	1901	2,182,000	39	44	12	not known	28	not known
	1961	6,236,100	34	79	51	13	65	16
British Columbia	1901	180,000	3	46	..	..	..	..
	1921	529,000	6	56	37	not known	65	not known
	1961	1,629,000	9	77	60	none	76	none
Manitoba	1901	260,000	5	25	..	19	..	..
	1921	610,100	7	44	..	not known	not known	not known
	1961	921,700	5	65	52	not known	79	not known
Alberta	1901	73,000	1	16	..	..	..	..
	1921	588,500	7	30	none	21	..	64
	1961	1,331,900	7	64	46	not known	71	not known

TABLE 1A -- Continued

Province or Region	Date	Provincial or Regional Population ^a	Percentage of Canadian ^b Population	Urban % Share of Area's ^c Population ^d	Percentage of Population in Size Group ^a		Percentage of Urban Population in Size Group ^a	
					100,000 and over	30,000 to 99,999	100,000 and over	30,000 to 99,999
Saskatchewan	1901	91,300	2	6	••	••	••	••
	1921	757,500	8	17	••	13	••	75
	1961	925,200	5	43	••	14	28	32
Prairie Region	1961	1,848,800	17	58	••	38	65	9
Atlantic Region	1961	981,800	11	52	••	15	29	25

^aCensus of Canada, 1961, Bulletin 7.1-2, Tables V, 1, 2.

^bG. W. Wilson et al., Canada (Toronto: University of Toronto Press, 1965), Table 3.24, p. 136. "Urban" is defined as in the 1956 census.

TABLE 2A

PERCENTAGE INCREASE IN THE URBAN POPULATION IN CANADA
AND THE UNITED STATES, BY CENSUS DECADES, 1890-1961

	1890-1900	1900-10	1901-20	1920-30	1930-40	1940-50	1950-60
United States ^a	36.4	39.3	29.0	27.3	7.9	19.5	30
New England	32.5	25.3	17.0	12.3	1.7	7.8	
Middle Atlantic	35.0	34.6	22.7	20.7	4.8	8.0	
Great Lakes	41.2	33.2	35.7	28.7	3.9	14.5	
Southeast	37.1	48.3	36.0	39.3	18.6	33.5	
Plains	27.7	31.3	22.2	17.6	7.9	17.1	
Southwest	165.9	118.3	63.6	55.0	19.4	52.3	
Mountain	51.6	68.6	23.8	14.7	18.1	31.0	
Far West	37.4	112.1	45.1	60.3	14.9	43.6	
<hr/>							
	1901-11	1911-21	1921-31	1931-41	1941-51	1951-61	
Canada ^b	61	32	30	13	27	42	
Quebec	50	35	40	18	31	45	
Ontario	42	30	24	13	18	33	
British Columbia	141	21	59	12	38	28	
Manitoba	185	32	23	2	20	45	
Alberta	828	61	29	10	72	93	
Saskatchewan	1,322	60	47	2	32	58	
Nova Scotia	42	22	2	18	13	16	
New Brunswick	23 ^c	28	6	12	17	37	
Prince Edward Island . . . . .	. . .	11	3	22	18	37	
Newfoundland	--	--	--	--	--	68	

^aH. S. Perloff et al., Regions, Resources and Economic Growth (Lincoln: University of Nebraska Press, 1960), Table 5, p. 20.

^bI. B. Anderson, Internal Migration in Canada, Staff Study no. 13, Economic Council of Canada (Ottawa: Queen's Printer, 1966), Table 7, p. 13. Urban population includes people living in incorporated cities, towns and villages of 1,000 and over.

^cLess than one per cent.

TABLE 3A

INCORPORATED CITY SIZE,
CANADA AND UNITED STATES, BY REGIONS
(Number of cities of certain size)

	United States ^a														
	1870					1910					1950				
	50,000 to 100,000	100,000 to 250,000	250,000 to 500,000	500,000 to 1,000,000	1,000,000 and over	50,000 to 100,000	100,000 to 250,000	250,000 to 500,000	500,000 to 1,000,000	1,000,000 and over	50,000 to 100,000	100,000 to 250,000	250,000 to 500,000	500,000 to 1,000,000	1,000,000 and over
New England	2	0	1	0	0	12	7	0	1	0	17	11	0	1	0
Middle Atlantic	3	4	1	1	1	18	5	4	2	2	23	13	3	4	2
Great Lakes	3	1	1	0	0	11	5	3	1	1	31	10	4	3	2
Southeast	1	2	0	0	0	6	6	1	0	0	23	15	4	1	0
Plains	0	0	1	0	0	5	3	1	1	0	9	4	3	2	0
Southwest	0	0	0	0	0	5	0	0	0	0	10	6	3	1	0
Mountain	0	0	0	0	0	1	1	0	0	0	2	1	1	0	0
Far West	0	1	0	0	0	1	4	2	0	0	11	5	5	0	1

TABLE 3A -- Continued

Canada^b

	1870					1911					1951					1961				
	A	B	A	B	C	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E
Quebec	1	1	1	0	1	1	5	1	0	1	1	15	1	0	1	30,000 to	100,000 to	250,000 to	500,000 to	1,000,000 and over
Ontario	2	0	1	1	1	12	3	0	1	0	0	16	2	1	0	99,999 to	249,999 to	499,999 to	999,999 to	1,000,000 and over
British Columbia	0	0	0	0	0	1	0	1	0	0	0	2	0	1	0	30,000 to	100,000 to	250,000 to	500,000 to	1,000,000 and over
Manitoba	0	0	0	0	0	0	0	1	0	0	0	2	0	1	0	99,999 to	249,999 to	499,999 to	999,999 to	1,000,000 and over
Alberta	0	0	0	0	0	0	0	1	0	0	0	2	0	1	0	30,000 to	100,000 to	250,000 to	500,000 to	1,000,000 and over
Saskatchewan	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	99,999 to	249,999 to	499,999 to	999,999 to	1,000,000 and over
Nova Scotia	1	0	1	0	0	2	0	0	0	0	0	2	0	0	0	30,000 to	100,000 to	250,000 to	500,000 to	1,000,000 and over
New Brunswick	1	0	1	0	0	1	0	0	0	0	0	1	0	0	0	99,999 to	249,999 to	499,999 to	999,999 to	1,000,000 and over
Prince Edward Island	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30,000 to	100,000 to	250,000 to	500,000 to	1,000,000 and over
Newfoundland	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	30,000 to	100,000 to	250,000 to	500,000 to	1,000,000 and over

^aH. S. Perloff et al., Regions, Resources and Economic Growth (Lincoln: University of Nebraska Press, 1960), Table 7, p. 22.

^bCanada, D.B.S., Census of Canada, 1961, Bulletin 7.1-2, Table 2 and 3.