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AUTHOR	Keating, D.; Mustard, J. Fraser
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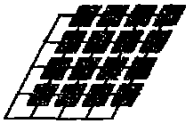
ABSTRACT

Social and economic influences significantly affect the development of competence, health, and well-being in modern society. During periods of profound social and economic change, such as the present, some sectors of society are often at very high risk of encountering a decline of social support and hence inadequate nurturance of developmental needs. Families with young children are often the most vulnerable, especially those in lower income groups. This social trend is likely to have a significant, negative impact on people's competence, health, and well-being. An overview of current theories of economic growth, the human development factors necessary to sustain wealth creation, and the major problems faced by many families and children highlight key challenges for society. Capitalism based on individualism will probably be unable to create enough wealth for everyone, since it tends to be captured by those interested in a wealth-driven society. Nations that have evolved capitalism in a broader societal context will probably meet the challenges and be able to create the wealth needed to sustain prosperous and healthy societies. Contains 54 references. (MDM)



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Canadian Institute for Advanced Research
179 John Street, Suite 701
Toronto, Ontario M5T 1X4
(416) 971-4251

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Social Economic Factors and Human Development

Daniel P. Keating and J. Fraser Mustard

The biology of primates, including *Homo sapiens*, is rooted in millions of years of evolution. Studies of human and non-human primates provide evidence that the health and well-being of individuals is powerfully influenced by the quality of the tribe or troop (the social environment) in which an individual exists (Robinson and Tiger 1991). Centuries of observation have recorded that human primates brought up in social environments offering poor nurturance tend to do poorly in later life, including outcomes of health, well-being, and competence. The issue therefore is not whether the social environment in which we live and work influences the development of competence, health and well-being, but rather how it influences these outcomes and what if anything can be done to ensure adequate supports for human development in rapidly changing modern societies.

Historical and scientific research perspectives are equally useful in this task. We place our current societal dilemmas in a species' context, specifically *Homo sapiens'* very recent (in evolutionary terms) "experiment with civilization." We draw on recent work on economic growth theory to emphasize the inherent interdependence of technological and social innovation in fostering human material advancement. These changes in social organization may have unanticipated negative effects on highly vulnerable sectors of the population, ultimately undermining the society's ability to

create and distribute wealth.

During periods of profound social change, such as the present, some sectors of society are often at very high risk of encountering a decline of social support and hence inadequate nurturance of developmental needs. Families with young children are often the most vulnerable, and this appears to be true in our contemporary society. Although economically poor families are at the highest risk for this form of family insecurity, the changes we are currently experiencing are so widespread that negative consequences are occurring even for children in moderately economically secure families. In particular, labour market policies that do not recognize the extensive demands placed on families with young children, combined with the dearth of high quality and affordable alternative child care, create a situation in which adequate nurturance of the next generation cannot be assured.

This social trend is likely to have a significant, negative impact on people's health, well-being and competence. Specifically, the emerging evidence for links between early experience and later coping skills, translated into a range of physical and mental health outcomes, is powerful. The identification of a biological pathway for these effects has generated considerable research interest. Similar evidence on neural development suggests strongly that equivalent effects in the behavioural and cognitive realms are likely.

The ability of our current social institutions to respond to this challenge is thus of utmost concern. As in other historical periods of dramatic change, we need to alter our social institutions and policies to accommodate to these new realities. Based on an overview of current theories of economic growth, the human development factors necessary to sustain wealth creation in modern societies, and the major problems faced by many families and children, we identify the key challenges that confront us. Specifically, it seems that capitalism based on individualism will probably be unable to create wealth through the new economy because it tends to be captured by those

interested in a wealth-driven society (Davidson and Rees-Mogg 1991; Elbaum and Lazonick 1986; Porter 1990; Thurow 1992). Nations that have evolved capitalism in a broader societal context will probably meet the challenges and be able to create the wealth to sustain prosperous and healthy societies.

Homo Sapiens' "Experiment with Civilization"

The human primate has gone through a remarkable range of socio-economic changes in an extremely brief period in biological terms. For 90 percent of our existence, we lived as hunters and gatherers in relatively small social groups in a manner similar to most of our primate ancestors (Boserup 1981; Robinson and Tiger 1991; Schubert and Masters 1991). When we learned how to cultivate crops and domesticate animals, we began the Agricultural Revolution. This led to a farming population able to produce sufficient food to feed non-farming communities. This led, over time, to the formation of urban centres and the cultures and civilizations with all their interplay of social forces, technological changes and inter-group trade.

After the initial experiments with civilization arising from the Agricultural Revolution, we began to develop literacy and numeracy skills and better understanding of the world around us. Until very recently in our history (less than 0.3% of our species' existence), however, our species did not show a dramatic increase in numbers. During the period following the Agricultural Revolution a large part of the population had to act as a source of energy for those who controlled the institutions and social structures. This meant that many in these new social environments existed as serfs or slaves, and in most societies the majority of the people lived in poverty (Bloch 1966; Boserup 1981; Rosenberg and Birdzell 1986).

When we learned how to harness fossil fuels as an energy source, we were able to take humans out of the energy loop and build the affluent democratic societies we find in the developed world today (Boserup 1981; Rosenberg and Birdzell 1986).

The Industrial Revolution has been associated with a marked increase in life expectancy in the developed world, an unprecedented growth in populations throughout the world (McKeown 1988; Rosenberg and Birdzell 1986), the abolition of serfdom and slavery in the developed world, the emancipation of women, universal suffrage and democracy. Attending these changes have been remarkable developments in the social environment in which individuals live and work and in our attitudes and values (Bell 1978; Lodge 1975; Rosenberg and Birdzell 1986).

Not every society has created a social environment that provides optimum conditions for human development throughout its population (Bell 1978; Lodge 1975). In the last 100 years, we have begun to understand some of the factors that influence our prosperity, our society and our development, and we have created a large number of disciplines concerned about human primates and society (the social sciences). Humans are social animals, so it is not surprising that some of the new environments in which we live and work have a negative impact on our health and well-being. Although many individuals in all walks of life appreciate how negative social environments damage individual and societal health and well-being, we have not always been effective in responding to the challenges facing our societies (Hamburg 1992; Kaus 1992). This may be in part because we do not have a consensus about how societies create and distribute wealth and how economic factors influence the quality of social environments.

There are many views expressed in a variety of economic philosophies, ideologies and political institutions (Bell 1978; Heilbroner 1992; Lodge 1975): fundamentalism, communism, socialism, capitalism, and so on. All of these are descriptions of how groups of humans try to create and distribute the resources to sustain our societies. We still do not clearly understand the determinants of economic growth (*The Economist* 1992) and how to distribute income to maintain high quality social and physical environments.

During periods of major economic change, there can be disruptions of social environments in which some sectors of the population suffer. In these circumstances, women and children are at very high risk (Hamburg 1992). We now know enough about human development to understand how a poor social environment can have a negative impact on the development and eventual health and well-being of individuals.

Although we do not fully understand the determinants of economic growth and prosperity, we do know that technological innovation is a driving force (*The Economist* 1992; Rosenberg 1982; Rosenberg and Birdzell 1986) and that periods of major technological change cause changes in a nation's or region's prosperity base and society (Lipsey 1993).

All of the evidence indicates that we are in such a major technological, economic, and social change. During this period of major socio-economic adjustment in our continuing experiment with civilization, can we apply our understanding of human development to minimize damage to the health and well-being of the population, particularly children? There are several new bodies of knowledge that add to our intuitive understanding and earlier observations and studies about the factors that influence individual and societal health and well-being. Our understanding about the development of the neurological system in primates and how the stimuli individuals receive when their brain is most "plastic," particularly between conception and puberty, is providing some insights in how behaviour, cognition, competency and "coping skills" evolve (Sapolsky 1992; Shatz 1992; Task Force on Human Development 1992). The merging of knowledge from the neurosciences with that from the social sciences concerning human development is providing a new intellectual framework for understanding perception, language, memory, cognition and consciousness (Shatz 1992; Task Force on Human Development 1992).

A second set of observations has begun to demonstrate the relationship between early chiidhood when the brain is most plastic in terms of its development, and cognitive and behavioural characteristics at later periods (Power et al. 1991; Shatz 1992; Task Force on Human Development 1992; Werner and Smith 1992). The possible risks for later life of a disadvantaged early childhood are now better understood.

The third set of evidence that provides some important insights is the work on non-human primates. Here, because of the shorter life span of most of these species, it is possible for humans to study development over several generations and look at the linkages between nurturing and development in early life and events in adult life (Sapolsky 1992; Suomi 1991a).

The final group of observations relevant to this subject is a substantial expansion of the initial observation of Selye (1976) that animals that are excessively stressed tend to have changes not only in their hormonal system, but also in their immune system. The demonstration that nerves and immune-system cells have common receptors and can make similar peptides indicates the pathway by which the nervous system and immune system can interact with each other (Moyers 1993). In addition, there is a body of knowledge showing that the health and well-being of individuals is related to how well they cope with their everyday lives (Mustard and Frank 1991). The neurobiological links between the hormone and immune systems may be the pathway by which poor coping skills can change the host defense systems and thereby increase vulnerability to disease.

These observations allow us to define more clearly the key relationships between the quality of early childhood and learning, behaviour, and vulnerability to poor health in adult life.

Coping Skills, Health and Well-Being

One of the striking features of most observations on the health and well-being of populations is that it is strongly associated with the quality of the social and physical environments in which people live and work. Nations or regions that are able to achieve increased prosperity and reasonable equity in the distribution of income have populations that live longer and appear to show small socio-economic gradients in terms of their health status as measured by such hard end-points as death (Hertzman 1990; Mustard and Frank 1991).

McKeown (1976; 1988) concluded that the improvement in the health status of the population of England and Wales associated with the Industrial Revolution was largely a consequence of factors other than medicine or standard public health measures. Public health measures that led to better water systems and sanitation were important parts in reducing the incidence of water borne diseases, and this may have influenced susceptibility to air-borne diseases. However, since the major causes of death were air-borne diseases, factors in addition to the usual public health measures had to be influencing the health and well-being of the population. For example, better spacing of births during this period would affect risk of infection and host defense, and better education of the population would provide better coping skills (Reeves 1985). Not everyone infected with the tubercle bacillus develops tuberculosis. Infected individuals in poor social environments appear to be most vulnerable to expression of the disease.

The striking feature that comes out of McKeown's work is the strong association between enhanced prosperity and improved health and well-being.

Analysis of the change in life expectancy among a number of countries has shown that countries whose economies have collapsed or faltered show either a slower improvement of life expectancy or, in some cases, a decline. The dramatic examples

of this deterioration in health associated with declining economies are the Eastern European countries (Hertzman 1992). Although many have felt that the deterioration of the physical environment as a result of pollution associated with badly managed industries is a key factor in the decline in health status of these populations, a more detailed analysis indicates that a large part of the deterioration is related to changes in the social environments of these societies (Hertzman 1992). In Asia, Japan has shown an extraordinary improvement in its life expectancy over the last 30 years which does not appear to be due to conventional public health measures or medical intervention (Marmot 1992). In 1960, the life expectancy of Japanese was shorter than that for the populations in the United Kingdom. By the late 1980s, life expectancy was four years longer than that of people in the United Kingdom. It was calculated that for the life expectancy of the citizens of the United Kingdom to equal that of the Japanese, nearly all deaths from cancer and cardiovascular disease would have to be eliminated in the United Kingdom (Marmot, 1992).

If we could understand what has happened in Japan and apply it to Canada, we could radically change two major causes of death in the adult population and the overall health and well-being of our population. Analysis across a range of countries shows that those that maintain prosperous societies with reasonable income equity tend to have healthier populations than those countries that do not (Wilkinson 1992). Until recently, it has been difficult to get an understanding of how economic growth and prosperity affect the health of individuals in a society.

There are clues emerging from longitudinal studies of subsets of populations, from the neurosciences and from cellular and molecular biology. What the longitudinal studies have shown in general is that there are gradients in health measured against a variety of socioeconomic markers such as the type of job a person has, levels of income, level of education, and so on (Evans 1992; Mustard and Frank 1991). The gradients hold for most societies that have been studied. In addition, there is evidence that the steepness of the gradient in health status can be related to the

socioeconomic characteristics of a society in terms of its prosperity and distribution of income.

The continuing longitudinal study of the health of civil servants working in Whitehall in London has provided an important perspective (Marmot 1993). In this study it was found that health status as measured by death was a gradient in relation to where you work in the job hierarchy. Over a 10-year period the top tier accumulated fewer deaths than the next tier and so on. Particularly important was that the gradient in health as measured by death was true for most of the major causes of death, including suicides and accidents. Since the civil service observations cannot be explained by poverty, the results from the study raise the question of what causes variations in health status in a society. What factors produce the gradient in health in a middle class population, regardless of the currently leading causes of death?

Although we do not yet know the explanation, plausible accounts are beginning to emerge. One may be an individual's sense of achievement, self-esteem, and control over work. Studies in Sweden have shown that individuals in high demand jobs who see themselves as having poor control over their work have a much higher incidence of coronary heart disease symptoms than people in demanding jobs who believe they have good control (Karasek and Theorell 1990). The Whitehall study bears this theory out: a high proportion of people in the lower tiers feel they have less personal control of their work than individuals in the top tiers of the civil service (Marmot and Theorell 1988). It is of interest that the gradient for coronary heart disease among the younger civil servants is such that the risk of dying from a heart attack is four times as high in the bottom tiers than in the top tiers. Even after removing the effects associated with conventional risk factors such as smoking, cholesterol and high blood pressure, more than 70% of the difference in risk remains.

Could how well a person copes influence the risk of disease? As stated earlier, this possibility is supported by the link between the neurological system and the

hormone and immune systems (Moyers 1993; Sapolsky 1992). Thus, individuals who feel little control over continuing demands or who cope poorly with the challenges of life and work could be stressed with a corresponding depression of their host defence system. Thus, whatever the disease an individual is susceptible to, the expression of the disease is influenced by how well the individual copes with everyday tasks. Although there is no hard human evidence at the moment to prove or disprove this hypothesis, there are now a range of animal experiments that indicate cancer, cardiovascular disease, allergic reactions and behaviour disorders are strongly influenced by this factor (Evans 1992). If these observations apply to humans, then the basic coping skills individuals develop could be an important determinant of health and well-being in adult life. Attempts to explore the relationship between early childhood and health risks in adult life have provided some evidence compatible with the existence of such a relationship (Fischbach 1992; Power et al. 1991). Again, in the non-human primate data, there is much stronger evidence for a latency effect between nurturing in early life and risks in adult life.

The increasingly strong evidence of the relationship among the development of competency and coping skills, the social context of everyday life, and individual health and well-being heightens the importance of understanding the relationship among economic growth, prosperity, social environment and individual development. This understanding will promote a healthy, adaptable population that is capable of life long learning.

Neuroscience, Cognition, Learning and Behaviour

Analyses of the "wiring" of the human brain during the critical periods of development are providing powerful insights about the development and function of major sensory and motor systems in some detail and are improving our understanding of cognition and behaviour (Fischbach 1992; Kandel and Hawking 1992; Shatz 1992). A key question is how specificity of the connections among the neurons (synaptic

connections) actually occurs? Although the initial stages of the development of the connections appear to be genetically determined, the choice of particular targets is powerfully influenced by nerve impulses derived from within the brain arising, in many cases, from external stimuli. During the past decade research has shown that initial neural connections elaborate themselves in a miniature pattern of connection that only grossly approximates the adult pattern. The development of the brain to achieve the precision of the adult pattern of neural connection must be stimulated by active use.

One example of this in human development is that babies who spend most of their first year of life lying in their cribs develop abnormally (Shatz 1992). For example, it was found that among babies brought up in this environment, some could not sit up at 21 months of age and fewer than 15 per cent could walk by the age of three. It is now recognized that children must be stimulated through visual, tactile and auditory and other stimuli to develop fully. Thus, factors in our social environment that impair these crucial stimuli for children during the sensitive periods of neural development could lead to cognitive and behavioural handicaps in later life.

At present, we do not have hard evidence from human studies that relate these patterns of neurological development to the development of individual behavioural and cognitive characteristics. However, there are a variety of clues from observations of many cognitive psychologists, educators, pediatricians and psychiatrists on human development that are compatible with these new observations from the neurosciences of a link between early stages of development and later stages (Task Force on Human Development 1992). It may be possible within a relatively short period of time to use the new non-invasive imaging techniques to study neural development with a precision that will allow us to measure these processes in children in a variety of environments (Fischbach 1992).

An impressive recent study of nurturing and nourishment on cognitive development comes from a study of high-risk children born in poor social environments in Jamaica (McGregor et al. 1991). McGregor found that children in a poor environment had vastly improved cognitive development during the first two years of life if they were given enhanced nurturing or stimulation. If they were given both, the children achieved nearly normal cognitive development by two years. These observations are compatible with the results from studies in non-human primates such as *Rhesus macaques* (Suomi 1991a, 1991b) in which genetically vulnerable young monkeys (that is, highly reactive to stress or novelty) that were poorly nurtured as children showed abnormal development and abnormal behaviour as adults. A high proportion of the poorly nurtured, genetically vulnerable strains tended to be withdrawn and become depressed. The males, when forced to leave the troop, coped poorly with their adjustment to adult life and were far more likely to be killed in trying to secure membership in a new troop (a normal part of *Rhesus macaque* social behaviour). Because of their poor coping skills, they have trouble affiliating with the gangs of young male monkeys upon leaving their natal troop and frequently become loners, dying young.

In this group of poorly nurtured susceptible monkeys, the hormonal responses to the stresses of everyday living have been shown to be abnormal in comparison to the animals that are properly and effectively nurtured. An important finding in these studies was that, although the genetically vulnerable animals that were poorly nurtured were often withdrawn and depressed, they could perform normally if cross-fostered to a highly nurturing and competent mother. Some even became troop leaders.

The results from the human and non-human studies show that while genetic factors are important, nurturing has a key influence. It is important, therefore, not to allow the nature–nurture debate to lose sight of the powerful effects of the social environment on genetically susceptible individuals.

Recent work indicates that how a newborn child is responded to in the first years of life may powerfully influence later development and set risks in terms of learning and behaviour later in childhood. There is a growing body of evidence that children brought up in poor socio-economic environments tend to develop in ways that make it difficult for them to cope with the school system (Offord and Racine 1991; Tremblay et al. 1992). Some of these children may fall into the anti-social stream and become part of the group that fails to achieve in school. There is some evidence that a significant part of the high school dropout phenomenon is set in place before children enter the school system. If this is the case, the problems may not be primarily a failure of the school system, but of the social environment in which children exist (Caplan et al. 1992).

A recent set of observations from the California school system are compatible with these findings (Caplan et al. 1992). Children of recent immigrants from Southeast Asia have performed superbly in science and mathematics even though the families were poor financially. Despite their limited wealth, the families provided strongly supportive, interactive environments for their children. The authors concluded that problems in development and education frequently result from the home environment rather than the school system.

Improving the social environment in which children develop may thus be more important in improving their competence and coping than changing the education system.

What may be a significant aspect in this story of primate development is how events in early stages are linked to developments in later stages, and how social environments leading to poor development at sensitive or critical times may create handicaps that cannot be adequately buffered at later periods of development or in adult life. For example, the studies of the *Rhesus macaques* show that the poorly nurtured vulnerable strain do not improve in adult life (Suomi 1991b). Poorly

nurtured female monkeys nurtured their offspring poorly, creating a cycle of poor development. The cycle could be broken if the daughter of a poorly nurturing mother was placed in an effective nurturing environment, which might include the mother. Social support from other female members of the matrilineal group was often critically important in lessening potentially negative effects.

This finding has implications for breaking cycles of poor nurturing in human populations, particularly in inner cities, and especially if one recognizes that effective social support for human mothers may be received from other adults who are not biologically related. It is important not to conclude that poor mothers are bad mothers. A good environment with substantial social support can help mothers to provide good nurturing even though they have been disadvantaged in their own development.

In considering this evidence in respect to the neurosciences and development, it must be pointed out that the findings are less clear for cognitive and behavioural development. The development of these abilities may be analogous to vision and other sensory systems, but multiple pathways are probably involved, leading to the probability that some non-optimal development in the early years can be improved by later interventions. We know for example, that central conceptual structures for early mathematics are not present at the beginning of school for many children brought up in environments where support for such developments is absent (Griffin, Case and Siegler in press). If schools assume that children have these cognitive structures and carry forward with instruction that is inappropriate for them, these children will be handicapped because they do not have the relevant cognitive base, not because they could not form the base with appropriate instruction (Keating 1990). The evidence that poor early development can set the stage for poor performance in later life makes the task of helping disadvantaged adolescents and adults seem complex. However, the evidence from longitudinal studies of human development over decades indicates that if there is a broad base of understanding, there are actions societies can take that can

help (Hamburg 1992; Werner 1989).

Buffering Factors in Human Development

An important question, therefore, is what kind of interventions may help individuals overcome the disabilities in development set in early life. Studies show how certain factors allow individuals caught in poor social economic environments to overcome the odds (Hamburg 1992; Schorr and Schorr 1988; Werner 1989). Some of these factors may relate to the personality of the child, as well as to the environment. Werner (1989) showed that a sizable proportion of children brought up in a high-risk environment actually did quite well. One of the characteristics of the children who did well is that they were able in early life to find "substitute grandparents or parents" in the community in which they were growing up. This suggests that non-biological parenting in communities having good social support structures can compensate for inadequate nurturing provided by biological parents. Large urban centres tend not to have social or physical environments that are similar to the pastoral Hawaiian setting of Werner's study, particularly during our current period of economic transformation, and thus may not have the social support systems that can help disadvantaged children. None the less, communities can try to structure both physical and social environments that provide supportive interaction. One recent intervention in poor districts of Winnipeg is an example of how this can be done (Lugtig and Fuchs 1992).

Werner also found the role of other social instruments, such as the church, were relevant, and for some of the disadvantaged children, the disciplined structure of the U.S. military helped them as teenagers to develop the skills to cope well in later life. This and other evidence suggest that there are interventions at later stages in development that may be able to compensate for poor early development. Unfortunately, not all children handicapped by poor nurturing in early life can be buffered by factors introduced later in life. It is clearly better to provide a high quality nurturing environment for all young children. Providing this environment requires

that we attend to a range of social institutional and social policy factors that may hinder or support such environments, including not only child-care but also labour market policies.

Are there planned interventions that are feasible in early life that can compensate for the effects on children of poor social environments? There is a body of evidence that planned interventions, which provide some normalization of the quality of the sensory stimulation and supportive social interaction that young children receive, can help (Berrueta-Clement et al. 1984; Hamburg 1992; Schorr and Schorr 1988; Werner 1989). The debate about child development and day-care is part of this issue. Centres that can function as child development centres are more desirable than centres that function only as baby-sitting centres. The evidence is strong that societies who invest in mothers and children tend to have healthier populations than societies that do not. How we support mothers who are single parents, many of whom have low incomes and inadequate social support networks, is a tough challenge for our culture. The support system for families with low incomes in which both parents work is also a problem. As we move through a period of poor economic growth and our governments have massive debts, it will be extremely difficult to prevent many children being caught up in poor social environments with inadequate nurturing. The most critical challenge in this period of diminished resources will be to maintain a good social environment for children at risk.

In that challenge, we need also to recognize the social necessity of enhancing the development of competence throughout the population. Our future economic prosperity depends on our ability to participate actively in technical innovation, which in turn relies on the diversity of talent the society has available. Failure to invest in families with children thus has potential costs to society in the form of less healthy and more poorly functioning adults. Adequate support, in contrast, not only reduces those burdens but also sharply improves the prospects for future economic growth.

Economic Forces

As the human race has moved from living in its normal pattern of a tribal structure (90 per cent of our existence) to a world in which we are still experimenting with civilization, understanding how socio-economic forces influence human development is of enormous importance for our survival. Economic developments that create poor–quality social environments run the risk of damaging a substantial part of the next generation. That is what has been happening in the United States for at least the last two decades (Davidson and Rees-Mogg 1991; Kaus 1992; Phillips 1990).

We know that the prosperity of a country and its degree of income equity are related to the health and well-being of its citizens (Marmot 1992; Wilkinson 1992). As discussed earlier, nations that falter economically or that cannot sustain their prosperity and systems of social justice appear to have populations with poorer health and well-being. Thus, it is important to understand the determinants of economic growth, yet this has always been one of the mysteries of economics (*The Economist* 1992; Lipsey 1991; Rosenberg and Birdzell 1986). Historical evidence indicates that both technological innovation and institutional innovation have been crucial factors (Rosenberg and Birdzell 1986). The recent incorporation of technological innovation into the framework of neo-classical economic theory has led to a theoretical framework that appears to better fit the historical evidence (*The Economist* 1992; Romer 1990).

The new theories are summarized in a number of articles in academic and non-academic journals and government reports (Premier's Council on Economic Renewal 1993). Some of the implications of these new concepts appear to be as follows. The goods and services produced in the traded sectors of the economy are crucial for generating the income a society needs to maintain its prosperity and a high-quality social and physical environment. Economies based primarily on trade in natural resources are less and less able to generate the income to maintain their

standard of living. The new innovation-based economies that create wealth from ideas (technological innovation) are emerging as the prosperous nations of the future. Canada must sustain its natural resources economy while building an increasing proportion of its business in the new economy if it is going to be able to create the wealth necessary to sustain and enhance its prosperity.

Each time societies go through what are described as changes in the techno-economic paradigm that governs wealth creation, some adjust well and others poorly (Lipsey 1993). During this period of adjustment the wealth of a country can decline. In some cases, the various groups in communities or regions can come together to try to cope with both the economic and social changes. Despite our knowledge about the factor that determines individual and societal health and well-being, English speaking cultures show a poor capacity to meet the present challenge.

The United Kingdom amassed great wealth at the time of the Industrial Revolution and as a result created one of the most remarkably democratic and tolerant societies ever. However, they have systematically failed to meet the economic challenges of the new technological innovations throughout this century, leading to a decline in their wealth relating to the rest of the developed world (Dahrendorf 1982; Elbaum and Lazonick 1986; Porter 1990). With this decline there has been increased inequalities in health and human development, a deterioration in tolerance and major inner city problems in the regions that have had the worst economic decline. Why has the United Kingdom failed to respond to the new economic opportunities? One answer is that the social structures (institutions) values and culture prevented them from responding (Dahrendorf 1982; Elbaum and Lazonick 1986). One of the striking features of the British economy is that the institutions that amassed wealth with the Industrial Revolution ceased to invest in future wealth creation and instead "played" with their money. Porter (1990) calls this a wealth-driven society, and Keynes called it "vulture capitalism." Thus, the regions around London have done better in

economic terms and in the health and well-being of their populations than other major urban regions in the United Kingdom.

Nations that fail to understand the determinants of economic growth and the economy's relationship to the health and well-being of their populations are likely to become societies in decline. As outlined earlier, one of the key factors in the decline is the increasing proportion of children who are poorly nurtured. It is hard to build a modern economy with a handicapped population and with the heavy demands on security and other measures resulting from the crime and violence that emerges in declining societies (Davidson and Rees-Mogg 1991; Kaus 1992).

A key element in creating economic growth is directing capital from the investment patterns of a wealth-driven society to the patterns of an innovative society (Porter 1990). Until we are able to change our incentives and understanding, the majority of the English-speaking cultures will continue their decline, with negative effects on the most vulnerable part of the population -- children. The two dominant issues facing countries like Canada are (1) to build the new kind of economy that can create wealth from ideas and (2), during a period of profound economic change with diminished resources, to sustain the healthy social environment that is best for human development.

We know what has to be done and we have the pool of human ingenuity to do it. However, we do not have the institutional structures for the human ingenuity to express itself.

Primates are social animals. Forces that do not promote good social environments are not healthy for primates, including the human primate. In our "continuing experiment with civilization," the next century will see a contest between societies who practice capitalism in a narrow *laissez-faire* context and societies that evolve capitalism in a broader societal context. At present, the latter have a much

better record of creating societies that have a broad base for individual and societal health and well-being.

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