Dalhousie Law Journal

Volume 2 | Issue 1

Article 32

2-1-1975

The Creative Role of Law

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Recommended Citation

I. F. G. Baxter, "The Creative Role of Law" (1975-1976) 2:1 DLJ 41.

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I. F. G. Baxter*

1. Introduction

A few years ago, the writer was asked by a professional association (concerned with pharmacy) to organize the legal side of a research project. The project was to examine the state of the profession and to produce a new design for the future. The suggestion was made that the legal part of the report should be done first so that the other reporters could know what they could or could not suggest in making their proposals. It was replied (by the legal researchers) that law too is a planning variable, and that law's true role is not to confine desirable reform but to fulfil it. This is not an isolated example and most of us who have done inter-disciplinary work could provide others. A complementary attitude is that lawyers should not concern themselves with more than the technical legal aspects of social, political, or economic problems, unless they have been converted into politicians, civil servants, or business executives, and are qualified to think differently by wearing new hats. The law as such is supposed to be concerned with current legal rules and process (or with legal history to understand the present better). In consequence, legal scholarship and research are commonly regarded as mostly exegesis (was Sheep J. justified by authority, and was he correctly reversed by Lion, Tiger, and Leopard L.JJ.?) or with unravelling legislation and criticizing its logic. One hears complaints that some lawyers in large corporations, when asked to comment on management proposals limit themselves to identification of what canot be done (because of the law) and find it hard to function as creative members of a team seeking positive solutions.

The tendency to regard law as pigeon-holed and apart is aided by the Canadian situation where legal education deals almost exclusively with those intending to practise. The Common Law and the Civil Law are integral parts of the cultural heritage of the Western world, and, however we value them, they are major legacies of our past to all of us and, one way or another, they are creative forces for the future of our societies.

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The legal profession has made a substantial contribution to law reform and the improvement of laws, institutions, and practice. There is also considerable effort made in the further education of practitioners, who must spend a great deal of time keeping abreast of new legislation and jurisprudence. But this article is more concerned with the status and function of law itself in our society. the general acceptance of its creative potential in regard to the kind of society we will have in the future and its desirable partnership with other disciplines in an integrated approach to fundamental questions. In current discussions about food, population, energy resources, pollution of the environment, inflation, law is often unrepresented, or only marginally represented, tending to be thought of as a rule producing, applying, and explaining process, lacking the relevancy of the contributions of scientists, politicians, civil servants, economists, sociologists, engineers, agronomists, demographers, and so on. At many conferences and discussions views are expressed that societies should examine their life-styles and behavioural patterns, in the long-term, to produce a safer and more comfortable balance with the physical resources and structure of our world. In recent years there has been emphasis on the fact that our world, its resources and environment, have boundaries that future generations may encounter. But the other side of the coin, and perhaps the more immediately important one, is the behaviour of people themselves and their way of living. Inflation may be connected with the continuously rising expectations of many people for more goods and services and for their enjoyment now, and resource and environmental problems are surely influenced by people wanting larger "slices of cake." The main problems of our time may be more concerned with human conduct than with science and engineering, and law deals with social behaviour, and whether and how it should be controlled.

It seems obvious that the fundamental long-term problems of our time must be monitored and kept under continuous review. Equally clearly this must be done on a multi-disciplinary basis, where those working and researching will study a problem from more than their own specialised angle. Perhaps researchers on these problems will need special commitment and training to become experienced in the many-sided complexities, and may have to blur the edges of their own specializations in so doing. This is the integration of specialists into inter-disciplinary teams for particular problems. It will be a serious omission if law is not included as an element and a potential creative force in the examination of such problems, and up to now it has mostly been omitted.

The purpose of this article is to advocate the involvement of the legal discipline in the study of the fundamental long-term problems facing our society and hopefully to start some discussion about this. If law is to be a creative element in the shaping of society to meet these problems, there are many serious questions about what is to be controlled and how, and about the role of law in the next century. The next part of the article is a short consideration of the nature of these long-term problems and some recent comment on them. The last part of the article questions whether our existing legal structure and institutions are adequate to provide the legal component for such long-term study and planning, and it suggests that they are not designed for such a role, and that new initiatives are needed.

2. Long-Range Planning

It has been stated that until recently, "there has been no way to estimate the behaviour of social systems except by contemplation, discussion, argument and guesswork."¹ New methods are appearing which study models of the inter-relation of the major elements: food, population, natural resources, industrialization, pollution,² and interest in the limitation of resources, and population, have stimulated concern about the information base of decision-making and, in particular, the long-term implications. Professor Thompson suggested that ten years is the range in the resource extraction industry, because there, as elsewhere, the planning time-scale is determined by the rate of return desired on the investment.³ The typical planning range for a corporation contemplating an investment is the period over which the outlay can be restored plus the profit. A politician supporting a policy makes an intellectual commitment, and prefers to see good results within a reasonable time. But although business and administrative decisions are

^{1.} Forrester, "Counterintuitive Behavior of Social Systems", published in Towards Global Equilibrium: Collected Papers (1973), ed. D.L. and D.H. Meadows, 5. Cf. Ross, On Law and Justice (1958), 320-322.

^{2.} The best-known, so far, uses computer modelling and a global approach. Forrester, footnote 1, 5-6, 9-10; Cole, "The Structure of the World Models", Thinking About the Future, A Critique of The Limits to Growth, (1973) Science Policy Research Unit of Sussex University, 30.

^{3. &}quot;Natural Resources and the Ecosystem. Is Ten Years the Future?" (1973) 51 Can. Bar Rev. 295.

commonly made on a short information base, their effects may have a long reach. This concerns the legislative process, and also cases where judges must rule on arguments about major projects (such as for the recovery of energy), and must examine risks beyond the valid time-limits of the expert evidence. Judgments may be required on what is presently unpredictable, but a wrong decision can damage the future decades ahead.⁴ Continual depreciation in the purchasing-power of money, high cost and risk in the recovery of natural resources, and political uncertainties, tend to make the planning range shorter. Not only can decisions have long-term consequences, but a number of long-term decisions have to be made in any event.

Prediction is mainly extrapolation of the dynamics of past experience, plus consideration of matters that can limit future options, and it is not the Delphic Oracle. Due to the nonindependence of the change patterns, the behaviour of the whole social system cannot be properly understood unless there is quantitative study of the relations between the sub-systems.

3. Social Equilibrium and Decision-Making

The work of the M.I.T. project team sponsored by the Club of Rome, of which "The Limits to Growth"⁵ is a preliminary report, is a beginning attempt to study the interacting problems of social equilibrium in a global, quantitative manner. The report has been criticised as over-pessimistic and as contributing to a depression malaise about the future. Whether or not the authors suggested future disequilibrium and collapse too strongly, the real importance of their work seems to lie in its being a step away from thinking about social systems "by contemplation, discussion, argument, and guesswork"⁶ and towards quantitative study. Even critics have acknowledged this, and one describes "the M.I.T. work as a courageous and pioneering attempt to make a computer model of the future of the world. As a result of reading *The Limits to Growth* many people are now thinking anew about long-term problems and

^{4.} There are other areas where courts make judgments of long-term impact "without the help of radar", e.g. decisions on the custody of children.

^{5.} The Limits to Growth, Report of the Club of Rome (1972).

^{6.} Forrester, "Counterintuitive Behaviour of Social Systems", footnote 1, 5.

^{7.} Freeman, "Malthus with a Computer," Thinking about the future, footnote 2, 6.

discussing them much more seriously. In particular, they are discussing once again whether or not the world is likely to run up against physical limits. This is a very important achievement.¹⁷⁷ We seem to have the beginning of public interest in meaningful quantitative study of the interaction dynamics of such elements as food, population, capital and depreciation, natural resources, pollution, on a large scale in space and time, and the development of more sophisticated techniques for so doing. A new horizon for the human mind, aided by technology such as the computer, may be emerging, affecting planning and decision-making. This may be of unusual importance because of the long-term, fundamental effects which the interplay of these elements can have on the quality of life, and because of the distant shadows made by physical boundaries to growth.

The method of the "Limits to Growth" research was to build a highly simplified computer model inserting global data for the relevant variables.⁸ This approach is comparable to the construction of some cosmological models of the universe, as the following quotation indicates: "The solutions of the gravitational equations which are considered here are based on the assumption that matter is distributed uniformly over all space. By its very nature, such an assumption unavoidably has only an approximate validity, because of the averaging which has been performed. Moreover, the available astronomical data are still not sufficient for making any definite judgment concerning the character of the average distribution of the galaxies in space. However, the isotropic model apparently gives a description of the present state of the universe which is correct in its general features."⁹ The "Limits to Growth" model may be no more accurate as a statement of reality than some of the early maps of the known world, but these early maps were the beginnings of modern geography. So, we may have the beginnings

^{8. &}quot;The model we have constructed is, like every other model, imperfect, oversimplified, and unfinished. We are well aware of its short-comings, but we believe that it is the most useful model now available for dealing with problems far out on the space-time graph. To our knowledge it is the only formal model in existence that is truly global in scope, that has a time horizon longer than thirty years, and that includes important variables such as population, food production, and pollution, not as independent entities, but as dynamically interacting elements, as they are in the real world." Limits to Growth, footnote 5, 21-22.

^{9.} Landau & Lifshitz, The Classical Theory of Fields (2nd ed., 1962), 375; Fock, The Theory of Space, Time and Gravitation (2nd ed., 1964), 375.

of a new branch of science — which, it has been argued, must be strongly developed if we are to make decisions that will not place the future in jeopardy. Correctly interpreted, studies such as Limits to Growth do not predict the apocalypse (as has been too easily inferred); they indicate the dangerous level of our ignorance about the dynamics of social systems. The M.I.T. model, World 3, was built to investigate "accelerating industrialization, rapid population growth, widespread malnutrition, depletion of nonrenewable resources, and a deteriorating environment. These trends are all interconnected in many ways, and their development is measured in decades or centuries, rather than in months or years. With the model we are seeking to understand the causes of these trends, their interrelationships, and their implications as much as one hundred vears in the future."¹⁰ There have been a variety of criticisms of these "modelling" efforts and suggestions for improvement, of which the following is typical: "The features of the models' structure which appear to be unrealistic in a way likely to affect the results are the absence of technical, economic and social feedback processes and the use of world averages for all variables. Added to this is the possibility of a bias of many of the relationships arising in part from errors of extrapolation."¹¹ The model has been criticised as too pessimistic about the power of future technology to make apparent problems go away, and there are those who point at technological solutions in the recent past as precedents, and think that, with enough investment by the western world in R & D, technology can be counted on as a *deus ex machina*. The potential of technology to develop alternative forms of energy, recycle waste, and so on, is very impressive, given enough time and money, but it is also important just when technological solutions will appear and if the cost of their mass application, in money and otherwise, will be tolerable to this and other parts of the world. As might be expected, some of the discussion of World 3 indicates a war of experts. A test comparision of World 3 predictions and actuality can be made by running the model back to see how well it projects a view of the past, and this historical efficiency was an important feature in building the model.¹²

^{10.} Limits to Growth, footnote 5, 21 (in which the model described is Meadow's "World 3"). See also Meadows, "Introduction to the Project", footnote 1, 39.

^{11.} Cole, "The Structure of the World Models", footnote 2, 32.

^{12. &}quot;In any case, much of the credibility of the futures portrayed by the models

Limits to Growth states that: "All five elements basic to the study reported here - population, food production, industrialization, pollution, and consumption of nonrenewable natural resources are increasing. The amount of their increase each year follows a pattern that mathematicians call exponential growth. Nearly all mankind's current activities, from use of fertilizer to expansion of cities, can be represented by exponential growth curves''¹³ The equation $A = a^{t}$ (t = time) denotes an exponential curve. Compound interest is a familiar example.¹⁴ Such a process is also a "positive feedback loop" because the increase due to interest is fed back into the capital. A population produces births, which increase the population and therefore (in time) the total reproductive potential. Reversing the flow gives a negative feedback loop. "Whenever a sequence of influences leads back to its own starting point and thus forms a closed circuit, it constitutes a feedback loop".¹⁵ A mixed set of positive and negative loops can produce a residual feedback, for example, a positive/negative pair, such as birthrate and deathrate. This concept of exponential or feedback loops is very central to the World 3 model. If accelerating annual growths are common in large-scale social systems, serious problems can build up, unless there is a proper organisation to monitor the growth patterns, and to consider effective decisions and rules for the co-ordination of social behaviour and life-support systems. If 100 units grow at 7% compounded annually until 2000 A.D., the increase during the first year is 7 units, but the increase during the twenty-sixth year is 38 units.¹⁶

World population is an example of exponential change given by Limits to Growth. It is stated that in "1970 the population totalled 3.6 billion and the rate of growth was 2.1 percent per year. The doubling time at this growth rate is 33 years."¹⁷ The reason is mainly decreasing mortality — due to modern medicine and public

rests on their ability to reproduce to a plausible degree historical trends between 1900 and 1970 and, in general, the longer the period over which trend forecasts agree with history, the more valid they appear''. Cole and Curnow, "An Evaluation of World Models", footnote 2, 113.

^{13.} P. 25.

^{14.} E.g. for 7% compound interest: $A = (1.07)^{t}$ per unit, and at 7% interest per annum, a unit approximately doubles in 10 years.

^{15.} Meadows, "Introduction to the Project", footnote 1, 37.

^{16.} I.e. from 543 units to 581 units.

^{17.} P. 34. On the difficulty of obtaining reliable data see Page, "The Population Sub-system," footnote 2, 45.

health among other factors. India's population approaches 550 millions and comprises about 14% of the world's population, and it has a present doubling rate of thirty years so that extrapolation will give a figure of almost 1,000 million by the end of this century.¹⁸ There are, of course, various possible controls, legal, social, psychological which could alter the shape of the change curves, and it has been pointed out that "law also embraces all of the governmental decisions that are put into official form and translated into action. It takes legislation, administrative regulations, or executive decrees to establish systems of family-planning education and services. It takes similar action to appropriate money to carry out population-control programs, or, if the policy lies in a different direction, to provide baby bonuses and the like. Moreover, the contact between law and population reaches into some areas not as obvious as contraception, abortion and the like. For example, various aspects of marriage and divorce law, including minimum marriage age, the abolition of polygamy, and even the general ease or difficulty of marriage and divorce, may have some bearing on the situation."19

While new entries to populations may be reduced in the future by planning, law, psychological persuasion, mass deaths due to starvation, or the effects of malnutrition, it is also possible that future mortality rates may be significantly reduced, for example, by better distribution of medical and public health services, research on nutrition and aging. A breakthrough in North America in the next twenty years making possible an increase of ten to fifteen years in the expectation of life, by a process that can be mass-produced and delivered economically, could result in positive growth trends in population during the first part of the next century beyond the results of present extrapolations. Rising population obviously increases total demand for food, but it also places strain on the availability of many other goods, services, and resources. Education can be one of these, increasing the total budget, and also

19. Lee and Larson, (ed.), previous footnotes, Population and Law (1970), VII.

^{18.} Singh, "India", in Lee and Larson (ed.), Population and Law (1970), 99. Chandrasekhar, India's Population (1967), 4. The current populations of the People's Republic of China and India perhaps amount to about a third of the world population (Canada's population is around one half percent of the world population). Urquidi, "Economia y Poblacion," El Perfil de México en 1980 (3rd ed. 1971) Vol. 1, 4-5, gives the population of Mexico as 36 millions in 1960 and projects it as 73 millions in 1980.

affecting the availability of trained personnel in underdeveloped countries with low literacy rates.²⁰

Limits to Growth states that no one "knows exactly how many of the world's people are inadequately nourished today, but there is general agreement that the number is large - perhaps 50 to 60 percent of the population of the less industrialized countries which means one-third of the population of the world."²¹ The report goes on to say that about half of the land in the world potentially suitable for agriculture is under cultivation today, being the richest and most accessible half. "The remaining land will require immense capital input to reach, clear, irrigate, or fertilize before it is ready to produce food. Recent costs of developing new land have ranged from \$215 to \$5,275 per hectare. Average cost for opening land in unsettled areas has been \$1,150 per hectare."²² Of course, in some regions of the world, agriculture is less a business than in North America and more a means of survival. "For millions of persons born in rural districts there is no escape from an agricultural career agriculture starts with too many candidates; neither selection nor rejection is possible, for where would the rejected go?"²³ It has been suggested that the data on the agricultural sub-system in World 3 are capable of improvement, for example in the following respects: (a) more thorough and representative data on land development costs and other matters, (b) inclusion of predictions of future technical progress, (c) clearer distinction between the physical limits and the political and economic limits to production and distribution of food, (d) recognition and examination of regional and national differences.24

An example of exponential variation that comes readily to mind is depreciation in the purchasing power of money. With a depreciation rate of 7% per annum a unit will reduce by half in about 10 years, and inflation rates of 10% or more per annum exist in the world today. If, as may happen at the present time, the investment return

^{20.} Myrdal, Asian Drama, (1968), 111, 1672 gives these literacy rates: Pakistan, 29% M, 8% F; India 41% M, 13% F, (reliability doubtful) (1961); S. Vietnam, 23% M, 10% F (1962); Indonesia, 57% M, 30% F (1961).

^{21.} P. 46.

^{22.} P. 48. The cost figures were from the President's Science Advisory Panel on the World Food Supply, The World Food Problem, 2: 423.

^{23.} Howard, Labour in Agriculture — An International Survey (1935) quoted in Asian Drama, footnote 20, 11, 1243.

^{24.} Marstrand and Pavitt, "The Agricultural Sub-System," footnote 2, 64-65.

on a sum of money falls below the depreciation from loss of purchasing power, there is a downward spiral in the purchasing value of the capital sum invested, and a lender's net real return is negative. This is advantageous to large financial institutions which receive money under contracts to repay later, for example, banks, trust companies, life assurance and annuity companies, pension funds.²⁵

Inflation in the developed countries must also have a detrimental effect on the efforts of under-developed countries to build up capital. The economically advanced countries are in a better position. "Most of the world's industrial growth is actually taking place in the already industrialized countries, where the rate of population growth is comparatively low. The most revealing possible illustration of that fact is a simple table listing the economic and population growth rates of the ten most populous nations of the world, where 64 percent of the world's population currently lives."²⁶

Poverty can be a feed-back loop. The Swedish neurobiologist, Holgar Hydén suggests a connection between protein levels and learning ability, and British studies on children indicate that poverty can reduce a child's health, and learning ability. The Report of the Special Senate Committee²⁷ stated that unless "we act now, nationally, in a new and purposeful way, five million Canadians will continue to find life a bleak, bitter and never-ending struggle for survival."²⁸ The aged, permanently disabled, or ill accounted for half of those receiving social assistance in 1970, and female heads of families (excluding dependents) accounted for 26%.²⁹

^{25.} At a negative net investment rate of 2%, a unit of money will reduce by half its purchasing-power value in 35 years. As to the effects of depreciation in the value of money on marital property settlements see Colomer, L'Instabilité Monétaire et les Régimes Matrimoniaux (1955).

^{26.} Limits to Growth, footnote 5, 41-42. The average annual growth rates of GNP per capita (1961-1968) (% per year) are there stated to be: Peoples Republic of China 0.3; India 1.0.; USSR 5.8; USA 3.4 (1968 G.N.P. \$3980 U.S.); Pakistan 3.1 (1968 G.N.P. \$100 U.S.); Indonesia 0.8; Japan 9.9; Brazil 1.6; Nigeria — 0.3; Federal Republic of Germany 3.4.

^{27.} Poverty in Canada (1971).

^{28.} P. vii. It also stated at p. 23 that more than a third of the families consisting of a mother with dependent children had incomes below the 1967 poverty levels, and almost a quarter of the 3.5 million families with children under 18 were below the 1967 poverty levels.

^{29.} Poverty in Canada, footnote 27, 31.

The concept of a vicious circle of poverty has been stated to imply "a circular constellation of forces tending to act and react upon one another in such a way as to keep a poor country in a state of poverty. Particular instances of such circular constellations are not difficult to imagine. For example, a poor man may be weak; being physically weak, his working capacity may be low which means that he is poor, which in turn means that he will not have enough to eat; and so on."³⁰ If the man produces less than the critical amount of food, a downward exponential change begins. The lower economic levels involve large numbers of people. "The typical house in most areas of Southeast Asia is made of wood or bamboo, has a thatched roof, and is often built on piles, 4 to 6 feet high. Thus the living space, most often from one to three small rooms, is safe from the dampness of the ground and from animals and reptiles, and fresh air circulates freely from beneath. But when dirty water spills through the flooring the ground becomes slushy, a breeding place for mosquitoes. As animals are often tethered under the house, animal dung and urine create a further nuisance. The unsanitary atmosphere is mitigated only by the smoke fires lit to keep mosquitoes away and by a strong sun."³¹ Another factor in creating a poverty feed-back loop is the political weakness of those concerned. Would it matter to others if the people whose houses are mentioned above went on strike? Their disappearance from the globe would hardly touch world industrial development.³² Until a vicious circle is recycled into a benign one, emergency supplies of food, clothing, and medical supplies may only increase the numbers involved and hold off nature's remedy of equilibrium by mortality.

Limits to Growth is concerned with global data mainly, and its denouement is a general collapse of systems if current growth trends

^{30.} Nurske, Problems of Capital Formation in Underdeveloped Countries (1953) 4; Myrdal, Asian Drama footnote 21, III, 1844.

^{31.} Myrdal, Asian Drama, footnote 21, 1, 552-553. "Large numbers of South Asians have only one set of clothing, which is seldom washed except in bathing. Typically the same clothes are worn day and night since pyjamas and even underwear are luxuries a great many people can ill afford. The hygienic consequences are easy to imagine. Few people, especially in the poorer classes, have shoes or even sandals."

^{32.} Myrdal says that these "masses are mostly passive, apathetic, and inarticulate", and that "the masses of people in the underdeveloped world are the object of politics but hardly anywhere its subject." The Challenge of World Poverty (1970), 62-63. Jawaharlal Nehru said: "The really poor never strike. They haven't the means or the power to demonstrate."

continue unchanged for the next 100 years. "If the present growth trends in world population, industrialization, pollution, food production, and resource depletion continue unchanged, the limits to growth on this planet will be reached sometime within the next one hundred years. The most probable result will be a rather sudden and uncontrollable decline in both population and industrial capacity."³³ But there should be concern not only with the risks of irreversible collapse of systems, but also with earlier deteriorations in the quality of life, and the structure and interactions of de-acceleration patterns in this respect.

Limits to Growth contends that the world usage rate of every natural resource is growing exponentially. "Given present resource consumption rates and the projected increase of these rates, the great majority of the currently important nonrenewable resources will be extremely costly 100 years from now. The above statement remains true regardless of the most optimistic assumptions about undiscovered reserves, technological advances, substitution, or recycling, as long as the demand for resources continues to grow exponentially. The prices of those resources with the shortest static reserve indices have already begun to increase. The price of mercury, for example, has gone up 500 percent in the last 20 years; the price of lead has increased 300 percent in the last 30 years."³⁵ World energy consumption post-war has been apparently at high exponential rates, and it has been stated that from "2700 mtce (million tons of coal equivalent) in 1950 world energy consumption has grown approximately 5% a year — i.e. doubling every 15 years - and reached 6000 mtce in 1968. At this rate of growth world energy consumption would be 19000 mtce in 1990 and 36500 mtce in the year 2000. World consumption of oil and natural gas has grown at an average rate of 7.8% a year since 1950 (doubling every decade), and has risen from just over one-third of total energy consumption in 1950 to nearly two-thirds of the much larger total 20

^{33.} P. 23.

 ^{34.} Pp. 54-69. See also Naill, "The Discovery Life Cycle of a Finite Resource: A Case Study of U.S. Natural Gas", Towards Global Equilibrium, footnote 1, 213.
35. Limits to Growth, footnote 5, 66-67. According to Time Magazine, 28th

^{35.} Limits to Growth, footnote 5, 66-67. According to Time Magazine, 28th January 1974, between 1968 and 1973 the average U.S. price of nickel went from 94 ϕ per lb. to \$1.53, tin from \$1.48 to \$2.20, copper from 42 ϕ to 59 ϕ .

^{36.} Surrey and Bromley, "Energy Resources", Thinking About the Future, footnote 2, 91-92. According to a statement by the President of the Canadian Electrical Manufacturers Association, conventional fuels, e.g. gas and oil,

years later".³⁶ Such figures are based on extrapolation and are subject to alteration by social and political change or rescue operations by science and technology. The real problem seems to be one of countries having to adjust socially and economically to accelerating change in demand, in conjunction with the other accelerating basic growth patterns, coupled, of course, with de-acceleration in the value of money. How long can societies in the developed countries stand the pace of these exponential patterns, and where does all this leave the under-developed countries?³⁷

The study of the pollution sub-system is a relatively new subject and its long-term assessment is very full of imponderables, but it is a basic element in the construction of a model such as World 3 or a more specialized or regional variety. Limits to Growth contends that virtually every pollution "that has been measured as a function of time appears to be increasing exponentially" and examines briefly different kinds of pollution and waste.³⁸ The whole operation of the pollution sub-system is not well understood at present and it is perhaps here that the World 3 method of using global aggregate data is most open to question.³⁹ But the fact that pollution of the environment and accumulation of waste is as yet not well understood, (because there is a paucity of quantitative data on its dynamics) is a reason why it should be investigated and monitored

represented 69% of the world's energy supply, and 98% of world consumption in 1972.

^{37. &}quot;For all countries, except a favoured few that are large net exporters of energy, a significant increase in energy prices would make it more difficult to satisfy other economic and social needs. The hardship will be greatest for those that import the bulk of their energy requirements — especially the poorer countries whose economic development is already restricted by chronic shortage of foreign exchange". Surrey and Bromley, previous footnote, 106.

^{38.} Pp. 71-86, footnote 5; Randers, "DDT Movement in the Global Environment", 49, A.A. Anderson and J. M. Anderson, "Systems Simulation to Identify Environmental Research Needs": "Mercury Contamination", 85, J. M. Anderson, "The Eutrophication of Lakes", 117, Randers and Meadows, "The Dynamics of Solid Waste Generation", 165, Towards Global Equilibrium, footnote 1.

^{39. &}quot;The real problem with the sub-system is that most disasters caused by material pollutants are likely to be local, like mercury in Minamata Bay, or to be caused by one pollutant or class of pollutants, such as the effects that pesticides may have on non-target components of the ecosystem. By aggregating all pollutants, and assuming that they behave in some composite way, attention is drawn away from what are urgent, and still soluble problems, and diverted into speculation upon an imaginary race against time between "Life" and "Global asphyxiation". Marstrand and Sinclair, "The Pollution Sub-system," Thinking About the Future, footnote 2, 88.

on a continuing and organized basis, both for itself and for its interaction with the other sub-systems. In the case of pollution problems which seem to be localized and to be currently soluble, it must be hard to determine whether this is really so, or whether the pollution will build up and seep out into other parts of the world and develop into more long-range and much less soluble problems.

It is stressed in Limits to Growth that it is the integrated long-term dynamics of the population, food, industrialization, natural resources, and pollution sub-systems that require to be monitored and controlled, and regulation of the growth of one or more of these individually will not be enough to produce an acceptable state of equilibrium between man's behaviour and the world in which he lives. Each sub-system, it is argued, is composed of positive feed-back loops combined with weaker negative feed-back loops and the constraints of the latter are not sufficient under current social patterns to prevent positive exponential growth in all the sub-systems. Man has worked to modify some of the drastic checks and balances of nature, e.g. famines, plagues, and epidemic diseases, and many technological solutions are meant to reduce the natural operation of the negative loops. Another way of producing control would be to weaken the positive loops in the ensemble of sub-systems that make up our social structure. This would be a new way of looking at the style and quality of life and it would obviously court opposition from heavy vested interests in the present method of reducing the painfulness of negative loops in nature and stimulating positive loops. "Another response to the problems created by growth would be to weaken the *positive* feed-back loops that are generating the growth. Such a solution has almost never been acknowledged as legitimate by any modern society, and it has certainly never been effectively carried out. What kinds of policies would such a solution involve? What sort of world would result? There is almost no historical precedent for such an approach, and thus there is no alternative but to discuss it in terms of models either mental models or formal, written models".⁴⁰ Restraints on positive loops, it is further argued, must be applied over all the sub-systems to produce a lasting equilibrium. The equilibrium conditions prescribed by the builders of World 3 are: (a) birth rate

^{40.} Limits to Growth, footnote 5, 157. For criticisms of World 2 and World 3 see Cole and Curnow, "An Evaluation of the World Models", Thinking About the Future, footnote 2, 108-134.

equal to death rate, capital investment equal to depreciation, and all input and output rates kept to a minimum; (b) population and capital levels set in accordance with the wishes of the society concerned and the options given by the advance of technology.⁴¹

4. The Capacity of the Present Legal Organization

This article suggests that policy making and law should be partners in a long-range national strategy to study and monitor the social sub-systems. This implies that we must consider the capacity for such a role of existing legal systems and institutions. Private international law is important in this context, because, traditionally, it is concerned with making the legal rules of a country responsive to multi-state facts. An outward-looking view is essential to a long-range strategy. The conclusion of this article is that neither the structure of private international law nor the present organization and thinking of law in general provide a foundation for law as a partner in long-range strategy on basic social systems.

Conflict of laws is concerned with fact situations unrestricted to the locus of a single jurisdiction, although laws are controlled by state boundaries, so that "le droit international privé donne le spectacle d'une entreprise de nature apparement internationale menée par chaque Etat pour son propre compte".⁴² Further, the parties may have obtained a judgment, acquired property, changed status, entered into a contract, and so on, with legal implications under the laws of other states. The co-ordination of legal systems has been suggested as a fundamental purpose of private international law.⁴³ Even in the early development of conflict rules, people moved about from the locus of one set of customary laws to another, and these could not be regarded as isolated sets of legal variables.⁴⁴ Development of nationality and freedom from legal interference by other nations created a corollary — the doctrine of

^{41.} Ibid. 174.

^{42.} Batiffol, Aspects Philosophique du Droit International Privé (1956), 103. De Nova, "New Trends in Italian Private International Law" (1963) 28 Law and Contemporary Problems, 810, refers to private international law as "Ersatz" international law.

^{43.} Batiffol, *op. cit*, 102. He considers that each state designs its own "international" policy as a basis for its conflict rules and for its own mode of relating the intersections between the facts and the loci of different legal systems. 44. Meijers, (1934) 49 Hague Recueil, 567.

comity⁴⁵ or "courtoisie internationale", to accommodate the facts of life and the growth of international trade. The doctrine of party autonomy was a central feature of Savigny's treatise.⁴⁶ Where autonomy did not apply, Savigny turned to past experience, hoping to systematize it so as to produce a rational harmony of decisions affecting persons, property, and obligations.⁴⁷ According to Savigny, conflict rules could be found by extrapolating comparative legal history into the future. This produced the "natural seat" of a legal relationship,⁴⁸ and "connecting factors" (the lamps that guide us to the "natural seats".) The "natural seat" concept has relations in the modern Common Law doctrines that regard the distribution of the facts among the jurisdictions as important in a selection of the applicable law. "Closest association" is used to discover the proper law of a contract (where autonomy has not been exercised); it has been discussed in regard to tort liability; a real and substantial connection between a party and the divorce-granting jurisdiction has been taken as the basis for recognizing a foreign divorce.49

A broad objective of traditional conflict of laws has been to allot geographical loci to persons, transactions, property, and other basic elements of legal relationships. Situs of land or a chattel, domicile or nationality of a person, are concepts of this type, and the more generalized "natural seat", "center of gravity", "closest connection", "significant connection", are efforts to materialise relationships geographically. A conflicts rule is usually only a step in the complete solution, and although the literature discusses "good" and "bad" rules, it might be more honest to talk about "usefulness" in problem-solving.⁵⁰ The policy behind traditional conflict of laws is less philosophical and more concerned with the construction of practical algorithms than is sometimes made to appear.⁵¹ A different approach to a conflicts problem consists in

^{45.} Davies, (1937), 62 Hague Recueil, 453.

^{46.} System des heutigen römischen Rechts, Vol. 8, (1849).

^{47.} Neuhaus, "Legal Certainty versus Equity in the Conflict of Laws", (1963) Law and Contemporary Problems 795, 798; Batiffol, "Sur les mobiles de l'appel à la nature des choses", (1963) 65 Rev. Int. de Philosophie 287. Savigny's approach was an application of: die Weltgeschichte ist das Weltgericht.

^{48.} Legal relationship = Rechtsverhältnis.

^{49.} Indyka v. Indyka [1969] 1 A.C.33 (now replaced in the U.K. by the Recognition of Divorces and Legal Separations Act, 1971).

^{50.} See Baxter, Essays on Private Law (1966) 195.

^{51.} Ehrenzweig justifies his "rule of validation" empirically: A Treatise on the Conflict of Laws (1962), 458.

examining a rule of law to see whether it was intended to apply to the given cross-jurisdictional situation. But a domestic rule seldom provides the answer directly, and indirect speculation is needed in most cases resulting in what the judge (or legal writer) considers that the law makers ought to have intended.

Although, in conflict of laws, a state is adapting itself to a plurality of legal systems and to cross-jurisdictional facts, the principles are not based on quantitative analysis of social, political, and economic data, and, at present, conflict of laws does not provide any foundation on which a state could build rules adapted to long-range governmental planning and local, regional, and world problems regarding food, population, industrialization, energy resources, and pollution. But a state's law should be sensitive to social data and influences outside its boundaries and should develop internationalism "pour son propre compte".⁵²

Discussion about (a) law as discoverable by reason and (b) law as an expression of the popular will, has a long history.⁵³ Plato thought that the correct ordering of a state could be obtained by attention to the gods and reason,⁵⁴ and he was concerned with "political hygiene",⁵⁵ mostly between the members of a state rather than between the state and the natural world, although some interest was taken in growth limits.⁵⁶ The historical school of jurisprudence sought for the law of the future in the legal experience of the past, and did not support the free construction of societies by popular will and reason.⁵⁷ This recognizes that law reform does not build on a *tabula rasa*, and that there must be concern for more than the

^{52.} There can be too great a readiness to see the national viewpoint as quasi-international. According to Marsh, "The Rule of Law as a Supra-National Concept", Oxford Essays in Jurisprudence (1961), 223, the rule of law "was thought to express a system of desirable values largely attained in the United Kingdom and, by implication if not openly so said, imperfectly achieved in other countries."

^{53.} Cairns, Legal Philosophy from Plato to Hegal (1949), 547; Batiffol, op. cit, footnote 42, 114, 166.

^{54.} Laws 714A; Shorey, What Plato Said (1933), 371; Baxter, "Plato and Modern Justice" (1962) Giornale di Metafisica, 134, 142-143.

^{55.} Popper, "Plato as Enemy of the Open Society", Plato: Totalitarian or Democrat (ed. Thorson) (1963) 41, 46; Grube, Plato's Thought (1935) 265 et seq. Similarly Aristotle, e.g. Ross, Ethica Nicomachea (1925) V, 6; Ross, Aristotle (5th ed., 1960), 253.

^{56.} Gomperz, Greek Thinkers (1905) III, 117 (reference over-population).

^{57.} Allen, Law in the Making (1964), 16-17, referring to Savigny, Das Recht des Besitzes (1803).

attainment of popular ideals. Hägerström and the "Scandinavian school" regarded legal phenomena as conceptions of social reality, and thought that legal reasoning based on a priori notions having no "scientific" basis was of no value.58 A difference, however, was recognized between the "relatively univocal objectives" of the applied natural sciences and the multiplicity of attitudes and influences with which social scientists and decision-makers have to deal. Hitherto politics and law have not been scientific: "Our attitudes are conditioned by our beliefs. If the latter are uncertain and fumbling (as they certainly are concerning the enormously complicated social connections) so will the attitudes be. We do not know enough about social facts and their correlations to know what we want."⁵⁹ When law is regarded as a social technique, the way ahead may be a jungle of variables, but it will be linked to the real world instead of to popular ideology and a priori conceptions. Alf Ross advocates a "legal politics" which "would acquire a scope far beyond what is in general considered as the field of action of the jurist", but he admits that "a legal sociology in the form of a systematic science, built on methodical researches does not in fact exist at the present time, or at any rate only in small beginnings. The lawyer operates with knowledge obtained from the common experience of life, supplemented with more or less fortuitous statistical data'' 60

Analogous to religions in their reliance on source and authority, the North American legal systems have shown some narcissistic tendencies on the basis that, if the meaning of justice can be more clearly seen, laws can be purified to make them more just. Objectives in law-making can be relatively simple: evenhandedness between parties; self-consistency; removal of out-ofdate provisions and cumbersome complexities. Much of our Common Law at the present time is the outcome of "contemplation, discussion, argument, and guesswork". This is not unexpected. Litigation stems from differences in behaviour, social aims and attitudes, and there is not just one position, scientificallyascertainable, for the law to take.

General-purpose law reform commissions have been appointed in Canada, federal and provincial, and there have been similar

^{58.} Allen, at p. 48.

^{59.} Alf Ross, On Law and Justice (1958), 321.

^{60.} Ross, at p. 332.

developments in Great Britain and elsewhere. The Commissioners are lawyers (some whole-time and some part-time) assisted by staffs that are predominantly, if not wholly, legal. They are mainly legal "doctors" checking the law for obesity, aging, lack of condition, and prescribing re-habilitation. They are meant to have the time and opportunity to conduct systematic reform programmes (which is not possible for the legal staffs of governments, harried by short-term demands). The Commissions can, of course, seek advice from other disciplines than law, or from the public in general, and this has been done, for example, by informal consultation, by contracting for papers and reports, by inviting the submission of briefs, by holding public hearings, and by the use of public opinion polls.⁶¹ But apart from efforts not to be insensitive to popular opinion, law reform commissions are mostly lawyers prescribing for the body legal. The Ontario Government appears sometimes to regard the Ontario Law Reform Commission as a cooling-off place for political "hot potatoes", and there has not been a large volume of major legislation derived from the Commission's work during the nine years of its existence.⁶² There are a variety of economic, scientific, and other advisory bodies, as well as less formal sources, which in some respects may be concerned with more than a ten-year time-scale.

There is a need for organized studies specially designed to examine on a sophisticated and continuing basis the interactiondynamics of food, population, industrialization, natural resources, pollution, with an extended time-horizon. Such work should be in close contact with similar endeavours in other parts of the world, it would give a regional in-put to larger studies, and would prepare specialized models. This would mean organized participation in a virtually new field and an attempt to achieve a new plateau of knowledge about social behaviour and the world we live in. This seems necessary to estimate the future of different options, to make

^{61.} Vox populi, vox dei, or according to Pope: "The people's voice is odd, It is, and it is not, the voice of God".

^{62.} The following examples (from the Commission's annual reports) do not appear to involve major areas of law reform; The Limitation Period for Actions under The Sandwich, Windsor and Amherstburg Railway Act, 1930; The Mechanics Lien Act; Admissibility of Business Records (resulted in The Evidence Act, RSO 1970, s. 36); The Execution Act: Exemption of Goods from Seizure; Sunday Observance Legislation; The Change of Name Act; Powers of Attorney; Section 20 of The Mortgages Act (resulted in R.S.O. 1970, ch. 279, s. 21); Proposed Extension of Guarantor's Liability on Construction Bonds.

decisions for equilibrium with the life-support systems, and to contribute to acceptable living, not just for ourselves, but in the world generally.

Such new facilities and studies ought not, of course, to be only for the conduct of scientific research, and the publication of papers and monographs. The influence of such research products would be for the experts and would be liable to misunderstanding, misuse, or neglect by the laity. Anyway the influence would likely be persuasive only, erratic and uncertain in its effect on behaviour. Apparently smoking has not been reduced in North America by pointing out risks to health and life, and it is not likely that people will re-arrange their life-styles in deference to a complex argument on system-dynamics "with a time-horizon longer than thirty years", ⁶³ even if it is claimed that neglect of the argument may be catastrophic for generations yet unborn.

How far does living in a country with a high share of certain of the world's natural resources, food facilities, and so on, carry with it moral responsibility for resource management and concern for the world as a whole, and particularly the parts of it that are poorly endowed? Traditional private international law is limited to an attempt by the law of a country to accommodate itself to cross-national facts, where the "internationalism" is a creature of national law.⁶⁴ There is, of course, an important role for studies that are organized through institutions such as the United Nations, groups such as the Club of Rome, foundation-sponsored research, or regional studies of one sort or another.⁶⁵

There appears to be a need for a long-range strategic planning group to study the macro-system dynamics of population, food,

^{63.} Limits to Growth, footnote 5, 22.

^{64.} Cf. Batiffol, see footnote 42, 103. In the United Stated international customary law has not been accepted as an independent source of conflicts law; Banco Nacional de Cuba v. Sabbatino, (1964) 376 U.S. 398; Ehrenzweig, Private International Law (1972), 32. Cf. The Rose Mary [1953] 1 W.L.R. 246; Re Helbert Wagg & Co. [1956] Ch. 323.

^{65.} E.g. the U.N. Environment Programme. The Science Council of Canada proposes to study the implications of a "Conserver Society" (Annual Report 1973-74, pp. 27-28). The Institute for Research on Public Policy is interested in long-term research on the structure of Canadian Society. In France CEREBE (Centre de Recherche sur le Bien-Étre) has been established by the Ministry of Finance and the Commissariat au Plan "to analyse systematically the channels through which the characteristics of a society, especially the state of its economy, influence its members, either positively or negatively:" (1973), 38 European Business 12.

industrialization, natural resources, pollution; to develop techniques for quantitative research; and to generate ideas and make proposals on political and legal planning and action related to the future of Canada and the rest of the world. Such a group ought not to be a government department, but a promotional, co-ordinating, and directing body, stimulating projects and research, acting as a focal point for discussion, publishing research, and submitting ideas and proposals for decision-making. In order to be effective, the group ought to concentrate on long-range strategy and social macrosystems, on a continuing basis, and it should not be diverted into local crises and problems. The group should have independence and the permanence and resources necessary for its task. There is a tendency to ignore the investigation of legal aspects of behavioural questions,⁶⁶ but it would be a great mistake to study the growth patterns of social macro-systems without including law as a creative element. There are not only questions of whether behaviour patterns should be changed because of new knowledge about social systems but also vital questions of how they ought to be changed. Although these matters have a long-term perspective, it is suggested that Canada should not delay an organized interest, or assume that the Americans, or someone in Europe, will make available the answers.

^{66.} Lee and Larson, footnote 18. In the preface Lee states that on attending the 1965 U.N. World Population Conference in Belgrade he was struck "by the fact that there was only one lawyer among the thousand participants and that none of the papers presented at the Conference dealt with the legal aspects of the population problem and family planning "