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Technology and the Loss of Self: An Environmental Concern

Frank Fisher

ABSTRACT

Present technology is thought to embody a world view that does not encourage us to control it critically. On this basis environmental breakdown is essentially unavoidable. An examination of the many subtle ways in which technology obstructs access to the meaning it embodies is followed by discussion of the construction of self in an interactive world view. Such a view asserts the primacy of the relationship between observer and observed in the construction of meaning, and therefore of self. Meaning arises in language and, recognizing that we construct our reality, frees us to work towards technologies that mediate our relationship with nature as if it mattered in the way that self presently matters. Attaining a world view such as this would enable us to *feel* the meaning of environmental breakdown and to provide the beginnings of an intellecutal framework for permanent tenancy...as people-in-nature.

La technologie et la perte de soi: une question environnementale. On croit que la technologie d'aujourd'hui reflète une vision du monde qui ne nous encourage pas à contrôler cette technologie d'un oeil critique. Cette vision a inévitablement un impact néfaste sur notre environnement. Le présent article traite tout d'abord de plusieurs moyens par lesquels la technologie nous empêche de bien la connaître. Ensuite, il est question de la façon dont nous nous percevons dans ce monde que l'on qualifie d'interactif. Le fait de percevoir ainsi le monde souligne la primauté de la relation qui existe entre l'observateur et l'objet observé pour la formation du sens et, par conséquent, du soi. Le sens provient du langage et sachant que nous créons notre réalité, nous pouvons développer une technologie pour établir une relation avec notre environnement, relation qui sera aussi importante que nous-mêmes. Lorsque nous réussirons à percevoir le monde et nous-mêmes de cette manière, nous pourrons comprendre instinctivement l'importance de notre environnement et formuler une théorie qui assurera notre survie sur terre; nous vivrons alors en harmonie avec notre environnement.

INTRODUCTION

Human activities are no longer consistent with the environment in which they are conducted. The capacity to "operationalize" our theoretical models into machine form has outstripped nature's capacity to provide a permanent home *(ecos)* for them. While our capacity to do this locally is not new, it is only recently that human artefacts have gained a capacity to destroy the viability of the biosphere as a whole.

Lagging behind this capacity somewhat is the development of concern about it; today's environmental movement. From some twenty years in the movement and over a decade sifting through hundreds of applicants to Australia's oldest and largest Master's degree in environmental studies, it is clear to me that the concern of the majority in the movement is not with cultural structures but with drawing attention to the "problematique" (Club of Rome, 1974 and 1975) and with raising the efficiency of existing technical and economic procedures to deal with it. In caricature we may isolate these approaches as two "generations" of environmental concern. Firstly, the whistleblowing or awareness to breakdown phase and secondly, concern with the social and technical structures that appear to be immediately behind the breakdown. These latter are concerns about political and economic priorities and the efficiency and impacts of the techniques used by them; in particular of the technologies or hardware they use.

The result of the successful pursuit of these concerns is that the industrialised world now has a wide range of environmental protection legislation and its operationalizing bureaucracy and attendant industry. These mechanisms set aside "wilderness" for preservation, impede the release of pollutants, bring major projects under public scrutiny and promote public education. Nevertheless, while these means achieve a certain success in their own terms, breakdown continues to manifest itself in ever more variegated forms, ever further beyond the reach of existing political, legal and economic measures. Compare present responses to toxic waste disposal or atmospheric pollution, let alone to genetic engineering. All mainstream responses are of a shift-to-another-means kind, none suggest

that we might seriously question how we arrived at these problems nor that such questions might in turn expose structures amenable to change.

Beyond the mainstream however, this question is being seriously investigated and a third generation of environmental activism is casting around among thinkers in many areas, for clarification of the underlying structures of thinking and knowing that give rise to our present ways of doing things (see the survey work reported in Milbrath, 1984 and Cotgrove, 1982).

The primacy of technology in the culture of the so-called "developed" nations makes it a useful means of access to what Borgmann has called "the character of contemporary culture" (1984); we all have immediate and continuous experience of it. It embodies the character of its host culture and through observations of our interactions with it we might investigate hypotheses about our understandings of ourselves-in-nature.

In this paper, the hypotheses are twofold. Firstly, that our present understandings of ourselves-in-nature and of nature itself, is of organisms of machine form, isolated but interacting in nature. Secondly, that the practical outcome of this understanding is self reinforcing, enhancing our dependence upon machines by subverting our capacity to see ourselves differently. In the first part of the paper various dimensions of the technological subversion of meaning are sketched. In the second part, discussion is about the extensive recent writings on the development of self and personal meaning that arise in *interactive relationship* with "nature" and which have no meaning outside this relationship. Nature here, is in quotes to emphasise that we cannot know it independently of personal meaning in the process of becoming (development). The concluding section looks at what techniques consistent with such understandings might look like.

In common with other writers (see later) concerned with the development of such a "new way of seeing", I believe that it is through critical recognition of the cultural construction of our techniques that we might begin to unravel them fundamentally. Without cultural comprehension, first and second generation environmental activism lead to a concatenation of unintentional irresponsibilities. Isolated problems are "solved" by transferring them from one spatial, temporal or social context to another. Thus "dilution is [still] the answer to pollution" according to the Smithsonian Institution as late as 1987 (Wernick); we leave our toxic and radioactive wastes to succeeding generations ("sins of the fathers being visited upon the sons") and we shift problems to poorer or less densely populated areas, particularly in the "less developed" countries. Worse, and this is the essence of the critique to follow: problems are transformed in terms of the subtlety of their implications. For instance, from the products of metabolic combustion (horse and human manure) our transport now relies on those of internal combustion (of petroleum products) and may come to rely on those of nuclear fission, fusion and even, on the not-so-benign, large scale solar technologies.

TECHNOLOGY AND THE SUBVERSION OF PERSONAL MEANING

Technology as it concerns us here, is the realm of artefacts. An artefact is a purposefully designed and/or used device. Its essence is an expression of purpose which may or may not be clear to its users (for a case where it is not, consider the socially divisive bridge designs of Robert Moses, analysed by Winner, 1986:22-23). It is a quantitative expression of a particular perception of how to do something and of that something's environment. It is not, of-course, restricted to the designer's expressions alone; those who interact with it also impress their own perceptions and purposes on it. Therefore a technology is more correctly a set of potentials for doing things.

In the case of a spade the ostensible intentions of the designer are relatively clear. Even here however, without more intimate knowledge, one usually does not know which type of soil or "spading" duty a particular design is suited to. Nor does one necessarily know why the spade was made from the materials it uses, let alone how or under what conditions it came to be made (was it expressly made to "capitalise" on the market for spades, is the wood in its shaft from a rare tropical species and will its plastic handle degrade quickly if left in sunlight?). In practice it might find uses having nothing to do with spading and, we have not begun to question the cultural structures it enters such as why it must be privately owned and how this imperative affects its design and use. Calling even a spade a spade then, is no straightforward task, let alone knowing what to call a computer programme or a product of genetic engineering (on computers, see Weizenbaum, 1976; Dreyfus, 1979 and Winograd and Flores, 1986; on genetic engineering, see Yoxen, 1983 and Suzuki and Knudsen, 1988).

In the following observations on the loss of meaning inherent in aspects of present day technologies and our interactions with them, I shall not be considering the much discussed losses inherent in the consequences of pollution and resource use nor the more straightforward social consequences of altered employment, equity and training they cause; nor the consequences of the various financing, legislative and political mechanisms involved. The concern in this section is to demonstrate something of the losses to personal meaning and control implicit in the character of contemporary technology and its infrastructure. Nor will the putative benefits to personal control offered by

technology, be discussed; for they are foist on us daily and it is simply presumed that we know them. In the final section however, I shall describe a general but inverted "benefit" to be derived from present technological developments.

The losses are presented in four increasing levels of generalization:

1. Loss of direct or material control.

The loss implied here concerns a loss or exclusion from the meanings (workings) purposively, i.e. known to be, built into devices. It comes about in two ways, a) through design itself, and b) by way of the social context in which the devices are used. Later, I shall show that these are not independent; designs and the devices in which they are manifest arise interactively with their social contexts.

a) A selection of directions by which design trivializes and suppresses the meaning inherent in everyday practices involving machines:

i) active or deliberate suppression of meaning through:
* cowling or boxing-in mechanism for streamlining purposes. Streamlining may be for physical reasons (as with an aircraft engine) or, and these are the present concerns, for production, marketing and maintenance purposes. Compare design concepts such as "fool proof", "user friendly" and built-in maintenance "facilitation" practices such as "discard-after-use" and "replacement sub-unit". In the latter procedure, the sub-unit is either discarded or returned to "head office" or a specialized repair shop for re-constitution; thereby centralizing the expertise (meaning) contained in it. (see 2. below)

* restriction of user access to the face ("interface") or output of technological processes. In addition to overt cowling, this can happen by centralizing processes leaving only an "access module" (terminal) open to the public. In apparent contradiction to this, today's "powerful" personal computer (PC) has taken the place of time-sharing arrangements on powerful centralized main-frames. However, in subtle ways and in common with other devices of this kind such as automatic teller machines and do-it-yourself petrol bowsers, the PC is still an "access module" to the centralized expertise and infrastructure that enables its software and its "high technology" hardware to gain viable access to our homes. In practice, access to the meaning of the PC is little greater than to that of a distant main-frame [see also b) on complexity and the last section on the character of technology].

ii) inadvertent trivialisation of meaning through:

* the plethora of technological forms for every mechanisable function conceivable and acceptable to the *market*. Commitment by producers is to what will sell rather than what will do; which in turn reflects something of consumer expectations of products (see Scitovsky, 1976; Hirsch, 1977 and Leiss, 1978).

* accessibility of artefacts by virtue of their cheapness and uniform distribution; in part both are a function of large markets and the latter especially is a function of the subsidy provided to rural distribution by large urban population (market) densities.

* "easy" and authoritative disposal of waste products and spent or derelict artefacts.

* miniaturization and plasticity of form. The latter refers to standardization and the use of standard components in a variety of devices. Of special note here is the capacity to generate "customized" devices apparently built to suit individual needs. Aside from what this says about the interpretation of individual needs (later) this is possible through the increasing rationalization of procedures to facilitate interlocking, for example, LEGO pieces and the great variety of forms open to the LEGO builder who accepts the interlocking procedures implicit to the game.

Artefacts that fall under these four characterisations are rendered ephemeral by them, hence the trivialisation.

* complexity. Many or most contemporary artefacts are complex in one way or another. In that we recognize this and in that complexity is only understood at one level, it is threatening - requires effort, may make us feel inadequate and the thought of overcoming it may be felt to lead to a pandora's box of implications we may simply not want to pursue. The response to complexity raised in the last section enables us to come to grips with it by recognizing the higher levels of abstraction or generalization into which it fits: Few have the capacity to do this today.

In addition to these relatively straightforward inadvertent mechanisms of suppression, is a deeper outcome of the distancing implicit in the techniques modern technology is now involved with. It is the inadvertent suppression of methodology itself and I shall illustrate this with a few brief examples.

To rationalize the transfer of measurement to machines the metric system is now virtually universal. At the time the process began it was thought simpler to convert humans to this rationalized system than to convert machines to the various older, culture and

geography specific ("organic") forms it was to replace. We had the common situation of instrumental/utilitarian rationality swamping the organic, direct identification built into earlier systems of measurement by dint of history (the foot, the stone (= 14 pounds) etc.). It is not so easy to identify with 1/40,000,000th of the circumference of the earth (a metre).

The metric system did facilitate the automation of fabrication processes such as cutting (lathes), milling and drilling machines. These now operate by "numerical" control, an encoded and therefore essentially wear and error free means of directing and monitoring a machining process. In doing so, involvement in the measurement process is concentrated in (arrogated to ?) the numerical control i.e. the hands of the designers or, more generally, the manufacturers.

There is however, an ironic twist to this tale. The very universality, cheapness and smallness of today's microprocessors means that units in any coherent system of measurement can now be accommodated.

Another example is that of wordprocessing which has the potential to erode learned writing skills by, again, arrogating them to the machine. Note that to those with the skills, wordprocessing can be "liberating", while it is only to those without them that it is potentially disabling.

Automatic transmission in a car automates gear changes to the car and its designers. Manual gearing allows drivers to automate gearing to themselves, making them more insightful and therefore independent in their relationship with the car. In addition the car is cheaper, more efficient and less demanding of maintenance. Calculators do the same for our understanding of arithmetic processes not to mention the potential for subsuming methodology of that generalized "thinking" machine, the computer (on mathematics see Davis and Hersh, 1984; on computers and the subversion of meaning see Roszak, 1986; Barrett, 1986; and Searle, 1984).

b) A selection of directions in which the social structure associated with technology suppresses and trivialises its design and the risks associated with them:

* maintenance (breakdown) organizations which obviate the need to experience breakdown directly i.e. to get involved with mechanisms.

* separated production and maintenance has the potential to undermine public understanding of the essentially inseparable relationship between them. The rift reduces pressure to design for durability, accessible maintenance, dismantling and/or re-use. The rise of intermediary organisations (such as Consumers Associations) that seek to bridge the gap can actually work to further remove involvement by consumers in production in that they formalize and therefore, again, concentrate consumer responsibility in themselves.

* pressure to sell acts to shroud risk associated with devices, the need for maintenance, product longevity etc.

* quantification and digitization of risk and technique add legitimacy but impede access, by those not versed in quantitative techniques, to the basis of the formulations used.

* the rate at which devices are rendered obsolete (and at which capital is discounted) determines the extent of concern with robustness and maintenance. Obsolescence in itself is unavoidable, however, its presence demands systems to deal with the obsolete.

* bureaucratically erected standards and monitoring give an impression that the implications and risks of technology are being dealt with and indeed, are amenable to bureaucratic control. Again, the need for personal involvement is obviated.

* legitimation structures and the sheer pressure of the necessity to produce and be seen to produce in the controlling bureaucracies, renders access to them difficult. Legitimation structures include naming (Environment Protection *Authority*), access to legislative and regulation procedures, geography (situation in The City say), architecture (imposing) and economic and social barriers such as charges for service and requirements to fit various preconditions prior to gaining access (the requirements of "Freedom of Information" type legislation which nominally permits access to government documents; also, the procedures for gaining effective access to a particular decision maker).

2. Loss of day-to-day control.

In addition to the issues listed in b) above, two nominally contradictory currents arise in the development and control (the politics) of technology:

a) concentration of technical expertise in the hands of technical specialists. The more intricate our devices and procedures become the more we are constrained to find the appropriate specialist for the job. Such specialisms range from the pure mechanical to the "mechanics" of finance, marketing and risk and damage handling such as insurance, fire and medical expertise.

b) dispersion of technical expertise as the number of specialisms and specialists grows. To trace the technicalities (alone) of today's devices, we might need to approach specialists in a dozen or more countries let alone individual firms. For, most large machines (even cars) involve numerous components sub-contracted to others. Weizenbaum (1976, Chapter 9) and Brooks (1975) in quite different ways have detailed the consequences of this phenomenon in the construction of computer programmes. Tracing the methodology behind a particular piece of software will involve hunting for authors in both space and time. Anyone who has tried to solve a technical problem with equipment originating on the other side of the globe can attest to this.

In the long run these difficulties are the basis for a new breed of specialist characterised by insurance agents, consumer advocates, consultants of various kinds and the environmentalist. These people purport to cover and assess whole areas of expertise and in consequence they too are becoming specialised, distant and inaccessible (the *professionalization* of environmentalism).

3. Alteration and subversion of understandings about natural phenomena - the illusion of dominance.

In a particular way, bounded by the ways we have learned to relate to it, technology has a capacity to extend our insight into nature and ourselves. Consider the microscope or television. If we involve ourselves with these devices without an understanding of their social and epistemological meanings, the very "power" of the insight they offer can be profoundly disempowering (on TV see Postman, 1987). They have a capacity to trivialise both our understanding of nature and the meaning of the relationship we have with it. In European cultures at least, this can give an illusion of dominance over nature (see Merchant, 1983).

Consider the effects of speed (motorised transport) on our perceptions of distance, the environment around distance and what it takes to move through our earthly landscape. While speed tends to collapse "natural" space and trivialise what lies in it, it has the same effect on artefactual space or the perception of the infrastructure necessary to permit it. There is voluminous indirect documentation of these changes, in the "doctoring" of "the view from the road" by planners and geographers (see Appleyard, 1964); in the political difficulty in raising cash to pay for road maintenance and at the microlevel, in assessments of how long it takes to walk or climb a distance one has only ever motored through before (see also Pirsig, 1976).

Consider further, the implications of an automated urban water supply and sewage system for our understandings of water and what it takes to get it, and what it takes to dispose of it (let alone to *use* it). Again, the presence of the technologies suppress questions about wider meanings of water and sewage. For instance, what happens to distant or underground environments when we tap our urban water from them? To return to my first example one might, facetiously, ask that technology build a macroscope which would allow us to see context. We will see in the next section however, that this is a contradiction in terms for, context is an abstraction about our interactions in nature/ ourselves. Technologies only "help" us by default; by bringing an awareness to us of what it means to live *without* an awareness to context (see last section).

4. Loss of self - outcome of a world without context?

The enormous proliferation of mechanism and its apparent success or staying power, has lead to its use as a metaphor or model for virtually all conventional explanatory purposes (see Descartes, 1975 [original 1637] usually credited as the first formal account of the mechanistic world view). Thus, aside from its use to construct actual machines, we use it to construct procedures (technique) and further still, to explain phenomena in general whether perceived "in nature" or in our social constructions. Even the notion of clearly defineable problems and consequently clearly delineable, and therefore marketable-as-a-package "solutions", derive from this model.

Among the phenomena amenable to mechanical modelling are people, societies and environment in general. We ourselves are perceived as mechanisms and our being and its relationships to all else are thought to be essentially delineable in this way. While the "behaviourism" of B.F. Skinner (1971) which embodies this view, has been strongly criticised, the day to day reality of even the most generalized sciences of psychology and sociology still reflect the ascendancy of the mechanistic view (see Lilienfeld, 1978 on the social uses of systems theory). The upshot is that our humanity is stripped of its interdependence with nature and therefore, as we shall see, of its access to self-definition.

An example of such thinking is the portentiously titled Turing Test for Artificial Intelligence. If a tester at a computer terminal is alternately connected to a person and a computer and then cannot discern the difference, the computer is said to exhibit artificial intelligence. (Evans, 1980, Chapter 14) Unwittingly Weizenbaum (1976) developed just such an "artificial intelligence": ELIZA, a "psychiatrist", "who" reacted to "her" clients so realistically that they sought to "be alone with her". Weizenbaum became world famous because he recognized the unwitting trick perpetrated

against ELIZA's human clients. They involuntarily suppressed their normal and usually subconscious judgements about what constitutes a human and severely limited their everyday understandings of intelligence into the bargain. Such deceit is practised in numerous mundane contexts. A "thank you" on a terminal or cash register slip demeans the nature of politeness by being essentially self-administered (we trigger it). At best it lacks the direct quality of such sentiments and at worst it corrupts the notion of the *consideration* of the giver. As a machine response, politeness becomes merely a form trading on a similarity to genuine sentiment, to create a particular behavioural environment; in a word: manipulation.

AN INTERACTIONAL APPROACH TO THE CONSTRUCTION OF MEANING.

The obfuscation of meaning set out above must be understood in a context of the potential science and technology offer us were we to develop them in a context that recognized *both* as culturally and environmentally interdependent. Thus, none of the foregoing is to be construed as damning of technology *per se*, only as damning of the idea that technology, might be recognized *per se*! I shall suggest that there is no reason to eschew even mega-technologies such as the road network, only, to construct and use them within in an interactional or dialectical way of knowing that incorporates us actively.

In terms of environmental concern, scientific understanding alone is not enough. We are always developing new insights about old processes and simultaneously are developing new processes about which insights are only projected. Herein lies the fundamental *non sequitur* in both environmental and technology assessment. Our priorities in respect to environmental control reflect old insights based on old awarenesses to old damages. A successful development in these terms is one that realises its own "blueprint" and provided we can constrain its environment through force or selective perception, we accept its success. Nature and nature's organisms are not like that. Not because they are too complicated to model precisely but because the idea that models of nature can be applied in nature *as* nature is a fundamental (and self-destructive) misunderstanding.

At the risk of being criticized for pushing yet another area of specialization I shall attempt to illustrate the drift of thinking that asserts the construction of meaning and therefore of self, from an embedded, interactive relationship with nature. My intention in doing this is to show that the success of the mechanistic world view rests in the hidden presumption that nature will reintegrate (itself) around our incursions. Then, should we use pharmaceuticals say, for some purpose, the presumption is not that we are attempting to reconstruct ourselves chemically, only that we are trying to shift the particular balance we represent, to something we consider more favourable. I shall return to this example later.

The world view to be described replaces the present accounting approach to nature with an extended capacity to act responsibly *in* and *as* nature. In this view, nature ceases to be seen as a species of artefact or resource to be tooled by us, and we no longer need to wrestle with whether or not we are our brother's or sister's keeper in terms of environment and society. We can now recognize ourselves as actors in nature mutually constructing and being constructed in it.

The use of words to describe such a world view have themselves the same problem as technology. With the present world view we see them as discrete descriptors of something rather than as models representing our culture's attempts to create meaning from what our senses and intellects provide for us in a developing way. Thus, calling nature "it" as in the last paragraph is not to imply that nature is an isolated entity but that we, or I, in my attempt to involve you my reader, am using an existing expression having currency to us both, to develop an idea. The "it" then is part of our continuing act of becoming. In this sense we also do not *have* "world views" nor "models" only a continuing Kaleidoscope of changing intellectual formulations to what our senses, structured through our culture (especially language) provide for us. We *are* these formulations, our selves are constituted in them, each generating a unique pattern of being-in-language (as culture) (see references to Maturana, and others, below). Culture-as-language enables (*is*) this (*our*) dimension of being.

To illustrate these obscure sentences I shall proceed by explaining a number of terms used to characterise the underlying ideas by those working with them.

Dialectical. Used to characterise thinking that recognizes itself as a series of formulations, in language, of perceptions of reality. Reality in turn arises for us through our interaction with it. Our perception is a relationship arising in the interaction of our biologically and culturally based beings with the "objects" of our perception. Therefore, no "phenomena" can be *known* as such because they are always individual constructs-in-language (as culture). Culture enables the knowledge we attain and ensures a large proportion of commonality between our understandings. But, it is only with artefacts designed-in-culture of which, within the particular culture, it can be said that we *know* them in some kind of absolute or objective way. Otherwise "All nature", as Turner put it, "is second nature" (1984).

Causality. Arises as a means of explaining an abstracted sequence of events perceived via the agency of some purpose. Again, it has no absolute meaning. In part the Cartesian idea of the "reality" of cause and effect began to be unwound by physicists early this century. Amongst those were Planck (1932), Schroedinger (1958), Heinsenberg (1958) and their more recent followers Bohm (1980) and Capra (1977) who pointed to the place of the observer in constructing observations.

From this we can see that only mechanical devices (or nature abstracted in this way) can be "operationalised" causally, in that they are material manifestations of our theoretical models. However, as soon as they breakdown their natural basis becomes evident and until our capacity to explain extends to include the mechanism of the breakdown, they are removed from our "knowledge". In understanding the break however, we do not understand the *nature* from which our artefact is realized, only that part of it sufficient to reconstitute our device for its original and implicit purpose.

Process and Structure. Illustrating the interdependence of these two concepts offers another means to understanding the approach developed here. The famous formula $\mathbf{E = mc^2}$ recognized the definitional basis of process (energy) and structure (mass). It is possible however, to illustrate this in more mundane terms. Consider how the rocks (structure) that shape a waterfall (process) can also be thought of as process in a larger view of the waterfall. Instead of viewing the fall through a time framework of seconds, we might view it through years, by taking a snap-shot once a year for a hundred thousand years. When the pictures are strung together as a film the rocks would be seen to fall or become a process (of erosion) within the larger structures of geomorphology in which the water is part (its erosive "agency" is structural). What has changed is the conceptual illumination we bring to our perceptions - here, primarily a shift in time frames. Similarly, if matter itself is "viewed in a light" of X-rays, the contours we perceive may change dramatically just as the ionosphere appears hard to "short-wave" radiation and, the earth's atmosphere appears hard enough to deflect an incoming satellite back into space if it approaches at too shallow an angle ("belly whacking" from a diving board).

To assist in understanding present considerations of meaning and the development of *self*, a number of concepts arising from recent work among biologists will be helpful.

Central to the thinking of Maturana and others mentioned below are the General Systems concepts of self regulation or homeostasis and its allied ideas of self-production (autopoiesis) and formative causation (morphogenesis). These words describe the capacity of living systems to preserve themselves in certain states of organisation. While living systems are open to what are identified as matter, energy and information (see below) they are closed organisationally. That is, they exhibit a capacity to recognize and sustain organisational coherence (homeostasis) and to consistently go on producing themselves (autopoiesis), which includes developing and controlling their shape (morphogenesis) and reproducing and repairing themselves.

Inherent in these capacities of living things is a capacity to respond to changing conditions by altering the characteristics nominally used to define their particular homeostases. This implies a "meta", or higher level homeostasis; a homeostasis of homeostases. On this basis Maturana and Varela maintain that the:

> view of animal life as selfish is doubly wrong. ...first, because natural history tells us...that instances of behaviour which can be described as altruistic are almost universal. Second...because the mechanisms we put forward to understand animal drift do not presuppose the individualistic view that the benefit of one individual requires the detriment of another. Indeed...the existence of living organisms in natural drift [both in development of their lives, ...aging and in development of their forms] is not geared to competition but to *conservation of adaptation,* in an individual encounter with the environment that results in survival of the fittest. Now, we as observers can change our frame of reference in our observation. We can consider also the group unity which individuals are a component of. In doing so we see that the group necessarily conserves adaptation and organization in its realm of existence. (1987:197) (my emphasis and parentheses)

The human potential for language has in turn given rise to meaning and the notions of meaning (notion!), self and mind. In common with other processes occurring between individuals, language is a mutually recognizable activity. Cells for example, are able to exchange various chemicals because they are recognizable to each other and, in that they are exchanged, the chemicals facilitate the maintenance of the partners involved in the exchange and help to define the partners' existence. Similarly people exchange language to facilitate their existence. However, language also constitutes a consensual domain (Maturana, 1978:47) which allows for a patterning of mutually orienting behaviours. Thus, as Winograd and Flores put it, "A language exists among a community of individuals, and is continually regenerated through their linguistic activity and the structural coupling generated by

that activity." (1986:49)

Further,

> The basic function of a language as a system of orienting behavior is not the transmission of information or the description of an independent universe about which we can talk, but the creation of a consensual domain of behaviour between linguistically interacting systems through the development of a co-operative domain of interactions. (Maturana, 1978:50)

Meaning and knowledge then, are generated within a like-minded community, such that while:

> Reality is not objective, ...neither is it individual: ...cultural differences do not represent different modes of treating the same reality, but legitimately different cognitive domains. Culturally different men live in different cognitive realities that are recursively specified through their living in them....The question of solipsism [that discourse deals only with our subjective thoughts and feelings] arises only as a pseudo-problem, or does not arise at all, because the necessary condition for our possibility of talking about it is our having a language that is a consensual system of interactions in a subject dependent cognitive domain, and this condition constitutes the negation of solipsism. - Maturana, *Cognitive Strategies* (1974:464). (Winograd and Flores, 1986:52) (my parentheses)

If we accept this, information must not be confused with what is measured as "bits" of data in an electronic "communications" system. Information is that which changes the form of consensual behaviours in language and cannot be determined quantitatively. Consider von Foerster's observation along the lines that a person who maintains that something is boring is actually saying that s/he is boring (sic) (Pers. comm.), "Mind" (and knowledge) therefore, "is not in the head, the mind is in the behavior". (Maturana, 1985:308-311; see also Bateson, 1979)

Turning now to the self, the understanding of meaning as an interpretation of consensual activity arising in language allows Maturana (1988) to state that:

> For a living system in its operation as a closed system there is no inside or outside, it has no way of making the distinction. Yet, in language such a distinction arises as a particular consensual co-ordination of actions in which the participants are recursively brought forth as distinctions of systems of distinctions. When this happens self-consciousness arises as a domain of distinctions in which the observers participate in the consensual distinctions of their participations in language through languaging. It follows from this that the individual exists only in language, that the self exists only in language, and that self-consciousness as a phenomenon of self distinction takes place only in language. Furthermore, it also follows that since language as a domain of consensual co-ordinations of actions is a social phenomenon, self-consciousness is a social phenomenon, and as such it does not take place within the anatomical confines of the bodyhood of the living systems that generate it. On the contrary, it is external to them and pertains to their domain of interactions as a manner of coexistence. (p.63)
>
> As a result, reality arises with self-consciousness in language as an explanation of the distinction between self and non-self in the praxis of living of the observer. Self, self-consciousness and reality exist in language as explanations of the happening of living of the observer. Indeed, the observer as human being in language is primary with respect to self and self-consciousness, and these arise as he or she operates in language explaining his or her experience, his or her praxis of living as such. (p.81)

To re-inforce these ideas in somewhat easier language, let us turn from the initially difficult expressions of Maturana to those of a "man of letters", philosopher Rom Harre (1983):

> ...to understand how we can conceive of ourselves as conscious beings, we need to suppose that we are using a theory to organize our experience, a theory that introduces a unity of self as a theoretical concept rather than as an empirical discovery. [Similarly] our conception of ourselves as agents should also be understood as the employment of a theory with the active agent and willing self as its prime theoretical concept. In possession of a *theory* that I am an agent capable of acting against the tide of my inclination, capable of getting myself up and going etc., I have the means for readjusting the many means-end hierarchies which are involved in the preparation for action. And I have a way of explaining

> how my mental life (with others) appears to me the way it does. By being forced to listen to the exhortations of others, I learnt to exhort myself, and by watching others push each other into action, I learn to bestir myself. It is my grasp of the theory that I am a unified being that enables me to understand that I am the recipient both of exhortations and kicks and shoves, and that I can exhort and shove others and, finally putting all this together, that I can so treat myself. (p.193) (my parentheses)

Moreover,

> There is no more (and no less) mystery in coming to understand how I can obey myself than in coming to understand how I can obey you. In general, my obedience to your commands is explicable in terms of our relative location in one or more moral orders....The same can be said of personal agency. There is a moral order in which I stand in various relations to myself, expressed in remarks such as 'You owe it to yourself', 'Don't let yourself down' and so on. To understand agency is to have a grasp of this moral order as it is differently realized in various cultures. (p.195)

> Consciousness [therefore], is not some unique state, but is the possession of certain grammatical models for the presentation to oneself and others of what one knows by inter- and intrapersonal perception. These models provide the structures by which I can know that which I am currently feeling, thinking, suffering, doing and so on, that is, they provide the wherewithal for an organization of knowledge as mine. (p.214) (my parentheses)

And,

> Clearly, there is an indefinite potential hierarchy of 'knowings' which is given by the possibility of reflexive consciousness. Thus, I can become aware of an orange, pay attention to it, ...can know that I am attending to it, and so on. [Indeed] one of the commonplace techniques of dealing with pain is to attend not so much to the pain but to the relation in which I, as experiencer, stand to that pain. (p.212) (my parentheses)

With those insights behind us, let us return to the business of control. We have seen that meaning arises in recursive interaction between people *in language*. We have also seen that self and selfhood arise in the development of meaning in an individual. Where our access to meaning is restricted, our access to self determination, the means to construct our selves, diminishes.

The control I am concerned with in the first half of this paper then, is not that of domination but simply that of a) retaining and enhancing access to meaning and selfhood, and b) through the *practice* of a) to develop an articulate sense that meaning and selfhood imply a capacity to *care* or to be *response-able*.

To explain how this *ethic* is implicit in the dialectical basis of understanding they have developed, Maturana and Varela conclude their book, *The Tree of Knowledge* as follows:

> The *knowledge of knowledge compels*. ...because, when we know that we know, we cannot deny (to ourselves or to others) that we know....[This] implies an ethics that we cannot evade, an ethics that has as its reference point in the awareness of the biological and social structure of human beings, an ethics that springs from human reflection and puts human reflection right at the core as a constitutive social phenomenon. If we know that our world is necessarily the world we bring forth with others, every time we are in conflict with another human being *with whom we want to remain in coexistence,* we cannot affirm what for us is certain (an absolute truth) because that would negate the other person. [Coexistence implies that the *other's*] certainty... *is as legitimate and valid as our own* because, like our own, that certainty expresses [the other's] conservation of structural coupling in a domain of existence - however undesirable it may seem to us. Hence, the only possibility for coexistence is to opt for a broader perspective, a domain of existence in which both parties fit in the bringing forth of a common world....A conflict can go away only if we move to another domain where coexistence takes place. The knowledge of this knowledge constitutes the social imperative for a human-centred ethics.

(On evolution by co-operation see also Axelrod, 1984).

Finally,

> ...we can expand our cognitive domain ...through reasoning, through the encounter with a stranger, or, more directly, through the expression of a biological interpersonal con-

> gruence that lets us see the other person and open up for him(sic) room for existence beside us. This act is called *love*...without [it] there is no social process and, therefore, no humanness. (1987:245-6) (square parentheses mine)

While this section was primarily based on the work of Maturana, Varela and Harre I do not wish to give the impression that they are relatively lonely exponents of the dialectical view of meaning. At most they are the most articulate exponents of the ideas known to me. It may be illustrative for those unfamiliar with these ideas, to recognize that they have coexisted alongside mechanistic science in the modern western tradition for virtually all of this century. Supporters of the ideas come from all areas of intellectual work and are now manifest in a veritable avalanche of thoughtful books, papers and even periodicals devoted entirely to them and include *Revision*, *Co-Evolution Quarterly*, *Resurgence*, *Journal of Transpersonal Psychology*, *In Context*, *The Trumpeter* and *The Deep Ecologist*.

Examples of this tide of dialectical writings will be found in the secular works (sacred writings have long included a dialectical orientation) of:

Physicists: see Planck (1932), Schroedinger (1958), Heisenberg (1958) and more recently Capra (1977) *The Tao of Physics*, Bohm (1981) *Wholeness and the Implicate Order*, Lovelock (1979) *GAIA* and Prigogine , actually a chemist, who with Stengers wrote *Order Out of Chaos* in 1984. Each work has generated a spate of comment and interpretations and spawned virtual cult-followings.

Philosophers and Sociologists of Science: Whitehead (1985, original 1926), Polanyi (1958 and with Prosch, 1975), Habermas (1979), Berger and Luckman (1967) and Mulkay (1979).

Psychologists: see Jung (1958), Fromm (1976 and 1968), Frankel (1963), Maslow (1966) and Rogers (1980).

Feminists: see Keller (1985), Merchant (1983), Daly (1979), Grimshaw (1986), Caldecott and Leland (1983) and Cheney (1987).

Other social theorists: see Illich (1973 and 1977), Bateson (1973 and 1979), Boulding (1961 and 1985), Baudrillard (1970), Morin (1977), Wilber (1983) and Futures and Urban Studies theorists such as Satin (editor, *New Options* newsletter), Slaughter (1988), Le Guin (1976 and 1986), Sennett (1971 and 1974) and Jacobs (1965).

Biologists: see Waddington (1977), Levins and Lewontin (1985), von Foerster (1984), von Glasersfeld (1984) and Sheldrake (1981) and in particular, ecologists such as Leopold (1949), Worster (1977) and Livingston (1981).

Recently, two additional areas of thinking have gained extensive multi-disciplinary adherence. These are general systems theory, and deep ecology:

General systems theory (mentioned above): see von Bertalanffy (1969), Wilden (1981 and 1987), Meadows (1982), Jantsch (1980), Salner (1986), Beer (1980) and Vickers (1983).

Deep Ecology. Populated by representatives from a wide range of disciplines, this new philosophy is entirely consistent with dialectical understandings. It asserts that nature is intrinsically valuable - which is consistent with Maturana and Varela's "ethic". That is, nature is of the essence of our development (in language). Consequently we are constrained to be responsible in relation to that which we recognize as nature. Being responsible implies acting *elegantly* or *appropriately*. Workers who pursue this theme are Naess (1974 and 1985), Berman (1982), Shepard (1982), Devall (1988), Berry (1983), Evernden (1985), Snyder (1983) and Drengson (1983).

AN INTERACTIONAL APPROACH TO TECHNOLOGY

Half a century ago, in a short *cri de coeur* entitled *The Abolition of Man,* C.S. Lewis wrote:

> ...if any one age really attains, by eugenics and scientific education, the power to make its descendants what it pleases, all men who live after it are the patients of that power. They are weaker, not stronger: for though we may have put wonderful machines in their hands we have pre-ordained how they are to use them. (1978, original 1943:36)

This bleak reality suggesting that we can lose control of our technologies has been filled in variously by Mumford (1967/70), Ellul (1964 and 1980) and Winner (1976). While recognizing that "the steel does indeed draw the iron to it" many other writers are content to sketch in the social construction of our relationship with technology stopping short of seeing it as having an unstoppable dynamic of its own.

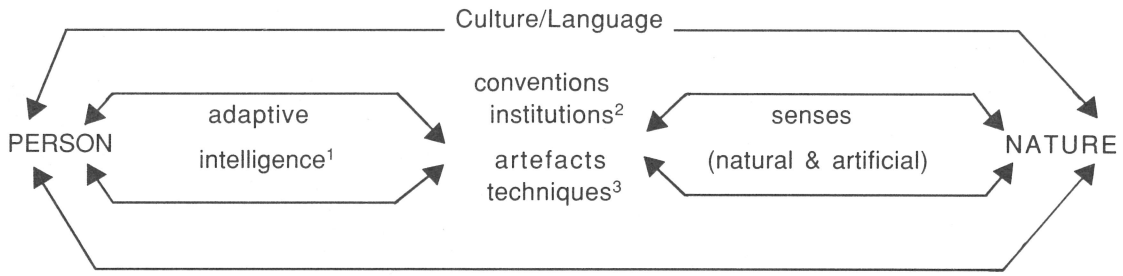
In addition to those already mentioned, a selection of the many recent works on technology showing an awareness to the directions taken here are those of

Borgmann (1984), Stanley (1978), Jonas (1984), Dreyfus (1986), Vanderburg (1985), Heidegger (1977), Ide (1983) and of-course Schumacher (1973) and his followers such as Carr (1985).

Within a dialectical view of the world, technology, as a subset of *technique*, is a mediator of desired natural phenomena. It is an explicit product, a crystallization, of particular understandings of both "nature" and people and therefore is - at least in origin - quite culture specific. On the face of it, technologies have no meaning beyond the purpose originally vested in them in their culture of origin, although, as with the *Coke* bottle in the film *The Gods Must be Crazy,* the original meaning can be "recreated".

In a mechanistic world view technique resides in the dualistic gap between people and nature (Figure 1). It can however, be used to facilitate closure of the gap and when it does this, it is "appropriate". The notion of appropriate technology today is a bridging device between dualistic and dialectical technologies, between a world of independent mechanisms and one in which our tools are recognized as us. Technique in such a world view enables the person - nature relationship to drift, to establish some new (enhanced!?) homeostasis. It also has a potential to "disappear" in practice, in the same sense as I am not conscious of my hand writing these words or you are not conscious of your eyes reading them.

To arrive at such a state should be no simple feat in a culture such as ours where we seek to make meaning explicit. The disappearance or harmony with its environment attained by a technique-in-culture must be multi-dimensional. That is, the community in which it exists must understand it technically, environmentally, socially and epistemologically. Which means that in addition to knowing "how it works" we must know conceptually how it "fits". Thus the stick Polanyi's blind person uses to *feel* obstructions with (s/he feels them at the tip of the stick not where stick meets hand!) must be replaceable in a continuous or sustainable way and its social implications for both blind person and the rest of us must also be known. At a quite unidimensional level, were the dialectical view of technology common, we would for instance, immediately recognize the benefit of automotive shock absorbers for *roads* (they reduce road wear) as well as for cars and their occupants. We would also bear in mind their potential to make us forget the roughness of surfaces...and so on!



Notes:
1. abilities required to "master" the artifacts, techniques etc. of the culture.
2. formal institutions but also legal, political, economic and other, frameworks.
3. artefacts = hardware; techniques = operationalizing procedures (in a limited or mechanical sense; in a wide sense, all four aspects are technique).
- All concepts selected for display in this model are "as conceived" for the purposes of this paper. Their isolation under the nouns used, is of-course itself an artefact with no intended reality outside the context of this paper...

Figure 1: An Interpretation of the Mediation of Phenomema. (adapted from Olson, 1976)

In a world such as the Australian Aborigines inhabited before European settlement - small, tightly-knit, self-sufficient groups - techniques were "naturally" dialectical. The groups implicitly understood the "mechanisms" germaine to their "existence-in-tools". The long-term viability of both the tools and the cultures that embodied them reflect the coherence between their tools and their cultural and natural environments.

Today, specialization and the deep epistemological alienation that characterises our culture has created techniques in which control by explicit understandings is unavoidable. I am suggesting that the development of a dialectical world view offers opportunities to appropriate our techniques not so much by understanding their detail but by understanding the structures of meaning that enable them.

Comprehension of form, for example, is enhanced by recognizing light as a phenomenon. However, as explained above, the nature of our metaphor is a partial constituent of the form it illuminates. Touching or tasting the same "objective" form facilitates a different formative experience. Thus a technique or artefact will embody current perceptions of the "nature" on either side of a mediation process and in turn will form them. Recognizing this enables the rise of technique which rather than demeaning or contracting our humanity, extends it.

Heidegger speaks of breakdown as a source of insight into the means we use (1977). Breakdown is any condition in which we stumble and are forced by circumstance to generate an experience. For it to be useful in appropriating technique, we must have developing language structures (theory) coherent with, or capable of, accepting it. To assist in creating such appropriate theory we could do worse than follow the example set by our medical schools. In my own university we have a department of Social and Preventive Medicine (an innovation paralleled in all Australian medical schools). That this innovation is profound can most easily be sensed when we apply the name to other areas of knowledge such as Social and Preventive Engineering or Economics. Inherent in the studies conducted by such departments is the notion that a profession might attempt to pass responsibility for its area of "epistemological hegemony" back to its public. Thereby, the profession departs from an interpretation of responsibility as accountability, in which *it* determines what is to be counted, and moves to grapple with what Jonas has called *The Imperative of Responsibility* (1984).

Breakdown then, is a non-trivial source of insight that takes many forms. Ironically much or most technical robustness must actually be credited to what are nominally criminal activities ("hacking").

In common with environmental science, teachers in departments of Social and Preventive Medicine are turning to dialectical or systemic means to clarify the "realities" that concern them. Exposing the systems of knowing that are the womb of our designs and that enable those designs to be operationalised in practice is the path to closing the present hiatus between us and nature while preserving in a careful way those techniques coherent with us *as* nature. Recognizing the existence of a virtual infinitude of parallel (same order of abstraction) and embedded (higher or lower orders of abstraction) systems for organizing our perceptions is a liberating first step in coping with complexity and in innovating in a careful, minimally intrusive way.

In conclusion two brief personal experiences are offered as examples of the liberation implied.

Self as Whirlpool. A metaphor for self in the dialectical view might be a whirlpool in a stream. The whirlpool is an organisation maintained by the stream. The molecules of water that form it at any time are not it, they only serve to maintain it as they pass through it. Indeed the stream of which the whirlpool is part is also an organisation conceived by us and maintained by what we understand as water molecules; as is the valley in which the stream runs. Now, I have Crohn's disease, a chronic autoimmune gut disease, have sustained numerous operations and am now sustained in turn by an array of pharmaceuticals. For a long time I struggled with the meaning of what I took to be myself as a pharmaceutical artefact until finally I recognized that *they* were not "me". They simply maintained "me" as the whirlpool, where some other, unknown, destabilizing agent would have taken me "over the brink". Now, I am well aware of the social and environmental dimensions of the pharmacopoeia and should, at some later date, the expense of all this be what I consider destabilizing to the community, (the cost of total intravenous feeding), I'll take the brink.

The edge of madness. Most of us will have had the experience of approaching a plastic plant to test it for "naturalness". And, if the imitation is good, we will have felt frustrated with our inability to discern the difference between "plastic" and "life". This is another example of the rich experience inherent in breakdown. I believe that the source of frustration, the "edge of madness", does not lie in our feelings of not being sensitive enough but rather, in:

1. the possibility of being *deceived*, and more profoundly,

2. the possibility that we might not be able to tell what is natural and what is not. In other words that we just might not be capable of telling whether *we* - as the flower, part of our greater self - are natural.

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A Conservation Strategy for Ontario: The Next Steps

Simon Miles

ABSTRACT

Popular support for an ecologically sound development process is strong and growing. Three global explosions - in population, technology and knowledge - have contributed to a major paradigm shift in our values, a shift expressed in such global efforts as the Brundtland Report and the World Conservation Strategy.

In an effort to move toward a conservation strategy for Ontario, the Conservation Council assessed current policies and programmes in the light of the objectives outlined in the World Conservation Strategy.

Common problems - stemming from a continuing process of environmental exploitation - were found in all six issue areas the Council examined. The Council recommends a move to a more sustainable society through cross-sectoral, long term management policies that integrate development and environmental concerns.[1]

Une stratégie de conservation pour l'Ontario: la prochaine étape. La conservation de l'environnement occupe depuis toujours une place importante en Ontario même si les raisons qui la motivent ont beaucoup changé. Aujourd'hui, à la suite d'une explosion démographique, des progrès en technologie et de nos vastes connaissances, on accorde une plus grande importance à l'environnement. En fait, on compte sur l'environnement pour assurer notre subsistance, sauvegarder nos ressources et l'écodéveloppement. C'est la raison pour laquelle une étude intitulée *Stratégie de conservation mondiale* a été publiée en 1980. Malgré la pertinence des recommandations émises dans ce rapport, ce n'est qu'en 1985 que le gouvernement ontarien a décidé d'agir. Tout d'abord, un conseil a été formé pour évaluer les pratiques de conservation et de développement déjà en place. Ensuite, il a rédigé un rapport qui se concentrait sur l'agriculture, la foresterie, les eaux, les animaux sauvages et les territoires naturels, la gestion des déchets et les conflits sur l'utilisation des terres. Ce rapport émettait également des recommandations pour résoudre divers problèmes.

Ce qui reste à faire maintenant, c'est de mobiliser les ressources humaines et d'obtenir la collaboration de différents organismes, de s'assurer de l'appui du gouvernement en matière de développement d'une économie de subsistance, d'établir une structure et une procédure organisationnelles et d'identifier les prochaines démarches à entreprendre.

INTRODUCTION

My conclusion on the link between the theme The Unfinished Landscape[2] and A Conservation Strategy for Ontario is that, as a society, we are getting increasingly fed up with our cultural inheritance. As a society, our values are changing. We have begun to realize that we have made one heck of a mess of our landscape and it is about time we cleaned up our act. The trouble is that we cannot easily agree on just what is needed. Conservation is one option that is attracting more attention but even among so-called conservationists there are differences of opinion as to *what* we should be doing to conserve our resources and environment and thus to shape our landscape.[3]

Our landscape is an expression of our culture: of that which we have inherited and that which we shall leave behind us as an indelible imprint on the lives of our children. In this sense our landscape is always evolving and will always be unfinished. As an expression of our culture, our landscape is far more complex than our language and as a mode of expression it more readily enables us to distinguish ourselves from our neighbours. Our expression in landscape clearly differs from our expression in language in that the former is imposed on others - like it or not - and it may well live on. The latter is generally shorter lived. Someone may swear at you - fine; someone builds outside your window and blocks your view - far from fine - downright offensive! Freedom of speech is one thing; freedom of expression in landscape is another!

In short, the opportunity to offend the values of others is very real. There is an ethic attached to the way we express ourselves in our landscape. Hence there is a strong element of emotion behind the actions of those who profess to care about the landscape as an expression of culture. The actions of offenders are seen by the beholders to be morally wrong. Moral

wrongs have to be countered with moral rights. The search for a moral philosophy begins. Enter conservation.

Now that I have got onto the subject I wish to deal with, I do not think that the interest in conservation arose primarily in response to the offences committed to our landscape. If this were so we would have had a lot more conservationists in the early days of the industrial revolution. Yes, there were preservationists. Yes, they were inspired primarily by the desire to protect landscapes being subjected to major change. They have become part of the conservation movement. In addition, we had industrialists constantly seeking more efficient ways of exploiting resources. A good portion of this effort, but not all of it, was and is aimed at conserving those resources.

But, and it is an important distinction, the motivating force for these industrialists was not a moral one. It was economic. If money could be made by reducing waste, by getting more from less, then so be it. There was no moral imperative to provide for later generations from less resources. In fairly short order, technological advance also became a motivating force. The fascination with new technologies was such that if something could be done it should be done. There was little or no consideration given to the rate at which natural resources were being consumed in order to maintain the economically and technologically driven development process. Most important of all, there was no mass movement in the body politic, organizing and pushing for a different philosophy of life.

However, a new philosophy has emerged only recently in Canada and elsewhere. It carries different labels depending on whom you talk with. "Sustainable development", "ecodevelopment" and "conservation" are three of the better-known labels. Protagonists of different camps will argue the fine points. The more fundamental point is that this is all part of a major paradigm shift.

Some of us are more willing participants than others; but more and more of us, including those concerned about the rape of our landscapes, are hitching our wagons to the new movement.

I have belaboured this point about the evolution of these new values because it is really the most basic point that is made in the Conservation Council's report, *Towards a Conservation Strategy for Ontario* - an assessment of conservation and development practices in Ontario.[4]

Translated into political terms, the basic point is that popular support for sustainable development is strong and growing. Awareness of pressures on the environment as a resource base, as an amenity and as a sink for our wastes, is increasing. This is contributing to a change in societal values. There is a shift from support for an economically - and technologically - led process to support for one that is more balanced and which gives more attention to social and environmental considerations. This is leading more opinion-makers to push for longer-term resource management policies that aim to internalize those costs that were formally externalized by our production processes, consumption patterns and life styles in the form of environmental and social costs.

What is it that accounts for these changes in values? I would like to suggest that it is three global explosions - in population, technology and knowledge. In particular, knowledge about the implications of the other two explosions makes it clear to everyone that we should act now if we wish to keep the options open for our children and future generations to enjoy the quality of life we enjoy.

There is thus a moral imperative which is ignored only at some political cost.

It is reasonable to say that it was this moral imperative that led to the development of the World Conservation Strategy by literally hundreds of people working world-wide under the leadership of the International Union for the Conservation of Nature and Natural Resources. The Strategy is a well-reasoned attempt to respond to the mounting pressure on the world's resources and to the growing indignation on the part of ordinary citizens in so many countries that not enough was being done to put a halt to the destruction of the planet's life support systems.

The World Conservation Strategy appeared in 1980 but it was probably Rachel Carson's books *Silent Spring* published in 1962 and *The Sea Around Us*, that catalyzed this growing awareness of the destruction of the planet; it seems looking back that the Strategy was a very long time in the making.

I mention this time lapse because it seems to be an inevitable factor that one has to reckon with in any major change. It was recognized by those putting together the World Conservation Strategy that it would be up to national and sub-national governments to implement its recommendations. Unfortunately, they did not go out and sell it. This meant that those of us who did get a copy at the outset found that we were working on our own in promoting the idea of conservation strategies nationally and provincially. Yes, the federal and provincial governments did get copies, and in 1981 Environment Canada, on behalf of the federal government, did agree to support it. After that it was up to one young lady, working part time, to convince all the federal departments to back it. The provinces did not act.

Thus it was hardly surprising that it took until 1985 to get a receptive ear at Queen's Park to talk about a conservation strategy for Ontario. Although former British Prime Minister Harold Wilson has reminded us that "a week is a long time in politics", it is equally true that

five years is no time at all on the bureaucratic clock. To be fair though, the Council did get a very receptive audience. We felt it wise to propose that we start with an assessment of the current conservation and development practices rather than leap right in with an effort to come up with a comprehensive strategy. In hindsight, I am even more convinced this was the right decision. There is a lot of good work being done in Ontario and a lot of good legislation in place. To try to rework it all from scratch would have been misguided and wasteful.

At the same time a lot of shortcomings were discovered but these will not be discussed in detail here for they can be found in the report.

The objective of the assessment was to provide a broad overview; not a detailed assessment of each piece of legislation. The intent was to convey the character of the strengths and weaknesses with a view to identifying economically, socially and environmentally productive new thrusts in policy and programme development. It was assumed from the outset that there would be a second phase, for more detailed follow-up, once we had a sense of where we are at and where we should be heading within the broader context of societal development.

The report is organized around six issues areas and, within these, fifty two priority concerns. For each priority concern there is a short statement on the nature of the concern, the progress or lack of it in recent years and what is needed by way of provincial government action to improve the present situation. These recommendations are made in point form. The standard format of the report makes it very easy for the busy reader to find out what the Council recommends on any one concern.

The Conservation Council used six task forces, with multi-interest membership drawn from within and outside of the Council's ranks, to conduct the assessment. A number of people from the University of Waterloo such as John McRuer, who worked with the Waterloo Simulator Research Facility (WATSRF) Project, Chris Hart and George Francis, contributed to this exercise. We believe the report reflects the views of a broad cross-section of the body politic.

The World Conservation Strategy was chosen as the yardstick because it offers a global perspective; it is non-partisan and was produced outside of Canada. It is well regarded as a guide for the formulation of conservation and development policies and is beginning to be used for this purpose by many jurisdictions around the world.

The essence of the World Conservation Strategy is contained in its three objectives of living resource conservation:

1. to maintain essential ecological processes and life-support systems such as soil regeneration and protection, the recycling of nutrients, and the cleansing of waters, on which human survival and development depend;
2. to preserve genetic diversity (the range of genetic material found in the world's organisms), on which depend the breeding programmes necessary for the protection and improvement of cultivated plants, domesticated animals and microorganisms, as well as much scientific and medical advance, technical innovations, and the security of the many industries that use living resources; and
3. to ensure the sustainable utilization of species and ecosystems (notably fish and other wildlife, forests and grazing lands), which support millions of rural communities as well as major industries.

In broad terms, the assessment looks at provincial government policies and programmes in light of its contribution to the realization of these objectives. Some observations were made on federal policies and programmes.

Also of particular value in identifying the requirements of policies and programmes that are expected to satisfy the three objectives was the checklist of priority requirements listed in the World Conservation Strategy document.

It is important to note that in each of the six issue areas a similar message was found. There has been a continuing process of environmental exploitation, motivated by the economies of the market place and allowed to continue out of cultural inertia.

Thus, in looking at *agriculture* we see that the competition of the market has pushed production up 40% in the last 25 years. The price has been the disappearance of wildlife habitats and the loss of soils for future generations. Our food clearly costs us more than we pay for it.

Turning to *forestry*, we find that for decades we have cut more trees than we have replaced through natural regeneration or by replanting. The net result is that a Canadian industry that contributes a $2 billion trade surplus is going to be able to deliver less and less in the near future.

Like forests, *water* resources have been treated as if they were inexhaustible. We have billed ourselves little for using and polluting them. But the true costs are poorer public health, poorer wildlife and recreational opportunities, and a growing bill for the Great Lakes clean-up to be paid for by our children.

Regarding *wildlife and natural areas* the record is a little better. Although we are beginning to recognize the value of our heritage, it is taking too long to establish a minimal system for protecting it.

It required eighteen years of pressure from citizens' groups to win guarantees for the ecological health of the Niagara Escarpment (which in 1989 is again under attack by development minded local officials) .. and that is just one small corner of a vast and threatened environment.

Action on *waste management* is only just beginning. As society has developed, we have used the environment as a sink for our wastes. The problems we have created by doing this are growing worse. The new wastes from modern forms of production are often chemical compounds that do not break down as part of normal biological processes. As a result, deadly chemicals continue to accumulate. This is in addition to the problem of an ever dwindling supply of land for waste disposal.

Finally, looking at the sixth issue area, *land use conflicts*, we find that some 56 000 hectares of Classes One to Three agricultural land were lost to urbanization between 1966 and 1981 in Ontario. With 52% of Canada's Class One land, Ontario has a responsibility to other Canadians to minimize this loss.

The report was drafted in a great rush because the government wanted to use it at the meeting of the Canadian Council of Resources and Environment Ministers (CCREM) in October 1985. The payoff was supposed to be that the other provinces might feel inspired to do something similar. Although we made the agenda, we had about ten minutes just when people were leaving. One year later CCREM is discussing it at their meeting in Alberta. It is a bigger item on the agenda and there will doubtless be follow-up.[5]

The process of spelling out the next steps to be taken is not simply a task of assigning specific tasks to existing agencies. We need to look at *how* those steps should be organized, that is, we need to look at the process within which the decisions will be taken. This is hardly surprising. We are looking at a transition to another approach to development that puts more emphasis on horizontal or cross-sectoral policy-making. In addition, this transition has to be made in the context of a fast-changing world that dictates that any shift to sustainable development also has to be supportive of other major shifts in our development policy, such as the adjustment to a post-industrial society.

To be described now are considerations relating to the organization of what are seen to be the four major steps to be taken. The first three steps relate more to establishing the rules of procedure. They should be easy to accept if the notion of sustainable development is acceptable. This should mean that the fourth step, the actual identification of the additional measures required, can be commenced without too much delay.

STEP 1: MOBILIZING THE FIRST-ORDER RESOURCES THROUGH A CONTINUING PARTNERSHIP

Given the importance we have placed on our culture and the effect it has on our behaviour, we have to recognize that all members of society have to assume some responsibility for the situation we find ourselves in. Likewise, to change things, everyone has to play a part. Equally clearly, there will be no such change if the Province does not act with *commitment* to encourage our society to take a new direction in its development. Far-sighted individuals acting on their own cannot bring about the necessary change. To rectify the situation will take *money, vision, credible leadership* and *collaboration* on the part of the body politic. These are what the Council regards as "first order" resources, without which others, such as information and time for participation and deliberation in decision processes, are not only secondary but of little avail.

What kept the Council's initiative on the political agenda was the obligation that the government had to produce something for both the World Conservation Strategy global conference in Ottawa, in May 1986, and the visit, a few days before this, of the World Commission on Environment and Development known as the Brundtland Commission. Not to make light of it, the change in the provincial government in mid-1985 produced a completely different situation for those of us who had for so long been fighting in the trenches to get the most miniscule of legislative changes through Cabinet.

So where do we go from here? In its report, the Council outlined the next steps that should be taken. There were no surprises. By definition an evolving strategy contains very few if any surprises. Surprises are counter-productive in dealing with anyone. The only thing that is new is that it is hoped that there will be action at the provincial level.

The need for *money* is emphasized because, not only do we have to halt the decline in our environmental capital, we have to make visible progress in restoring it. Visibility is essential in order to demonstrate the benefits of this new approach to development and thus gain not only the tacit support but the active collaboration of all citizens. Once our society enjoys this active *collaboration* the money will be a less important resource. People will recognize that their efforts are not in vain and that they are not having to push against the tide. They will more gladly participate in a number of excellent programmes being offered. In short, to bring about a cultural change, we have to use demonstrations with pay-offs to prime the pump to the point of social take-off.

The *vision* of a society enjoying sustainable development is not hard for any one individual to conjure up.

The challenge lies in organizing collective support for a reasonably common or mutually supportive vision. Such a collective commitment to a sustainable society is building up, but it is a slow process. Such change has been discouraged until now by a political and economic system that has preferred to place its faith in the market. This market, which has no way of representing the collective interest, has encouraged the pursuit of individual gain at public expense. Much of the so-called profit of the market is not a product of value-added but of production and consumption processes that externalize much of their costs as environmental and social costs to be borne by others elsewhere or by later generations. Fortunately, our society has already moved to internalize many of the social costs through company contributions to health insurance and pension schemes. The environmental costs await such treatment.

Just as the social reforms that introduced the welfare state to western industrialized societies after the Second World War required vision, so they also required enormous *commitment* on the part of those same visionaries, backed by *credible leadership* from governments. Today, the world's governments suffer from a distinct lack of credibility. Indeed, there is an unfortunate but very real lack of trust in governments even when they undertake well-intentioned endeavours. This trust will take some time to restore. The distrust or lack of credibility is a product of many things. Some of the more obvious sources are: the sheer size of governments; the air of secrecy with information as to what is really going on - often more apparent than real, simply because of the size; and, a tendency to deal with symptoms rather than root causes. The environmental and resource management field has been particularly prone to this lack of credibility on all three counts. Here in Ontario, as elsewhere, this has been so even though many of the issues actually benefit from treatment in an Ontario-wide, or even wider, jurisdiction. The Province gave recognition to this problem of credibility when it established the Ontario Waste Management Corporation, with a world-renowned scientist at its helm and time to find the right way of dealing with our wastes. Even this worthy initiative, however, still leaves the fundamental problems about the nature of production and consumption processes to be dealt with.

The mobilization of these first-order resources is clearly a challenge, if not impossible, for the government on its own. If we look outside government, to non-governmental organizations, we see another form of this dilemma. Certain non-governmental organizations, such as the Conservation Council, while having all the necessary credibility to mobilize people, develop commitment and bring forward individuals with vision, lack funding and thus find themselves equally unable to utilize their own strengths.

The solution, we believe, lies in some form of partnership. Together, the Province, the Council and other non-governmental organizations could be very successful in mobilizing the necessary funds, credibility, collaboration and vision.

The Council has recommended to the government that the conservation strategy project be continued, as originally proposed, into a second phase of what has been, in our view, a very productive working relationship between the Province and the Council.

STEP 2: FORMALIZING ACROSS-THE-BOARD SUPPORT FOR SUSTAINABLE DEVELOPMENT

Prior to launching the second phase of this project, a number of administrative steps would have to be taken that would formalize the government's support for a cross-sectoral approach to sustainable development and that would recognize the role of the Council and other non-governmental organizations. The key step in this regard was the delivery of a statement from the Premier declaring support for a shift in direction towards sustainable development in the form of a conservation strategy.

The Council worked very hard in the summer of 1986 to ensure that such a statement would be forthcoming from the Premier. It felt that if the message were to be conveyed that there had to be an across-the-board approach in government, to the pursuit of sustainable development, then the Premier had best have his Ministers and Deputy Ministers in attendance. If he is to convince the leaders of business, academia, and of many citizen groups that he expects them to take on more responsibility, then they had best be present too.

So we organized a Gala Dinner - at the Council's Thirty-fifth Anniversary in October 1986 - and invitations were issued to the Premier and everyone else whom we felt should be there. This was to be the Premier's first major speech on environment and resource management.

This speech was supportive of an across-the-board approach to sustainable development but it contained no policy announcements to introduce this new approach to development in a systematic way. However, within the next year, I believe that the Premier instructed his Deputy Ministers, on at least two occasions, to find ways of incorporating the principles of sustainable development (as proposed in the Council's report) into the decision-making processes of their ministries.

STEP 3: ESTABLISHING THE ORGANIZATIONAL STRUCTURE AND PROCESS

The incorporation of a conservation strategy into the development process supported by the government of Ontario should be viewed within a larger context of the necessary restructuring of our society and thus its government as it evolves into a post-industrial society. The Council believes that the modifications called for in support of an effective process for pursuing sustainable development are also supportive of efforts to achieve these other goals of society. What was in mind was the need to identify the organizational and procedural objectives and, then, based on these, certain characteristics of the ongoing process could be identified.

The organizational and procedural objectives included, among others, the following:[6]

1. to introduce into policy and programmes across the board new perspectives aimed at realizing sustainable development;
2. to build up the government's credibility and the public's preparedness to collaborate with the government in the implementation of a conservation strategy;
3. to develop a better understanding and practising of ecosystem planning and management;
4. to bring about more effective cross-sectoral policy and programme development to deal with those issues that affect several ministries;
5. to develop a clear line of accountable authorities;
6. to ensure that budgetary and financial control systems match projects; and
7. to develop effective outreach programmes, involving diverse groups in society, that serve both to convey information and to provide feedback from the body politic.

These objectives suggest certain characteristics of the ongoing process to be followed in the project. It would be highly desirable to identify these characteristics ahead of time. Some examples are as follows. Note that although I refer to the Council all the time, this is because I know its capabilities and its limitations. There are no reasons why other NGO's should not be equally involved. However, we do see the benefits of a coordinated multi-interest process being used here.

1. Joint involvement by Government officials and members of Council in the design of follow-up activities, wherever feasible.
2. Continued use of Council-based task forces for initiating or steering non-governmental sub-projects and the introduction of joint Provincial-Council task forces for governmental sub-projects.
3. Continued use of a joint Provincial-Council Steering Committee, restructured to reflect the need to bring in additional ministries as necessary and probably meeting less frequently, assuming more direct collaboration between government staff and Council task forces.
4. Extension education and involvement to be performed by Council and to reach out to involve different combinations of interest groups and individuals appropriate for each sub-project.
5. Research to be conducted whenever appropriate, within the context of multi-interest research-action processes involving representatives from governments, business, labour and citizen groups in addition to the researchers.
6. Public information programmes to provide opportunities to non-governmental organizations to prepare information documents, with co-operation of government staff.
7. Frequent conferences on issues being examined around the Province.

STEP 4: IDENTIFYING THE ADDITIONAL MEASURES REQUIRED

Given that the Council came up with some 250 specific recommendations for action, Phase II was seen as having the following initial tasks:

1. To identify those recommendations that can be implemented without the need to overcome any significant barriers (eg. those calling for increased activity in well-regarded programmes). These would constitute the first round of priority requirements for a Provincial Conservation Strategy.
2. To identify those recommendations fundamental to the successful pursuit of a Provincial Conservation Strategy, but facing some obstacles. These would become the second round of priority requirements of such a strategy.
3. To identify the precise nature of obstacles to meeting these second round priority requirements and ways of overcoming them.

In identifying the priority requirements from the list of recommendations made in the report, it must be borne in mind that they were made in the context of discussions about substantive issues. Many of the recommendations, however, relate to broader concern about the processes of making and implementing development policy. They pertain to several, if not all,

of the policy fields. Some of the more important of these broad areas of concern relating to processes are now identified. They constitute a short list of what is required of all ministries and government agencies in the pursuit of a Provincial Conservation Strategy. For each area of concern, I will also note the emphasis that the Council saw as being required.

1. Elaboration of a development philosophy

- outline a philosophy of ecologically sound development, its main principles and its implications for "statements of Provincial interest" and policy and programme design; and
- develop normative "statements of Provincial interest" relating to major resources and environmental issues.

These statements should serve to give direction not just to the ministries with a central responsibility for policy in the environmental and resource management fields but also to all other ministries, from education to trade, whose policies and programmes have a direct bearing on the demands made of the environment. The development philosophy and the specific statements should recognize that, whether it is in our production processes, consumption patterns or life styles, our human behaviour can be encouraged, guided, cajoled or regulated to be supportive of development that does not destroy or weaken our life-support systems of air, water, soil, vegetation and animal life, that does not deplete the genetic diversity in our environment and that does not erode the opportunities for sustainable development.

In short, sustainable development policy has to become a horizontal policy that cuts across all other policy fields. This will require new organizational structures and processes in the Provincial government. More fundamentally, since the sectoral organization of governments pervades our thought processes, we will have to encourage more inter-disciplinary thinking by individuals in their everyday life. This is obviously nothing new to people associated with the Faculty of Environmental Studies at Waterloo. I mention it only to underscore the importance of that work for all facets of government operations, not just the Ministries of Environment and Natural Resources.

2. Strategic policy-making: design of the process

- incorporate an ecosystem approach with a biospheric perspective;
- incorporate long-term time horizons;
- incorporate mechanisms for global scanning and analysis; and
- get the information out to those who should use it.

3. Strategic policy-making: some research priorities

Although there are major costs associated with the "clean up" and "catch up" required in the short term, in the medium term we can look to reducing costs considerably by acting now to shift to a policy stance of anticipation and prevention rather than continuing with the traditional catch-up and clean-up stance. This will require more attention to longer-term strategic planning, to monitoring, to the promotion of different technologies for production and to the true costs of not pursuing sustainable development programmes.

The key component of the strategic planning is the sense of direction given by the statement of development philosophy, the vision of the future. With this vision and desired situation in mind, the implications for Ontario of the changes in major forces at work globally, as well as within Ontario and Canada, can be identified. The implications can be spelled out in terms of constraints upon and opportunities for manoeuvreability in investing our monetary, human, natural and technical resources in individual and societal development that will be sustainable. The complexity of this exercise suggests the desirability of making use of sophisticated computer-based models. Again, some pioneering work has been done at the University of Waterloo. The Waterloo Simulator Research Facility (WATSRF) is an initiative that should be further developed and promoted. It has been ahead of its time until now, but I sense that its value should be recognized by governments as more of their young staff, who are familiar with these processes, move into positions of authority.

Some of the research priorities seen in the field of strategic policy making are as follows:

- population: its future distribution, make-up, and size; implications of federal immigration policies (Ontario receives almost 50% of immigrants); global developments and the implications for (a) trade, (b) Ontario's faith in federal immigration policies;
- value changes in society and implications for expectations of environmental and resource management, production and consumption processes, life styles;
- alternative futures (20 years +);
- institutional adjustments in governments (and the private sector) to facilitate the transition to a sustainable society;
- pressures on our resources arising from:
  - international market developments
  - the ways others manage their resources
  - trade agreements
  - substitutability of materials and of suppliers
- US production processes such as increased use of coal;

- "true cost" of resource management practices
  - benefits of incorporating these costs into the price of goods
  - removing obstacles to such incorporation
  - systems for collecting "true cost" increases for environmental protection insurance funds where necessary
  - development of Provincial resource accounts
- removing barriers to conserver technologies, for example, Ontario Hydro's higher buy-back prices for conventionally-generated energy; and
- strategy for adjusting to almost inevitable climatic change.

4. Understanding ecosystems

- their functioning, interrelations, ecotoxicity, tolerances; and
- educational programmes to promote this understanding in schools, universities, in professions and businesses (those in schools should be both special programmes and incorporated into regular curriculum).

5. Enhancing public awareness of responsibilities for environmental conservation

- extensive campaigns to promote conservation and a sense of responsibility for stewardship of our resources as "common" - aimed at everyone from children to adults (eg. excellent programmes of: The Ministry of Natural Resources - Landowner Contact project, Community Fisheries Involvement Programme; and Ministry of Energy - children's games to TV advertisements on energy conservation).

6. Changes to production and consumption processes

- research "true costs" and ways of internalizing them in production and consumption processes;
- promote "environmentally friendly" technologies (eg. low-waste internal combustion engine; and biological controls for pests); and
- broader use of performance standards.

7. Information programmes

- better use of federal systems - eg. ecological mapping; Statistics Canada's STRESS model and SERF, and Environment Canada's strategic scanning studies;
- produce information, in easily digestible and credible packages, on certain things people want to know (eg. environmental impacts of certain production processes);
- have non-governmental organizations prepare information packages and analytical reports wherever they are competent; and
- avoid "infoglut".

8. Institution building

- strengthen capacities of local governments and conservation authorities in ecosystems planning (and focus conservation authorities' efforts in this regard); and
- develop roles for universities in organizing public interest group policy advice, and programme implementation.

9. Human resource needs

- identify changed Provincial and municipal personnel needs generated by the introduction of ecosystem planning and strategic planning;
- technical assistance to municipalities (using consultants to provide flexibility and minimize overhead costs); and
- train more field technicians in conservation techniques and in promoting direct citizen participation in conservation projects (eg. in agricultural and forestry outreach programmes) and make it attractive for them to remain in the field.

10. Provincial-federal relations

Since the Council's report was to the Provincial government, we could only advise the Province that, in its ongoing relations with the federal government, it should:

- encourage Environment Canada to make more use of European concerns over, and research on, acid rain to pressure the US to reduce emissions;
- ensure that the federal-provincial accord on environment-related matters does indeed address *all* environment-related and resource-related issues, even though it is administered only by the Minister of the Environment on behalf of Ontario;
- encourage the federal cabinet to restore funding cut from Environment Canada programmes, from the National Research Council environment programmes, and from the Canadian Centre for Toxicology;
- encourage Environment Canada to conduct more long-term, global studies leading to policy-oriented action plans for resource and environmental management;
- encourage Statistics Canada to restore funds cut from its environmental statistics programme;

- encourage more federal support for programmes aimed at assisting developing countries with birth control and resources management;
- support the federal efforts to establish ecological reserves and gene banks;
- encourage Agriculture Canada to extend the federal Fertilizer Act to control the use and application of fertilizers;
- encourage the federal government to: have the Pesticides Management Advisory Board report to the Minister of Environment (in addition to, or instead of the Minister of Agriculture); introduce a formula for the official deregistration of pesticides registered under the federal Pest Control Products Act; and, tighten controls on marketed pesticides under the Environment Contaminants Act; and
- encourage Environment Canada to increase its funding to Wildlife Habitat Canada.

11. Inter-provincial relations

- encourage other provinces to develop conservation strategies.

12. Public participation in public sector decision-making

- develop ways of enabling public participation in large scale resource development projects with long lead times;
- provide intervener funding; and
- provide information in a format that is concise and that anticipates obvious concerns.

13. Modifications to legislation

- ensure that policy goals and objectives are explicit;
- ensure that any move to have "sets" of ministries responsible for cross-sectoral policy fields results in clearly defined responsibilities; and
- promote more explicit and broader interpretations of environmental concepts in legislation.

14. Adequate Funding for a conservation strategy

- in addition to costing programmes, identify costs of not introducing them and also consider other than the conventional sources of revenue; and
- identify scope for cutting redundant programmes.

There are, of course, many other process issues that the Council will be identifying. The above list is provided to give a sense of some of the possible areas where one can start improving the underlying processes in support of the realization of a Provincial Conservation Strategy.

ENDNOTES

[1] I gratefully acknowledge the assistance of C. Elstone, Managing Editor, *Environments* for her great contribution in preparing this manuscript for publication.

[2] This paper is based on an unpublished presentation made at the September 1986 Conference *The Unfinished Landscape,* University of Waterloo.

[3] The Conservation Council of Ontario is a non-governmental organization which brings together 33 member organizations and a limited number of individual members elected on the basis of their promoting conservation in Ontario. It focusses on broad policy issues and development of appropriate solutions to these issues that represent the consensus of opinion emanating from its broadly based membership.

[4] The Conservation Council of Ontario. 1986. *Towards A Conservation Strategy for Ontario* Toronto: The Conservation Council of Ontario.

[5] Since the delivery of this paper in 1986, all provinces and the federal government have first established a National Task Force on the Environment and the Economy which reported in September 1987 and, following that, Ontario, among others, has established its own round table on the environment and economy. The Round Table has been charged with promoting sustainable development in Ontario. Given these developments, which offered an alternative vehicle for the pursuit of the steps recommended here, Phase II of the Conservation Council's project did not proceed as such. However, the author believes that the recommendations made in this paper are as pertinent in 1989 as in 1986, whatever the precise form of vehicle established for their pursuit.

[6] The remainder of this paper draws heavily upon: The Conservation Council of Ontario, *Towards A Conservation Strategy for Ontario*, pp. 159-65.

Privacy, Independence and Separateness in Living Arrangement Selection Among the Elderly: Research and Implications for Housing Policy

Andrew V. Wister

ABSTRACT

Research indicates that the valuation of privacy and independence has been instrumental in shaping older people's living arrangements. This paper discusses literature that pertains to this issue in an attempt to provide conceptual clarity to dimensions of privacy and independence in living style. These important attitudinal components of household decision-making are then discussed in terms of current housing policy in Canada. Emphasis is placed on analyzing their implications for innovative housing options and utilization of community services aimed at assisting elderly to remain in their own home for as long as possible. An argument is made for the building of individual subjective evaluation into the demand side of the housing formula.

Intimité, indépendance et division dans la sélection de l'arrangement du cadre de vie parmi les personnes âgées: recherches et implications pour une politique du logement. Des recherches ont indiqué que l'intimité et l'indépendance revêtaient une grande importance aux yeux des personnes âgées dans le choix de leur habitation et de leur mode de vie. La présente étude revoit les ouvrages qui traitent de ce sujet afin de mieux définir les concepts d'intimité et d'indépendance en matière de mode de vie. Ces facteurs décisifs sont ensuite analysés par rapport à la politique du logement en vigueur au Canada aujourd'hui. Une grande partie de l'étude se concentre sur l'impact qu'auront ces facteurs sur la création d'options d'habitation et sur l'utilisation des services communautaires visant à aider les personnes âgées à vivre dans leur maison aussi longtemps que possible. On propose même de préparer une évaluation individuelle subjective qui serait incorporée dans la demande de logement.

INTRODUCTION

The importance of retaining private and independent living styles into old age is widely accepted. Recently, there has occurred a proliferation of research on the housing and support needs of the elderly, partly in response to the rise in separate living. However, it appears that not enough attention has been devoted towards understanding why older people choose to live alone and the consequences of this behaviour on housing strategies and the organization and delivery of social services. In particular, the salience of preferences for privacy and independence underlying key life decisions beckons consideration of their relevance for social and physical environmental design. There is, therefore, a need to extend knowledge of the dynamics and implications of individual subjective judgements in decisions about living environments. By living arrangement, we mean the household configuration or with whom one lives. Living environment refers to all aspects of the dwelling, including who lives there, dwelling type and location.

In response to these issues, this paper will attempt:

1. to review literature pertaining to the propensity for older persons to live separately;
2. to present conceptual definitions associated with preferences for privacy and independence in living environments; and
3. to discuss implications of these subtle but potent subjective factors for housing policy and related support services.

RESEARCH ON LIVING ARRANGEMENTS

In Canada, the proportion of elderly living alone has increased dramatically since around World War II. Between 1951 and 1981, the number of older persons in single person households has quadrupled. More recently the proportion of elderly living separately has risen from approximately 18% to 24% between 1971 and 1981. Concurrently, we have witnessed an increase in institutionalization of the elderly from approximately 8% to 10% during the same ten year period. (Priest, 1985)

This shift in living arrangements, resulting in an increase in living alone, has occurred mainly among older widows rather than other age-sex-marital status categories, however, such compositional change over time can only account for approximately one-third of the increase. This suggests that other factors are important in the increase in living alone.

The major hypotheses accounting for these patterns include:

1. the demographic availability hypothesis, which suggests that lower fertility over time has reduced the potential number of adult children for co-residence;
2. the purchase of privacy hypothesis, arguing that income has increased, thereby allowing for the manifestation of an economic demand for privacy in terms of living arrangements (see Michael et al., 1980); and
3. the normative or cultural hypothesis, which contends that fundamental changes have occurred in society that have manufactured an increased valuation of privacy and independence regarding living style.

It is this latter hypothesis that we are interested for the purpose of this paper.

In the realm of community based (non-institutional) living arrangements, many researchers have emphasized the role of changes in *values, attitudes* and *preferences* in the trend towards separate living among the elderly (Haraven, 1981; Kobrin, 1981; Abu-Laban, 1980). Some see this separateness as enforced, arguing that older people in Western society have experienced isolation due to changes in the quality of family relations. Others contend that these transitions are voluntary, the result of a desired separateness on the part of elders.

In a cross-cultural study of the living arrangements of widows in the United States and Israel, Chevan and Korson (1975) find support for the idea of a universal trend of 'family modernization'. They define this process as "the adoption of a set of norms, attitudes and values which lead to changes in family structure" (Chevan and Korson, 1975:517). The assumption made is that the diffusion of the nuclear family system has led to a rise in separate living.

Modernization theory stresses the decline in the position of the elderly within the family and society over generations, which causes them to experience increased isolation (Cowgill, 1974). Moreover, most of the technological and social changes that contributed to this loss of social status did so by affecting the value of older people in the workplace. Smith (1981:92) argues that historically the elderly have lost their social status because of "the rising proportion of the population in older age groups, the impact of compulsory retirement, the emergence of mass affluence, and the development of the welfare state as an alternative to the family".

Other researchers have focused on transformations in the quality of family ties as the cause of intergenerational separateness. Haraven (1981:160-1) contends that family relations in the nineteenth and early twentieth centuries were characterized by a high degree of kin integration. According to this author, we have witnessed a growing "privatization" of the family over the past century due to an increased separation between the family of origin and the family of procreation. It is argued that changes in kin relations stem mainly from reductions in the level of exchange, especially in the form of economic assistance between kin members. Since the development of the welfare state, these functions have shifted from the family onto the public sector (Haraven, 1981:161). Changes in family relations appear to represent an important causal link between public support programs and individual household behaviour.

It is recognized in the literature that most older people enjoy a mutually supportive social network (see for example, Shanas, 1980; Adams, 1968; Shanas et al., 1968). However, the majority of this support tends to be affective in nature (Rosenthal, 1987). Thus, while the myth concerning the social isolation of the elderly has been virtually extinguished, there remains the contention that family separation, as manifested in the rise in separate living, has been produced by alterations in the nature and flow of economic exchange across generations.

In contrast to the view that separate living styles are the result of involuntary behaviour on the part of the elderly, the perspective has recently been offered that older people desire to live alone (Abu-Laban, 1980; Lopata, 1973; Shanas et al., 1968). In addition, Abu-Laban (1980) speaks of a "norm of separateness" operating in North America whereby elders are expected to live apart from kin. Taken together, the articulation of independence as an important household characteristic is understood partly as a need to be self-reliant and free from constraints and partly as a

preference not to burden adult children or other kin. Attitudes of self-reliance among today's elderly have been associated with past exposure to historical events such as the great depression. Relevant to this discussion, the desire for particular affective qualities in the residential environment among older persons is brought to light in Jirovec's (1977) study, where the elderly preferred quite different qualities than young respondents, including friendliness, quiet, neatness, esthetics and texture, in addition to cost.

More recently, in a multivariate analysis of cross-sectional data, elder's desire for privacy and independence have been identified as the principal factors influencing living arrangement selection (Wister, 1985). Additional subjective dimensions, including the perception of a social expectation of separateness, the perception of difference in life-style across generations and kinship obligations, were also found to be important predictors of living arrangements. These relationships persisted after controlling for demographic, economic and health constraints, which displayed considerably weaker associations. Although these factors were crudely measured, this research does indicate that individual preferences and perceptions exhibit a strong effect on living decisions independent of health needs.

Extending the previous research, it can be argued that personal preferences for privacy and independence may be influenced by the perception of societal constraints or what is "proper" in terms of living and housing arrangements. For example, the extent to which elders perceive a social expectation that they should manage on their own for as long as possible may contribute to some of their stated desire for private and independent styles of living. This is not to say that what people desire (preferences) can be understood as a mirror image of societal norms but that such normative forces may, to some extent, influence the formation of individual preferences both directly and indirectly (Keesing, 1974).

In this connection, one might think of the socialization influence of modern government social policies and programs. These provide income to the elderly and thus partly remove economic constraints on separate living. But the mere enactment of such programs must have been based on the value assumption that older people should be financially independent of their kin, and constituted a powerful social endorsement of such 'independence'.[1] A similar process can be observed with the recent development of home care systems and their impact on reducing health-related constraints. Such programs imply that the responsibility of caring for elders is in the hands of the government and community rather than the family.

The articulation of a desire for privacy and independence associated with separate living may also be partly due to age differentiation, or a perceived "generation gap". Perceptions of differences in values and life styles across generations have been found to contribute to a higher relative value being placed on such preferences (Wister, 1985). These two ideas are consistent with the frequently stated viewpoint that older people do not wish to be a burden on their children or other kin with regards to their living arrangements. Of course, feelings of burden may be balanced by high expectations of family obligation associated with certain ethnic groups (see Thomas and Wister, 1984).

Finally, research indicates that older people's decisions concerning housing change and modification involve large elements of inertia and passivity rather than decisiveness (Burch, 1981:1-20). These important decision-making characteristics may overlap with preferences for privacy and independence in such a way as to create barriers to environmental change. For these reasons, thresholds of residential dissatisfaction may be higher for older people than for younger age groups (Golant, 1986). Older people's perception of limited futurity may lead to a higher cost associated with change and result in a propensity for tacit acceptance of current conditions.

The above components, including the income and demographic hypotheses, have been organized into a decision-making model borrowed from the demographic analysis of fertility, migration, marriage, and household formation and expanded to facilitate the integration of the subjective dimensions (for further discussion, see Wister, 1985; Wister and Burch, 1987). Individual living arrangement decisions are perceived as the result of an interpretive process involving the selection and assessment of information with an underlying motive of maximizing one's welfare in the face of various constraints. These constraints may be social, such as those imposed by a social expectation of behaviour, or they may be physical, such as health-related disability or financial limitations. A crucial element of the decision process is therefore the subjective evaluation of costs and benefits associated with various living alternatives or styles. Furthermore, the decision process is embedded within a decision frame, referring to a decision-maker's conception of the acts, outcomes and contingencies associated with a particular choice (Tversky and Kahneman, 1981). In this sense, a primary goal of decision-making analysis is to analyze the nature of the decision as it is shaped through interactions with normative and preference factors, constraints, and individual perceptions. Recognizing the salience of individual preferences for privacy and independence in choice of living styles, the task remains of promoting a fuller understanding of their development, interrelations and implications for housing policy and development.

CONCEPTUALIZING PRIVACY AND INDEPENDENCE

Privacy and independence are multidimensional and relative concepts referring to "goods" frequently described as highly valued household and lifestyle characteristics in contemporary industrial societies. As population density and levels of information and social noise have continued to increase (Klapp, 1978), these goods appear to have taken on increased value.

The notion of privacy is tied to the physical environment and its interaction with the senses (Hoglund, 1985). It involves the perception of boundaries and the potential threat to those boundaries, suggesting that living arrangements and privacy are directly related. These boundaries can be physical, such as the construction of a wall, or they may be social, as with the expectation that someone will knock before entering your house. The broader conceptualization of privacy may entail privacy of thought, life style or personal living space (Hoglund, 1985). More specifically, privacy among the elderly can also be viewed as resulting from a certain degree of involuntary segregation, perhaps due to loss of social status in contemporary society (Smith, 1981; Cowgill, 1974). As suggested in the literature, separate living may in some sense be imposed as well as chosen by the individual. It should also be understood as integrally linked to intergenerational family relations and perceptions of social expectations about what is proper in terms of living arrangements.

Independence, on the other hand, relates more to life style or the ability to do what one wants when one wants; a condition often associated with freedom. Independence connotes societal values related to self-reliance, strength, feelings of control and the absence of helplessness and is therefore inextricably tied to dependency and interdependency. Examples of different forms of independence include independence from physical constraints, and freedom from social and social-psychological constraints. The stated desire to be as self-reliant as possible and the wish not to be a burden on family members can therefore be viewed as parallel characteristics of independence.

While privacy and independence tend to be highly valued, they do not come without some sacrifices or costs. First, to some extent, privacy and independence are tied to wealth and the ability to purchase privacy. Second, they may involve compromising companionship to some degree and in extreme cases may result in 'loneliness'.[2] Finally, it may be necessary to relinquish an environment conductive to mutual exchange for one that provides for greater privacy and independence, assuming the latter is a feasible alternative.

Examining privacy and independence from the other extreme, an elderly individual may be forced to give up a certain degree of privacy and independence in their lives to remain out of a nursing home. Reliance on home support services or family members may be necessary so that relative levels of privacy and independence can be maintained. Thus, although there may be a tendency to maximize such preferences, this process may ultimately entail their sacrifice.

Conceptualizations of privacy and independence preferences in living alternatives help to clarify their role by placing them in the social context from which they have developed. In so doing, we are able to better assess their implications for housing policy and planning.

IMPLICATIONS FOR HOUSING POLICY AND SUPPORT SERVICES

From the previous discussions, it can be concluded that attitudes, preferences and perceptions are integral in decisions about how one physically and socially organizes their personal space. Preferences for privacy and independence represent potent forces that may mold demand for community support services and various housing options either in existence or currently under development. Before addressing these issues, it is appropriate to briefly introduce housing policy specifically aimed at our aging Canadian population.

Housing Policy Directives

Current housing policy for the elderly can be characterized as having two main thrusts sharing the common goal of reducing the rate of institutionalization. First, there has been an emphasis on extending the range of options in response to the heterogeneity of needs displayed by older Canadians. A second but not always compatible policy centers around the theme of 'aging in place'. Both are supplementary to subsidized housing and rent rebates.

Regarding the former policy, the pursuit of housing innovations for seniors has responded to arguments that options are limited. This policy perspective has roots in person-environment modelling (see for example, Lawton, 1980), where the development of ideal environments are considered to be logical responses to declining competence (Pollack and Newcomer, 1986). In other words, environments can be designed or adapted to fit the needs of the individual to optimize their level of functioning. A less demanding environment is preferable for someone experiencing a serious limitation, such as chronic arthritis. In this case, a dwelling with fewer stairs may be necessary so that the individual can function adequately outside of an institution.

Some of the community based housing options that will be discussed in the subsequent section are granny

flats or PLUS (portable living units for seniors); accessory apartments (self-contained apartments built inside or onto the house of a family member); shared living (sharing living expenses with one or more unrelated persons, sometimes forming a co-op); Abbeyfield housing; home exchange (exchanging homes with someone in order to adapt the home environment to changing individual needs); and equity conversion.

The 'aging in place' strategy, on the other hand, is predicated upon the rationale that most Canadian elderly own homes (approximately two-thirds) and would benefit by remaining integrated into the neighbourhood and community. Dislodging individuals from their homes may have the deleterious effects of fragmenting present support networks and separating the individuals from the familiar physical environment (see especially, Golant, 1984). This policy direction is also tied to a recognition of housing and living arrangement preferences, namely the desire to stay in one's own home and remain out of an institutional setting.

To achieve the above goal, a multitude of support systems have proliferated most large communities and have begun to develop in smaller communities. These programs are aimed at providing elderly with homemaker services, home delivered meals, and a wide range of related services. Some programs are very specific (such as hot meal services, friendship/visiting services or home repair services), while others respond to wide range of needs (such as are found at most senior centres). Most programs are regionally based with combined support from provincial, municipal and private sources, except for a few recently developed programs run solely by provincial governments, such as the pilot Home Care Programs. A common theme emerging from these community support services is the goal to enable older people to remain at home for as long as possible.

Issues Surrounding Innovative Housing Options

Innovative housing strategies have increased over the last several years for elderly living in the community. Some of these options appear to be ideal environments, especially for those who suffer from chronic health disorders that may hamper day-to-day functioning. It is recognized that these innovations have been developed for specific subgroups of elderly. However, what planners and policy makers view as optimal in environmental design may not be shared by the older individual targeted for such accommodation. This is consistent with research showing that elderly tend to have more positive appraisals of their housing and residential environments than specialists using objective measures (Golant, 1986:48). It is therefore necessary to be sensitive to the subjective components of the older decision-maker that may influence assessments of the environment.

The implementation of the demonstration PLUS (granny flat) program in 'Ontario'[3] appears on the surface to be a viable option for seniors who desire to remain in a separate dwelling but also require proximate contact with a family member. Portable living units for seniors involve the installation of a compact portable dwelling on the lot of a family member or on their own property, thereby making their house available for a close relative. This arrangement provides a certain amount of privacy and independence in addition to making accessible a supportive family network. Although this arrangement may be preferable for some seniors, there are a number of social barriers that may limit demand for these units. First, there are the obvious problems of finding suitable lots that can accommodate a granny flat and zoning constraints. Usually the prospective family member is an adult child of the older person, which limits availability, especially for future cohorts of elderly who have smaller families. Second, research indicates that, in general, elderly do not wish to move from homes and neighbourhoods that they have lived in for long periods of time (Blackie, 1986; Pollack and Newcomer, 1986). If the unit is placed on the family member's property, then the older parent is dislodged from a familiar environment. Relocation may be stressful for some elderly individuals depending on their level of attachment to their home and community (Rutman and Freedman, 1988; O'Bryant, 1982; Ferraro, 1981). A third and related problem stems from the meaning and importance of privacy and independence to the older person. Earlier discussions indicate a relationship between the desire not to be a burden on family members and conceptualizations of privacy and independence in living style. Whether this emphasis on self-reliance stems from normative forces in society (such as social expectations to live separately), differences in habits and values across generations, or whether they have developed out of past life experiences, it remains an influential force in decisions concerning co-residence. When elderly are asked if they would consider living with adult children, it is not surprising that frequent responses include: "I really don't want to be a burden" or "They have their own life to live." These views can be easily transferred to the notion of portable living units. That is not to say that some three generation families cannot co-reside successfully, but rather, that demand for granny flat living will likely remain low until these pervasive societal attitudes are altered naturally or through active campaigns. Finally, rents for current PLUS in Ontario are not affordable to elderly with low incomes. Recent estimates of monthly rents for units in the Waterloo region are around the $400 mark (exclusive of utilities), which would amount to a yearly housing cost amounting to more than half of the aver-

age income of unattached elderly. Allocation of government resources for the development of large-scale PLUS projects should therefore be predicated upon in-depth marketing and social research.

The option of self-contained accessory apartments usually built in or onto the home of a close relative can provide a combination of companionship, support and relative levels of privacy and independence. Although this alternative is probably more feasible and desirable than PLUS units, the same attitudinal constraint as previously discussed may limit demand. Specifically, negative feelings associated with dependency coupled with a desire for separateness may inhibit the selection of living in someone else's home, even if it entails living in a self-contained apartment. Such an arrangement is fraught with many potential social hazards not the least of which would be personal conflict among family members. This option may be a more viable one for ethnic families exhibiting strong normative obligations for care of elderly parents.

Further complications involve zoning and the lack of adequate space in the average home for conversion. Regarding the latter, escalations in the housing market over time has resulted in the construction of smaller homes which are often not conducive to such adaptations. Although interest free conversion loans of up to $7,000 are available to Ontario residents through the Ministry of Housing, the majority are used to construct apartments in homes for non-relatives.

The idea of home sharing has also received a fair amount of attention in the literature (Boyd and Spence, 1988; Rapelje, 1985; Streib et al., 1984). Homeowners may share their home with a friend, student or companion for additional income, home assistance or other forms of support. Approximately twenty-three home sharing programs presently offer their matching services in Ontario. Some of these also provide clients with information on a range of housing options. Initial findings from a Ministry of Housing project aimed at evaluating home sharing promotion techniques are encouraging (Boyd and Spence, 1988). However, studies indicate that home sharing is usually of short duration for those who attempt it and is, at least presently, viewed as undesirable for the majority of seniors. Renting a portion of one's house appears preferable due to the articulation of a desire for privacy, control over the dwelling and other psychological and social barriers to this style of co-residence (Golant, 1986).

Another approach is the Abbeyfield housing concept (a form of congregate housing) currently being developed in Canada. The concept involves a large house with seven to ten people living in private rooms. Two meals are shared in a common dining area and a live-in housekeeper assumes the majority of the domestic duties. Sheltered housing is based on the same principal but usually entails a larger number of people. While this approach may be very successful for a small proportion of elderly, this option suffers from the same limitations as home sharing as a large scale alternative. Problems of relocation may also limit its desirability.

Home exchange as a means to move into an environment more congruent with need may also be problematic due to the complexity of the transaction. Moving is stressful without unnecessary complications. Similarly, financial mechanisms (such as home equity conversion) aimed at liquifying some of the assets contained in a house that has no mortgage would likely be viewed with scepticism by the vast majority of seniors. Current levels of public assistance are considered to be adequate by most elderly recipients and the idea of selling one's house over time to free assets may likely appear frivolous.

The movement towards innovative housing options for the elderly is rooted in the view that a greater supply of alternative environments is needed. Certain options are reinforced by the theme of 'aging in place' identified in current housing policy. Professionals must become alerted to those characteristics deemed important by older residents in assessments of housing quality and related environmental decisions. This will lead to more accurate predictions of housing demand among the elderly and better evaluation studies.

Issues Surrounding Community Service Utilization

Underlying the 'aging in place' housing policy we find a strong emphasis on the role of community services. In particular, home support programs and home repair programs are considered to be integral components of this policy. In order to stay put and delay institutionalization, frail or impaired elderly require the assistance of these programs. Home support programs provide an inexpensive means of having basic domestic needs met, while home repair programs make available cheap expertise and labour for repairs and modifications to the home environment.

These programs tend to be aimed at older people living alone, quite often those experiencing problems with daily functioning. However, the same desire for privacy and independence that has led to separateness in living arrangement may also inhibit utilization of these services. Further, the strong emphasis on self-reliance in conjunction with the perception that these programs represent a form of social welfare may constitute initial barriers to utilization (Golant, 1986). These factors may partly explain the large gap between results of community studies based on self-reported needs and actual utilization of services created to meet those needs (Moen, 1978). While these surveys indicate large proportions of elderly with various unmet needs, utilization of community services

remains fairly low, except for homecare programs and homemaker services in some jurisdictions. However, as the client base expands, reliance on services providing hot meals, housekeeping or repairs may be seen as appropriate behaviour among most elderly. Furthermore, attention given to the issue of support systems for the elderly by government and private sectors, including active advertising campaigns for specific services, will have the likely effect of enhancing the acceptability of these programs from the perspective of the prospective clients.

Another restricting force on utilization is the lack of knowledge of these services, an issue which can be applied to the demand for housing options currently available in Canada. Tacit acceptance of difficulties in day-to-day functioning, the desire to live one day at a time and the attitude that involvement with community services necessitates large investments of time and energy represent a selection of influential decision-making elements that may deter investigation into formal service providers. The strength of these attitudinal components of separateness tends to be underestimated by professionals in their attempt to improve older people's quality of life. Perhaps this is due to projection of their own standards of acceptable living conditions onto the elderly.

Emphasis on the individual's life experiences, attitudes and preferences should not be interpreted as a critique of community services targeting needy elderly, but rather, should be viewed as an approach to understanding utilization behaviour and to help direct policy and planning. For example, in order for services to reach those in need, it may be necessary for service providers to employ a liaison person who can meet with elderly in their homes to assess need and discuss future strategies of adaptation. This type of approach may reduce the likelihood of a crisis situation brought about because of a reluctance to use services or consider options.

SUMMARY

The literature addressing the issue of family transitions and shifts in the living arrangements of older persons affirms the importance of privacy and independence in household decision-making. Elderly, in general, express a desire to maximize privacy and independence in their living environments, based on qualitative and quantitative interview data. It is suggested that this movement towards individualism in the lives of the elderly results from several social forces.

Perceptions of age differentiation and social norms of expected separateness appear to promote a greater desire for privacy and independence. This suggests that rapid social change and diverse life experiences across age cohorts (underlying perceptions of an age gap) have been instrumental in the development and spread of these preferences for separate living. Furthermore, it appears that the diffusion of social expectations to live on one's own during old age in tandem with attitudes of self-reliance contribute to such preferences, which indicates both voluntary and involuntary aspects. It has also been contended that fundamental changes in instrumental forms of intergenerational family support has occurred in conjunction with alterations in residential norms. In other words, there has occurred a shift in the responsibility for caring of elders from the family onto the government and community.

Our review of research pertaining to privacy, independence and separateness in living styles among the elderly emphasizes the integral role of individual evaluations in the appraisal and organization of living environments. These findings are consistent with earlier research by Golant (1984, 1986) and others, who recognize the importance of the sometimes subtle but potent subjective processes embedded within the person-environment interaction. Several implications of these individual decision components are discussed in regards to current housing policy in Canada. The movement towards extending the range of options in conjunction with developing a comprehensive network of community support services targeting specific subgroups of elderly raises several key issues. Arguments have been presented based on the theme that several of the innovative housing alternatives appear to be overestimated as potential housing solutions for substantial segments of the older population. The salience of privacy and independence as conceived by the elderly must be included in the demand side of the housing formula.

Similar issues can be raised with regards to community service development aimed at providing home support. It is well established that utilization is based on more than individual need factors. Awareness, evaluation of costs and benefits, and even perception of need by the individual are influenced by attitudes and values that have developed out of past life experiences and earlier decisions. In this way, the discrepancy between need assessments and utilization behaviour can be partly explained by the operation of individual influences, such as negative perceptions of government assistance and the desire to be self-reliant. Attention should be given to these issues, since they may represent crucial constraints on the delivery of services to those in greatest need.

This raises a controversial question -- whether experts, professionals and policy makers know what is best for prospective clients or whether the individual's judgement is to be considered in a significant way. It is argued here that specialists must respect the ways in which older people perceive and evaluate their social

and physical environment. Moreover, program evaluation and cost/benefit analysis should consider the intangible qualities of the residential milieu from the perspective of the recipient. Currently, there is a need for comprehensive assessment of housing policy directives such that allocation of government resources can be made in an efficient and effective manner. Apart from cost and demand factors, a need also exists to evaluate whether the aim of delayed institutionalization is reached through these approaches.

The development of current strategies of housing and related support systems has been rapid and extensive. There is no doubt that greater attention should be given to evaluation and refinement. This paper has considered the relevance of a selection of individual attributes based on research pertaining to living arrangement selection. Clearly, this work leaves many issues unresolved or even omitted. Issues of affordable housing, cost analysis of housing options versus institutionalization, and regional disparities in housing stock and prices cannot be ignored. But experts also cannot be insensitive to older people's attitudes, awareness of options, and preferences regarding living environments when policy and planning decisions are formulated and put into place.

ENDNOTES

[1] Financial independence, does not logically imply residential independence, of course, but it would be interesting to review the development of social security programs to see if that was not assumed all along.

[2] The sacrifice of companionship in modern societies may be compensated through other indirect means. For example, the television, stereo and telephone may act as surrogates for a certain amount of social interaction. Clearly, this point requires further attention.

[3] This is also known as the garden suite demonstration project in other provinces. The project involves co-operation between CMHC, provincial housing agencies and the manufactured housing industry.

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Sustainable Economic Growth: Using Simulation to Assess the Prognosis

John D. McRuer

ABSTRACT

The Brundtland Report is the latest round of a two hundred year debate over the legitimacy of Thomas Malthus' famous proposition on overpopulation. "Sustainable development" is its current context. Nobody in Canada has the slightest idea what kind of an economy is sustainable. This situation is discussed ecologically, in terms of population dynamics, where the population in question is human artifacts with the people as their parasites. The philosophical controversy over mass balance simulation as a technique for assessing sustainability is examined. The context is a Kuhnian paradigm shift. "Non-predictive" mental models supported by computer based "design" models appear to be the best approach to assessing long-term sustainability. The difficulty of anticipating the impact of technology can be mitigated by considering systematic constraints arising from natural laws, especially the Second Law of Thermodynamics. This requires technology to be understood as the economy's institution of adaptation, where development adds to the energy demand and increases the burden of complexity. Long-term simulations of the type called for in the Brundtland Global Risks Assessment Programme are available in Canada but are mostly idle because of low funding priority.

Croissance économique durable: utiliser la simulation pour accéder au pronostic. Le rapport Brundtland clôture un débat vieux de deux cents ans sur le bienfondé de la célèbre théorie émise par Thomas Malthus sur la surpopulation. Aujourd'hui, on parle plutôt "d'économie durable". Toutefois, au Canada, personne ne sait quel genre d'économie assurera cette durabilité. Dans l'article suivant, on étudie ce problème du point de vue écologique, en termes de dynamique des populations, où la population en question représente les objets fabriqués par l'homme les habitants et leurs parasites. Il est également question de la controverse philosophique soulevée par l'emploi de la simulation de l'équilibre de la masse comme technique d'analyse de la durabilité. Le contexte est le mouvement paradigme kuhnien. L'utilisation de modèles non prévisibles alimentés par des modèles créés par ordinateur semblent être la meilleure approche pour évaluer la durabilité à long terme. Bien qu'il semble difficile de prévoir l'impact qu'aura la technologie sur notre environnement, on peut réduire la marge d'erreur en tenant compte des contraintes systématiques imposées par les lois naturelles, plus particulièrement la Seconde loi de la thermodynamique. Pour y arriver, il faut percevoir la technologie comme l'institution d'adaptation de l'économie, où le développement augmente la demande d'énergie et rend la situation encore plus complexe. Le genre de simulations à long terme qu'exige le programme Brudntland d'évaluation des risques globaux sont disponibles au Canada, mais demeurent presque tous inutilisés en raison du manque de fonds.

BACKGROUND

The Brundtland Commission and Sustainable Development

In 1987 the World Commission on Environment and Development published a sobering report. Its first paragraph:

> From space we see a small and fragile ball dominated not by human activity and edifice but by a pattern of clouds, oceans, greenery and soils. Humanity's inability to fit its doings into that pattern is changing planetary systems, fundamentally. Many such changes are accompanied by life threatening hazards. This new reality, from which there is no escape, must be recognized - and managed. (WCED, 1987)

Unlike several predecessors, the United Nations document, (which is known as the "Brundtland Report") was skillfully promoted, and its impact was heightened by an accumulation of dramatic and unpleasant revelations about the biosphere. It has therefore been taken very seriously by the Canadian and virtually all other governments -- their concern reaching far beyond the parochial interests of environmental agencies. The

report has retained its high profile, and is now the point of departure of all discussion, not just of the emerging environmental situation, but of economic development as well. From its sombre beginning the Brundtland Report goes on to deal with interlocking global crises, institutional gaps threatening the sustainability of economic development, particularly in the Third World, and the policy directions needed to forestall looming crises. It addresses population, food security, ecosystems, energy and managing the international Commons. The need for new institutions to assess global risks and to provide information for making informed choices is stressed. The central theme is *sustainable development*.

In its call for action the Brundtland Report is strident.

> The rate of (ecological) change is outstripping the ability of scientific disciplines and our current capabilities to assess and advise.
>
> ...The next few decades are crucial. The time has come to *break out of past patterns*. Attempts to maintain social and ecological stability through old approaches to development and environmental protection will increase instability. Security must be sought through change. The Commission has noted a number of actions that must be taken to reduce risks to survival and to put future development on paths that are sustainable. Yet we are aware that much reorientation on a continuing basis is simply beyond the reach of present decision-making structures and institutional arrangements, both national and international.
>
> ...We are unanimous in our conviction that the security, well-being and very survival of the planet depend on such changes now. (WCED, 1987) (emphasis added)

Endorsing the Brundtland Report, the Canadian government commissioned a National Task Force to explore its implications for Canada. (NTFEE, 1987:22) That Task Force's report maintained the sustainablility theme. Most significant to immediate policy development were recommendations concerning *informed decision making* and *conservation strategies*. The Task Force thus recognized that without a thorough understanding of what is happening, coherent policy cannot be made.

The Malthusian Debate

The Brundtland report is actually the latest round in a two hundred year old debate about the sustainability of the human economy. In 1798 Thomas Malthus published the celebrated proposition that:

> (Human) power of population is indefinitely greater than the power in the earth to produce subsistence...population, when unchecked, increases in a geometrical ratio. Subsistence increases only in an arithmetical ratio. (Malthus, 1798)

That proposition is actually a primitive ecological model which suggests the demise of civilization. However, it neglects the most dominant aspect of modern industrial economies: the success with which rapidly evolving technology has more than met the needs of ten times the population that existed in Malthus' day. Moreover, technology has provided both the means and the incentive to control population growth. This has led to a "doomsday debate" characterized on one side by "Malthusian Pessimists" who continue to fear the worst, and on the other by "Technological Optimists" who argue that resources sufficient to sustain many times the present human population can still be won from the environment, and that continuing development itself will cause population growth to cease. The Optimists therefore believe the so-called problem will evaporate. However, they omit a crucial issue -- the exploding population of *buildings and machines*, and their gargantuan appetite for resources.

Influenced by the irrepressible optimism of business, and subject to the lure of populist politics, the Economics Establishment has generally sided with the Optimists.[1] But because of Malthus proposition's pernicious implications, not all economists dismiss it. Cross with mainstream arguments whose vision seems limited to the business cycle, a small minority of dissenters insist on a long-term perspective (which, as they point out, is routine and legitimate in forestry and electricity supply). They reason that an economy which grows at three percent will undergo unprecedented changes within a single generation. While such changes have not so far meant doom as Malthus feared, their models do suggest that past successes may be poor justification for their colleagues' complacency.

This long-standing and sometimes acrimonious debate is really about the legitimacy and not the substance of Malthus' proposition. (Cook and Cook. 1988)[2] The issue is a fundamental difference between how economics and the rest of science, understands economic systems.[3] Economics sees itself as a social science whose prime focus is on motivation. With a very simple model of human nature it has developed useful theories about how society allocates its resources. Like any other science, economics is deeply dependent on its counting medium, money, which after two centuries of trying it still cannot define.

Malthus' proposition introduces a new counting medium -- people and nutrients -- and in so doing it makes economics an extension of ecology -- fundamentally changing its nature. In so doing it raises a host of new questions about sustainability which conventional theory is not equipped to handle. Over the last three decades sustainability has become increasingly important, and in the late 1980s it is a dominant theme of economic management. Yet economics has on the whole failed to adapt. Why should it take polar ozone holes, several decades of acid rain, *waldsterben*, massive species extinctions, Bhopal, Chernobyl, Mexico City, the specter of climate change, intractable Third World debt, and a host of other crises to induce economics to rethink its fundamentals?

Historically the situation is completely predictable. It is the quintessence of a "paradigm shift" as described by Thomas Kuhn in his celebrated classic *The Structure of Scientific Revolutions*. (Kuhn, 1970) This mechanism is the basis of growing ecological crisis and the Brundtland Commission has faced it squarely.

The Brundtland reference to "breaking out of past patterns" quoted above, is a deeply significant reference to the Malthusian debate. True to Kuhn's analysis it has political overtones. Regrettably, those overtones make Brundtland's breakout difficult, for they involve both the legitimacy of the required methodology, and the availability of crucial research funding.[4] As of the end of 1988 nobody in Canada had the slightest idea what kind of an economy is sustainable. Estimates are almost never made, but when they are their basis is not rational analysis but ideology or fear. The estimates, when they are made, range from an indefinitely large economy to one much smaller than we now have.

The time has therefore come to develop a philosophy and methodology for improving that situation. The Canadian public, their editorial writers, political policy makers and public servants must be provided with a much better sense of the environment's ability to go on supporting the lifestyle they now enjoy.

PHILOSOPHY

True to its roots in Kuhnian paradigm shift, the Malthusian Debate is a philosophical controversy masquerading as a debate about methodology. In order to understand the debate, technicalities, which normally provide its substance, must be set aside and the underlying questions examined. Only when that is done, can the technical substance be resolved.

Thus before attempting to assess the sustainability of the Canadian economic system the basic research philosophy must be examined: the meaning of 'sustainable' must be explicit; the legitimacy of projecting the future must be established; the nature of models must be clear; the assumptions governing their use for long-term planning must be explicit; and controversial issues about forecasting, predicting and speculating must be resolved.

The Fundamental Question

We begin by asking how much we can know about the future and how much we care? The vast effort society puts into planning, making policy, and saving its money suggests people care a great deal -- a caring that is implicit in every page of the Brundtland Report. Caring thus leads directly to a fundamental question, which on the surface seems a typical policy-research issue. However, it rests on such a web of assumptions that it is really about philosophy. Simply put, the question is: What level of economic activity is sustainable in Canada?

But What Does "Sustainable" Mean?

"Sustainable development" has a comforting ring, but when an economic development project is considered by a funding agency -- such as the World Bank or perhaps the Northern Ontario Heritage Board -- a practical operational definition has to be worked into its engineering, social, and financial analysis. Such definitions have been elusive. So far, there have only been preliminary discussions of the problem. One such discussion took place at the *Our Common Future* conference in Toronto in June 1988, where a panel of environmental economists discussed sustainability's philosophical implications but made no useful headway.

A pragmatic approach has been used by the International Institute for Applied Systems Analysis in its study of the future European environment. (Stigliain, et al. 1987) It assumes that if we project the economy's state either during the projection period, or become foreseeable beyond the study's time horizon, then the economy is probably sustainable -- not *in perpetuity* perhaps, but at least as far as we can see.

Actually, the issue cannot be resolved without considering what is to be sustained -- *the economy*. In their widely used text Samuelson and Scott (1980:4) define economics as "...the study of how...(humans) and society end up choosing...to employ scarce resources which could have alternative uses, to produce various commodities". They do not explicitly say what an economy is. However, a definition is implicit in their picture of the General Equilibrium System, the basis of all macro-economic analysis. (Samuelson and Scott, 1980:51-53) General Equilibrium depicts an economy as a closed system of property rights, commodities, labour, land and capital. It is driven by consumer demand, constrained by costs and

controlled by markets. Its counting medium is money.

Conspicuously absent from General Equilibrium is the environment (which provides the economy with vital resources and sinks), the law of Conservation of Mass, and the Second Law of Thermodynamics. The absence of these physical essentials poses an insurmountable problem for long-term analysis. Short-term work assumes, without saying so, that the influence of physical phenomena cancels out of the equations over the time-horizon used in the analysis. If the period is short enough, that implicit assumption may be reasonable. However, when the time-horizon is several decades distant, the depletion of resources, the glutting of environmental sinks, and the disorder imposed on supporting ecosystems conspire to render projections meaningless unless the fundamental laws of physics are included. Therefore, the paradigm of General Equilibrium, regardless of its usefulness in the short-term, must be rejected for understanding the long-term implications of sustainability.

In place of General Equilibrium, we need a model that sees the economy as part of an ecosystem that is dominated by a rapidly evolving heterogeneous group of species which has an unusual symbiotic relationship with its parasites. Such a model allows sustainability to be analyzed according to the conventions of ecology, using population dynamics. The species to be analyzed are not the humans but their artifacts -- their buildings and machines. The people are the parasites! The symbiotic relationship is the drive of the people, in their role as parasites, to control their host population's "genes". They create, evolve, and adapt those "genes" to their own purposes. But in so doing they create a positive feedback relationship that destabilizes both the population of people and the population of their artifacts.

The justification for this somewhat bizarre view is the obvious fact that the artifact population has become the human life support system, providing the people with habitat, food and waste disposal. This is virtually the definition of parasitism. Almost all direct human environmental impact is on the so-called "built environment", not the natural environment. The built environment (provided it also includes vehicles in the transportation system) is just a conventional term for the artifact population. Virtually all pollution can be traced to some machine driven economic process in the built environment. Furthermore, only a small fraction of the built environment's impact on natural ecosystems is direct human "flow-through"; the largest single contributions come from the energy and chemical industries which service artifacts, not people. With their teeth, fingernails, feet and feces, humans do almost nothing to the natural environment directly.

Thus, if our economy is sustainable, our machines and buildings must somehow co-evolve with nature *in perpetuity*, such that the standard of living we, the parasites, wish to maintain does not suffer -- for us, or for any of our descendents. Since it is our fate, and that of all other species to become extinct this definition expects too much. In practice we are concerned about when and how human extinction will happen. Do we do it to ourselves soon and by neglect, or do we try to manage, allowing nature to take its inevitable course, at some distant date with eternity?

Practically, the sustainability issue is simply this: how long can we maintain our present standard of living? Without a detailed understanding of the complex interactions between the economy and the environment, we will get the answer only by unpleasant and irreversible experience.

Prediction, Forecasts, Projections and Prophesy: A Position

We cannot deal with sustainability without speculating about the future -- without making projections from where we think we are to where we may end up. There is a philosophical debate about the legitimacy of making such projections. Can we really know anything about future, especially about relationships between the economy and the environment: The whole popular notion of forecasting is thus questioned at its roots: with it is questioned a huge social infrastructure of bureaucracies, planning faculties, economic modelers, editorial writers, investment houses, military strategists and weatherpersons.

The position taken here is that, we cannot know everything about the future. Yet we can know a lot when it is very near but less and less as the future eventually dissolves into distant irrelevancy. We then assume that no matter how sparse that knowledge might be, it is still useful, but only provided we know how to cope with its uncertainty. This means that provided there is no dramatic upheaval (such as a nuclear war, or some fundamental technological breakthrough), and provided we have sufficient understanding of the economy-environment system to simulate it, running many scenarios through a simulation should identify the range of futures we might have to deal with. While this process would not reveal our destiny it would at least limit our expectations.

The justification of this view is partly everyday experience, and more formally the concept of attractors in the mathematical theory of chaos. An attractor is a state (more properly a range of states) into which a chaotic system tends to settle, no matter what its initial conditions were. (Crutchfield, et al. 1986) Therefore if the economy-environment is a chaotic system its medium to long-term prognosis would not be totally unknowable.

This position allows us to plan. We can legitimately use what we believe about the future to navigate our way around obstacles we foresee, much as a driver looks ahead and plans lane changes, turns and stops. Even very long-term planning is thus a useful and practical undertaking for as the system grows in size and complexity its momentum increases and it becomes necessary to look further and further ahead, just as the driver of a truck must plan further ahead than the driver of a bicycle. More and more sophisticated projections are therefore required as the system's complexity increases. Such projections are not proven right or wrong by subsequent events, only close or far from the mark -- with the meanings of "close" or "far" being determined by how useful the projections turned out to be. If a projection is deemed to have been useful, its philosophy (and therefore its methodology) is used for the next plan. Otherwise a new philosophy is tried: and this will generate a new strategy and a new methodology.

In Defence of Simulation: Model as Thought Process

At a panel discussion at the June 1988 *Our Common Future* conference in Toronto, one of the panelists was asked about the use of computer modeling to investigate sustainability. Ignoring the fact that almost all economists at some time or other use models to investigate *financial* sustainability, he dismissed computer modeling as out of date, and historically a failure. Yet all plans subsume *models* of how the world works. A model is a mental construct of the real world. It can be rendered as a scale model, as architectural drawings, a set of specifications, a work of art, a narrative, a system of equations, a set of accounts, or as a computer program. Models can be static or dynamic, and if they are dynamic they can be configured in an orderly succession of states, which follow each other logically as time passes. Model making is therefore a basic thought process. Thus, when it comes to dealing with the future of our civilization (or any less momentous issue) the questions are not whether we make models, but what kind of models they are, how they should be used, and how much to expect of them. When using a model, the first step is to choose an appropriate mental one. That done, practical questions about how to work with it must be resolved. Should it be rendered in mathematics (with or without a computer), in narrative, or in some other medium. D.H. Meadows and J.M. Robinson provide guidance in their 1985 book *The Electronic Oracle*. Its essence is that when properly used, computer renditions of mental models have a place, but mental models must remain paramount.

> The computer model as oracle is a natural image, a modern twist of an ancient thread, an expression of the continuing desire to know the future as a way of making wise decisions in the present. But even in the earliest forms of human society there were sources of wisdom very different from oracles. They were sages and masters, much less flashy, less popular at court, who denied both the possibility and utility of knowing the future. They focused attention not on the crystal-ball but on the being who gazed into it. Instead of predicting, they:
> - Questioned how it is we know what we think we know.
> - Exposed false assumptions.
> - Put daily affairs in a larger perspective.
> - Showed the interconnectedness of all things.
> - Pointed to the wisdom each person can find within.
>
> ...[Yet we] have said that computer modeling can add five important qualities to human understanding beyond what can be achieved by the mind alone:
> - Precision[5]
> - Comprehensiveness
> - Logic
> - Explicitness
> - Flexibility (Meadows and Robinson, 1985:435)

The advice implicit in that quote is accepted. On questions of long-term sustainability we should opt for computer supported mental models.

"Non-predictive" Predictions!

Physical sciences use mathematical models to predict what *should* happen. If the science is evolving the prediction becomes a tentative understanding of a natural mechanism: a hypothesis to be tested against reality by experiment. If the science is mature it becomes reality itself -- against which an engineer can cheaply test another hypothesis. This process, which accurately predicts a real outcome, is called simulation.

Strategies also use simulation, but to predict what *might* happen, not what will happen. Unlike engineers, strategists live in a world of speculation where no experiment can ever be repeated, every design is used just once, and all prototypes are final. Their solution is to use the experiences of history to create a psuedo-reality where time is reversible and prototypes can be scrapped. That reality is in simulation -- in models. Strategic simulations started as "exercises" where troops responded in movement and fantasy to a conjectured military situation. By the 1940's these exercis-

ENDNOTES

[1] Economic growth, like everything else, has costs and benefits such that every economy should have some optimum size. However, the most cursory reading of the popular economic media will show that economic growth is a *value*, and not just a parameter. It is therefore deeply entrenched in the economic paradigm, and shielded from rational enquiry. Three years of careful perusal of the prestigious international newspaper, *The Economist*, has shown countless articles lamenting the sluggishness of economic growth, but only one that ponders what growth means for the long-term future. That article concludes, "But GNP will still be increasing: not because it *is a totem worshipped by economists* but because it represents, in a rough and ready way, the *creative* efforts of billions of people whose *spirit will not be dulled* just because they are rich." [Anonymous, 1987. "When Croesus rules." *The Economist.* March 7, 1987. (emphasis added)] Most media references to Malthus describe his proposition as "discredited". Economist Beckerman treats the issue more thoughtfully but comes to a predictable conclusion by avoiding the fundamental issue of what time horizon to use for analysis. (Beckerman, Wilfred. 1974. *In Defence of Economic Growth.* London: Jonathan Cape. p. 237.)

[2] The Malthusian proposition has recently been legitimized under the euphemism "sustainable development". The problem of getting it on national agendas is discussed by the World Commission on Environment and Development (1987:311-2). In Canada, unconstrained economic growth remains sacrosanct policy for all mainline political parties. (See the Royal Commission on the Economic Union and Development Prospects for Canada. c1984. "Promoting Stable Economic Growth." in *Report Highlights.* Ottawa: Canadian Government Publishing Centre. p. 11.

[3] The Science side gains legitimacy, but slowly. Consider the following developments. 1) Motivated by huge losses on Latin American loans, CityCorp, one of the largest U.S. banks, is sponsoring a series of conferences of scientists and economists with the objective of breaking out of economics' conventional assumptions. (Corcoran, Elizabeth. 1988. "Disequilibrium: Might bacteria someday help to explain international debt?" *Scientific American.* 259 (6):108.) 2) General Equilibrium, the fundamental tenet of macro-economics, has been rigorously proven to violate the Law of Conservation of Mass. (Perrings, Charles. 1986. "Conservation of Mass and Instability in a Dynamic Economy-Environment System". *Journal of Environmental Economics and Management.* 13:199-211.) 3) For early developments there is former president of the American Economic Association, Kenneth Boulding's heretical view that the economy should be integrated with general science and understood in the context of cybernetics and ecology. (Silk, Leonard. 1976. *The Economist.* New York: Avon Books. pp. 194-6.)

[4] Statistics Canada has wound down its Structural Analysis Division, which was responsible for developing and using computer software for studying the long-term sustainability of the Canadian economy. In anticipation of this problem the software was installed at the University of Waterloo in 1984, where it has since had an uphill struggle with resistant funding agencies for grants to investigate the sustainability of the Canadian economy. (Robert Hoffman, former Associate Director General, Structural Analysis Division, Statistics Canada. Conversations, 1984 to 1988.) Meanwhile, StatsCan's software (known as the Socio-Economic-Resource Framework, or SERF), which is the only instrument available for investigating sustainability in Canada, is rejected as "unproven" by the government's primary champion of sustainable development. (Sainte-Marie, G.A., Deputy Minister, Environment Canada, Letter to John McRuer, October 24, 1988) In contrast to the poverty suffered by sustainability, which must be the most fundamental economic issue of all, the Ontario government has, as a matter of routine, spent $120,000 on such trivia as the feasibility of raising chickens in Nakina. (Francis, Diane. 1989. "Chicken wars in the Great White North". *Maclean's.* January 9, 1989.)

[5] By "precision", Meadows and Robinson mean exactness of description and precision of definition. They do not imply that forecasting is precise. Computer models are often forced to work with such poor data that the outcome is more conjecture than a precise forecast. Then the model performs an important service by highlighting the absence of satisfactory information about the issue being studied.

[6] Ehrlich, Paul R.; Anne H. Ehrlich and John P. Holdren. 1987. *Ecoscience.* W.H. Freeman and Company Inc., San Francisco. pp. 730-3. The most balanced critics of *The Limits to Growth* tried to assess whether the study's defects would reverse the conclusion that unless the world economy voluntarily limited its growth, ecologocial scarcity

would impose an unprecidented population collapse during the 21st century. Much of the subsequent controversy over substitution overlooked its technological underpinnings. Taking place largely in the financial paradigm of conventional economics, that discussion ignored the physical implications of mining very low grade ore, the ecological insecurity of enhanced yield food systems and their photosynthetic limits, and especially the finite processing capacity of environmental sinks. Moreover crucial constraints imposed by the Second Law of Thermodynamics received little if any attention. These highly technological issues are the basis on which economies' "routine" adjustments to scarcity depend.

[7] See, for example, *The Marshall Cavendish Illustrated Encyclopedia of Science and Technology*. 1979. Marshall Cavendish: London. Conventional visions of future technology may also be found in abundance in *The Futurist*, published by the World Future Society.

[8] In the 1970s the Ontario Science Centre had an exhibit sponsored by Ontario Hydro entitled "Energy Slaves". This exhibit estimated the number of medieval slaves that would be required to provide a typical modern household with the service it receives from the electrical utility.

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The Rural Community: Issues and Local Approaches to Planning and Development

Wayne J. Caldwell

ABSTRACT

Canada's rural communities will never be the same. Current issues ensure that change will continue and rural communities must adapt if they hope to maintain stability. The most appropriate means for a municipality to respond is through the combined fields of planning and development. Building upon this general thesis an approach to a new set of issues affecting rural Canada has been developed.

Both the issues which are facing rural communities and the response by municipal planning and development are reviewed. The paper provides a focus on agricultural communities and identifies economic and environmental issues which are likely to dominate their future. In recognition of current and anticipated future issues, the following municipal approach has been developed:

1. Municipalities need to identify a new set of goals, reflecting a new set of issues;
2. municipalities need to develop policy in response to the most damaging issues. These include economic and environmental factors; and
3. municipalities need to emphasize the process of planning and development as a means of dealing with problems. The elements of this approach include community development planning; strategic planning; public involvement; public education and legislation.

La communauté rurale: problèmes et approches locales de la planification et du développement. Les communautés rurales au Canada ne seront plus jamais ce qu'elles ont été. Les problèmes d'aujourd'hui promeuvent le changement et les communautés rurales doivent s'y adapter si elles veulent maintenir leur stabilité. Pour y arriver, elles doivent avoir recours aux experts en développement et en planification. En effet, ils ont réussi à trouver une nouvelle approche pour résoudre ces problèmes.

L'article qui suit passe en revue les problèmes auxquels les communautés doivent faire face ainsi que les solutions proposées par les experts en développement et en planification. L'emphase est mise sur les communautés agricoles et les problèmes économiques et environnementaux qui domineront sûrement leur avenir. En tenant compte des problèmes actuels et de ceux qui feront probablement surface plus tard, voici ce qu'on propose aux municipalités:

1. Dresser une nouvelle liste d'objectifs qui tiendront compte des nouveaux problèmes;
2. Émettre des lignes de conduite pour faire face aux problèmes les plus sérieux, y compris les facteurs économiques et environnementaux; et
3. Souligner le rôle important tenu par les experts en développement et en planification pour résoudre leurs problèmes, dont la planification du développement communautaire, la planification stratégique, la collaboration du public, l'éducation du public et la législation.

INTRODUCTION

Rural and agricultural Canada is at a crossroads. Our rural communities face increasingly difficult economic circumstances and ever threatening environmental constraints. These issues promise not only to alter the composition of the rural economy and society, but also to threaten the very existence of some communities. Some may argue that the issues facing rural communities are beyond the grasp of local and municipal action and are the sole responsibility of Provincial and Federal governments. This position, however, fails to recognize that the majority of impacts occur at the local level. Moreover, municipalities do have the ability to react through their own local approaches to land use planning and economic development. While certain strategies have been implemented, it is argued that more can be accomplished. The basic goal of this paper, therefore, is to explore current and future issues affecting rural agricultural communities and to provide a framework for community-oriented action.

To achieve this goal, several critical points are addressed. First, six major issues which currently affect rural communities are identified. Second, the nature of planning and development in rural communi-

ties is described. The final section focuses on certain issues which may dominate the future of rural Canada and indicates how rural communities may use planning and development to respond to these issues.

Given the constraints imposed by the scope of this paper and recognizing the breadth and complexity of the issues involved, certain limitations were imposed at the outset. While all rural communities, including those dominated by fishing, forestry, mining and agriculture, have similarities, they also have important differences. This diversity, combined with the unique nature of agricultural issues and the relative significance of agriculture to much of southern Canada, has resulted in a focus on agricultural communities.[1] Within these communities the response of municipal planning and development to the central issues of economic change and environmental degradation is explored.

ISSUES AFFECTING RURAL COMMUNITIES

The purpose of identifying the issues affecting Canadian rural communities is twofold: first, to establish the broad spectrum of rural change and second to allow for an identification of certain key issues affecting the future.

An understanding of differing community issues and their relative significance as they vary across the country, requires some knowledge of Canadian geography. Throughout rural southern Canada, agriculture is generally the dominant activity and the nature of agricultural production is largely a reflection of climate, soils, markets and the overriding historical, economic and political structure. Combined, these items produce a varied agricultural industry, including such details as the distribution of crops, livestock, and farm productivity and finances (e.g., the sale of agricultural products per hectare of farmland in Southern Ontario in 1981 was $860 versus $118 in Saskatchewan) (Statistics Canada, 1986). The result of these differences is the generation of regionally specific issues. For example, the combination of soils and climate allow for the production of certain crops within Southern Ontario and the Okanagan Valley, British Columbia which cannot generally be commercially grown elsewhere in the country. As a result, the anticipated negative impacts of Free Trade upon the wine industry (Ontario Ministry of Agriculture and Food, 1988:23) create issues specific to these communities. Regional differences such as an export oriented agricultural industry, wheat, in Saskatchewan versus the more diversified agriculture of Southern Ontario make these distinctions even more evident. Although there are substantive community issues in both areas, the nature of these issues obviously differs. In evaluating the issues which affect Canadian rural communities, one must be careful to recognize this diversity.

To deal with the wide range of issues affecting rural communities, broad categories have been identified. Troughton (1984) identified six general issues, or as he calls them 'community viability criteria.' These include: economic structure (employment, income, investment); social services (education, welfare, health, housing); distribution (goods and services, optimal population); community self determination (government, administration, decision-making); quality of life - cultural (variety, richness) and quality of life - environmental (ecological, conservation). Troughton suggests that a number of planning issues are generated for these six categories in the following locations: urbanizing zone of a metropolitan area; rural agricultural hinterland zone and the marginal or frontier zone. Beyond this, one should recognize that issues will vary within these three areas, as the areas themselves vary regionally, provincially and nationally.

Relying largely upon the above framework, Figure 1 identifies the general issues affecting rural Canada.[2] This figure emphasizes both the complexity and number of issues and the local, regional, provincial and national factors which create issues at the community level. It should be stressed, however, that the specific issues included under Figure 1 represent only a sampling of many issues. In addition to those included under economic structure, for example, one could equally have included regional economic decline, lack of diversification, structural change in agriculture and the world economy, soil erosion (as an economic issue), vertical integration in agriculture and the prospects of free trade, among many others. The following provides a preliminary discussion of the general issues, identified in Figure 1.

Economic Issues

Many rural Canadian communities find themselves receiving fewer and fewer benefits from agriculture. The combination of an agricultural industry which is both depressed (Financial Post, 1987; Sinclair and Giangrande, 1987) and much less dependent upon local inputs, results in only a small portion of what the farmer receives being retained in the local community. For example, oil refineries, farm equipment plants and chemical plants located in urban areas receive much of the farm dollar. Heffernan (1986:212) argues that this results in the farm family being no more important to the economic base of the rural community than is the family which receives its income from some other source, such as the post office. Consequently, the lack of economic diversification, problems in the agricultural sector and other changes in both the economy and its structure (Davidson, 1987) have contributed to rural decline in much of the country. The related com-

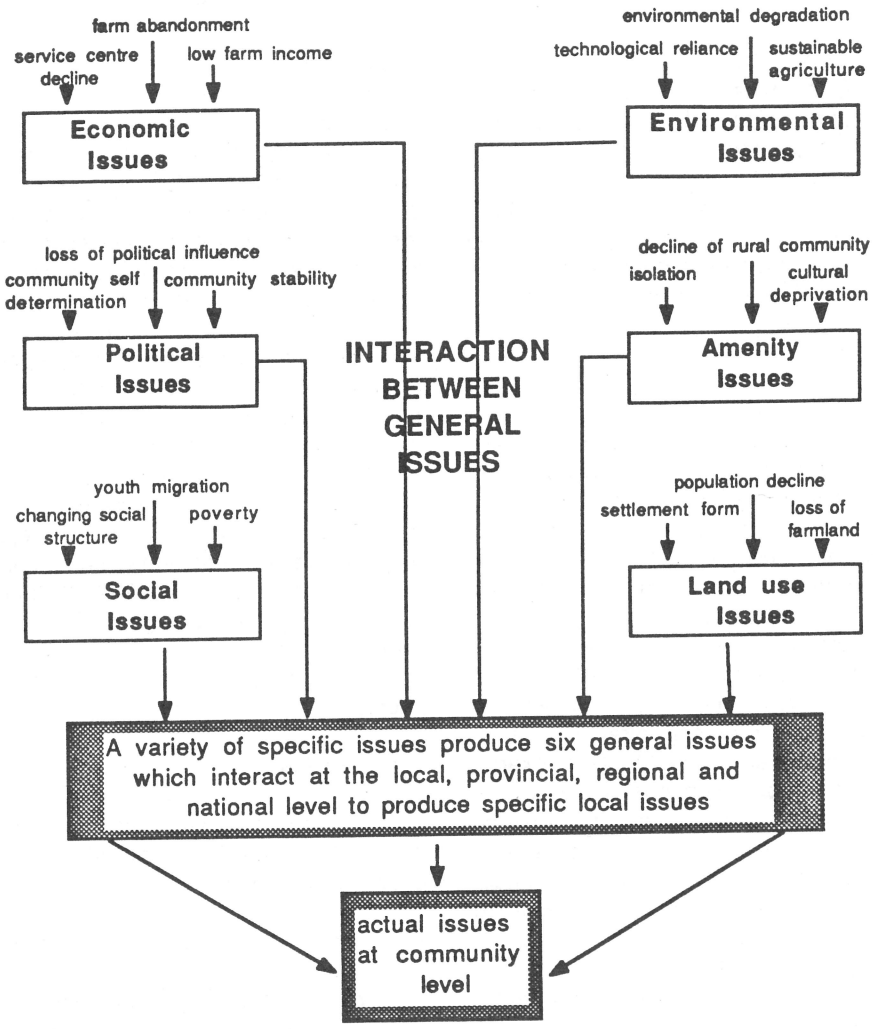


Figure 1: General Issues Affecting Rural Communities

munity issues of a declining tax and employment base led many to pose the question, "How can communities respond?"

Environmental Issues

Many predict an environmental catastrophe for much of Canada's agricultural lands. The on-farm problems of soil erosion, soil compaction and salinization, among other related problems, support the arguments of those forecasting serious problems for Canada's agricultural industry.[3] Although there may be too few people taking action with respect to environmental concerns, a whole host of issues revolve around both the long term sustainability of agriculture and the communities that agriculture supports.

Political Issues

Politically, rural Canada faces at least two separate sets of issues. First, at the national and in some cases provincial level, the overall decline in rural population, as a proportion of the total population, has resulted in a loss of political influence (Horner, 1980:290). As the country has shifted from a nation of farmers to a nation of urban dwellers (approximately 80%) the programs and attention of governments have shifted accordingly. Secondly, at the opposite end of the spectrum, the composition of many rural communities is changing and as a result, the direction of local rural councils is shifting. Russwurm and Bryant (1984:113-4) for example, have demonstrated the tremendous growth in the nonfarm population and the corresponding decrease in the farm population in areas adjacent to Canadian cities. This trend has occurred to varying degrees throughout many rural areas of Canada. The result is considerable political turmoil at the local level and an increasing shift in policy and decision making away from the traditional needs of the local community to the needs of the exurbanite population (Walker, 1987).

Amenity Issues

While an ambiguous term, the concept of amenity and what the community offers its population is of long standing importance to many rural communities. Much has been written in the sociological literature concerning the increasing loss of the rural way of life and a discussion by Wilkinson (1986) helps to identify the associated problems. He suggests that rural communities inherently are dependent upon larger centres and that the distance from these centres limits access to the needed resources.[4] This combination of 'dependency' and 'distance', he argues, tends to be associated with such conditions as poverty and community instability. Further, a small population cannot support a variety of organizations, agencies, firms and other services required to meet the daily needs of people. As a result, rural people look elsewhere for many needed services and amenities and this further reduces local community ties (Wilkinson, 1986:7).

Social Issues

Two types of social issues affect rural communities: the availability of institutional services and the presence of social stress. Change in the nature of the rural community, combined with depopulation in some areas, has detrimentally affected the viability of rural institutions such as schools, churches and other community organizations (Ginder et al., 1985:1188). Further, the overall state of many rural economies and the combined effects of distance and dependency outlined above, have created considerable stress at the community and family level. Given that nearly 500 farmers declare bankruptcy each year in Canada and that countless others are facing foreclosure and leaving farming (Sinclair and Giangrande, 1987), it is not surprising that local newspapers carry reports of suicides as a leading cause of death in rural communities (London Free Press, July 13, 1987:A6). Finally, the lack of opportunity and generally depressed rural conditions also contribute to the equally damaging but insidious effects of rural poverty and the outmigration of young people.

Land Use Issues

The land use issues which have evolved in rural Canada may be considered under five separate but related headings. These are:

1. changing function of rural communities - the changing nature of agriculture (larger farms, a reduced farm population and a reduced reliance on local services) and the automobile have contributed to declining importance and change in many traditional service centres (Dahms, 1984);
2. loss of agricultural land - the loss of agricultural land (including nationally significant tender fruit lands) resulting from conversion to urban uses, speculation and farm abandonment has occurred in many regions of the country (Krueger, 1978; Krueger and Maguire, 1985);
3. urban development in rural areas - the growth of a non-farm population in rural areas has created its own set of issues. While people may argue the merits of this trend, it has affected rural communities by increasing land costs and creating issues of land use compatibility (Davidson, 1982);

4. ownership of farm land - the ownership of land by those residing outside the community (including foreign ownership) is an issue which has generated considerable concern. These concerns, including land availability and control, have led seven of ten provinces to monitor foreign or non-resident land holdings (Lapping and Clemenson, 1984:51); and
5. role of natural areas - the role of natural areas within the rural community has been an evolving land use issue. While ongoing concerns over wind erosion demonstrate the need for proper management, including the protection of natural areas, farm practices have not always been supportive (Lapping and Clemenson, 1984:52).

While attempting to identify the major issues affecting rural Canada, the previous discussion has not suggested the relative importance of the issues. Further, depending upon individual perspectives, any one of the given sets of issues could be considered the most important. Despite this reservation, however, this paper focuses on agricultural change and soil degradation as important community issues.

The identification of rural issues and a proposed approach to these issues through municipal planning and development[5] is the fundamental goal of this paper. As part of this process, however, it is necessary to review the current status of municipal planning and development, including how it has dealt with the rural issues outlined above.

MUNICIPAL LAND USE PLANNING AND ECONOMIC DEVELOPMENT

Within every Canadian province, legislation has been implemented to allow municipalities to become involved in land use planning (Lapping and Clemenson, 1984) and in every Canadian province municipalities are involved in economic development (Bryant, Preston and Buck, 1987).[6] Across the country, including rural areas, an approach to planning and development has evolved reflecting local and provincial issues, legislation and politics.

The approach to planning and development, however, has not always proceeded in a coordinated fashion. Despite the fact that the goals and objectives of both planning and development should be similar, the municipal approach has frequently run counter to these goals. In many situations, municipalities have supported either planning or development, but not both.[7] In other situations, planning and economic development have involved two separate and competing municipal departments. Further, in those situations where a joint department has been established, the bias has more frequently been towards the land use planning function. Dykeman (1987:50) also has made this observation, suggesting that despite the obvious interdependency, the two activities are carried on with little or no co-ordination and are often in direct conflict. Consequently, while not wanting to perpetuate this separation, the history of the two responsibilities suggests that a separate review of planning and development is appropriate.

Rural Planning

The history of rural planning is essentially a history of an attempt to deal with the land use issues identified earlier within this paper. While there are obvious links with social, amenity, political and in particular environmental and economic issues, the overall direction has been towards land use issues. These include the changing function of rural communities; the loss of agricultural land; urban development in rural areas; the ownership of farm land; and, the role of natural areas. The focus on these issues is partially a result of the legislation under which planning functions, the direction provided by upper levels of government and the issues as perceived by the public, politicians and planners.

There are certain historically relevant issues that help explain current approaches to rural planning in Canada. Concern over the loss of agricultural land (Krueger, 1963), the beginnings of a national land evaluation system leading to the Canada Land Inventory (Crerar, 1963) and the continued industrialization of agriculture (Troughton, 1982) each has provided an impetus to rural planning. The result, in some parts of the country, has been an agricultural perspective. The actual development and implementation of the first agriculturally-oriented plans in the early to mid 1970's had to overcome the mental outlook that the countryside is either undeveloped land awaiting urbanization or a resource land awaiting exploitation (Davidson, 1984). Not surprisingly, the development of planning which was based on the primacy of agriculture and the agricultural community received its initial and greatest acceptance from communities which were primarily agricultural in nature (Davidson, 1982). Given the results of research dealing with the intrusion of non-farm uses into agricultural areas, there was a growing acceptance of what may be termed agriculturally-oriented planning. Although initially localized to a few municipalities, this approach became more formalized in Ontario through the adoption of the Foodland Guidelines in 1978.[8]

Economic Development

Whereas the focus of planning has been on land use issues, the focus of local economic development has been more on economic issues. Municipalities have become involved in economic development, as a result of a declining employment and assessment base, combined with an overall desire for new growth or redevelopment.[9] Perhaps the most significant point contributing to the involvement of rural areas and small towns in economic development has been an increasing feeling of frustration and loss of control over local economic issues.[10] The depressed farm economy in Saskatchewan, for example, has been accompanied by a corresponding decline in the trade centre role of small towns. The consolidation of schools, hospitals, highway maintenance facilities, police detachments and post offices in towns with a population of 2,500-14,999 has sealed the fate of many small towns and villages (Ironside, 1984:257).

Increasingly, municipalities differ in their approach to economic development.[11] Some municipalities have placed an emphasis on 'boosterism' (Seasons, 1985:34), while others have taken a more strategic approach.[12] Dykeman (1987:50), for example, suggested that economic development has been associated with a number of key characteristics: (1) quantitative analysis with a concentration on numbers, not people; (2) provision of industrial parks to encourage the establishment of secondary industry; (3) incentive programs to attract large-scale outside investment; and (4) community promotion. Dykeman also points out that economic development is generally measured in terms of employment and income indicators, ignoring other important socio-economic indicators which measure the viability and stability of communities. Hence, the term 'industrial development' is frequently regarded as synonymous with 'economic development' (Seasons, 1985:22). Consequently, economic development initiatives are often the perceived solutions to the community's problems and success is measured based on the attraction of new industry. This tends to overlook many of the potential benefits that a diversified approach to economic development can provide (Hunker, 1974:6).

Coffey and Polese (1985) recommend three policy options for local development. These include funding (the supply of venture capital); information (providing appropriate information to the public); and social animation (mobilizing of community groups to generate entrepreneurs). In the opinion of Coffey and Polese, the process of economic development involves each of these three options in a sequential manner, moving from the most complex (social animation) to the least complex (funding). They suggest that if the sequence is not followed, or if one or more stages are omitted, the results will fall far short of expectations.

This discussion of planning and development has provided a general overview of how planning and development has dealt with rural issues. Increasingly, however, the issues are changing and both planning and development, operating in a coordinated manner, provide the opportunity for municipal action. The question becomes, "What will the future issues be and how will municipalities react?"

PLANNING AND DEVELOPMENT - TOWARDS A FUTURE RESPONSE

The process of planning and development is a thinking process. It involves asking the questions where are we now, where do we want to go and how do we get there? The answers, however, are complex and seldom arrive in one nice, neat package. Development of an overall approach requires a review of individual issues. Economic, environmental, political, amenity, social and land use issues were discussed previously. One of the most significant activities affecting these six general issues in rural communities today is the state of Canada's agricultural industry as related to economic and environmental issues. As the mainstay of many rural economies, the future of agriculture will dictate the nature of tomorrow's communities. This relationship between agricultural issues, community issues, and the need for a community response is central to the following discussion.

Agriculture - Economic and Environmental Issues

A paradox confronts many Canadian farmers. Economic pressures force many farmers to assume a mode of production which threatens their very livelihood. Over the short term and in response to narrow or non-existent profit margins, farmers need to maximize output. This has contributed to a greater emphasis on fertilizers, pesticides, herbicides, monoculture and inappropriate means of soil management. It is these practices and the resulting environmental degradation which jeopardize the long term future of Canadian agriculture (Fairbairn 1984; Hill 1985).

While the above simplifies the issues facing Canadian agriculture, it does highlight the relationship between competing economic and environmental forces. Figure 2 builds upon this relationship and in the process summarizes much of the relevant literature.[13] Economic issues, including the cost-price squeeze, low commodity prices, over supply, the US and EEC price war, and massive government subsidy programs justifiably dominate the thinking of many Canadian farmers (Carter, 1985; Financial Post, 1987). Environmental issues, while increasingly receiving

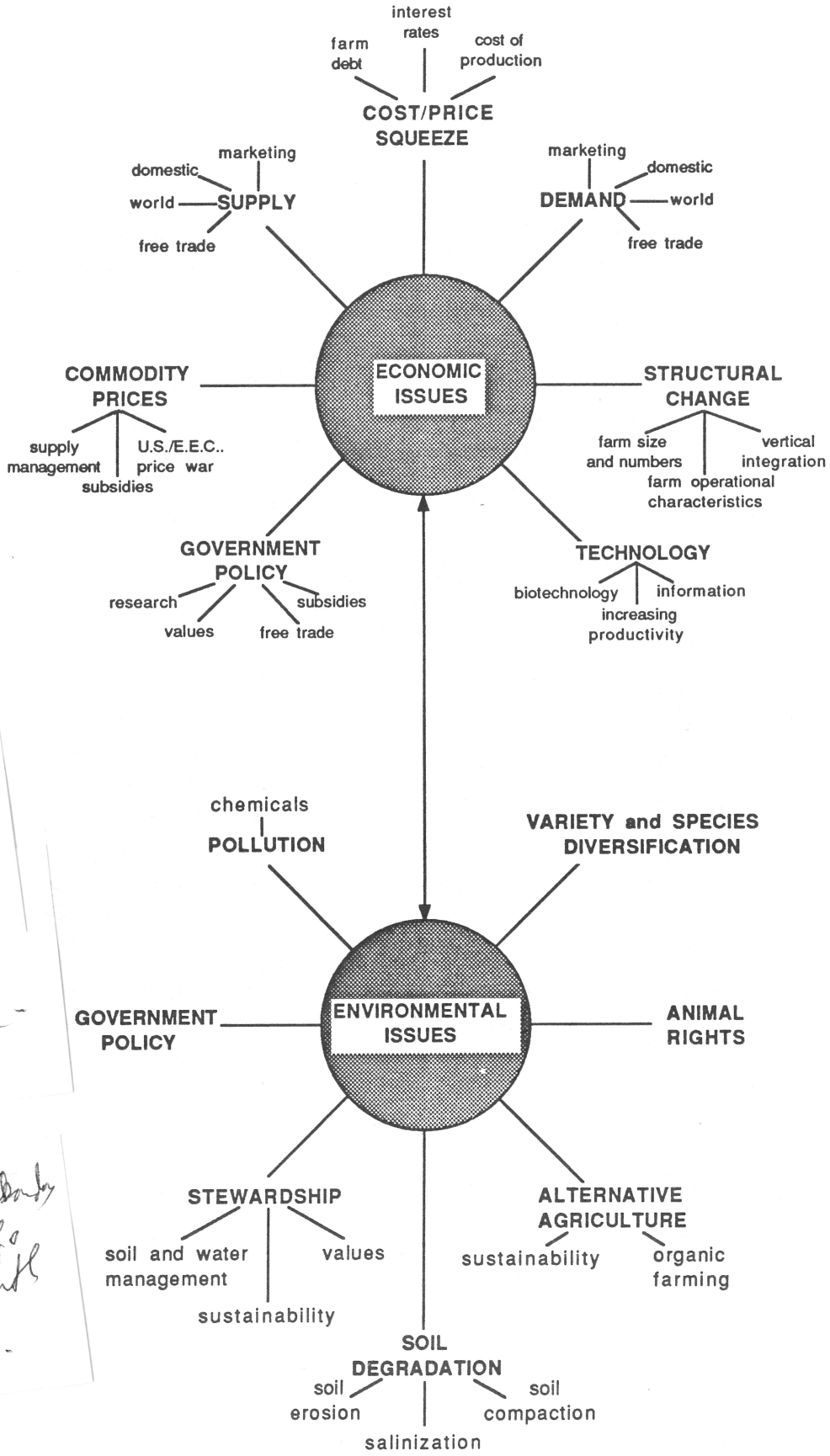


Figure 2: Major Issues Driving Agriculture

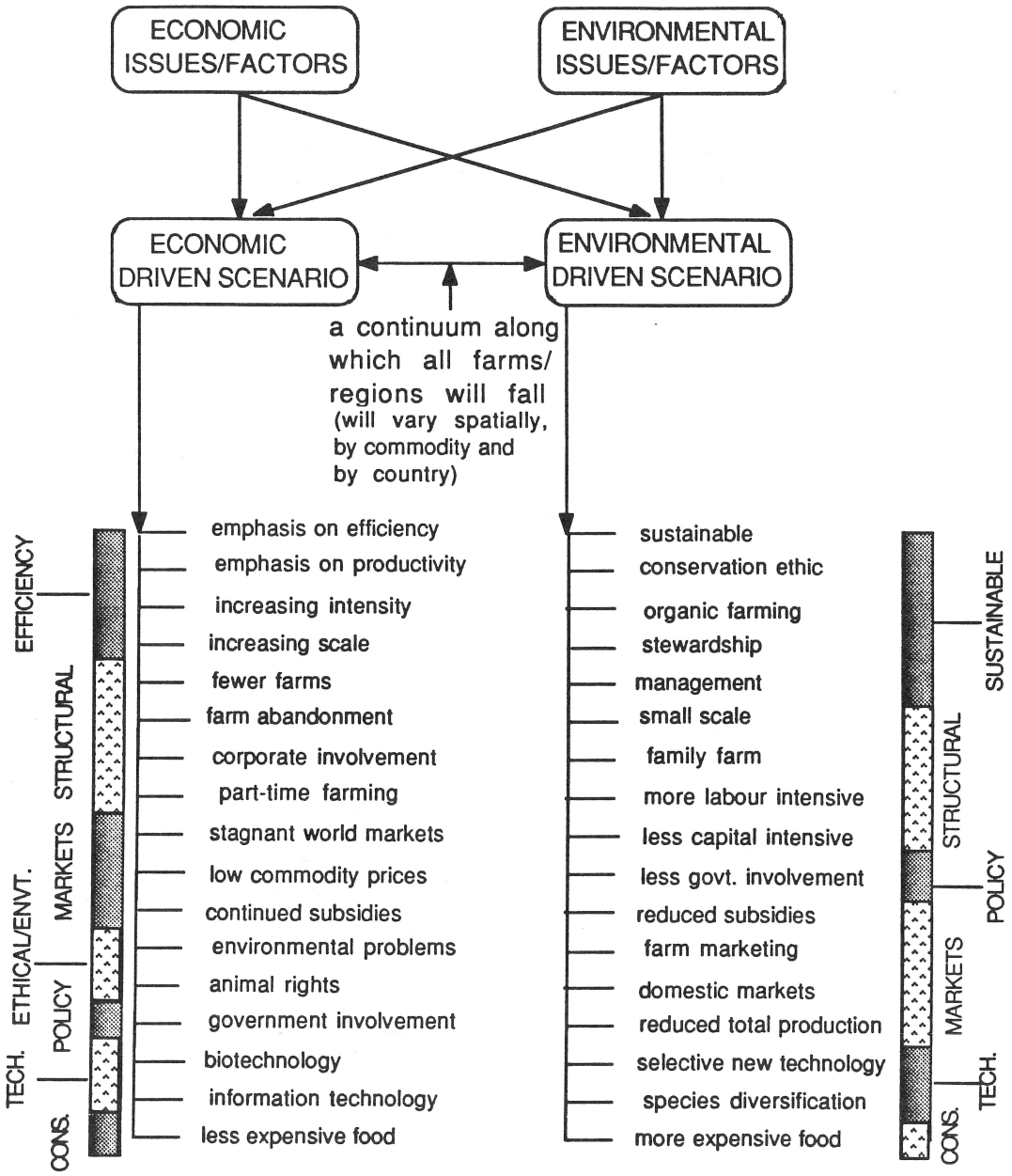


Figure 3: Scenarios in Agriculture

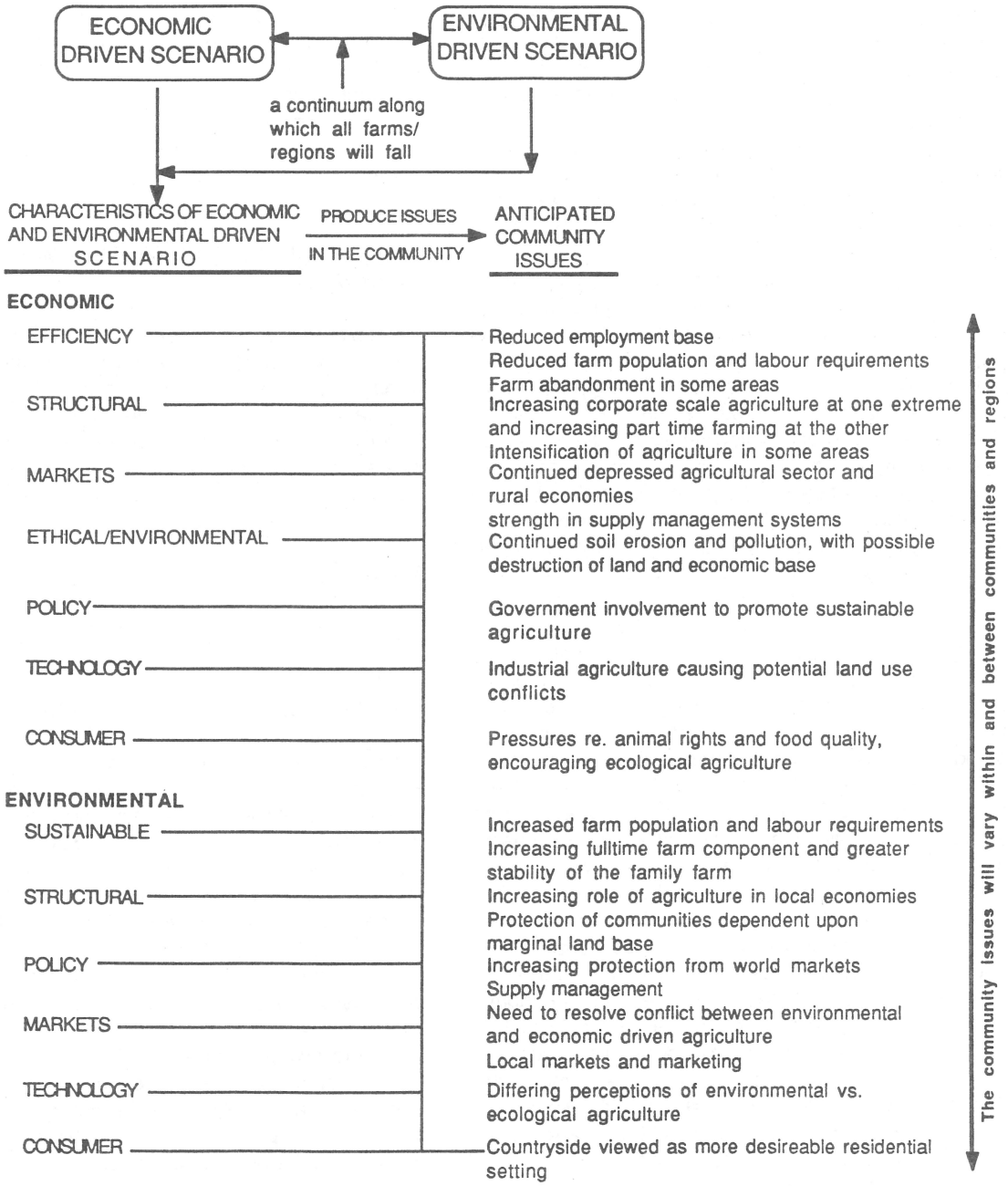


Figure 4: Agriculturally Derived Community Issues

attention, tend to remain in the background. The results, however, of soil degradation (erosion, salinization and compaction), associated pollution and a lack of sustainability threaten to be equally devastating (Willis, 1985).

This separation of environmental and economic factors reflects what many consider to be a structural problem within Canadian agriculture (Dyer 1982; Hill 1985). The concepts of land stewardship, as discussed by Leopold (1949), Berry (1981) and others have been replaced with an ethic of efficiency and productivity (Giangrande, 1985). Although farmers are in part responsible for the adoption of these goals, the role of government and the public also needs to be recognized.[14]

The need to develop responses to agriculturally-derived community issues requires consideration of the probable future of agriculture. Gunton (1985), in his paper on the theory of the planning cycle, suggests that the development of issues and policy frequently lack co-ordination. The result is that by the time an issue is perceived and policy developed the issue has further evolved and the resulting policy is inappropriate. The importance of this point lies in the need to develop policy approaches in anticipation of issues. The fear that current agricultural issues may be permanent as opposed to cyclical provides all the more reason to anticipate the future of agriculture (Allen, 1987; Davidson, 1987; and US Congress, 1986).

Figure 3 builds upon Figure 2 and suggests that in the future agriculture will continue to be dominated by economic and environmental issues. The scenarios included in Figure 3 suggest that a continuum exists along which all farms and communities will fall. Willis (1985) has capably demonstrated the nature of these two extremes. On one hand, he suggests that future agriculture will continue to concentrate on increasing scale, productivity and capital investment, while on the other hand, he foresees and prefers a much more environmentally benign form of agriculture, including small scale, ecologically based and sustainable production. The reality of the future, however, is likely to involve a mix of the two extremes, with economic issues continuing to dominate. This is an important point; while individual farms may be at either extreme, the overall composition is likely to include farmers who recognize the importance of environmental issues. The number, commitment and success of these farmers will influence the future of many communities.

As established earlier, agricultural issues quickly become community issues. Figure 4 identifies future community issues resulting from agricultural change. Although the listing of issues included in Figure 4 is by no means complete, it does emphasize the direct link between agricultural change and the future of rural communities. In some situations this future is bleak and includes a threat to the community itself, resulting from depressed commodity prices or soil erosion. Conversely, in other areas the future of agriculture looks more promising, although the benefits in terms of agricultural employment are less certain. The real questions which relate to community futures, however, revolve around the ability of individual farmers and the community to manage continued economic and environmental change. It is from this perspective that rural planning and development assume a role not only in dealing with agricultural change, but more importantly in dealing with agriculturally derived community issues.

RURAL PLANNING AND DEVELOPMENT - AN APPROACH

Rural planning and development provide municipalities with an opportunity to deal with community issues through both policy and process.[15] Further, the approach to planning and development needs to go beyond a narrow focus on agriculture to include a wide range of agriculturally derived community issues, including economic decline and the lack of economic diversification.[16]

The Policy

In dealing with agriculturally derived community issues, the fundamental difference between planning for where the community would *like* to go and planning for where the community is *likely* to go needs to be recognized. For example, the analysis included within Figure 4 suggested that a sustainable form of agriculture was likely to help stabilize local economies, provide increased levels of employment and help protect communities dependent upon a marginal land base. The reality of the situation, however, is that agriculture is likely to continue along a path that will not provide these potential benefits. The municipality therefore, may find itself caught in a position of wanting to be visionary, directing agriculture and the community, but also needing to be realistic enough to plan and react to the more likely scenario.

The following discussion achieves two goals. First, sample community goals in response to economic and environmental concerns will be identified. Second, a specific example of a comprehensive municipal response to the problem of soil erosion will be outlined.

Sample Goals

The depressed state of Canadian agriculture and environmental degradation have been identified as key issues in the future of rural communities. As a result, many communities face local economic decline,

reduced employment, farm abandonment, a depressed economy and continuing pollution, among other perils. A response to these types of issues requires both the formulation of goals and implementing policy. The intent of this section is to demonstrate the types of goals which can be formulated in response to these issues.

From Figure 4 two categories of broad issues can be developed. The first of these is local or regional economic decline characterized by a reduced employment base, declining assessment and a stable or declining population. The causes, while largely economic, may increasingly become associated with impacts of environmental degradation. The second broad issue is the gradual diminution of the soil base through erosion, salinization, compaction, and mismanagement. The causes are an interesting mix of economics, environmental factors and ethics.

The development of community goals in response to these issues requires community involvement and an appreciation of the issues and types of policy which can be implemented. For example, a policy encouraging low input or organic farming may provide additional employment and reduce soil erosion.[17] The following, represent the types of goals which can be developed in response to current community issues:

- to diversify the local economic base;
- to promote local entrepreneurship;
- to diversify the local agricultural base;
- to encourage sustainable agriculture;
- to encourage local marketing of agricultural products; and
- to reduce the levels of soil erosion.

Building upon these basic goals, the next stage involves the formulation of policy. There is no shortage of suggestions in the literature as to the types of policy required to implement these types of goals. Wilkinson (1986) for example, contends that rural communities need to become more urban while Malizia (1986) stresses that municipalities first need to decide upon a growth or development option.[18] While the development of individual policy in response to these goals requires further study, it is noted, that for an issue such as soil erosion, there are numerous opportunities and available policy options.

The Process

If properly implemented, planning and development holds the promise of setting community goals and establishing community resolve in fulfilling these goals. As a thought and public education process, rural planning and development can provide municipalities with the opportunity of dealing with community issues. There is however, no one approach which will guarantee results. Municipalities need to adopt and adapt to the overriding political, economic and legal structure of their area. Despite expected diversity, much of the process is applicable in all municipalities.

Community Development Planning

Municipalities need to develop a coordinated approach to rural planning and development. As established earlier within this paper, municipalities have, all too frequently, separated the functions of rural planning and development. While in some jurisdictions this may be appropriate, in most rural communities it is not. An approach resembling the community development process as outlined by Dykeman (1987), Lotz (1987) and Douglas (1987) promises to mobilize staff, financial and community resources with a common set of goals.

The Ashbridge Conference on Social Development in 1954 defined community development as "a movement designed to promote better living for the whole community with the active participation and on the initiative of the whole community" (Lotz, 1987:42). From a traditional economic development perspective, this definition broadens the municipal mandate considerably. Not only does it include the frequent municipal concentration on industrial development (Seasons, 1985:22), but it adopts a more holistic approach to the local economy, including where appropriate: agriculture, tourism, forestry, residential development, and of course business and industry. As a result, less emphasis will be placed on promotion and marketing and more will be placed on assisting existing economic activity, identifying and securing overall community improvements and research (Bens, 1986; Teitz, 1987). Further, whereas local planning has evolved, all too frequently, into development control, the above definition of community development suggests the need to reevaluate the role of community planning. Earlier within this paper, planning was defined as a way for a community to determine how it can use and develop its basic resources in order to influence its future (Friedman, 1973). This definition supports the need for planning to go beyond regulation to focus on community development goals. The coordination of traditional planning and development programs and the inclusion of both in a framework which is prepared to consider alternate approaches is most likely to fulfill the goals of community development and grapple with issues facing rural Canada. These approaches include strategic planning, community involvement and public education.

Strategic Planning

Strategic planning as applied in the general field of community development is a useful means of identifying goals, strategy and means of implementation (Sea-

sons, 1988; Bryant and Preston, 1987; and Thomson, 1986). Initially applied in the private sector, considerable emphasis and study of its applicability to the public sector (including the field of economic and community development) has occurred (Bamberger, 1985 and Kaufman, 1987). It is argued that the basic questions which strategic planning brings forth help to define the role of community development planning.

Although there are any number of permutations to the concept of strategic planning, once organized the process can for the purpose of community economic development, be simplified to include four basic stages:

1. Economic Audit and Community Scan.
2. Develop Goals, Strategy and Action Plan.
3. Implement.
4. Monitor and Evaluate.[19]

The effect of this process is to ask questions such as:

- "What is the economic base of a community?"
- "What are achieveable goals?"
- "How do we want our community to develop?"
- "How do we achieve our goals?"
- "What resources are required to achieve our action plan?"
- "Have we achieved our goals and how do we modify our approach if improvements are required?"

Through asking these types of questions a rural municipality can develop an approach based on its own needs. Also, the municipality can establish priorities allowing for the proper implementation of relevant strategies. This approach will, it is believed, reflect both current approaches to planning and development and identify items not traditionally included.

Community Involvement

While the concept of community development envisions considerable public involvement (Douglas, 1987), this has not generally been an element of economic development programs (Dykeman, 1987:50). Further, while public involvement in land use planning has often been legislated, successful examples of extensive public involvement are not frequent (Wolfe, 1985).

The term 'community involvement' tends to imply different things to different people. It is based essentially on the belief that local policy and action is likely to be much more successful if based on public support. Also it recognizes the obvious role of the public in establishing community goals and strategy. In the case of planning, community involvement may include not only the presentation of completed plans to the public, but more importantly the soliciting of public input during the planning process (Richter, 1988:18). In economic development, local participation in setting goals and procedures for development is also valued (Bryant and Preston, 1987b). This may involve the establishment of local development organizations (Coffey and Polese, 1985:90) or alternatively working with different individuals and community groups (Bryant and Preston, 1987b:7).

Public Education

Associated with the above is a recognition of the role of education in community development planning (Lotz, 1987). The recognition of issues and the development of policy is essentially a result of public education. Richter (1988) suggests that education of the public allows for the development of the community residents as a means of achieving development in the community. That is, education increases people's awareness of issues and opportunities and establishes their competence for participation. Consequently, part of the municipal approach to dealing with community issues is to educate the public with respect to these issues.

Legislative Requirements

A final element of the approach is to recognize that at least the land use element of community development planning is largely bound by legislation. While this imposes constraints, it also provides opportunities. It allows municipalities to continue to build upon the successes of the past and to continue to organize the distribution of land in a rational manner. The important element, however, is that municipalities use the land use planning process, not only as a regulatory tool but also as a means of dealing with developing issues. The legal requirement for periodic plan review and public input forces the public and municipality to monitor and alter their plan as issues evolve.

CONCLUSION

The issues which face rural agricultural communities in Canada are also encountered by communities throughout the Western World. In the United States, the problems are accentuated by a larger concentration on corporate agriculture, which has introduced problems of rural poverty and migrant labour, among others (US Congress, 1986). In the United Kingdom, the Countryside Commission (1987) has suggested that certain lands be removed from agricultural production. At the same time it notes (1987:35) the benefits of land use diversification and recommends that the farm house-

hold become a centre of entrepreneurial activity to generate non-farm income. Moreover in the European Community as a whole, questions are being asked about agriculture's future (Marsh, 1987). Weinschenck's (1987) analysis suggests both that agricultural output should be reduced by decreasing the use of yield-increasing inputs and also, farming should be supported in the less favoured areas by direct income aids and retirement payments. This reflects a basic question about the desirability of efficiency which risks high subsidies and few rural benefits, as opposed to a more environmentally benign approach, with its corresponding benefits to the rural community.

As in Canada, the national government of each of these countries has pumped billions of dollars into supporting an agricultural industry which is simply too productive. The continuing high levels of deficit accumulation in each of these countries suggest that the subsidies may not continue. Further, basic questions must be asked at the national and international level about the direction of agriculture and agricultural communities. These questions and their answers are of critical importance to rural communities throughout Canada.

Also, as in Canada, municipalities are being encouraged to develop a response to the issues which they face. The Countryside Commission (1987:37) calls upon the planning system to adopt an enabling role rather than a purely regulatory one. Further, it recommends the preparation of rural development strategies by Counties and District Councils. In the United States rural communities also are encouraged to attract new businesses, develop labor retraining programs and to alter community infrastructure to attract new inhabitants (US Congress, 1986). What this signifies is the universality of the issues affecting rural areas and the need for Canadian municipalities to pursue the same initiatives.

The approach to planning and development outlined in this paper has general applicability to all types of rural communities within Canada. The approach, which is largely based on community development planning, strategic planning, community involvement and education represents a focus which generally has not been pursued by rural communities in Canada. In some respects, the approach is as simple as asking the right questions and in turn identifying the right options. The fact that the process may not be easy, or that the community may not initially be prepared, does not reduce the necessity of becoming involved. While some communities may have the luxury of not needing to act, for others, the option of not acting is suicidal. The process of planning and development does not guarantee results. All that it does guarantee is an opportunity to rationally evaluate issues and trends and potentially develop a strategy to provide some direction to the future.

Issues facing Canadian rural agricultural communities have been reviewed and an approach was pursued based on their dominance and as a recognition of the magnitude of the issues and concerns facing these communities. These issues (Figure 1) while diverse are dominated from many perspectives by economic and environmental issues (Figure 2). Further, these two issues are expected to continue to dominate (Figure 3) and produce a range of community issues (Figure 4). While planning and development have dealt with other issues with varying degrees of success, the threats placed upon rural communities by economic and environmental issues threaten the community itself. Municipalities can and should react. In the public interest they need to ensure the continuity of the community. Although the approach is not necessarily easy, examples have been included demonstrating that it is possible.

ENDNOTES

[1] Agricultural communities are defined as communities dominated by an agricultural system, including the farm and non-farm population, small urban service centers, the land base, the economic and institutional framework and all related items.

[2] Within Troughton's analysis the term 'distribution' pertains to goods and services and their distribution. Generally, this term pertains to 'land use' and 'settlement'. Consequently, and in an attempt to broaden the framework, the term 'land use issues' is used. Troughton also used the term 'quality of life-cultural'. This term is somewhat narrow. The more general term 'amenity issues' has been selected. 'Community self determination' was also renamed as 'political issues' (see Figure 1).

[3] For a comprehensive discussion see "Soil at Risk - Canada's Eroding Future" (Senate Standing Committee on Agriculture, 1984); "Stress on Land" (Coote, 1983) and "The State of the Environment Report" (Environment Canada, 1986)

[4] *Family Farm Forum Report* (Canada, 1987) indicated that the average distance for Canadian farm families to basic facilities (school, doctors, stores, etc.) was 18.6 km. and the average distance to extensive facilities (universities, medical specialists, etc.) was 106.6 km.

[5] The term 'planning and development' is used to be synonymous with 'municipal land use planning and economic development programs.'

[6] Generally, for the purpose of this paper, economic development refers to local involvement in preparing and implementing strategies or initiative to enhance local resources, with a goal of development and improved quality of life. For more detail, see Coffey and Polese (1985); Seasons (1985); Bryant, et al. (1987); Lotz (1987) and Douglas (1987). The definition of planning has tended to be constrained by the legislation under which planning functions and much of the discussion of existing municipal planning will reflect the formal and legal process in which the orderly development of land and resources is a primary goal. Friedman's (1973) more general definition, however, links planning more closely to the definition of economic development. He defines planning as a way for a community to determine how it can use and develop its available resources in order to get where it would like to be in the future. For more detail see Hudson (1979); Friedman (1973) and Cloke (1987).

[7] Reflecting the legislative mandate and provincial encouragement to be involved in land use planning, more municipalities have become formally involved in planning than economic development.

[8] Ontario' s agriculturally oriented planning approach includes the following characteristics (many are shared with other provinces): the protection of lands with agricultural potential (specialty croplands and Class 1 and 2 soils); restrictive land use policies which prohibit the development of non-farm uses in agricultural areas; the preservation of large contiguous agricultural areas, including a large farm parcel size; development based on a separation between livestock facilities, residences and other forms of urban type development; a restrictive severance policy which eliminates the creation of non-farm lots and may eliminate so-called farm residential severances (surplus residence, son, daughter or retiring farmers) and the preservation of areas of natural environment.

[9] This tends to reflect many related items including a desire to correct community deficiencies, generate a more positive economic environment, keep youth in the community and maintain reasonable prosperity.

[10] It is also important to note that the emphasis on local economic development is partially a result of a shift away from integrated national and regional programs. This shift, in the opinion of Bryant and Preston (1987a:52) reflects both the frequent failure of senior government programmes to live up to expectations and concern over the deficit of senior levels of government.

[11] For a discussion of various provincial approaches see "Papers in Canadian Economic Development," (1987), Edited by Bryant, Preston and Buck.

[12] Including community promotion and what some call 'smokestack chasing.'

[13] Both environmental and economic issues have received wide spread attention. Much of the literature upon which Figure 4 is based includes Canadian, American and European experience. See for example, [environmental] Bird and Rapport (1986); Coote (1983); Berry (1981); Fairbairn (1984); Lockeretz (1983); Paddock, et al. (1986); Poincelot (1986); Willis (1985); [economic] Carter (1985); Cooper (1986); Dahlberg (1986); de Gorter (1987); de Janvry (1986); Fulton (1987); Giangrande (1985); Petit (1985); Thompson (1987); US Congress (1986) and Valluis (1987).

[14] Giangrande (1985) argues these goals of productivity and efficiency are those of large scale industry.

[15] In suggesting that municipalities can formulate an approach to agricultural and community issues, there is a recognition of the potential frustration. Many of the current trends in agriculture are not local, nor Canadian, but international in nature. Although municipalities cannot alter these macro trends, there is a belief that there is a responsibility on the part of the municipality to attempt to deal with the impacts at the community level.

[16] As a prerequisite, the approach to rural planning and development needs to maintain a reasonable chance of being implemented; it needs to build upon past successes and it needs to be realistic. Unless these three conditions are maintained, the usefulness of the approach is dubious.

[17] For a discussion of organic farming and related terms, such as sustainable agriculture see Willis (1985) and Hill (1986).

[18] Malizia (1986) uses these two terms suggesting that growth is oriented to the creation of jobs while development focuses on long term change in the economic structure.

[19] Adapted and simplified from a discussion of strategic planning by Thomson (1986) and Bamberger (1985).

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Destroying Trees, Destroying People: Forest Dwellers' Rights in Papua New Guinea

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ABSTRACT

The paper defines such terms as "rights and responsibilities", "common heritage" (and "common property"), "public interest" and "reciprocity" within Papua New Guinea. It then takes a look at land rights and why they have persisted and how meaningless they may become once land has been stripped of resources. Ecological interventions are then examined from a number of points of view including those of the villagers who generally have little knowledge of what such impacts mean. The roles of deforestation proponents and facilitators are then discussed. Alternatives to deforestation and export-dominated agriculture are analysed in terms of guardianship and commercial activities not involving deforestation. Finally, ancillary matters and rights are discussed and include knowledge by villagers about land use plans, use of advisors, value of their assets when they have been confidentially inventoried, and local and international economics including wood product trends. It is suggested that forest owners should have a national organization for their own purposes to include monitoring companies and government officials; lobbying government to protect their interests; and education of its members.

Détruire les arbres, détruire le peuple: les droits des habitants de la forêt en Papua Nouvelle-Guinée. Le présent article définit les termes responsabilités et droits, héritage commun (propriété commune), intérêt public et réciprocité dans le contexte de Papua, en Nouvelle-Guinée. Il est aussi question des droits arables, du fait qu'ils sont encore valides et du peu de valeur qu'ils représentent lorsque la terre en question a été dénuée de toutes ses ressources. De plus, on discute de la réaction de certains groupes face aux changements écologiques qui se produiront, notamment les villageois qui habituellement savent très peu l'impact de ces changements. Par ailleurs, on traite du rôle des partisans et des promoteurs de la déforestation. On étudie égalemnt les solutions de rechange pour la déforestation et l'agriculture orientée vers l'exportation en termes de protection et d'activités commerciales qui, elles, n'exigent aucune déforestation. Finalement, on traite des problèmes et des droits des propriétaires de forêts et des renseignements nécessaires aux villageois pour les informer des projets sur l'utilisation des terres, des services conseils disponibles, de la valeur de leurs biens confidentiellement répertoriés, de l'économie locale et internationale et des tendances du marché du bois. On recommande même aux propriétaires de forêts de former une organisation à l'échelle nationale qui leur permettrait de: - Superviser les compagnies et les représentants gouvernementaux; - Faire pression auprès du gouvernement pour protéger leurs intérêts; et - Éduquer leurs membres.

INTRODUCTION - TERMINOLOGY

Rights, *responsibilities*, *common heritage* or *"common property"*, and *public interest*, are concepts which are difficult to define but are basic to what I have to say about forest dwellers and the resource that they control. To give an indication of the implications of what these terms mean to me, I assume that:

A *right* is something of value whether it is to a forest or to strategic information. It is a just entitlement or claim.

Such a right might not be able to be exercised unless its holders have power, for example, can deal with others, including corporations, as at least equals. Power in an evolving capitalistic society, such as Papua New Guinea, (PNG) comes from money or from the ownership (and use) of a resource.

A heritage becomes *common*, ideally, when the original beneficiaries receive adequate compensation before such a heritage is transferred to a potentially infinite number of beneficiaries.

Public interest should, in the PNG situation, include many viable alternatives to the sale of logs and destruction of forests. In the recent past, for example, public interest has been narrowly defined as generating more national income from log exports (actually, for the benefit of an urban, national elite).

A *responsibility* to, say, a wider group is meaningless and perhaps even damaging unless there is reciprocity by that wider group, such as a provincial or national government.

FOREST LAND

Thanks to tradition, a certain freakishness in various colonial laws and policies, and the constitution adopted at Independence, land (97% of it!) still belongs to the people. This can be contrasted with Irian Jaya where Melanesian land rights have now become somewhat meaningless because of colonialism. Along with certain other resources, including forests, land is generally available for the owners-caretakers to do with it as they wish. Fortunately their husbandry of the land has been good except in drier areas where fire has been used; this land has sustained them for millennia. This caretaking role has been assisted by a low population, a deep understanding of tropical, ecological systems and the use of simple but effective, technologies. Additionally, cosmological and mythical systems have been developed which legitimize their rights to *all* land and resources in PNG. These rights were validated, affirmed and strengthened in warfare and through ritualistic practices. Of course these rights and whole cosmological systems are now being reformulated as western values appear and stress, as they do, individual ownership and the solvent power of money in the selling and buying of resources. Typically, forested land has a low human carrying capacity and influential developers and their local agents do not have too many problems in peddling such philosophies to so few people. What people there are, are usually scattered and lack young educated persons with a wider perspective than, say, clan heads to give advice on economic workings of the outside world. And of course, developers are now aware that they can, if necessary, sidestep the usual bureaucratic procedures that were formerly intended to protect landholders' rights. Additionally, they know that they do not need to get legal title to the land to get access to its most valuable attribute - trees. The Private Dealings Act and declared Local Forest Areas make bribery, extravagant promises (legal if in logging agreements but extra-legal if made verbally) and local lobbying much easier than previously. The current unsatisfactory performance of successive governments in forest protection and orderly exploitation under older, colonial legislation, make villagers skeptical about taking the national governmental route when wishing to dispose of their forest asset. Here we run up against an irony. The colonialists emphasized paternalism in the disposition of rural resources to "outsiders" (foreigners). The PNG people were in fact protected not only from these outsiders but from themselves! They were, in effect, locked into a traditional relationship with their resources, particularly land, and could exploit it only in traditional ways for food or for producing export crops. Thus, at the time of Independence, they had few skills in dealing with foreigners who valued resources differently from the way they did themselves. Also, except for the Wau-Bulolo valley, none of them had ever seen land degradation on a massive scale. Certainly there were natural disasters and associated impacts but few human-made debacles such as the Gogol Valley now is. They did not, historically, consider that land separated from its surface biosystem might become worthless. Even if this was known, the economic rewards from urban and rural work were unequal.

The sale, on a large-scale basis, of rural resources thus seemed an attractive proposition. Millennium thinking, the migration townward of the young, and the decline in export crop prices did little to help the resource holders take a hard line on the disposition of these resources. And when their rights to forests were abrogated through the receipt of money, this money was ploughed back into the traditional kinship system just like any other exchange item (kinship systems are the blueprints for traditional economic transactions and tend to be distributive and reciprocal rather than centripetal and accumulative). Capital accumulation by the sellers of forests has not tended to occur and royalties and other payments have generally been used to buy consumables. Low rates of return have made a strategy of capital accumulation very difficult. Without such capital, however, the villagers still remain powerless in the modern world. In terms of actual costs, villagers have had to pick up the costs not only of land degradation but also that of ecological and social impoverishment. The latter occurs when villagers' lifestyles are changed quickly and, in the longer term, they have fewer resources, have to labor more (less leisure), and have fewer services, such as those formerly provided by the Australian colonialists and which are now in decline for a variety of reasons. In short, their standard of living actually declines. This has happened in parts of the Gogol abandoned by Japan and New Guinea Timbers and the government now that roads have started to deteriorate rapidly during wet seasons. In New Ireland there is a similar situation. When fires or over-population, through migration or through natural increase, follow clear-felling or the loss of forest cover through other causes, the results can be catastrophic and long-lasting. This is what has happened on a massive scale in Thailand.

This sequence of events leads logically to the rights of forest dwellers to be informed about the likely ecological impacts of forest cutting and what is happening elsewhere when trees topple.

ECOLOGICAL INTERVENTIONS.

PNG forest dwellers are excellent naturalists. The complexity of the natural forest system is reflected in the cognitive complexities of the villagers' descriptions of their forests. These complexities contrast strongly with the simplicities of rice agro-ecosystems (rice is actually a grass or pioneer species) and the cognitive descriptions of the occupants of endless flood plains. However, despite their formidable knowledge of the natural functioning of the forests, they often have little knowledge of what can happen after forests have disappeared. They do not know that:

- Ground water levels may change permanently and flooding and erosion might become more severe. Soil nutrient loss can reach 80% in the first year after clear-felling.

- Their forest contains literally millions of species, many unique, and many not visible to humans. These species are being lost at an appalling rate as about 9 million hectares of tropical forest worldwide fall to the chainsaw every year.

- These intricately dependent life systems cannot be quickly replaced. At best, they might expect after about 10-20 years a canopy of woody plants and some fauna and mature-appearing forests in 100-500 years. The villagers, if still around, might see pristine forests similar to their own re-appear after several millennia providing such forest areas are close to other forests which can restock them! More likely, neither forests or people are likely to be around after such a long period.

- There are many, many forest species which have actual and potential great value to humankind and about which the villagers (and scientists) know nothing.

- The loss of a forested area may have profound effects on near and not so-near biotic systems including reefs and wetlands.

- They (the forest dwellers) will suffer severe dislocation as the species on which they depend disappear and money has to be paid for replacement resources from elsewhere.

- PNG forests, from a purely economic (monetary) point of view, must in the future appreciate in value as tropical forests in other nations are destroyed quickly.

- Ecologists and scientists throughout the world believe that forest owners should develop a responsibility to protect forest resources for humankind - it is in the public (international) interest for them *not* to be destroyed. PNG forests should become a "common heritage" items - instead of clans "owning" them they should be owned or "held in trust" and "used" by a much larger social collectivity. In believing this, outsiders may, perhaps correctly, have little trust in the integrity of national governments to protect such unique natural resources.

- Forest loss may have very negative impacts on traditional gardening - disturbed soils, high water tables, new insects and other predators, new plant pathogens and micro-climatic changes.

- Recent findings of the Worldwatch Institute indicate that the world's tropical forests play a vital role in storing carbon (not releasing it into the atmosphere as carbon dioxide).

Forest dwellers have a right to be informed about probable ecological changes and how this fits into the global picture. Transmitting this information through schools and to the villagers may be a lengthy affair. Ideally, such matters as health and disease, human physiology, zoology and botany, nutrition and such like should be covered in a wider human ecology program. If persons passing on such information start from what the villagers are familiar with, resistance should be minimal. Forests themselves can be a launching pad for such information. Ideally proponents of forest clearance should also attend such information-sharing programs. Perhaps they could also share in the cost of the program. This suggestion leads to the next "right" of villagers to particular kinds of information.

DEFORESTATION PROPONENTS AND FACILITATORS.

Often villagers have little knowledge about the people who want to cut their forests. These people may be corporate or government personnel and may be foreigners or nationals. Basic vital information must be given to the villagers and is listed below:

Economic track record of the proponent

Has the corporation sufficient funding to carry out the stated objectives included in the agreement with the people? Has the corporation been unduly exploitive of people and their natural resources elsewhere? Have their profits been reasonable (some companies, such as Weyerhaeuser, have profits of 33% in places like

Indonesia, and are reported to be involved in graft with public officials). Has the company, in the past, invested in facilities for villagers and in health and education programs? Has the corporation been involved in local diversification of products or are they interested only in logging? Will they pay local and national taxes? What is their connection with other corporations? Do they have a record of transfer costing and being a front for a larger corporation? How have they coped with international market fluctuations in the prices for wood products in the past? How will the villagers be affected by such fluctuations? Who will audit and monitor the corporation and will there be progressive reporting to land owners?

Labour

What will be the company's demand for skilled and unskilled labour? Will preference be given to local employees? Will there be staff training programs? How has the corporation treated workers' unions in the past? Does it have a good workers' health and safety record else-where? Has it had a high worker turnover elsewhere?

Restoration

Will the cutover land be reforested? If so, with what species? How will the landowners be involved? Will it be associated with village tree farming, agro-forestry etc.? How will the villagers benefit in very specific financial terms?

Reserves

What areas will not be part of the cutting area? What will they achieve - protect species? - provide firewood? - protect peoples' sacred areas? - protect water supplies and stop erosion? How will these reserves be protected? What has been the corporation's record elsewhere in respecting such reserves?

Forest cutting plan

How and when will villages be affected by the plan? When will they benefit from logging roads and other facilities? Is the cutting plan part of a much wider land use plan. Is the plan ecologically and environmentally sound? Will the people be involved in its creation? Will the plan be regularly modified according to the wishes of the land owners? Have the project planners appropriate experience in tropical rainforest areas? Is there a good enough data base (on soils, waterways, village gardening areas, etc.) for detailed logging operations?

Roads and transportation

What will the villagers' and outsiders do about access to "private" logging roads? Will access be restricted in any way? Where will road building materials come from? How much will be paid for such materials? After cutting has been completed who will pay for the maintenance of the logging roads?

Technology

What kinds of technology will be used in felling? In other activities? Will it adversely affect the environment, such as soils, and be dangerous to humans? What has been its impact elsewhere? Will any of it be available for village projects?

Payment to forest owners

Has this been properly rationalized? Will such payments cause clan feuds? How will the government be involved?

Health

How will villagers and local workers with new diseases and accident victims be assisted by the corporation or government? Will there be permanent health facilities in the deforestation areas? Will they remain and be maintained after the cutting is complete?

Built facilities

What facilities will the corporation build? Will they be built of permanent materials? Will they remain after the cutting? Will villagers have access to them? Are any of them suitable for conversion to other purposes, such as schools, auto workshops and clinics? Could they be the basis for a new urban area? Who will the ownership be vested in?

Complaints

How will complaints of labourers and villagers be handled? Who will be involved? Has the corporation a good record of resolving such complaints without violence? Can village or other courts mediate?

Infrastructure

Who will be responsible for building this? For maintaining it? Will villagers have access to rural electrification? To piped water? To sewage systems?

Agreements

Do villagers understand the nature of the agreement between themselves and the corporation? Do they

have their own lawyer and advocates to negotiate and explain exactly what is intended to happen in the future? Is there any chance of trickery? Can performance bonds and the like be included so that there are reasonable guarantees? Are there punitive sanctions for corporate misdeeds?

The above cautionary notes were formulated on a distillation of actual complaints relating to earlier deforestation projects. Villagers desperately need to know who they are dealing with and what will happen if they are faced with unethical and environmentally destructive behaviour by the corporation or its employees - especially those from outside of the area. The above relates to finding out about corporation records elsewhere, negotiating agreements with them and then monitoring them during cutting operations. But what if villagers decide not to succumb to the blandishments offered by the proponents of cutting schemes? What are the alternatives to deforestation? Suppose the villagers exercise their right to retain their resource?

ALTERNATIVES TO DEFORESTATION AND EXPORT-DOMINATED AGRICULTURE.

As mentioned earlier, scientists, ecologists, environmentalists and ordinary people throughout the world are stressing the need to conserve natural rain forests and treat them as an international treasure house filled with all sorts of fare and other unique items. There is new respect by social scientists for the adaptive styles of the forests' human occupants. This is based partly on nostalgia for things like forests that westerners lost a long time ago, and partly on a realization that the forests' occupants are the last remaining buffer between developers and the forests. Previously the forest people were regarded by anthropologists and others as curiosities - people who were completely integrated with their biotic environment and who lived in an isolated milieu. Now, instead of being seen as neolithic curiosities, they are seen as survivors in a world that is rapidly running out of resources and livable habitats. This new-found interest is not without its problems. Some ecologists, ironically, like developers, see trees and fauna as being more important than the lives of forest dwellers. They would like forest dwellers to be merely guardians of biota. However, they probably would not go to the extremes of some developers who see forest dwellers as being faunal impedimenta blocking their access to logging.

Among the things that forest dwellers should know about, even before alternatives are discussed, are questions relating to government policies and activities, or lack of them, elsewhere in PNG. For example if all of the cutover areas had been replanted with trees, there would be no need to cut virgin forests. Even if these areas had been re-settled with agriculturists, much international and local revenue could have been generated. Such re-settlement areas too, could have offered refuges to forest dwellers who wanted to leave their forests to grow cash crops - once land tenure problems had been straightened out. By selling their forests cheaply, present forest dwellers are perpetuating this problem and encouraging wastage and the boom and bust practices of forest exploiters.

Another factor is the way the forests are currently being cut. If cutting practices had been rationalized to maximize re-generation, forests would not be threatened with extinction. For example, if about 50% of the forest, in strips or along contours, is untouched at the time of cutting, the forest will eventually regenerate itself and can be cut again in the future. Foresters plead that this is an economically indefensible practice because it is not done elsewhere by competitors.

At present, the environmentalists who want tropical forests preserved, are being asked, to put it colloquially, "put your money where your mouths are". Increasingly, environmentalists are saying that tropical forests have the same status as museums, schools, media outlets, storehouses for exotica, oases of knowledge, mixed "ethnic" enclaves, informational storage and retrieval systems, historical depositories and clearing houses - the anologies are endless. Forests should thus have values equivalent to those of these institutions and facilities. But a demand has to be created to give forests these values or values which are at least greater than those placed on them by crude loggers. Like any other investor, investors in living, viable tropical forests will want returns on their investments. At first these might be negligible but as the forests decline rapidly scarcity will increase their values to non-loggers and hopefully increase the value of their returns - what ever these might be. And tropical forests are declining rapidly despite the present market being swamped with tropical logs. So far some large sums have been acquired by organizations in wealthier countries for investment in South American forests for preservation purposes. The problems with these acquisitions are that extensive areas are needed to support large, free-ranging fauna. How would the present human occupants fit in to such a scenario? They would be left in place and probably be paid for doing something that they have been doing for generations - protecting land, fauna, flora and other resources. But there is always the possibility that the present occupants would use their new-found wealth to disturb the forest. Remember the impact of shotguns on PNG forest fauna back in the 50's and 60's? Money for maintenance (and returns on investments) could come from a new clientele - students from the social and life sciences, eco-travel groups and the like.

Alternatively, there are valuable products in the forests which could be harvested and sold on a limited basis. These products might include fungi, medicinal plants, botanic and zoological specimens, commercial plants including wild orchids, and species of scientific interest. Additionally, certain plants could be planted under canopy cover or in natural breaks in the canopy where there is sunlight. This kind of cultivation is not unfamiliar to swidden agriculturists. Controlled tourism and the establishment of parks or protected area for endangered species are also possibilities. Forest species enrichment is also a possibility.

In areas where there is long term land use planning and where "in perpetuity" government or institutional ownership is possible, it may now be possible to practice biocultural or ecological restoration. Such areas need to be adjacent to well-established forests. Human-assisted forest regeneration is not as "nutty" as it seems at first sight. Such regeneration has always occurred after natural disasters, after swidden gardening and where trees have been felled or burned by lighting strikes. In PNG there are many uniquely stocked, undecimated areas adjacent to which these areas could be established and succession started and assisted by the new occupants. They can distribute seed, introduce bioengineered species which thrive in poor conditions such as abandoned gardens, tailings etc. Places like the Wau-Bulolo area, the Markham Valley, around Port Moresby and in New Ireland might be prime targets for such regeneration. Interesting species mixes of new species could emerge in the succession struggle. These regeneration areas, if big enough, could be organized in conjunction with animal sanctuaries, wild flower gardens, herb gardens, butterfly and moth breeding areas, gene repositories, watershed areas for water collection for variety of purposes including ponds for fish, reptiles and crustaceans. Similar establishments to these already exist in PNG at Wau and various parts of the Highlands (e.g., for gaura pigeons, birds of paradise, trout, marsupials and such like). These "farms" or sanctuaries already exist but need to be larger to incorporate a potential forest. They also need to be near existing pristine forests and their "development" should be fairly unfettered but not highly managed or controlled. Space permitting, traditional gardening might also be a possibility. If these areas are near large roads they may generate money from eco-tourists by providing controlled access. Certain plants may also provide income during the succession cycle. For example there seems no reason why a number of fruit trees from Asia and South America cannot be introduced to be members of this type of forest.

The key to realizing these concepts is educating interested farmers whose mindsets will of course be initially oriented to managed agroecosystems, and getting local and international funds to pay them for setting up and managing such areas. Despite the above comments, forest dwellers are infinitely more suited to this operation than are Western high technology farmers. The initial projects would be for demonstration and experimental purposes and would need to be monitored over a long period. Naturally, the new managers for these areas would need to feel that they are a part of a much wider provincial or national land use plan and that they will be allocated resources and rewards over a long, very long, period. For example, if fires in certain seasons during the pioneer stage of succession occur, the caretakers need facilities to control them and even the support of sanctions to control arsonists. Properly, "managed", these adjuncts to existing, but disappearing, forests could be used to improve the understanding of export crop farmers and their families. Monitoring a new and evolving ecosystem could be very exciting and intellectually challenging for all involved. Unfortunately in the past government officers involved in rural development have not been too concerned about improving rural intellect either at farm sites or in rural schools.

ANCILLARY MATTERS AND RIGHTS

Forested land owners should be carefully informed about land use plans at all levels of government and how these will affect their resources and life styles. Such matters as land taxes too, could be a very real threat to the resources they control and caretake. In the West "vacant or unused" land has often to be sold because of unpaid land taxes. It is used as a method of forcing owners to "develop" it or use it for cash-generating activities.

A concerned government or forest owners' association should provide potential forest sellers with the means to get good advisors. These persons should have backgrounds in contractual law, deforestation impacts, ecology, social change problems, economics and in many of the other areas mentioned in the foregoing. Frequently, villagers themselves from deforested areas can give graphic accounts to others of what has happened to them when they went through the whole deforestation cycle that is: "actual" as opposed to "likely" impact.

Forest landowners should be entitled to an inventory of their resources and what they are currently worth. This inventory should not necessarily be made available to anyone but the owners themselves. Such information can also be of great value to prospective developers. The inventory should take into account the value of rare biota and unique natural features. Values need not be expressed only in monetary terms.

Such owners should also be appraised of what is happening to resources and resource prices in the rest

of the world. They should also know about commodity trends and what their resources will be worth in, say, a generation. In the longer term, the value of PNG forests must increase as South East Asia becomes bereft of forests. The current over-supply of logs is caused by over-cutting not because there is an infinite supply. The situation is very similar to the current over-supply of potentially scarce oil. In such an over-supply situation, the chances for wood product diversification, reforestation, and piggy-backing deforestation with other projects, are rather slim. Greed of developers and the needs of poor forest dwellers have created a situation where even the production of value-added products is not feasible. Villagers should understand what a "liberalized" international market is doing to their resources and where the profligate production of logs has taken other countries in the region, for example in Thailand, Malaysia, the Philippines, Indonesia and even in the nearby Solomons. In these countries original forest dwellers no longer have any choice of life styles - many have had to migrate to the merciless slums of Bangkok, Manilla or Jakarta.

How can needy owners get out of this cruel bind and become able and enlightened partners with their global brothers and sisters who are also concerned with survival? It would seem as though isolated villages are very vulnerable to outsiders when they act on their own and get little positive assistance from government. It would also seem as though forest occupiers (and ex-occupiers!) must be mobilized as a strong interest group. The forest industry, itself, is well organized as a pressure and lobby group (Forest Industries Council). If the owners of the raw material they deal in were equally well organized, they could perform the following functions:

- provide legal and other kinds of counselling to would-be forest sellers;
- lobby the government to protect forests, stimulate diversified, value-added wood product industries and cut down on log exports;
- insist that monitoring be an ongoing activity in every deforestation project. Wayward and delinquent deforestation corporations and government officers could be punished;
- educate their members on a variety of matters related to forest exploitation and what is happening internationally; and
- provide advice to members on agro-forestry, regeneration activities and other activities suitable for deforested land.

It would seem that such an organization could be funded by an additional levy on log exports or from timber industry profits.

Deforestation does not destroy only forests. It can grossly modify forest dwellers' social relations. This change is caused by changed work patterns, changed demography patterns, new kinds of disputes, and gaps appearing between the perceptions of younger and older people. Where traditional institutions, based on kinship and subsistence farming, gathering and hunting activities, have been destroyed by deforestation, new ones which can withstand 20th century imperatives, should be worked out with the assistance of empathic outsiders. The primary need, even before deforestation, is to have organizations which are large enough to mobilize capital and expertise on a much wider basis than the typical forest village. This right to associate for economic purposes has been politically hindered in the past - one has only to look at what happened to consumer and producer cooperatives in PNG's past when the Pre-Independence Australian Liberal government decided that they were redundant in a free enterprise system. However, it seems that the time has come for the formation of forest owners' cooperative associations to mobilize funds and perform a number of other democratic, participatory functions.

DISCUSSION

Enough time has passed since PNG's forests were opened to loggers and other wood users to get a feel for certain patterns of unjustified exploitation. In some nations disadvantaged groups might be able to look to the government for assistance in protecting themselves from being taken advantage of. In PNG currently, it would seem as though this is not possible. In the foregoing I have tried to deal with this problem by identifying problem areas and how the villages themselves, and in conjunction with sympathetic outsiders (NGO's for example), might handle them. As to rights, I have tried to identify these and tie them in to questions or organization. Very briefly, forest owners need to be able to exercise rights in the following areas:

- to associate with other forest owners for the purpose of protecting themselves and their resource against exploitation;
- to access many kinds of information primarily so that they can make correct decisions about their resource and their own future;
- to be adequately compensated for the loss of biotic systems on which they are dependent and for the loss of a unique lifestyle; and,

- to know what assistance they can expect from outside of PNG and what is happening to forests and wood products internationally.

The paper has confined itself to the problems of forest dwellers. But the real problems lie elsewhere. Political leaders and international businessmen are the ones who really need "educating"; and control. If their ambitions and acquisitiveness were reined in, there would be little need for the forest dwellers to exercise their "rights".

The problems touched on above have deep economic roots and at core are very much associated with the maldistribution of economic benefits on a national and international scale.

NOTE

"Destroying Trees, Destroying People: Forest Dweller's Rights" was originally a paper presented at a PNG National Commission for UNESCO workshop held in Lae, Papua New Guinea, from June 20 to July 1, 1988. The sub-regional workshop's theme was: Forest Ecology and Management in the South Pacific.

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Architectural Education: Its Role and Responsibility in the National Development of the Kingdom of Saudi Arabia

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ABSTRACT

Architects in the developing world have generally failed to assume their proper role in national development. They have not assumed this role primarily because they have often ignored the relationship between architecture and such issues as economics, technology, and socio-cultural demands. By not carefully considering these issues, the architect has tended to design without efficacy and without vision. More importantly, the architect has tended to ignore the determinants of national consciousness and has consequently failed to express the aspirations and beliefs of the culture. Architects have, in effect, cut themselves off from their national identity.

For the architect to be established in a proper role in national development, the architect must recapture cultural identity and match it to knowledge of technique and aesthetics. Moreover, these skills must be matched to the economic and political realities that often determine development.

Architectural education is primarily western in outlook and consequently gives insufficient attention to the needs of the developing world. One result of this outlook is that the architect tends to assume, even if only tacitly, the superiority of western solutions to architectural design problems.

To counter this pervasive influence, the developing world needs to restructure architectural education in order to take into account the problems specific to that setting. Such programs will bring the architect and society closer together and will provide technical, aesthetic, and humane foundations necessary to obtain efficacious design.

L'éducation architecturale: son rôle et sa responsabilité dans le développement national du royaume d'Arabie Saoudite. Les architectes dans les pays en voie de développement n'ont pas, dans l'ensemble, réussi à assumer leur rôle fondamental en matière de développement national. Cet échec est dû au fait qu'ils ont rarement tenu compte de la relation qui existe entre l'architecture et les problèmes comme l'économie, la technologie et les exigences socio-culturelles. En laissant de côté ces problèmes, les architectes ont été portés à dresser des plans qui sont inefficaces et sans vision. Plus important encore, les architectes n'ont souvent pas tenu compte des déterminants de la conscience nationale et, par conséquent, ils n'ont pas réussi à exprimer les aspirations et les croyances de la culture. En fait, les architectes ont abandonné leur identité nationale.

Afin d'assumer pleinement leur rôle dans le domaine du développement national, les architectes doivent capter l'identité culturelle et l'exprimer grâce à leurs connaissances en technique et en esthétique. De plus, leurs connaissances doivent correspondre à la réalité politique et économique qui souvent caractérisent le développement.

La formation en architecture reflète avant tout la pensée du monde occidental et, par conséquent, ne porte pas suffisamment attention aux besoins des pays en voie de développement. Les architectes ont ainsi tendance à croire, ne serait-ce qu'inconsciemment, que les solutions du monde occidental aux problèmes de conception architecturale sont supérieures.

Afin de contrecarrer cette influence envahissante, les pays en voie de développement doivent repenser les notions de formation en architecture en tenant compte de leurs propres problèmes. Cette nouvelle formation rapprochera les architectes et la société et fournira les fondements techniques, esthétiques et humains nécessaires à une bonne conception.

THE PLACE OF ARCHITECTURE IN NATIONAL DEVELOPMENT

Ideally, architecture should be a reflection of the beliefs, customs, attitudes, and aspirations of the nation and people it serves. In this role architecture is a service discipline charged with the responsibility to give concrete example to the aims of a people and its development. At the same time it should reflect the goals of a nation's development and also express the national consciousness.

In this active role architecture must be able to lead. Because it is not only a technology but also an art, architecture is ranked with the fine arts and literature. In some ways it even outranks them, for it can bring to the people the intellectual and imaginative discipline of art fused to the technological discipline of science.

Neither technology nor beauty is architecture's exclusive concern. Harmony, quality, and functionality are of great importance. These three - harmony, quality, functionality - are determined, by the conditioning factors inherent in the culture and geography of a nation. To ignore custom, climate or natural landscape is to ignore the determinants of national consciousness. In this respect architecture must be in its active and passive roles not only international but nationalistic in its orientation. A building that is considered functional, harmonious, and of quality in New York City, for example, may not be considered so in Riyadh or Cairo or Paris. Function, harmony, and quality are each to a greater or lesser degree determined by custom, climate, topography, and the response of the people who are the auditors of a structure. When a building does not invoke a meaningful response, it is only a building; but when it does, then that building is art. (Vazques, 1978)

But so far we have been speaking ideally and we must not ignore the practical factors. Architecture is a discipline not only in terms of aesthetics and technique; it is also a discipline in terms of economics, socio-cultural requirements, and technological developments, to name but a few. Put simply, if architecture is to achieve a meaningful place in a nation's development it must take into account these practical considerations. As it is, architecture no longer sells. Too often today national development is taking place without the active help of architecture because at least in part we have tended to overlook the realities and practicalities.

Architecture and Economic Development

The economic realities of a nation and of the world of which it is a part must be considered as determining practically the direction and extent of its development. For architecture, the relationship between economics and national development is a major determining force. Neither a narrow aesthetic nor a narrow technological vision is any longer possible. Rather, to be effective, architecture must maintain a broad and, indeed, a global vision.

As the Egyptian architect Hassan Mohammed Hassan puts it: "Through an imaginative understanding, we must take into account that we are currently living in an interdependent world and that we will create a world that is desired by everyone only if we recognize our mutual needs." (Vazques, 1978) We must, in other words, find forms that will harmonize with the opportunities presented by growth, closely studying the sometimes precarious equilibrium between sectoral growth and regional necessities. At the same time, a clear vision of the future will allow us to identify our needs and establish the paths to be followed to reach our goals if we are to solve today's problems. (Vazques, 1978)

The orderly and humane development of a society is linked to its economic potential and, if such development is to take place, long term regional and national planning is required. We must begin formulating population growth and distribution policies. We must find ways of harmonizing sectoral and regional growth. We must find systems for the development of resources and industry that will be for the good of the nation, its people, and its environment. Whenever possible, architecture must identify and emphasize local resources, materials, and capacities.

Architecture and Socio-Cultural Development

In addition to economic development, architecture must explore its relationship to socio-cultural development. Rather than impose, architecture must discover, locate, define the requirements of a people's well-being. Too often have we seen architecture impose itself on a people and their environment, to the detriment of both. The imposition has often contributed to the perception that development is destructive of human values, of tradition, of environment. Some development is, by its nature, negative in effect - but even this kind of development need not be destructive. We must learn to assess the effects of development, and whenever we discover the destructive we must honestly find ways to eliminate, or, at the very least, minimize it. (Tange, 1978)

Take, for example, the problem of habitat, of housing. To some extent, the quality of housing is determined by economics, but it is equally true that quality can also be determined by vision and by technique. If we can discover and define those things which a people consider necessary to their well-being, we can then begin to find ways to overcome the various problems that stand in the way of meaningful solutions. Absolutely necessary to these solutions is the requirement

that we complement the natural environment and design human settlements that harmonize with what a people perceive to be necessary to a life of quality.

We can, for example, design with the idea of "architecture without architects." People can and often do build for themselves using local and traditional materials. They often build effectively and meaningfully without our help. How much more meaningful and effective would such building be with our help? It is just here that we must be particularly careful in our assessment of those things necessary to a life of quality. We must, in fact, achieve a balance through such assessment of the allowances of economics, socio-cultural requirements, and technology. (Tange, 1978)

Architecture and Technological Development

Inextricably interwoven with economic and socio-cultural factors is the technological factor. The twentieth century has been characterized by its remarkable technological developments. Too often architecture has substituted these developments in place of humanistic, artistic, and cultural development. In many parts of the world industrialization and urbanization grow spontaneously without limit or control. Technology run wild, if you will, has in turn reduced and sometimes even distorted the efficacy and value of national development. This reduction and distortion, in turn, has slowed and sometimes even halted the pace with which important social problems have been dealt with.

The techniques used today, sometimes misused, in fact do not differ substantially from the traditional ones. They are only more numerous, more mechanized, perhaps more precise. What we must recognize is the need to learn to treat technology as a part of a process, as a means and as a mode of expression. We need to recognize that we must not allow our use of technology to grow away from the needs of humankind. (Ekuan, 1978)

Planned cities, road systems, and mass housing all give an illusion of being highly efficient. In reality they can often hardly be said to function effectively. Too often they have taken on the appearance of high-technology ruins. As architects we ask, why is this so? These planned, costly ruins become ineffective because the "blood of life", the emotional juice of human life, does not circulate within their concrete arteries. To our eyes, as well as to the eyes of other people and government, these technological products appear to be antagonistic to humankind, appear to once again prove that technology and humans are in disjunction. Of course, we say, technology in itself is not antagonistic to the human spirit but our disclaimers are too often unheeded.

To be heeded, we must no longer treat technology as something inflexible, as something sacred. We must return technology to the process, treat it as a means rather than an end. In architecture's passive role in development, technology must be our tool; in architecture's active role, intellect and imagination must be our tools.

THE ROLE OF THE ARCHITECT IN NATIONAL DEVELOPMENT

So far we have been concerned with architecture as a discipline. What we really need to talk about is the builder and designer: the architect. The place of architecture in national development will be determined ultimately by the individual architect. It is, after all, the architect who must rescue the profession, who must demonstrate that architecture does have a meaningful place in a nation's development.

In this regard, there is a tendency today for architects to think of themselves as citizens with little or no power to shape the present or the future. They tend to think only in terms of the passive role of architecture. There are apparently good reasons for this attitude. We recognize that among these reasons is the fact that urban and rural planning, design, and development are very often politically, economically, and socio- culturally determined. But these reasons, may be more apparent than real and we must, in this light, ask ourselves one or two hard questions. Is it that we simply have lost sight of our active role in national development? Have we fallen back on our passive role? Are we not allowed an active role because we no longer know how to fulfill that role?

Perhaps the best answer to these questions is that of Mahadi Elmandjira, President of the World Future Studies Federation: "architecture synthesizes the traits of a nation and it expresses the nation's genius as well as its cultural identity. (Vazques, 1978) The crisis affecting architecture in the developing countries is not less than an identity crisis..." The crisis of identity in architecture, I submit, is most obviously located in our tendency to no longer synthesize and express our own cultural heritage. It is not the political or the economic or the socio-cultural that prevents us from taking part in the decision-making process; rather, we have lost touch with the realities and the practicalities of development. Our solutions to planning and design and development problems, are sometimes suspect, sometimes irrelevant, sometimes irresponsible.

The contemporary architect must recognize that the present and future tasks must be to maintain an awareness of national and cultural identity. (Vazques, 1978) To do that, one must recognize precisely what makes up that identity and once that is achieved, the architect must discover ways to match to it the knowledge of technique and aesthetics. The architect must,

in addition, learn to match technique and aesthetics to political and economic realities. In this way, the architect must be responsive to the nation and to its people, not as a servant. The architect must also offer leadership.

THE CURRENT INSUFFICIENCY OF ARCHITECTURAL EDUCATION FOR NATIONAL DEVELOPMENT

The mitigating circumstances that interfere with these broad solutions are, I believe, at least in part the result of the architectural education that has trained most of us. This education, for all of its technical value, has insufficiently prepared us to assume a meaningful role in national development. Indeed, many of us today continue that education as teachers of architecture.

Briefly, let us examine that education. Generally, architectural education in the developing world is western oriented. The West provides either the educational model or the faculty or, as is often the case, both. (Bechhoefer, 1976-77) To put it another way, the contemporary architect of a developing nation has either been trained in the West or has been trained in a western modelled program or has been trained by a westerner or by someone trained in the West. What sounds circular is in fact just that. Architectural education in the developing world is caught up in a circle which, on a country-by-country basis, to a greater or lesser extent begins and ends in the West. In no sense do I wish to imply that something is wrong with western architectural education, but what I do wish to stress is that such education is not wholly suited to nor wholly beneficial to the developing world.

The orientation of this kind of architectural education is toward an international western outlook rather than toward a local or national or regional outlook. The idea of urbanization, for example, is conceived according to the western experience. But the cultural, economic and geographical factors are different in the developing world. To put it bluntly, our culture, economy, climate, and topography are not taken into account in the western design equation. There is, moreover, the very real problem of the assumption in such educational programs that somehow the western way is intrinsically superior. This problem in particular is not limited only to the architect, for it is also found in the western trained contemporary bureaucrat. As a result of this training, we often find ourselves defending western orientation, and we do so not so much because of our commitment to it but out of our sense of crisis of identity or our cultural disorientation. (Bechhoefer, 1976-77)

Added to this is the problem of elitism that often results from a university education in the developing world. The causes of elitism are many, but perhaps the most important from our perspective is the insensitivity of the university to social problems, particularly in schools of architecture. In general this insensitivity is not purposeful. Rather, it is more than likely a reflection of the problems of the developing nation itself. The university is also in a state of development and often it is forced, whether consciously or unconsciously, to turn to the West for its models. As is often the case in rapid national development, limit and control and reflection are sometimes sacrificed to immediate goals.

It is little wonder, then, that the architectural students emerging from such an educational environment feels cut off from their culture and are all too often ill-equipped to participate in any significant sense in the development of their people and nation. The students may in fact be prepared in technological and aesthetic terms, but not always adequately prepared to deal meaningfully with the practicalities and realities of the development peculiar to their own nation. (Bechhoefer, 1976-77)

If the outlines I have given for the architectural education current in the developing world are accurate, then they do supply at least some mitigation for the current plight of the architect in national development. The problem doesn't lie in the technological provisions of western-modelled architectural education. The problem is located in the insufficient attention paid to local realities. It lies in the relationship of the individual architectural program to the culture to which it should be responsive.

SUGGESTION FOR A PROGRAM OF ARCHITECTURAL EDUCATION SUITED TO NATIONAL DEVELOPMENT

What I am calling for is the development or restructuring of programs of architectural education to make them responsible and sensitive to the individual nation and its communities Such a program will in no sense be isolationist in its orientation, for architecture must maintain a global vision. In fact, rather than narrowing the focus of architectural education, such a program will broaden it in ways that allow the student to recognize and synthesize all that architecture has to offer as an international discipline with national applications.

The goal of such a program is to prepare the architect to address the emerging and complex issues of national development and to formulate and execute solutions to these issues in a way that will contribute to the growth and well-being of the nation and its people. (Azoz, 1977) What is needed in such a program is a recognition that the needs of society have called for dramatic changes in the traditional roles of the architect. This has in part come about because today we

have the opportunity to identify and solve systematically environmental problems, and today we have at hand concepts and tools unknown a generation ago.

The architect must be a manager, a department head, a project chairperson, a government spokesman or representative dealing with foreign firms, and an interpreter of the culture. This changed role obviously calls for a wide range of abilities and qualifications suitable to the professional who is expected to be general enough to fit any position while being specialized enough to produce specific projects.

Such a program must provide its students with preparation in two major areas. It must, on the one hand, prepare the student to be a multi-professional generalist by providing a solid background not only in architecture but in the related fields of planning, landscape, and construction. (Azoz, 1977) On the other hand, the program must also instill in the student a broad perspective on society and a sense of value which will foster responsible participation in civic and public affairs. Taken together, these two major areas of preparation will develop in the student the technical and aesthetic skills and the humane awareness to synthesize and then express the genius of nation and culture.

Specifically, in the areas of technique and aesthetics the program should be centered on architectural design which takes into account both the human needs and the rules of nature. The heart of this is the studio where the collective learning experiences of the faculty, resource people, and students are synthesized in the design process. The emphasis in the design courses, however, should be on "how to" rather than on "what to" design. (Azoz, 1977) The focus here must be on the methods and means of understanding fully a design problem in both its technical and human aspects before attempting to solve it.

In this regard, humanistic and social studies should be established that are designed to complement the design process. Understanding of the behaviour, culture, and aspirations of the auditors of the built environment has become a crucial part of the design process insofar as such understanding indicates to us the nature and the location of the life blood of the built environment.

In conjunction with these studies, the architectural curriculum will need to restructure its history of architecture courses and establish more elective courses in art history. In both cases the emphasis should be on the analysis of and the totality of both traditions and not on the study of details. "The study of architectural history aims not only to clarify a scale of values and to broaden cultural background, but also to stimulate visually. (Azoz, 1977) Only through a familiarity with the recent and distant past can the context for development of future cultural value be provided. Studies in the history of art and architecture, intellectual and analytical in character, make the student familiar with the conditions and reasons which have brought about the visual expression of the different periods. Analogously, the teaching of architectural history should illustrate the concept 'architectural totality' through the analysis and criticism of examples. This implies that architectural history should be presented as an illustration to the main synthetical problems of design rather than chronologically."

A knowledge of art history, moreover, is absolutely necessary to the innovative architect as environmentalist, designer, and planner. (Azoz, 1977) Such knowledge is imperative in terms of the aesthetic background it provides to the design process as a whole. This background is most useful in the sense that it provides an analytical, intellectual, and emotional exposure to the sensitive perceptions of those who have dealt with the visual world as symbol and aesthetic fact.

As a part of these two areas, any architectural program oriented to national development must integrate into its curriculum provisions for the participation of the community. Such participation will have the two-fold benefit of reducing the sense of elitism associated with a university education and of bringing the architectural student closer to the realities of meaningful design. By interacting with the community, the student can more immediately discover and define its aspirations and its sense of what composes well-being.

In addition, the input of the community into the programming process will provide invaluable parameters for the design process itself. Programming, as we know, helps to locate, select, and organize facts into graphic expressions which may in turn be translated into physical expression. As part of community participation, the school of architecture should as often as possible make use not only of non-professionals but of professionals from other disciplines such as the social sciences, the arts, and medicine. It should, also, provide for a dialogue between the student and members of the government sectors who are involved in planning and development. This aspect of community input will provide the student with a clear sense of the economics and politics of development and how they influence design.

As a part of its orientation to national development, the program should further provide two primary and much needed program options. In addition to architecture, both environmental and urban design are major requirements in the developing world and should be an integral part of a restructured architectural program. (Azoz, 1977) These options should be planned according to the needs and environment of the nation and they should be designed to come to terms with these factors by way of the facilities and resources and

finances available to that country.

Obviously we do not have the time to consider each and every aspect of an architectural program based on the needs of a particular national development. We do have the time however, to stress the central idea of a program and to list the more important non-technical aspects and goals of a development oriented program.

Central to such a program, its informing idea, is the recognition of the need to integrate the goals and objectives of architectural education with the goals and objectives of national development in all of its ramifications. To accomplish this integration requires both breadth and depth of curriculum and total commitment to its informing idea. Aside from the purely technical components, the magnitude and success of such an integrated program will be dependent on the attainment of the following objectives:

1. The establishment of social, behavioural, and Islamic studies - where appropriate - to aid in the development of environments suitable to the culture;

2. development of a perceptive and cooperative social attitude through a commitment to active participation in the affairs of the community;

3. fostering and development of an increased understanding between the architect and society through multi-disciplinary programs and projects within and without the college; and

4. adaptation of local materials and resources in a way that is sensitive to the culture and environment.

The achievement of these objectives will, I believe, provide the developing nation with architects and an architecture appropriate to its real and practical needs. These architects will be able to recognize, synthesize, and express the true meaning and value of their culture. They will be able to do this because the following qualities will have become a part of their completed education:

1. The awareness of and sensitivity to the many facets of humankind's relationship to the physical environment;

2. ability to identify and translate personal and recognized cultural values into efficacious designs;

3. knowledge of the social and behavioural effects of physical design on people; and

4. commitment to use the tools of architecture to achieve physical forms which truly reflect and express cultural identity.

CONCLUSION

By achieving a program of architectural education that is integrated with national development, architects and architecture will be qualified to assume their logical, necessary, and rightful place in the developing world. Not only will the nation's physical development be served by the skills and techniques that will result from a restructured program, its aspirations, beliefs, and customs, its national consciousness, will be expressed by the humane and aesthetic values central to that program. Such a program is needed and its realization is possible given the determination not only of government and higher education in the developing world, but of our own determination to rescue the architectural profession and recapture and express our own cultural identity.

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FRANK FISHER

Frank Fisher completed a B.E. (Honours, Electrical Power) at Melbourne University in 1965 and spent 10 years studying and working with Swedish and Swiss heavy electrical multinationals. Between 1971 and 1977 he gained a B.A. (Honours, Geography) from Melbourne University and a Master's of Environmental Studies from Lund University on a Swedish Foreign Affairs Department Scholarship and has worked as an environmental consultant and lecturer. His research and teaching interests include the anthropology of technology, knowledge structures complementary to science (such as General Systems Theory) and the nature of inhibitions to "conserver society".

He has 18 years experience in a range of community work. He is married, has two young sons and has lived with a chronic auto-immune disease for 25 years.

JOHN DOW MCRUER

During the 1960s John McRuer was naval representative in a strategy group studying missile threats to North America. On leaving the Royal Canadian Navy he took his bachelor's degree in physics at Carleton University, worked at the Ontario Science Centre, and then in his own wilderness travel business. In 1983 he received a Master's of Environmental Studies from York University, with a paper on "The Environmental Security of the Ontario Economy". Since then he has been a newspaper columnist, and has worked with long-term computer simulations of Canada's socio-economy and resources at the University of Waterloo. He is a member of the Conservation Council of Ontario and chairman of its energy task force.

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Andrew Wister is an Assistant Professor of Sociology and an affiliate of the Gerontology Program, the University of Waterloo. He studies aging and the family, and his recent research includes housing, living arrangements and social support networks of the elderly, decision-making models of household behaviour, and family change.

Contact

Ideas

The University Consortium on the Environment (UCE)

Drew Knight, Project Manager
Bali Sustainable Development Project, University of Waterloo

BACKGROUND

In 1985 the Canadian International Development Agency (CIDA) funded a study through the Environmental Management Development in Indonesia Project (EMDI) at Dalhousie University to examine possible linkages between Canadian Universities and Environmental Studies Centres (ESCs) at Indonesian Universities. That report recommended the "twinning" of three Ontario universities; Toronto (UT), Waterloo (UW) and York with three of the leading University based ESCs in Indonesia, namely the University of Indonesia (UI), Gadjah Mada University (UGM) and the Institute of Technology, Bandung (ITB) respectively. Subsequent to that report, CIDA provided seed funding of $150,000 through Dalhousie University for the above Canadian institutions to undertake two years of cooperative activities, primarily through on-site assessments and planning meetings in order to investigate the possibility of long term collaborative development projects.

FRAMEWORK

In 1987 the University Consortium on the Environment was established and submitted a formal proposal to CIDA outlining a detailed program of activities over a five year period. The purpose of the program is to strengthen the ESCs in Indonesia through Education and Skills Development, Development Studies and Information Systems Development and Communication. The overarching theme is "Planning and Management of Environment and Development for Sustainable Development."

The framework for the project is provided by the three dimensional concept of Tridharma or the mission of the universities in Indonesia. That is, creating new knowledge (research), the transmission of knowledge (teaching) and the application or utilization of that knowledge (community service). There are two major components of the project: *Consortium* level activities (among the core universities with other universities, non-government agencies and government institutions) and *Twinning* activities (between each Canadian and Indonesian partner).

The consortium concept was initiated because of the affinity of the universities and of the interest in the synergy, and ultimately enhanced capability to address critical environment/development issues, that would be fostered. The consortium will promote scholarships and language training and as well, will facilitate annual thematic workshops, inter-university initiatives such as faculty/staff exchanges, special courses, publications, and will ensure involvement of some off-Java Environmental Study Centres in UCE activities.

At the same time, it was recognized that an effective consortium depended on effective twinnings. Accordingly, a core-network approach was adopted – each twinning represents the core; the network is

formed by the association of the participants on a functional basis: in workshops, in sharing experience and expertise, in conducting complementary activities, such as upstream and downstream projects in a single watershed (e.g the Citanduy).

ACTIVITIES

The Development Studies form the core of the Twinning activities. The UGM-UW Development Study will advance the art of interdisciplinary analysis of complex environments by focussing on a strategy for Sustainable Development in Bali – Integrating Regional Development and Environmental Management. This is an action-oriented strategic planning study concerned with exploring an appropriate balance between its major economic sectors: tourism, agriculture and small-scale industry. A cross-cutting theme in this study will examine the role of women in development utilizing a "grass roots" approach. Combined, these approaches in the development study will relate strongly to public policy and decision-making concerns arising from the special challenge of the natural and cultural environment of Bali. UW faculty associated with the Bali development include Jim Bater, Trudi Bunting, Len Gertler, Bruce Mitchell and Geoff Wall. Len Gertler will serve as the Academic Project Director with Drew Knight providing project management support. Lisa Weber will assist in administration. In addition Alec Drysdale and Kathleen Zimmerman are employed as co-project field managers in Bali.

Another UGM/UW initiative will focus on sustainable development in the Nusa Kambangan/Segara Anakan area at the Citanduy River Estuary, Central Java. The special problems of heritage and resources conservation in that area makes it a highly suitable locale for the application and demonstration of techniques of resources and environmental survey, specifically ABC/GIS techniques (Abiotic, Biotic and Cultural/Geographic Information Systems). The ABC/GIS concept focuses upon an integration of satellite remote sensing information, existing land use data bases and cultural resource maps in a computer data base and mapping environment in support of Environmentally Sensitive Area Planning. The results of this work will be used both to address specific planning needs and to provide training opportunities. UW faculty involved include Ellsworth Ledrew, Gordon Nelson and John Theberge.

The York/ITB Twinning is based on strengthening the centre's capacity of the Center for Environmental Studies at ITB to deliver environmental training and research at both graduate and professional levels; and in strengthening its capacity to manage a network approach to project implementation. The particular focus is on participatory strategies for environmental planning and management. The approach to action research and community involvement for the ESC is based on networking and cooperation with multiple organizations, not only within the university (i.e., other departments), but also with the private sector, NGOs, and the public sector. Support from York will be central to strengthening the institutional capacity of the ESC.

The objective of the collaborative activities between the University of Indonesia and other cooperating Canadian Universities will be to expand the capacity of the Centre at UI to meet the central environmental challenges associated with the conservation, rehabilitation and optimal management of resources. The proposed development study focuses on the issue of Waste Management in the Greater Jakarta Area, utilizing an integrated resource management approach. The aim of this development study is to formulate the requirements both technical and institutional of a comprehensive waste management system consisting of collection, transportation, treatment and disposal.

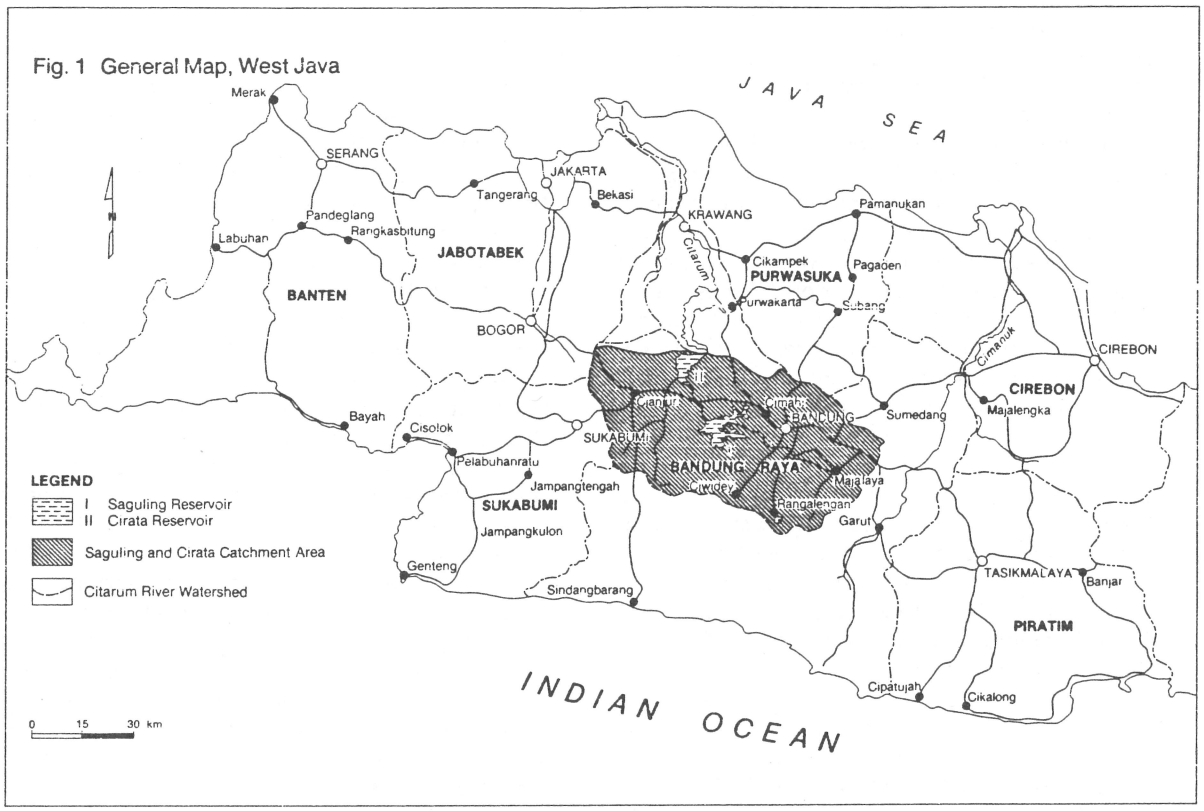
SUMMARY

The University Consortium on the Environment began operation officially in July 1989. Funds totalling approximately 5 million dollars will be provided by CIDA through the Environmental Management and Development in Indonesia program at Dalhousie University over the next five years.

Excerpts from an Indonesian Journal

Len Gertler
School of Urban and Regional Planning, University of Waterloo

Fig. 1 General Map, West Java



These journal entries were made during an assignment for Environmental Management Development Indonesia (EMDI). The general theme of the project was the link, functionally and institutionally, between environmental management and regional development. The assignment began in Jakarta, and involved work with several environmental study centres at Indonesian universities. These particular entries relate mainly to the activities at the Institute of Ecology, Padjadjaran University, Bandung, which was established by the noted ecologist, Dr. Otto Soemarwoto in the post-Stockholm '72 period. At the time, one of the main preoccupations of the Centre, and of my assignment for about one month, was the planning for the repercussions of two contiguous multi-purpose water development projects: the Saguling and the Cirata, in the Ciratum river basin, West Java.

Jakarta **Thursday, May 3 1984**

My Indonesian mentor (M) was in good form – giving me a broad picture of the things on the move (and there seems to be a lot) and weaving into it suggestions for my concern. I was very pleased that he did not take a too academic view of my mission, emphasizing for example, that in visiting the various Centres, I should engage primarily in a critical discussion of the development issues and interests of the Centres – both their technical and institutional concerns, and exploring their views on the way in which joint efforts with Canada would be pertinent, fruitful.

In responding to my terms of reference, he made the following points:

1. During his recent discussions in Ottawa, emphasis was placed on a joint Indonesia-Canada program (contra I guess, to a single University relationship); and he was asked to indicate priorities in the environment sector. These, it was suggested, should be strongly related to Canadian capabilities, e.g., at Canadian Universities. He gave, as an example, matching Gadjah Mada University's (UGM's) strengths in Geography to Canada's well know capacities in that area. In our discussion, we agreed that what we mean here is the general field of regional/resource studies. Resource mapping in such areas as protected areas (Environmentally

Sensitive Areas or ESA's), national parks, Nature Conservation areas (etc) were mentioned. The connection to this assignment is that he wants me to assist him in the identification and definition of such areas, partly through the discussions with the Environmental Study Centre (PSL) personnel. I will be meeting an interesting challenge. A Waterloo-Gadjah Mada link would certainly be interesting; should see the Rector over there. It will be necessary to put together the perception of needs and priorities and match them in a sense, discipline by discipline, university by university in Canada.

2. A second major point is a concern with making effective a current Ministry of State for Population and Environment (MKLH) initiative – taking the form of a draft regulation concerned with the process for evaluation of Environmental Impact Assessments (EIA'a). This would start from the filing by the proponent of "environmental info" (shades of the Ontario system); and would involve critically a Provincial commission – with the core from the provincial Regional Development Planning Board (BAPPEDA), Provincial Bureau of Population and Environment (BKLH), and the Environmental Study Centre (PSL) plus the sectoral agencies involved. The Commission would have responsibility for the evaluation, both for projects which are "provincial" and for those which are within the jurisdiction of a central sectoral agency, by reference from the Director Generals concerned.

   The connection to my assignment relates to the responsibility that falls upon BAPPEDA and BKLH in this regard. Their capability is crucial. 'M' wants me to give some attention to this, suggesting that in each of my visits, (the 2 to 3 day ones, in addition to those to Bandung), I might spend 1 day with each of the BAPPEDA and BKLH people exploring this. Question: has MKLH published objectives and evaluation criteria for EIA?
3. A third point relates to a program of thematic mapping for purposes of policy guidance; that is, the maps (e.g., Protected Areas) would be policy tools. In fact, these will be established by Presidential decree (presumably the authority for the map series). The connection here is that this is a specific area of expertise (e.g. determining "environmentally sensitive areas") and the related techniques for this and various kinds of landscape analysis and resource mapping – e.g., air photo interpretation, remote sensing, satellite imagery – which is a candidate area for the joint Indonesia-Canada program (twinning UofW with UGM).
4. Other potential areas identified by 'M' were: – social impact assessment and measures or indicators that could/should be used; – Harmony of Population and Environment, a Division of the Ministry under a former Assistant Minister for Development Supervision – one of its missions is the harmonization of social/cultural (people) aspects with the physical environment; the wish is to make an assessment process: techniques, measuring instrument(s), operational within 1 year; – a computer-based environmental data centre at MKLH, now being supported by the Dalhousie-CIDA manpower development project; – re-greening, reforestation; – population studies.

Jakarta **Sat/Sun, May 5/6**

I have read Goeffrey Hainsworth's paper (long, about 100 pages) on "Innocents Abroad or Partners in Development? An Evaluation of Canada-Indonesia Aid, Trade, and Investment Relations". Excellent, full of shrewd insight, but not adequate (or fair?) in its treatment of the CIDA Regional Development effort as a form of joint planning, program-based aid.

The only other info of note was quite a long phone conversation with a staff member of the Environment Centre at the University of Indonesia. My worst fears about distribution of my previous report on the role of PSL's (Feb/83 – based on my Sept – Dec/82 submission) were confirmed. He has not received it. It was the first thing he asked me about. This is bad for Government and University – in terms of relationships with the Centres – and bad for me. I involved the Centres – eliciting their cooperation and inevitably arousing some expectations. Feedback to them is an essential part of the information/education process (apart from the morality of the committment). A most significant part of the enterprise was to provide a constructive critique of the Centres and the system. How can improvements occur if there is no stream of discussion and debate?

Bandung **Wednesday, May 9**

All day at the Institute, plowing through material and doing my report. In the afternoon, met an interesting group from the National Electricity Corporation responsible for the two dam projects, Saguling and Cirata; someone from the Fisheries Department; Richard Neal, Director General, International Centre for Living Aquatic Resources Management, Philippines; and Don Graybill, environmentalist from Pennsylvania, currently with an international consulting firm and the man who coordinated an *Environmental Sector Report* for MKLH. Neal's group is making a 5 year committment to the establishment of aquaculture and fishing in the headpond area. This could be very significant – a fulfilment of some of the ideas projected by the Institute. The program will include marketing studies and arrangements, and coordination with fisheries in providing capital loans.

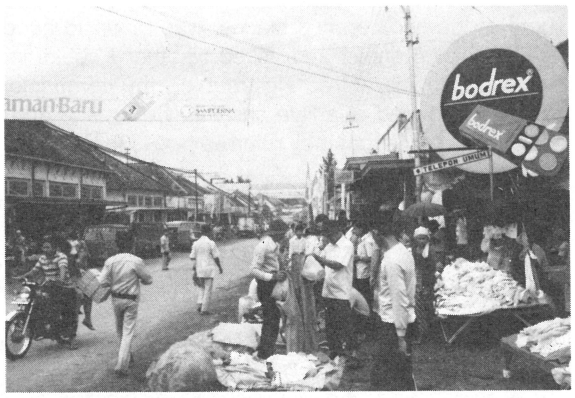
Bandung **Thursday, May 10**

Oh Journal, I have some trouble maintaining you. At this time, my third day at the Institute of Ecology, Padjadjaran University, I much need some perspec-

tive. The Director was warm in his welcome and outlined a role that I liked – to review their material and see how it might be turned into a Regional Plan. He feels that the work is very fragmentary and needs to be given cohesion and also that the implementation side needs attention. On both these scores, I can agree. Also, he states quite categorically that he looks forward to an ongoing association with the University of Waterloo. And he throws the gauntlet to me: tell us how to do it. As an "old regional planner" I could not want a better challenge. But at this time, I should feel happier about it than I do. There is quite a monumental amount of work to go through, although I did a "scope" of their 5 reports, 1979-83, and found an emphasis on a relatively few of the 25 subjects mentioned: Flora, Agricultural Systems, Erosion, Resettlement, etc. The task is to divine the implied strategy, observe the gaps, and propose an approach. Also in my last week, I am to give a public lecture before a University/Government audience. This will take some preparing.

Bandung **Friday, May 11**

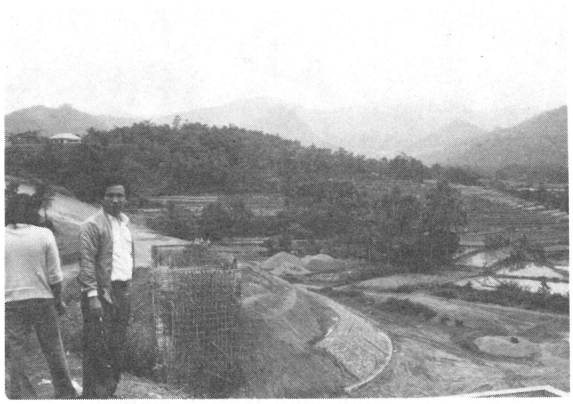
Not the best morning in the world, slept intermittently – watch stopped – as I came down the steps into the lobby, at the foot of the steps a roach the size of a 100 Rupiah coin crossed my path. I do feel out of sorts, also fretting about personal relationships at the Institute – typical intercultural impasse??



Anyway, the first few days, I went through a lot of the reports, which tended to be monumental, and then came up with a review that the director seemed to appreciate. The focus: how to turn EIA into a planning process? Today, up at 4:00 a.m., and stayed in my room until 12:30; then gave a 2 hour presentation/talk, to 4:00 p.m.; then back to the hotel: anti-climax, the forbidding streets of Bandung – forbidding in terms of traffic (motorcycles, vans, jeeps, trucks, a few cars and every kind of contraption). My comments dealt with the EIA in relation to a "broad planning process", the scope of the UNPAD Strategy, and institutional arrangements both for resettlement and for river basin planning in the Upper Citarum. The Director seemed to find some revelation in what I presented – probably the perspective of a planning process. He seemed to think that what I showed expressed what he was reaching for but could not conceptually express – so much the better. Anyway, I think I am well launched.

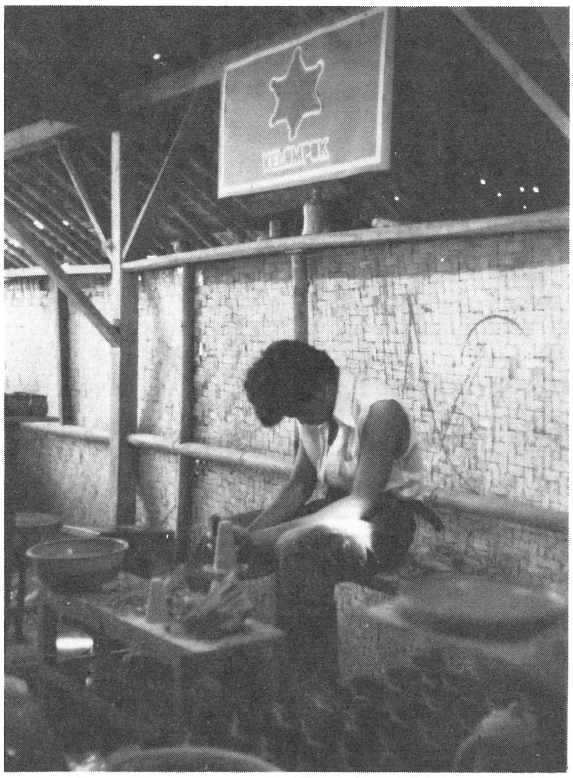
Bandung, Saguling Project **Saturday, May 12**

Today, a field trip to the site of the future Saguling Dam; took a loop, moving west focusing on Bandung, first on the south, then west, then north side of the future inundated area. Saw rice fields, and villages to be inundated as well as roads that will have to be replaced. The 645' level is one hellava rise – some fantastic landscape will be gone, villages and market



patterns changed. The dam is BIG. On the way, my Indonesian colleages (including an anthropologist and regional geographer) pointed out features: future tourism/boating areas and location of the Centre of the Fisheries Service, as well as other aquaculture sites. They were most helpful. Around 1:00 p.m., (we started at 7:30) had lunch at the lookout which gives quite a panorama, but it was hazy (completed a role of film). En route, my companions suggested that I outline the requirements of a regional plan, which they will work on and which I might monitor from time to time. Also they want me to write up yesterday's presentation ... sense a developing rapport.

About 18 miles west of Bandung at Ciburiel, we stopped at a running water aquapond. Spring water coming down quite a long steep slope. It looked productive, they cleared one pond to put in fresh water – the fish were exposed, hundreds flapping. Their data show that the original stock is multiplied by 3 in 3 months – can produce enough to make a net value a year of about 9,000,000 rupiah ($1 U.S. = 1000 Rp 1984). I need to check report data. This, it was said, is better than rice farming; the great advantage is the intensity; a small site, a few hundred meters square, will do.

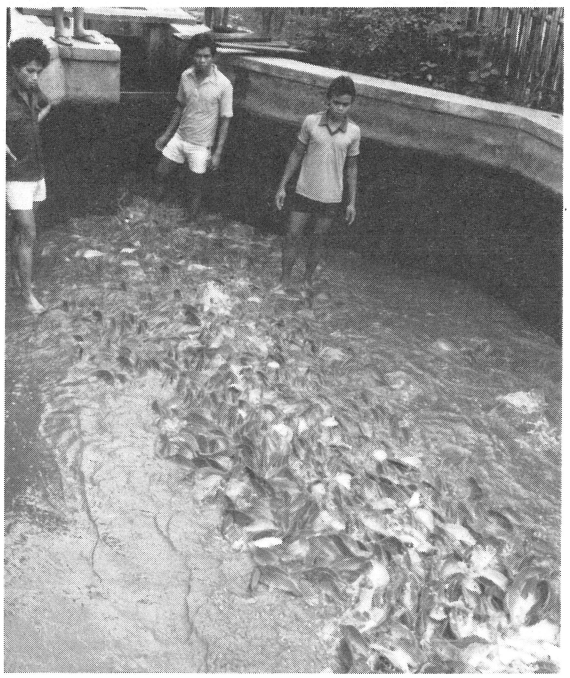


Field trip to the Cirata dam, N.W. of Bandung
Monday, May 21

I was picked up Monday for the Cirata field trip at 6:00 in the morning. The trip was not to be an entire success – the vibes somehow were not right. I believe that the more senior of my colleagues may from the start have resented some of the out-of-the-way places I wanted to see (I did not of course know before hand just how bad some of the roads were). But the trouble really started at Plered, not too far from the dam site, a place, the only one in the entire region, know for its ceramics: red roof tile and pottery. I noticed that we were moving very fast through the place (I had emphasized my wish to see it) past roadside displays of pottery – brown earthy colored jugs, vases, etc – and some colorful, amusing ones. I thought they probably had a place in mind to stop but at the "other" end of town, I enquired. It was clear they had no plan. I asked to stop at a tile (roof) making place. It proved very interesting (revealing re state of the art). It is focused on quite a large machine – a die for forming the tiles. Women shape them roughly and throw a slab onto the die – then a muscular young man with considerable zest turns a huge wheel which closes the die on the clay to form the tile – the excess is trimmed off by the women – the die is released by the male worker and the tile removed for drying, some on racks inside and some outside on the ground, 100ds/000's of them are spread out. Most of the workers were women, young. And the place obviously had a system which seemed to work well. I understand there is a big market for these tiles in Jakarta, Bandung, etc.

I suppose the coup de grace was when I asked to retrace our steps and go back to the pottery place, which we did, and my detractor could not disguise first his reluctance and secondly, his great interest in what we saw in the little factory (the largest pottery works in town). It was a well run establishment, making sets of dinner ware and a variety of jugs, vases, vessels from small to huge, using local clay. They handle the whole process from clay mixing up. Unlike the tile workshops which used culled rubber trees as fuel for the kilns (I understand the supply is quite limited, which will require a shift to another fuel), in the pottery works, they used kerosene for the kilns. The potters turning out the originals were at work, most of them quite young men. When I asked where they learned their skills, I was taken to a workshop for apprentices (women and men). It is a training program funded by a West German foundation – sometimes in cooperation with the merchants assoc. (presumably ceramic) and sometimes with a government department (small industry?). People at the plant, very cooperative and proud.

Later, I and the more supportive of my companions walked along to some of the home industries along the main street, making a variety of pots, some still wet, drying on balconies and at the road's edge. I was quite taken with these, the people, the children, the work, and inclined to photograph. I had already taken a lot of shots of the two ceramic places, was down to about my last 7 or 8 shots, and asked whether I could find film in the town centre. "No trouble", my companion said. He enquired at a little shop as we walked and I took more photos, but they referred him to the market.



In the van, I heard some conversation in Bahasa Indonesia about the film, and I think that I heard a somewhat truculent comment from the less sympathetic of the two: let him get (bring) film from Canada, don't stop; and I am afraid that my friend bowed to the pressure (although he was mortified in the intimidation).

Anyway, we did not stop for film, did not even try in the market centre, with the result that we went on to the very dramatic site of the Cirata dam and powerplant and my camera was not loaded. No one except the driver (once) mentioned film again. We did go on to the heart of the flooded area through nearly pioneer-type roads (like Sumbawa), rough, rough stone with some patches of clay cover wet from rain (we were not using a four wheel drive jeep this time, only a van). As I saw the sawah (rice fields) and the odd village centre, its substantial mosque and the houses of the people, I became very much aware in a visual-emotional sense of the extensiveness of the flooding.

(I later found a vestige of an earlier Japanese presence in my Bandung hotel, Kumala Panghegar. For most of the two weeks I was there, mysterious sounds of revelry, song and music wafted up to my first floor room, but I could not discover the source. The hotel public areas maintained their awe-some silence. The night (or two nights) before leaving, I noticed some Japanese fellows leave the coffee shop by a back door entering into a corridor, and after my dinner, I took the same route. Lo! I discovered a club, piano-bar style, girls, guys, and then noticed on the door, a sign, which would have been familiar in Japan,"MEMBERS ONLY" ... too bad)

From Mande, we took an interesting winding, narrow but well constructed plantation road, through an extensive rubber plantation, still apparently productive. The trees were being tapped and it looked quite well maintained. No doubt, it is a heritage of Dutch times, probably run by the Directorate General Plantation (i.e., Industrial) crops. I noticed that the trees were planted partly on very steep slopes, which were terraced – the trees planted in terrace: a sound practice from the point of view of water run-off and erosion control. We took that route across to Cipanas at the eastern end of the Puncak Mountain tourist area (I think, the village of Cipeundey first) and then along the infamous Jakarta-Bandung Road to Cianjur, a big Centre in the Cirata catchment basin. Then not far past there, we stalled in a long, long line of traffic. There was an accident: some of the close shaves are hits. We were held up almost for an hour and could not go before a lame bus was hauled by with one front side smashed literally to bits. When we passed the site of the accident, we saw the other vehicle, also a bus, equally smashed. As the driver said, "Sama saja" (exactly the same). At Rajamandale, the vehicle drove into a village gate. The group got out, declaring that they must pray – they would only be about ten minutes. They kept their word. We arrived home in the dark, about 6:45 p.m. – over 12 hours on the road.

Oh I forgot, at Cianjur, at about 3:30, we had quite a nice spicy meal, soto and ayam (soup and chicken) – at a restaurant. I think the lateness of our arrival for lunch may have been a partial cause of the disquiet I felt. By the time we returned to Bandung, the cold I was suffering: sore throat, running nose, cough, watering eyes, slight headache, was reaching some kind of climax. It was a relief to return to wash and take a pill (I was on 222, which did help), and then have some supper at the hotel. I wanted to work that night, because by mid-day next, I had to present the regional framework – planning studies for Area Development I had been working on all weekend. But I was beat, in bed by 9:30, which proved wise, because by next morning, I seem to have passed the crisis of my condition and refreshed, was able to do a lot and complete my report.

Archaeology and Environmental Assessments in Ontario

Robert J. Pearce
Museum of Indian Archaeology, London, Ontario

ABSTRACT

Various acts and guidelines in Ontario including the Environmental Assessment Act, Planning Act, and Heritage Act, require heritage resource assessment prior to construction on a variety of projects, and regulate how these are conducted. Heritage resource assessments must be completed by archaeologists licensed by the Minister of Culture and Communications, and are similar to biological and other types of environmental assessments which identify potential impacts to resources and attempt to mitigate those impacts.

Key words: archaeology, heritage, environmental assessment planning, mitigation, excavation

INTRODUCTION

Projects subject to an Environmental Assessment now require that the lands to be potentially impacted by the proposed undertaking be examined by professional archaeologists to determine if those lands contain evidence for significant heritage resources [prehistoric and historic Native archaeological sites, and nonstanding early historic (pioneer) sites]. The requirement for an archaeological assessment also applies to pipeline corridors regulated by the National Energy Board, and to residential and some industrial developments in all Regional Municipalities and certain Counties; the latter are regulated by the Planning Act.

RATIONALE

The rationale behind the requirement of an archaeological assessment is really quite simple: if a significant heritage resource was impacted by an undertaking, the proponent of that undertaking could be shut down by a "Stop Work Order" under the Ontario Heritage Act. Thus it is a prudent planning process which requires an archaeological assessment prior to any construction, to determine if such significant heritage resources are present.

Ideally, archaeological assessments are completed as part of the initial planning stage of an undertaking, in much the same manner as biological and other environmental studies are completed. If significant resources are found at this early stage, then it is possible to mitigate or avoid those resources prior to construction.

WHO CONDUCTS ARCHAEOLOGICAL ASSESSMENTS

All archaeological activities in Ontario are regulated by and subject to the requirements of the Ontario Heritage Act, administered by the Ontario Heritage Foundation and the Heritage Branch, Ministry of Culture and Communications. To conduct any form of archaeological activity, it is necessary to obtain an annual licence from the Minister of Culture and Communications; the licence dictates who directs the work, and the type of work done.

As of May 1989, the Minister had issued 30 licences permitting archaeological assessments of the nature discussed herein. Some of these apply to specific areas (i.e. a County or Region), some to all of southern Ontario, and others to all of Ontario. The licensees include individuals, companies, foundations, and universities. A majority of the work in southern Ontario is confined to a handful of companies or organizations who specialize in Heritage/Cultural Resource Management and employ full-time staff of 2 to 15 individuals and part-time staff (i.e. summer students).[1]

In addition, the Ministry of Transportation has two archaeologists on staff to perform work of this nature, although that Ministry undertakes so many projects that they also contract out to archaeological consultants. The Regional Municipality of Waterloo has initiated a pilot project, hopefully to be repeated in other Regions, by hiring their own "Regional Archaeologist".

CASE STUDIES AND EXAMPLES

The Environmental Assessment Act includes in its definition of the environment "any building, structure, machine or other device or thing made by man". While all archaeological sites broadly qualify under this definition, commons sense, previous experience, and provisional guidelines of the MCC (currently under review) narrow the definition somewhat and provide criteria for establishing site significance. This significance takes into consideration such factors as age, cultural affiliation, location, extent, nature (i.e. ploughed versus undisturbed), and representativeness in terms of local and regional prehistory or history. Thus, "isolated findspots" of single arrowheads or a few flakes of chert (flint-like material used to make stone tools) are not significant heritage resources.

The Museum of Indian Archaeology operates an archaeological consulting business which in 1988

completed 52 archaeological assessment projects, leading to the discovery of 230 archaeological sites, of which 34 were identified as being "significant" and requiring further investigation, mitigation, or avoidance. These projects included archaeological surveys for hydro transmission corridors, oil and gas pipelines, municipal landfills, bridge and road alignments or reconstructions, and residential and industrial subdivisions. The sites encountered ranged from "isolated findspots" to significant Palaeo-Indian (9000-7500 B.C.), Archaic (7500-1000 B.C.), Initial Woodland (1000 B.C.-A.D.800) and Terminal Woodland (A.D. 800-1500) sites, several early historic (A.D. 1810-1850) pioneer homesteads, and one pioneer cemetery.

Archaeologists have various means to pre-determine the archaeological potential of an area. Previous studies have demonstrated that 80% of all known significant archaeological sites are located within 150 metres of a source of water, and that they are usually in high, well-drained areas, such as on a knoll, ridge, plateau or terrace. Thus, for any project, archaeologists can examine detailed maps for topography, drainage, and soils and pinpoint those specific areas which have the highest potential for containing a heritage resource. The subsequent field survey then concentrates on those areas. In this way, only a small percentage of the land in a project such as a 50 kilometre long hydro corridor requires an archaeological assessment. On the other hand, smaller projects such as a 20 hectare residential subdivision normally have 100% of the land examined.

Despite the capability of determining areas of high archaeological potential, archaeologists can never predict how many sites might be found, or the types of sites that might be found. This creates a great sense of adventure for archaeologists, because they never know what might be found on the next knoll; but it plays havoc for the proponents of undertakings, who anxiously await a telephone call to inform them of the results. While most proponents are genuinely keen and excited about what archaeologists find, there are a few who, I am sure, silently curse us if we find something significant.

Of the 52 Museum of Indian Archaeology projects noted above, 14 resulted in nothing being found, while 38 resulted in the discovery of one or more sites. Of these, 34 sites required further investigation, mitigation or avoidance, ranging from one site on one project to eight sites on another project.

WHAT HAPPENS WHEN A SIGNIFICANT SITE IS FOUND

If an archaeological assessment results in the discovery of a significant heritage resource, there are a variety of options available to mitigate or avoid that site. These options are largely dictated by the actual nature, extent and significance of the site, as well as by the nature and timing of the proposed undertaking.

The vast majority of significant archaeological sites are quite small in size, typically involving an area of 50 metres by 50 metres or less. These are normally prehistoric camp sites which can be mitigated by complete or partial archaeological excavation in the space of 2 to 4 weeks. Early pioneer homesteads fall into this same size category, and can likewise be excavated in less than one month. It is not uncommon for archaeologists to carry out an initial archaeological assessment of a property, discover a significant site, and mitigate that site all in the period of 2 or 3 months, and not cause serious delays in construction or development schedules. Since many development projects are constructed on a phased basis, archaeologists frequently have some leeway to coordinate a mitigative excavation, such as finding a site in the summer or fall and excavating it the following spring.

There are, of course, exceptions to this, involving much larger sites or sites containing human burials.

The development of Iroquoian culture in southern Ontario included the establishment of large village sites between A.D. 600 and A.D. 1650. Villages may range in size from 0.4 hectare (1 acre) to 4.8 hectares (12 acres); after A.D. 1250, most village sites average 1.6 to 2.0 hectares (4-5 acres) in size. These village sites pose a severe constraint on proposed undertakings and are complex heritage resources to deal with.

One option available is to preserve the site, meaning that the land containing the site is set aside as a park or green space, never to be impacted. On large residential subdivisions, this new park can be part of the land dedication required by most municipalities. Here we can see the immense value there is in completing the archaeological assessment early in the planning stage; if a significant site is found, the proposed development can be adjusted to incorporate the site into a park.

A second option is to avoid the site, by adjusting the proposed undertaking to ensure that the site would not be impacted. From my own experience, I can cite examples of several sites that were avoided by slight revisions to the proposed undertaking, including adjustment of the boundary of a municipal landfill to the realignment of a road, hydro corridor, or utility pipeline. Here again we see how important it is to complete the archaeological assessment early in the planning stage.

If preservation or avoidance are not possible, then the only alternative is to mitigate the site through excavation. There are numerous examples of the mitigative excavation of large significant sites throughout Ontario. These frequently attract media attention because of public interest and due to the size, nature and cost of such projects. It is not uncommon for the excavation of an Iroquoian village to last an entire season (i.e. April-September), involving a large crew of professional

archaeologists and students, and costing anywhere from under $100,000.00 to over $1,000,000.00, depending on site size and complexity.

Responsibility for the entire cost of the archaeological assessment and mitigation rests with the proponent of the undertaking. However, archaeological consultants can and do work closely with the proponent to attempt to minimize the overall cost. For example, large mitigative excavations of Iroquoian villages have involved the use of volunteers, community and municipal support, and grants from various provincial and federal agencies. One of the most common and readily available sources has been Employment and Immigration Canada's summer student program, where charitable organizations can receive grants to pay summer students (at minimum wage). In addition, the Ontario Ministry of Culture and Communications has had a variety of grant programs to support excavation. Despite these sources of funds, however, the proponent must contribute substantially to mitigate a significant heritage resource.

Sites containing human burials pose another severe constraint on the proponents of undertakings. This constraint relates more to the complex legal aspects of cemeteries than to their mitigation. If two or more human graves are encountered, the area is automatically declared a cemetery and falls under the regulations of the Cemeteries Act (currently under revision). Although the processes involved in the formal closure of a cemetery are too complex to deal with here, it is important to note that time is a major factor. For example, the Museum of Indian Archaeology discovered a pioneer family cemetery containing six graves in the area of a proposed residential subdivision in Richmond Hill in November 1987, but it took exactly one year for it to be legally closed. In marked contrast to the legal aspects, the excavation of the graves was completed in five days. [The skeletal remains were subsequently analyzed by a professional osteologist to determine age, sex, etc., and then interred in a local community cemetery.]

Not all significant sites require total excavation, and it is sometimes necessary or possible to make compromises and sacrifices, depending on the circumstances. Some sites have been only partially excavated prior to development. In other cases, parts of sites have been excavated while parts have been preserved.

CONCLUSIONS

Archaeologists and the general public are well aware of reports of the discovery and destruction of important heritage resources in the late nineteenth-early twentieth century. Since the early 1970's, federal and provincial governments and the general public have been concerned with heritage conservation, and have or are exploring ways to ensure proper steps are taken to avoid the unnecessary destruction of significant resources. Thus, major undertakings including highways, pipelines, hydro corridors, municipal landfills and residential subdivisions must have archaeological assessments completed prior to construction.

Heritage resource assessments are normally conducted early in the planning stage of a proposed undertaking, to determine if significant heritage resources are present and require mitigation. The mitigation of significant resources may involve avoidance, preservation, excavation or a combination of these protective measures.

In Ontario, funds for pure research for archaeological excavations are scarce, and the majority of the most recent significant contributions to archaeological knowledge have arisen from heritage resource assessments and mitigation required as part of an Environmental Assessment or the assessment of residential subdivisions.

ENDNOTE

[1] The Heritage Branch, Ministry of Culture and Communications (MCC) (77 Bloor Street West, Toronto, Ontario, M7A 2R9, 416-965-4490) will provide a current list of all licensed archaeological consultants.

Reviews

Man and the Natural World: Changing Attitudes in England, 1500-1800

Keith Thomas
London: A. Lanes, 1983, 425 pp.
ISBN 6713912278.

"... (Humanity), if we look to final causes, may be regarded as the centre of the world", wrote the 17th century English thinker Francis Bacon, "insomuch that if ... (humans) were taken away from the world, the rest would seem to be all astray, without aim or purpose.".

Yet two hundred years later, in the late Victorian age, there were humanitarians in England who were urging the right of animals to 'self realisation'.

Such diversity of thought about organic and inorganic nature have inspired some cultures to seek domination, mastery and control over nature, and others a certain harmony and reverence for it. In 19th century America, Henry David Thoreau, for instance, preferred Hinduism because, he said it "offers a pattern for a relationship with Nature which is reciprocal rather than exploitative". Others, like the 17th century scientist Robert Boyle, saw in this veneration for nature in the people of the Eastern Religions, "a discouraging impediment to the empire of ... (humans) over the inferior creatures."

Professor Keith Thomas at Oxford has focussed his very insightful and discerning eye on the changing attitudes amongst the English towards the natural world for three centuries before the Industrial Revolution. In this work of extraordinary scholarship and brilliance, Thomas dwells at great length, and in minute and sometimes amusing details, on how the English treated their animals, their forests and their gardens, and ultimately, each other. He also describes how these attitudes and ways of life began to change in the wake of the Scientific Revolution.

In numerous ways every society perceives nature in its own image, extending its perception of itself on nature and its laws. For some, nature is a tribal cosmos rooted in kinship communities; for others, it is feudal or bourgeois or corporate, showing strict hierarchies of rights and duties, or indicating rivalry and competition.

Thomas explores these parallels with telling details. Even the scientific taxonomy in nature studies, he tells us, betrayed the biases of the prevailing social structures. The Linnean system, propounded in late 18th century England, divided the 'vegetable kingdom' into 'tribes' and 'Nations', the latter bearing titles which were more sociological than botanical: the grasses were 'plebeians' – "the more they are taxed and trod upon, the more they multiply"; the masses were "servants" who "collect for the benefit of the others the daedal soil": the fleas were "slaves" – "squalid, revivescent, abstemious, almost naked"; and the funguses were "vagabonds" – "barbarous, naked, putrescent, rapacious, voracious".

Occasionally there was also a reversal of this symbolic universe: Queen Elizabeth gave all her courtiers animal nicknames. In 1579, her future Lord Chancellor, Sir Christopher Hatton, even signed a letter to her as 'Your Majesty's Sheep'. Karl Marx accused Charles Darwin, in his theory of evolution, of seeing too much of his own English society "with its division of labour, competition, and the Malthusian struggle for existence".

Thomas' exploration of the sub-stratum of values, attitudes and actions towards the organic and the inorganic nature in England is masterly. He looks principally at the English society, but the manner of his probe is so sharp that one is drawn inevitably into the dynamics of one's own culture. What is it that we eat and why? What kind of animals have been hunted and with what ferocity? What spirits dwelt in the forests? How were the designs of gardens in England affected by notions of what is natural and what is unnatural? These are the sort of questions that Thomas asks and then sets out to answer with great wit and scholarship, drawing with equal facility from literary, historical and folk sources.

Thomas tells us, for instance, that a mid 17th century poetical dictionary suggested as appropriate epithets for a forest, 'dreadful', 'gloomy', 'wild', 'desert', 'uncouth', 'melancholy', 'unpeopled' and 'beast-haunted'. No wonder then that by the beginning of this century, Britain had the lowest percentage (4 per cent) of woodland in all of Europe. The ravages of the Industrial Revolution and the long-held views and feelings about forests and mountains, as the home of the "hideous, savage, and fierce people" prevailed in spite of the Romantics. For Wordsworth "no moral philosophy could match one impulse from a vernal wood"; the Transcendalists in 19th century America saw the forests as "God's first temples' " "If we don't go to church as much as did our fathers", wrote John Burroughs in 1912, "we go to woods much more".

No society, however cohesive its values, is at any one time entirely monolithic. There are always currents and cross-currents, some sweeping at one time, some at another. For instance, even as Malthusian's struggle for survival – with its natural victims and victors – had gripped the imagination of the natural sciences and had made the English possibly the most carnivorous people in the world, there were valiant attempts in 19th century England against the maltreatment of animals. In 1824, the Society for the Prevention of Cruelty to Animals was established and the British Parliament passed a series of acts against cruelty to horses and cattle (1822), against cruelty to dogs (1839 and 1854). In 1887, Queen Victoria expressed great pleasure in

the "growth of more humane feelings towards the lower animals" amongst her subjects. The same period saw a certain fascination for vegetarianism, and the rise in the belief that there was something beautiful in every creature. John Constable, though he didn't specialise in painting animals, took the celebrated view: "I never saw an ugly thing in my life". And it was Blake who said: "Everything that lives is holy".

What is it that differentiates humanity from other animals: reason, sense of time or guilt, self consciousness, religion? In different times and cultures there have been a variety of answers to this question. Martin Luther in 1530 and Pope Leo XIII in 1891 each declared that the possession of private property was the essential difference between humankind and beasts. Amongst the European intellectuals, debates raged on whether animals could reason and think, whether they could experience pain; the cry of a beaten dog, some followers of Descartes said, was no evidence that it experienced suffering, just as the sound of an organ, when struck, was no proof that the instrument felt pain. At any rate, they said, their suffering was not like human suffering ... Since animals had no sense of the future, William Wollaston wrote in the early 18th century, they lost nothing by being deprived of life.

The much-debated question is: What makes us behave the way we do, our values or our material conditions? Marx believed that it was not the religious ethos of the Christians which provided theological justification for the exploitation of all nature for the benefit and pleasure of humanity but the coming of private property and the money economy, which led Christians to exploit nature in a manner the Jews had never done. Marx considered this as the "great civilising influence of capital", which ultimately led to the end of the "deification of Nature". Today, in capitalist and socialist countries alike, the early credo of Scientific Revolution – to seek human dominion over nature – still reigns equally supreme. Anthropocentrism – the belief that humans are the centre of the universe, and all else is there to serve us – is like the egocentricity of an individual. All mystical insights, scientific knowledge and literary compositions notwithstanding, this remains our most abiding obsession. For, as Thomas suggests so eloquently in this study, how we see nature is an unmistakable reflection of how we see ourselves. In trying to make nature 'natural', we also keep defining and redefining what we believe to be natural about human nature. The inside and the outside tend to be reflections of each other: Inside out – Outside in.

Reviewed by: Sehdev Kumar
Environment and Resource Studies
University of Waterloo

Environmental Protection in the United States Industry, Agencies, Environmentalists

Joseph M. Petulla
San Francisco: San Francisco Study Center, 1987, 200 pp. ISBN 0-936434 -22

In recent years, it has been recognized that more research money should be spent on environmental issues, better environmental laws are needed, and environmental problems must be placed higher on the political agenda if environmental degradation is to be arrested. While legal, political, and institutional reform is necessary, one area that has not been the subject of focused discussion is the human factors – how do industrial managers view environmental issues? How do environmental groups view industrial managers? What barriers do pollution control agency personnel face in the fulfillment of their mandate? How do these various players interact? These seldom explored questions form the basis for Joseph M. Petulla's book, *'Environmental Protection in the United States'*.

In researching the book, Mr. Petulla contacted hundreds of company personnel and environmental managers, environmentalists, and governmental agencies between 1982 and 1985. While most of the contact was achieved through questionnaires, personal interviews provide a meaningful component of the study which allows for more detailed discussion in some areas and the infusion of a number of interesting case studies throughout the book. Mr. Petulla's research provides considerable insight into the dynamics of U.S. environmental protection, even though his proposals to overcome identified problems seem simplistic and in need of further refinement.

Part I of the book reviews the history of environmental protection in the United States. This part takes a two phase approach to reviewing the historical roots of U.S. environmental protection. The first phase, entitled "Environmental Protection History," identifies some of the key factors which drove resource development and traces early health concerns from that development. The discussion of the links between poverty, pollution, and poor health is interesting since, in many ways, those links are still being debated today, over a century later. The chapter then traces basic problems of urbanization and growth, such as sewerage and sanitation problems, and early responses to those problems through the development of sanitary engineering. Just as one problem was beginning to be addressed, other new developments arose such as the automobile revolution which created additional problems.

The second historical phase, "The Politics of Pollution," examines more closely the environmental challenges after the Second World War. This chapter traces the significant environmental pressures and

events and the political reactions and legislative responses. Hence, the evolution of the U.S. 'Clean Air and Water Acts', the emergence of the Environmental Protection Agency, and the impact of the 'National Environmental Policy Act', among other landmarks in environmental protection efforts, are traced. Interspersed in that discussion are other major influences in the development of environmental policy, such as the Reagan Administration.

Part II of the Book, "In the Trenches," really represents the most original contribution of the book to the understanding of environmental protection in the U.S.. The three chapters of this part examine the key players – industry, governmental agencies, and environmental groups.

In examining industry, Mr. Petulla categorizes three approaches by industry to environmental protection. One approach is "crisis-oriented environmental management" which typically characterizes small to medium size firms that, essentially, do as little as possible to comply with environmental regulations or anticipate environmental problems. "Cost-oriented environmental management" differs with the above approach in that environmental regulations are accepted as the cost of production. The companies, usually in the 5,000 employee range, that fall in this category, view environmental laws as requirements that must be complied with, although such obligations are undertaken reluctantly at times. The third approach is "enlightened environmental management" where the company has an executive-driven environmental component, with a strong environment management division, trained personnel and on-going research. Evidence is provided which suggests that corporate culture is gradually evolving away from crisis-oriented and toward enlightened management, although the evidence is far from conclusive.

Chapter 4 examines the barriers facing governmental agency personnel in carrying out their functions. These barriers include: political interference with their work, the need to convince companies to comply with regulatory requirements voluntarily, the complexity of regulation-making, and bureaucratic inertia. The next chapter describes, categorizes, and assesses environmental groups. For the most part, the focus of discussion is the large, established groups. Also discussed is the role of public opinion.

Part Three, entitled "Root Problems" examines professional standards, ethical responsibilities and the federal role. Mr. Petulla argues that, because environmental professionals are divided by training, disciplines, group standards, and commitment, there is a profound impact on job performance which has hindered environmental protection efforts. Further, "environmental specialists suffer from the lack of ethical codes based on their role in society. Because the subject is not discussed in professional schools and journals, ethical confusion contributes to lower standards in all sectors of environmental management." (pp. 148-149) The ethical responsibilities of media professionals are included in this discussion. Case studies are given of where the power of the media was used both as an effective tool for environmental awareness and abused when being accused of "cancer-mongering."

The remaining chapters describe, in a very summary way, Mr. Petulla's response to the problems which have been identified in the book. The basic thrust of his approach is an increased and more dominant federal role through the establishment of a National Research Center. The center would coordinate intermedia research, further programs on pollution-control technologies, and develop and standardize a risk-assessment model. Further, a "board with specialized committees should be formed, comprised of experts representing scientific viewpoints in and out of the departments, able to make policy decisions that would not be shaken by temporary heavy political and media winds." (p. 175)

There is some sort of naive utopianism about Mr. Petulla's proposal, especially the assertion that this policy board could remove value biases, instill professional standards, ascend ideological, political, or even economic approaches with a view to overcoming the adversial nature among industry, environmental groups, and governmental agencies. What magical formula could be used by this board to achieve all of these goals? Environmental decisions involve more than reviewing scientific literature to determine what risks are associated with an activity – they also involve the value-latent task of determining what risk levels are acceptable. The basic tensions and conflicting views inherent in that decision-making process are no different than those at the community-at-large. There is more to decisions than finding the "right" answer – it is arriving at a legitimate one. Hence, it is a question of process, where those that must bear the risks (the public) have input into the decisions together with those that create the risks (industry, for example) and those that regulate it (environmental agencies). Environmental professionals may greatly assist in ensuring that the proper questions are being asked, but they cannot purport to definitively respond to all the answers as representatives of all the pluralistic interests of society.

While Mr. Petulla's responses are thought-provoking, the real contribution of his book is in his research and analysis on how the task of protecting the U.S. environment is carried out in practice in the 1980s.

Reviewed by: Paul Muldoon
Energy Probe

Parks for Profit

Leslie Bella
Montreal: Harvest House, 1987, 216 pp.
ISBN 88772-033-1

Leslie Bella argues in this book that national parks in Canada have been promoted by governments, federal and provincial, as tourism facilities and natural resource storehouses which are to contribute to the economic development of surrounding regions. The view that national parks are mere tourism facilities or resource storehouses does not sit well with her. She believes that national parks ought to be wilderness reserves to which humans, without their trappings, come infrequently and fleetingly.

When one looks at the recent history of Canadian national parks, highlighted most spectacularly by the current debate concerning a proposal to expand further the Sunshine Village ski area in Banff National Park, it is easy to sympathize with Bella's views. However, much has changed in Canadian society since the establishment of the first national park, Banff, in 1885. The ideas regarding national parks as tourism centres have changed somewhat; the exploitation of other resource values in the parks has all but ended. A new set of ideas and values, much more non-utilitarian in orientation, is contesting the dominance of those older, more established views. That there is a debate over the Sunshine expansion proposal attests to the existence and importance of these new ideas. Bella's point of view, one which many readers of this journal will share, denies the reality of those older ideas about what national parks should be while coming down firmly behind the non-utilitarian point of view.

These two rather different sets of ideas and values about what national parks should be, are given uneven treatment in this book. The established, utilitarian ideas and values are traced reasonably well through the resource extraction activities and, especially, tourism in the national parks. Non-utilitarian viewpoints are explored to a more limited degree through the brief discussion of environmental non-government organizations such as the National and Provincial Parks Association of Canada (now the Canadian Parks and Wilderness Society).

Bella emphasizes that, in the historical development of national parks in Canada, economic valuations played a significant role. The dominant attitude behind the national park idea, she writes, was conservation rather than preservation:

> "...'conservation' did not mean preservation through non-use, but maximizing future profits through good management today."(p. 45).

She goes on to write that, while the nature of use shifted away from direct resource exploitation to more indirect use as in tourism, this notion of conservation remained a primary one in Canadian national parks. Her historical account cannot be faulted to any significant degree on factual grounds; however, the interpretation she brings to the factual material is difficult to accept. After all, in the social climate of turn-of-the-century Canada, the idea of a national park which might conserve sections of the country for future use was somewhat radical. Even the idea of conservation in Canada which, as she rightly points out, was strongly influenced by developments in the United States had then only a tenuous foothold. To point out that the ethics of preservation which she supports were not part of the national park idea is an easy, but essentially meaningless, criticism. Those ethics were not at that time in the public arena. The beginnings of national parks in this country, as in others, gave early expression to a set of ideas and values which have themselves been re-shaped over time to emphasize non-utilitarian elements. Even the earliest idea about conservation contained the germ from which non-utilitarian thinking about nature and national parks developed. Bella's failure to understand the role of conservation in the national park idea leads her to propose an unreal dichotomy between national parks then and now.

Elsewhere, she is presented with another opportunity to reconsider non-utilitarian ideas and values. She discusses the rise of two conservation movements, the first best represented by the Commission on Conservation (1910-1918), the second, dating from the late 1960's, by environmental non-government organizations such as the Canadian Parks and Wilderness Society and by government organizations such as the Canadian Parks Service (Parks Canada) itself. Of the two eras, there is no doubt that she treats the first much better than the second. Much of her discussion of the first era turns on the relation between conservation and the national parks, depending heavily on historical sources. Her treatment of the second era, the modern one, about which little has yet been written, is much weaker. While she succeeds in illustrating how important non-governmental organizations such as the Alpine Club of Canada were in contributing to a wider debate about national parks in the earlier period, she fails to trace the changes in ideas about national parks which these organizations expressed. Even the Canadian Parks Service itself went through significant changes in how it put the national park idea into operation. Furthermore, she fails to connect these changes to the wider social context within which they are set. The much greater acceptance in Canadian society of non-utilitarian ideas about nature and about national parks is a significant development in the last twenty years which deserves a much more careful examination.

The shifting management and policy environment within which the Canadian Parks Service (and its pre-

cursors) has worked through the period she terms "the second conservation movement" provides a useful case study which might permit an examination of how these old and new ideas have been combined. The *National Parks Act* and current national parks policy contain requirements that national parks be used by Canadians for recreational and educational purposes but also be protected by the agency in order that heritage values found in them are not destroyed. These often contradictory requirements have necessitated that planning be both adopted and systematized throughout the national parks system. The recent (1985) initiative by the Canadian Parks Service to augment already strong environmental planning with systematic visitor management is a recognition by the agency that, like it or not, it must meet both parts of its mandate. In focusing solely on the threats of tourism to national parks, Bella makes two major errors. First, she overlooks the substantial progress made in planning for protection purposes in the Canadian national parks over the past twenty years. Secondly, she contends that national parks are wilderness preserves and, therefore, any form of use for economic development ought not to be condoned or contribute to decisions regarding national park establishment. Recreational use, and even tourism, are part of the national park mandate in Canada. Sound management is the key to ensuring that while use occurs it does so in ways which will not interfere with the natural and heritage values upon which the park depends.

There is no doubt that this book has some major flaws. However, it must be pointed out that, since so little has been written on the national park idea and reality in Canada, Bella's book is to be welcomed, albeit with some reservations. In spite of those reservations, the book, by presenting a definite point of view rather than a chronological accounting, succeeds quite well in provoking this reader into thinking about current national park management and issues.

Reviewed by: R.J. Payne
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Lakehead University

Human Migration

W.A.V. Clark
Beverly Hills: Sage Publications, 1986. 96 pp.
(Scientific Geography Series, Vol. 7.)

In this excellent monograph, Clark reviews significant empirical results of migration research since 1960. His goal is to provide students with an understanding of the nature of migration, of its place in demography and population geography, and of the implications of migration related population change for migration policy. Although empirical findings are highlighted, basic conceptual frameworks used in mobility and migration research are presented clearly by models and examples. The monograph is organized according to a "broadly distance biased approach," and consists of an introduction to the nature of migration, chapters on migration within the city, among regions, and between nations, and an excellent bibliography.

In Chapter I, "Mobility and Migration: Definitions, Rates, and Data," Clark describes the place of migration in "The Demographic Equation," characterizes migration as both a temporal and spatial process, emphasizes the importance of permanent and semi-permanent population movement in the definition of migration, explains the concepts of migration rate and net migration, and introduces a typology of migrant behaviour that incorporates societal context. Key correlates of migration (age, educational attainment, and tenure status) are considered, the "life cycle" concept introduced, and the importance of interpreting migration in relation to larger societal frameworks emphasized. The chapter concludes with a review of data sources for migration studies: population registers, national population censuses, social surveys, and birthplace data.

In Chapter 2, "Residential Mobility," spatial patterns are described in terms of mobility rates, distance bias, directional bias, and suburban bias. Much of the chapter is devoted to the question "why people move." Explanation begins with a review of Rossi's life cycle model, and it is suggested that the original formulation of this model does not offer an adequate explanation of mobility decision making. Accordingly, housing adjustment, in combination with particular demographic variables, is included in a reformulation of the life cycle explanation. Critical summaries are then offered of the following reasons for moving: adjustments in the housing market, employment change, life cycle change, and accessibility. Reasons for selecting a particular residential neighbourhood are considered, and the nature of available information and its perception are highlighted along with traditional push-pull and accessibility explanations of migration. The last section is on "modelling the mobility process" and offers models of the residential location decision process and of the probability of moving.

In Chapter 3, "Regional Migration," Clark distinguishes between the analysis of aggregate flows and detailed modelling of individual decisions. Gross interregional migration flows are described in terms of direction, rates of movement, and changes in the population of destination areas. Then, accounting and gravity interpretations of interregional migration are discussed. This is followed by a consideration of how flows might be explained by variables measuring employment and amenity. Aggregate flows are then considered from the perspective of the human capital explanation of migration, a discussion which leads to a

consideration of family migration theory. The basic argument here is that it is net family gain rather than net personal gain that controls the decision of households to migrate. Clark suggests that the human capital approach is a significant advance over the analysis of aggregate flows because it focuses on the decision making process of families considering migration. He cautions, however, that the model's emphasis is still on economic variables. In partial response to this criticism, a discussion of the role of amenity in migration follows. Next, "expectation" as a force in migration is considered and it is suggested that research is needed on the contribution of different forms of information to migration related decisions.

In the last chapter on "International Migration," Clark divides migration streams into people seeking jobs in foreign countries and refugees from war and other political events. Explanation focuses on international patterns of employment opportunity and political unrest. Covered in some detail are migrant labour and regional labour markets (including guest worker movements), migration to the U.S., and key determinants and consequences of international migration. Clark suggests that current explanations place too much emphasis on economic incentives to migrate and too little on the dynamics of contemporary world economic and political systems. He suggests an approach to the study of international migration that embraces global labour market and political perspectives as well as individual migration behaviour. Undocumented migration is described and exemplified by the situation in the U.S. The last substantive topic considered is refugees. The monograph concludes by noting two emergent themes in migration research, the relative importance of individual decision making and structural and contextual impacts in the individual's decision to migrate and the relationship between policy and migration.

Clark set out to provide an introductory survey of the results of research on migration. This is done very well. The book is well organized, well written, and is interesting reading. It is rich in concepts and examples and the graphics are first rate. Clark's book will become a basic introduction to migration and mobility for undergraduates, graduate students, faculty, and planners.

Reviewed by: Richard E. Preston
Department of Geography
University of Waterloo

Les Grandes Places Publiques De Montréal

Marc H. Choko
Montréal: Editions du Méridien, 1987, 215 pp.
ISBN 2-920417-20-7

A large number of public squares survive in Montreal. They vary greatly in size, character, and importance. Some have played a very significant role in shaping urban development. Some serve as persistent landmarks in the changing built environment, while others have made hardly any noticeable contribution to urban milieu. Marc Choko, a professor of urban sociology at the Université Du Québec À Montréal, has chosen to spotlight these public spaces that are frequently ignored by urbanists. He focuses on the evolution of four of the largest squares in downtown Montreal: Place d'Armes, Victoria Square, Place Viger, and Dominion Square. His goal is to provide an historical review of these squares by documenting the architecture and functions of the surrounding buildings. He seeks to relate the changing character of the squares to the individuals and corporations involved in transforming the economy of Montreal. He chooses to highlight the architects who designed the principal buildings and the developer-owners who provided the impetus for development in order to demonstrate how the square reflected contemporary socio-economic and technological conditions.

After a very brief introduction, the author devotes most of the book to individual descriptions of the historical development of the four selected squares. Each square merits one chapter. While the author may be commended for the extent to which he has sought to detail the origins of the buildings surrounding each square, this reviewer found himself frequently wishing for a street map to show their locations at each particular period. Although several historic maps are included as illustrations, they do not provide sufficient coverage. Furthermore many paragraphs are little more than lists of owners, developers, and occupants at particular time periods. In reading the turgid text I found myself frequently sidetracked by the excellent illustrations. The best part of this book is the extensive collection of photographs and drawings that vividly recapture the character of the squares. There are excellently reproduced illustrations on virtually every page. They are far more evocative than the text in showing how the squares have evolved.

A concluding chapter "Quel avenir pour nos places publiques?" is in fact a very brief attempt to synthesise some of the common themes found to be running through the evolution of the four squares. Choko suggests that these public places owe their origin to the reclamation of residual land uses: cemeteries, fortifications, orchards etc. They all began as largely residential enclaves that were eventually overtaken by com-

mercial and institutional development. He cites the particular significance of churches in the development of the squares, suggesting the lower order of development of Viger Square to the absence of ecclesiatical occupants. He asks whether or not the development of downtown Montreal would have been different had Msgr Bourget chosen Place Viger for the new site of Saint-Jacques-le-Majeur cathedral rather than Dominion Square? The book sorely needs to draw further similarities and differences. The railways, insurance companies, banks, and retail establishments are documented as occupants of individual squares. It would be useful to compare how each business type contributed to shaping the character of the squares at different time periods.

A major omission from the text is a systematic description of the uses of each square. The text emphasises the changing morphology and land uses around the squares. Only intermittently is the appearance and content of each square commented upon. The illustrations show varying degrees of landscaping, structures, monuments and people. By delving further in the text on the evolving character of the squares themselves, it might have been possible to discern why some were more successful than others.

A petty issue is the title of the book. Choko has deliberately sought to restrict his research to four of the squares in downtown Montreal. The title certainly leads the prospective reader to assume a more comprehensive survey.

At a time when more and more urban spaces are being provided by private developers in interior and sometimes subterranean locations, most public squares are neglected. Choko has provided a look at how four of the larger public squares have contributed to the changing character of downtown Montreal. The illustrations vividly indicate how these squares have been very positive elements in the urban landscape. The book is worth looking at for these historic pictures alone.

Reviewed by: Brian Slack
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Concordia University

Aboriginal Adolescences: Maidenhood in an Australian Community

Victoria Katherine Burbank
New Brunswick, N.J.: Rutgers University Press, 1986, 153 pp.
ISBN 0-9135-1286-7

The theme of the book is summed up on the first page of the conclusions (p. 115): The Aboriginal people of the community of "Mangrove" once channeled and controlled the sexuality of their adolescent females by arranging marriages and placing the girls with their husbands before menarche. Thus, their sexual impulses were directed toward men deemed appropriate by their society. But now Australian law imposes the legal marriage age of 16 on the Aboriginal people which has introduced a period of maidenhood – the time between menarche and marriage – into the female adolescent experience. This was accompanied by the introduction of the Western concept of romantic love and individual choice in marriage. Much of the disruption in "Mangrove" community life, including intergenerational conflict and the waning of the Law of the Dreaming can be linked to this phenomenon.

This is an interesting observation, though perhaps placing too much emphasis on the destructive potential of emerging sexuality as a determinative factor in the organization of traditional Aboriginal culture. There is a sense in which sexuality in Aboriginal society was more concerned with reproducing an eternal order which aimed to achieve order and harmony on a more general level. Indeed, reproduction itself was conceived in spiritual, not biological, terms. Burbank is quite right to draw a comparison with the Copper Inuit: there is more concern over adolescent sexual freedom at "Mangrove" for fear that it will lead to wrong relationships and wrong marriages which in turn will disrupt the proper order of things as pre-ordained in the Dreaming.

These points made, I found the discussion of the literature on kinship and marriage to be naive and at times androcentric. Burbank implied (Chapter 3) that the traditional marriage system was very much a case of males manipulating and accumulating females in polygymous marriage arrangements and she suggests that even if we concede that both sexes were equally subject to the Law of the Dreaming, the Dreaming itself served male interests. Literature on so-called kinship and marriage is cited but is rarely discussed and the author herself fails to analyse the debates through conclusions of her own. It seems to me, for instance, from a reading of Dianne Bell's "Daughters of the Dreaming" and from my own experience in Aboriginal Australia, that a case could be made that women are discarding men in polygynous marriage arrangements rather than men accumulating women.

What makes the book particularly difficult to read is that it moves back and forth between the ethnographic situation at "Mangrove" and that in other parts of Aboriginal Australia to substantiate points on polygamy, bestowal and the like which may or may not have anything to do with the ethnographic situation at "Mangrove" at all. Even more frustrating is the fact that "Mangrove"is a fictitious name for some unidentified place in Arnhem Land so that we have no baseline from which to judge the validity of either the ethnography or the comparative statements. The recounting of the daily routine beginning with the church bell at 7:30,

a breakfast of damper and tea, school and work at 8, 10 o'clock smoke, lunch at noon, school and work ending in the mid to late afternoon, the shop and offices closing, the evening meal and adolescents hanging about around the basketball court in the evening sounds familiar to anyone who has worked in the remote north of Australia, but it would be useful to inform the reader ignorant of Burbank's personal history to know exactly where.

For all these reasons it makes it difficult to say more about the book. An interesting observation which could have been better presented.

Reviewed by: David Turner
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University of Toronto

Health Care Technology: Effectiveness, Efficiency & Public Policy

David Feeny, Gordon Guyatt, Peter Tugwell (eds.)
Montreal: The Institute for Research on Public Policy, 1986, 270 pp.
ISBN 0-88645-038-1

As the title suggests, this book concerns itself with the evaluation of health care technology from the perspective of how effectively it performs its prescribed clinical function as well as how equitably and efficiently it is applied within a health care system. It is a collaborative effort representing the work of eight contributors all of whom are associated with the Department of Epidemiology and Biostatistics at McMaster University.

The first three chapters offer a general overview of some of the major issues that are relevant to the introduction of new health care technologies, and their effect on health and the cost of health. The motivations of those who are most influential in the decision making process that results in the diffusion of new technologies is also discussed. It is pointed out that often decision makers are motivated by a number of factors including their desire to provide high quality health care as well as financial self interest and other incentives. The authors also claim that often a new technology is introduced before it has been adequately evaluated with respect to its effectiveness, efficiency and equity of provision.

The next five chapters (chapters 4-8) deal with methods for overcoming some of the deficiencies outlined previously. A seven step framework for the evaluation of technology is outlined demonstrating how "ideally" such an assessment should progress.

The authors then offer a brief overview of some of the pertinent considerations that should form component parts of the assessment of both therapeutic and diagnostic technologies. While not providing a detailed technical treatment of the subject, the authors offer a description of important issues regarding these types of assessment as well as some guidelines that should be followed when performing them.

The economic issues inherent in an evaluation of health care technology are then described. In this chapter such issues as how to select an appropriate form of economic evaluation as well as various parameters of performing a cost and benefit analysis are explored.

Planning for the provision and utilization of new health care technologies is the subject of the next chapter. The concept of optimum facilities planning to ensure that current and future size, number, and location of facilities maximize total benefits to the community is the foundation on which the content of this chapter is based. In this context facility is a term which refers to any diagnostic or therapeutic procedure, device, or service that falls into the broad category of a new technology. Case studies of the clinical and economic evaluation of both diagnostic and therapeutic technologies are offered in the next two chapters.

The final chapter examines some public policy issues that flow from the use of the type of evaluation of health care technology that has been described. In addition, some of the constraints to the use of vigorous evaluation studies are outlined. In particular, the authors point out that often the expediency of time mitigates against such exhaustive evaluations. In the final analysis, the authors indicate what is needed in any specific case is a balanced approach to ensure that the cost of obtaining rigorous information and the time required to obtain it are assessed against the potential social costs and perhaps even harmful health effects of not obtaining the necessary evidence.

This book is not designed to be a technically rigorous "how to" guide outlining in detail the various methodological approaches to the evaluation of health care technology. Instead, it is meant to provide guidelines to the major issues and other relevant factors intrinsic to an assessment of the effectiveness and efficiency of health care technology. It serves this function exceptionally well. It is written in a style that is clear and understandable to those who are not experts in the area of health care planning and clinical epidemiology. For the most part, terms are fully explained at the point of their initial usage so the reader is not handicapped by lack of familiarity with the jargon of planning and research.

The authors have achieved a nice balance between a description of the ideal steps that should take place in an evaluation of new technology and the pressures and demands of the real world. There is an attempt to reconcile the former with the latter. In this vein the authors demonstrate their obvious familiarity with the vagaries of actual administrative decision making by pointing out objective rationality plays only a part in this process. Other factors related to personal

gain or resistance to change also influence the decision that is finally reached.

While the chapters of this book are written by various authors, they flow together well. The reader is not impeded by having to adjust to widely differing styles of writing or usage of similar or identical terms but with different meanings. Further, the choice of topics and the ordering of chapters is intelligently and logically done. The chapters are also even in handling the level of detail in the material. In developing a topic such as the one the book addresses, and especially when a number of separate authors contribute to the work, there is the danger of digressing into a level of detail inconsistent with the overall tone of the book. There is also the risk of unbalanced impression of the relative importance of the various topics dealt with. This book avoids such pitfalls and has the consistency of style one would expect from a work written by a single author.

This book will be of interest to readers who have previous expertise and experience and those who want to broaden their understanding of the issues intrinsic to the evaluation of health care technology but who do not have a strong background in research and statistical techniques. As indicated earlier it is not a "how to" book regarding the in depth details of statistical operations related to the evaluation of health care technology. It is, however, a very useful book to the less technical reader and provides an excellent set of guidelines on evaluative issues and problems related to the new health care technology. As such, it is useful and interesting reading for those involved in technology investment decisions as well as those who are users of our health care system.

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Trading Canada's Natural Resources: Essays From the Third Banff Conference on Natural Resources Law

J.H. Owen Saunders
Toronto: Carswell, 1987, 367 pp.
ISBN 0459310615

Although many of the essays in 'Trading Canada's Natural Resources' focus on legal aspects of natural resources trade, included are several from other disciplines (political science, business, economics) which "provide a policy context for the discussion of more narrowly legal concerns." Consequently, and in spite of the fact that the volume was published in advance of the final version of the Canada-United States free trade agreement (FTA), the essays provide perspectives on the agreement as well as on the broader, evolving international trade environment facing Canada as an exporter of natural resources in the last decade of the twentieth century.

In all, the book contains 19 chapters ranging from the general ("Canadian Resource Trade: An Economic Perspective") to the particular ("Contract Design and Practice in the Natural Resources Sector"). Included is a comprehensive introduction by the editor which provides an accurate, thoughtful and coherent summary of the diverse contributions.

The editor's expertise is also reflected in the organization of the book. The essays are divided into five, clearly delineated sections the first of which provides an overview of political and economic factors which define the environment in which Canada's natural resources are traded. David Haglund's contribution on the international political dimensions of resources trade illustrates the extent to which various political considerations, in particular the American preoccupation with security of raw material supply, dictate the fortunes of Canada's resource industries.

Given the importance of natural resources in Canada's export profile, trade distortions determined by political factors pose serious problems for Canada. As economist Bruce Wilkinson points out, while commodity prices have declined and markets have shrunk, there have been "increasingly numerous attempts (by the United States) to manage trade and redefine the old Ricardian principle of comparative advantage to suit American interests. The softwood lumber case is a prime example." Wilkinson questions whether "current free trade negotiations can preclude such measures in the future," but Donald Macdonald's article on Canada-United States trade liberalization reflects (a leap of) faith in "a bilateral trade agreement (which would have) the advantage of limiting the circumstances in which Canadian exports would face such difficulties."

Several articles in Part 2, Legal Aspects of Trade Distortion, challenge, at times unintentionally, Macdonald's (and the Canadian government's) optimism (naivety?) in that they document some formidable limitations to trade agreements and their legal expression. For example, Christian Yoder's review of United States countervailing duty law as it has been applied to Canadian natural resource industries in recent years demonstrates the evolution of the American concept of subsidization and emphasizes that "the law is flexible enough to pose a persistent threat to Canadian industries." Indeed, the author counsels Canadians not only to study the law but also to seek "early compromises to trade irritants" because "establishing the elusive definition of a counteravailable subsidy and attempting to impose rational discipline through bilateral negotiations and agreements is a worthwhile objective, but one which cannot reasonably be expected to bring significant changes."

American lawyer, Shirley Coffield, an enthusiastic supporter of Canada-United States free trade, having

proposed a natural resources subcommittee which would "make recommendations as well as findings" as a device to solve Canada-United States Trade disputes in this sector, serves notice that the United States would be unlikely to "accept a bi-national commission's recommendations as 'binding' in every instance." This conditional approach is reflected in two articles on GATT which demonstrate the reluctance of nations "to surrender basic issues of economic policy and philosophy to third party arbitration." In the first of these, J.C. Gilson suggests that difficulties experienced in attempting to liberalize trade in the agricultural sector spring from a desire to maintain national control in a politically sensitive policy area. Donald MacRae reinforces this point by referring to the "non-legal ethos" of the GATT: "nor can states be expected to place before the GATT disputes in which the issues are extremely controversial, either domestically or internationally, and the costs of losing area too high."

Part 3, Private Ordering of Trade Relations: Adapting to a Changing World, includes some practical advice for Canada's resource exporters. Terence Daintith's comparative study of models of contract design in the natural resources sector sheds light on complexities of trade usually overlooked in the literature. Peter Richardson's paper on exporting Canadian natural resources expertise and O. Yul Kwon's analysis of mineral markets in emerging industrial powers in the Asia-Pacific Rim region, outline the challenges and opportunities confronting the Canadian resource sector in a changing trading environment. In order to succeed, Canadian resource companies will have to overcome legal, linguistic and cultural barriers and, at the same time, be prepared to devote more attention and revenues to research and development. Further, sophisticated strategies for penetrating potential markets will have to be developed. David Matheson's paper on countertrade, advocates the adoption of equally comprehensive approaches to enable Canada's resource industries to penetrate markets in nations which have legal systems and economies very much unlike our own.

Unfortunately, not one of the papers in this section confront the question of whether or not the adoption of any version of a Canada-United States free trade arrangement might discourage if not preclude such imaginative, outward-looking initiatives on the part of Canadian resource industries.

Part 4, Regulatory Aspects of Canada's Natural Resources Trade, includes articles on trade disputes within Canada. Constant Hunt's contribution on jurisdiction over natural resources trade in Canada and Martin Kay's essay on deregulation and interprovincial trade illustrate the potential for federal-provincial conflict in regulating the development and sale of natural resources. Whatever progress has been made in the 1980's on achieving some measure of federal-provincial harmony on these matters, there is little question that both legal and, more generally, policy disputes will continue to characterize Canadian politics during the 1990's as the terms of the FTA are fleshed out and implemented.

Arnold Madigan's examination of the impact of American regulatory policy on the export of Canadian natural gas to the United States and David Poch's article on regulating the export of environmental quality with particular reference to electricity exports conclude Part 4. Madigan demonstrates that even with deregulation (a "policy designed to allow market forces to operate instead of, or in combination with traditional regulation, for the purpose of improving the efficiencies of economic behaviour"), Canadian exporters are still vulnerable to United States decisions "not in harmony" with the spirit of economic *glasnost.*

Poch makes the case for taking into account the costs of environment impacts when approving Canadian electricity exports. Failure to do so means that energy is sold below its true value. This form of subsidization, he suggests, could perhaps be justified in the case of electricity for domestic consumption but clearly not when dealing with exports (the FTA, it should be noted, apparently precludes such discrimination between domestic and export markets). Given "the inability of tort law to provide a more direct remedy and the unavailability of domestic statue law to curb environmental abuse (especially if the problem has international aspects)," the author suggests another possibility: producers in the United States facing tough Canadian competition could attempt to block elèctricity imports on the grounds that they are subsidized. "The possibility of harvesting the competitive energy of U.S. industry in an effort to foster higher environmental protection standards in Canada has not escaped the interest of Canadian environmentalists, who may be willing to live with the epithet 'strange bedfellows' if the cause is just."

Part 5, Trade and the Defence of Non-Economic Values, is composed of the editor's essay on regulation of water exports and Barry Barton's paper, "Trapping, Sealing and Animal Rights Activism," both of which highlight the fact that trade in natural resources involves values that are not readily "subject to economic quantification." J. Owen Saunders provides a concise overview of the policy background of water exports and demonstrates "that the very concept of exporting water has long raised concerns that are not purely economic, or even environmental, in origin." The real challenge, he suggests, "will be in achieving a balance between the benefits and costs of constraining the sovereignty of both Canada *and* the United States with respect to their shared water resources."

Barton's paper addresses the conflict between non-economic values: the rights of some people to make a living versus animal rights. This case "casts doubt upon the ability of trade law and existing political mechanisms to deal in a fair manner with this balanc-

ing of interests." His review of Canada's "reasoned" but "inappropriate" responses to the public outcry in the European Economic Community against "the slaughter of the baby seals" is particularly interesting: "the real battle ground was public opinion, not official opinion," and "political considerations were overriding."

Each of the essays in this book is well worth reading. Taken together, they provide a broad range of perspectives on the intricacies, usefulness and, of particular interest, the limitations of the body of law pertaining to natural resources trade. Equally important are the various insightful observations on the volatile trade environment (in spite of, if not because of, the FTA) in which Canadian governments and resource industries must operate in the 1990's.

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The New Heartland: America's Flight Beyond The Suburbs and How It Is Changing Our Future

John Herbers
New York: Times Books, Random House, 1986, 228 pp.
ISBN 0-8129-1228-4

It is one of the realities of our contemporary post-industrial society that settlement form is changing. To some degree and scale, in virtually every western developed nation it is apparent that people are deconcentrating from denser and older urban and suburban areas. The resulting settlement form is one of an extended regional city neither urban nor country, but having attributes of both as well as a singular and unique set of its own. Driving this process of structural change is the movement of people. John Herbers' book is about these changes; changes which are reshaping the settlement structure of the U.S. Specifically this book deals with the ongoing population deconcentration from larger, older, more densely populated urban areas of the United States, into smaller towns and cities and rural areas. The phenomenon is not a new one; it has been known of since the mid-1950's and well known since the mid-1970's.

The book is comprised of five parts. First, Herbers gives a brief overview of the phenomena in question, which includes some inadequate definitions and distinctions of what is meant by population deconcentration. Also included here is a postmortem on a generic version of the old inner city and a North Carolina example of the new dispersed form of community. Herbers very skilfully uses these two examples to provide a general set of 'push-pull' reasons for the phenomena he is examining. The second part offers variations on this theme of the dispersed community using regional examples from across the U.S., with somewhat of a bias towards the Southeastern states. A third part discusses the new interest being shown in what Herbers terms "hard scrapple country" – chronically depressed low or no growth areas such as the Ozarks, Appalachia and southern New Hampshire. This growth, primarily, is based on the rural and scenic amenity present in these areas. With the changing attitudes of post-industrial populations, these amenity rich environments are now evaluated as useful resources attracting both industries and workers – not necessarily in that order. Perhaps Canada's own 'hard scrapple country' can take heart from this. The fourth part deals with the problems and advantages generated by this new and unexpected influx of generally affluent population. Finally, Herbers offers some opinions, speculations and ideas on the future of the new dispersed settlement form.

Herbers is a journalist, which is evident from the book's style. He makes no claim to having produced an academic volume, which is a relief, since it makes the book that much more interesting and easy to read! This, however, does not detract from the book's value; indeed it may enhance it, since Herbers deals in ideas (and sometimes opinions) seasoned with just enough fact to make them palatable. It is not a textbook, nor is it an academically rigid research volume. According to Herbers it has two purposes: first to provide a description and sometime analysis of the new economic and population growth taking place beyond traditional metropolitan boundaries; second, to "provide a guidebook to those considering moving to this newest American frontier". The style is that of a raconteur. Herbers travelled and interviewed extensively in the U.S. and the book is a result of this. It also benefits from Herbers' experience gleaned in his role as urban specialist and national correspondent for the New York Times since 1969. The book, as a result, is rich in detail, anecdote and, for better or worse, suggested explanations.

The book is also very American – again it claims to be no more and thus cannot be faulted. But the Canadian reader should be wary of cross-cultural extrapolation of urban topics (or any others for that matter), as Mercer and Goldberg so rightly point out. Herbers' descriptions of urban blight, city-fear, redevelopment, and ethnic and race violence, all of which contributed to the push side of the migration equation, would simply not fit the history of the Canadian city. On the other hand, the requisite migration pull factors – the attitudes and motivations characterised by the desire for open rural space – seem general to both Americans and Canadians. Such similarity is to be expected, for these items are not so much a product of culture or creed, or social, political or economic background, but of a common heritage – rootedness in a

European pioneer stock seeking relief, among other things, from severe land pressure in their homelands.

There are some matters that the book, journalistic or not, should have addressed. First, it does not distinguish sufficiently between population deconcentration and decentralization which operate over an interregional spatial scale, and the more localized spatial movement of people – the so-called exurban exodus which occurs within the urban field of city cores. In the first case we are speaking of regional shifts in population prompted by stimuli as prosaic as job hunting or as esoteric as the pursuit of completely different lifestyles. In the second case – that of localized movement – the stimuli are based on the pursuit of wider lifespaces, not necessarily different lifestyles. On the one hand the resultant settlement form is new and revolutionary – almost anti-urban; on the other it is new and evolutionary – almost a confirmation of the city's success and a broadening of its domain. Herbers confuses these ideas – a confusion born of insufficient clarity in definition. Furthermore, many of the well established and easily researched models of the new settlement form such as the urban field, the regional city and the dispersed city are not mentioned but should have been.

Herbers also misses, or at least skirts, the opportunity to put the development of the new heartland into its proper context. That is as part of the new reality of post industrial society. He clearly thinks of it in these terms, but rarely extends the level of his discussion much beyond the implicit. What we are witnessing, and what he describes, is structural change born of any number of attitudinal, motivational and socio-economic shifts in the way the population thinks about its spatial and socio-economic environment. Given Herbers' interest in national affairs, the book also has a strong political flavour. His discussion of the policies and philosophies affecting population movement at the local, state and national levels are excellent.

He also makes some interesting comparative observations about suburbs and the new settlement form, though, as is generally fashionable, he is rather heavy in his criticism of the suburbs. First, he notes that the suburbs have evolved over the past quarter decade from being a haven for large young families, to being, in many cases, areas with an increasing proportion of empty nests. He also notes a pertinent distinction between the new settlement form and the suburbs. The latter provided a haven for affluent whites leaving the decaying urban cores for the most part to poorer Blacks and later to other equally poor ethnic minorities. The new form, he suggests, is a better integrated, more tolerant society of mixed income and race.

Herbers' treatment of industrial decentralization is quite good. He weaves an interesting and, for the most part, quite accurate tale of industrial transformation from smokestack to silicon, from space intensive inner-city locations to space extensive suburban locations, to amenity rich exurban locations. Throughout the discussion he integrates the social and economic changes in population which have partly precipitated such decentralization, as well as the role played by post-war policies. Such policies include urban development schemes that gutted the inner cities, tax laws that encouraged abandonment of the old and building anew (usually in the suburbs), low interest mortgages that encouraged the growth of the suburbs, coupled with expressway construction that provided access to those suburbs. A litany of cause and effect. Perhaps the only carping comment on his treatment of industrial decentralization is the naive assumption that companies do so to maximize profit. In reality, for many of these companies the reasons are far more subjective, relating more to the desire for amenity environments, providing they can turn a profit at these locations. This is a far cry from classical industrial location arguments based on either maximized profits or minimised costs.

A final critical comment on his sources. Though the book offers some fifty-six references, among them the excellent empirical work of Calvin Beale, basic – one might even suggest seminal – work by Friedmann, Wardell, Berry and others is missing; a significant objection in a book, journalistic or otherwise, addressing a much researched topic in geography, rural sociology and demography. In balance, however, the book is a very worhwhile addition to the literature on the topic of population decentralization, providing an interesting, if not particularly rigorous, substantiation of this ongoing and important topic.

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A Dowrey of Owls

Larry McKeever
Toronto: Lester and Orpen Dennys, 1986, 208 pp.
ISBN 0-88619-098-3

In the gloom of ecological crisis, the McKeevers' Owl Rehabilitation Centre stands out as a beacon of hope and a positive example of determination and achievement. Larry McKeever tells the remarkable story of his wife Kay's concern for the fate of injured wildlife which transformed both their lives. As Larry puts it, "I finally concurred with Kay's idea in principle (regarding rehabilitating owls), little knowing then where it would lead." (p. 13)

I empathize with Larry. He was sixty years old and close to retirement when he married Kay in 1967. Kay brought into their household her dowry of unusual pets including three exotic owls, and a desire to rehabilitate

injured native owls. Three years later, they moved from Peterborough to their present Niagara location with eighteen owls under their care. At the time of publishing (1986), their dwelling had been transformed into an "aviary" with 27 indoor cages, an emergency ward (for owls), complete with requisite hardware including an Xray machine, and 46 outdoor cages ranging from 1,100 square feet for Great Gray Owls to 24 square foot hospital cages. They, particularly Kay, are considered as world experts in the rehabilitation and captive breeding of owls. In Larry's words: "an interesting ... example of what can be achieved by a determined woman and an obedient spouse."

As the tale of Larry and Kays' lives unwinds, several issues and concerns are addressed. The reader's curiosity is pricked as the shear magnitude of the undertaking is considered.

Larry describes how food, water shelter and space requirements are provided for the approximately 120 owls of several species. Many of the cages were constructed by Larry himself who muses that perhaps Kay married him for his carpentry skills.

In their early years, the owls' food needs could be provided for by the local butcher. However, their present collection of nocturnal hunters consume up to 250 mice, dozens of crickets and mealworms each day! In one chapter largely about feeding issues, Larry describes in detail a return trip from Toronto on the "Mouse Run". Kay, alone in her Mustang, expected to pick up 150 boxed live mice. Instead, she was given around 600. An unexpected Great Horned Owl also awaited her. Imagine the scene on the Queen Elizabeth Way when 200 of the mice escaped from the boxes!

Among the other issues addressed, often with a mix of seriousness, detail and dry humour, are the transportation of injured owls, often from thousands of kilometers away, the control of parasites and diseases, and breeding successes and failures of captive injured owls. The world class achievements of the McKeevers and the Owl Rehabilitation Centre (ORC) are numerous. As well as developing many successful rehabilitation techniques, their greatest achievements are the successful breeding of injured captive owls. At least nine species including the threatened Burrowing Owl have been bred successfully, their progeny released in their natural habitats.

Reading of their exploits begs the question "what are their motives?" At the end of the book, a credo clearly outlines the philosophy and motives of the McKeevers - a recognition that all life is interrelated and that humans have a special responsibility to see that other forms get a "fair shake". A sentimental attachment to owls, recognition of their important ecological functions as predators and a sense of responsibility for their plight have driven Kay and Larry McKeever.

Larry attests to the plight of owls in his descriptions of the injuries that they treat. Almost all injuries he attributes either directly (guns and leg-hold traps), or indirectly (collisions with cars) to humans.

This book is written in an anecdotal, personalized manner. The author occasionally vacillates between technical details pertaining to some aspect of the ORC and the story of his life with Kay. Although each foray is rich with information, the text can be choppy at times.

For those interested in natural history, a remarkable story of human determination, or a love story with a twist, I highly recommend Larry McKeever's A Dowry of Owls.

Reviewed by: Ted Cheskey
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Return to the Community: The Process of Closing an Institution

John Lord and Cheryl Hearn
Kitchener, Ontario: Centre for Research and Education in Human Services, 1987, 198 pp.

Over the past decade many communities have been experiencing the impact of deinstitutionalization, that is, the decision to close large governmental total-care facilities and to place former residents in community-based settings. There now exists a considerable wealth of literature detailing many aspects of deinstitutionalization. Most studies related to the depopulation of large total-care institutions have tended to focus on just one element or outcome of deinstitutionalization, such as the "dumping" phenomenon, or rehabilitation, or community attitudes and integration.

The value of *Return to the Community* is that it provides the reader with a comprehensive overview of the entire process of moving people out of an institution and into the community. This study of the closure of Tranquille, in Kamloops, B.C., is presented in a very readable report form and offers a helpful approach to understanding deinstitutionalization in relation to those whose lives are directly affected by closure of an institution.

In conducting this qualitative study the researchers employed a range of data collection methods including in-depth interviews (80 in total with residents of the institution, family members, advocates, government officials, and service providers), survey analysis (127 families and 41 service providers participated in this section of the study by completing questionnaires related to the closure and its outcome). Researchers also carried out a content analysis of documents such as minutes of meetings, press releases and newspa-

per articles, as well as participant observation in the institution, and later in the smaller exploratory follow-up study of the community-living situations of former residents of Tranquille (with four group homes and 24 people participating).

Through what the authors describe as the "multiple realities" which existed in the closure process, this study draws our attention to the various and different perspectives on depopulating the institution. The report is strengthened further by placing the closure of Tranquille against the historical backdrop of what is described as the "crisis of institutionalization", i.e., the events that led families to institutionalize in the first place. This allows the reader to gain a real sense of the extraordinarily difficult circumstances these families confronted, firstly in their decision to place their child in an institution, and secondly in accepting the more recent community-living and normalization philosophies which run entirely counter to their earlier understanding of "the best place" for a handicapped individual to be.

In many instances planning for closure of total-care facilities appears to have been very disjointed and very much a learn-by-doing activity. Once the decision is made to close a facility, very little seems to be delineated in terms of a plan for a comprehensive, coordinated approach to developing adequate community-life supports. Too often, as well, little or no provision is made for participation by those individuals and their families whose lives are most directly affected by the move to the community. As Lord and Hearn observe in the case of the Tranquille closure, it was very much a "plan-as-you-go" exercise.

There was, however, one unexpected positive element – the disjointed character of the planning exercise provided the very mechanism which allowed for varying degrees of involvement around closure and community placement decisions. Participation was facilitated through a community development process and a linking of various stakeholders and sectors affected by the closure, including, for instance, the provincial advocacy group, British Columbians for Mentally Handicapped People (BCMHP) and their local associations, the union of workers at Tranquille, namely the British Columbia Government Employees Union (BCGEU). Also involved were regional project staff and family members, some of whom had felt disenfranchised for years from any decisions regarding the lives of their offspring.

These various groups, each with a very different agenda and motivation for involvement, illustrate something of the differing perceptions and perspectives, i.,e., "multiple realities", involved in the deinstitutionalization process. Ultimately these differing perspectives may not be entirely incompatible – on the one hand the government's approach to decentralization and regional autonomy was reflected in its commitment to "the community dealing with its own problems" (p. 65). At the same time, the view of some parents is summed up in the statement, "Leaving it to government made us feel nervous" (p. 65).

This study also highlights other complexities involved in institutional closure which are by no means unique to the Tranquille case. These complexities include the many considerations that need to be taken into account when individuals move into the community, such as the needs and preferences of the individual and his or her family; the extent to which a community is prepared to receive residents from total-care institutions, both attitudinal and on a more pragmatic level vis-a-vis support services; and the relevance of general service plans which are prepared for the individual prior to departure from the institution and which may bear little relation to the individual's development and response to community-life.

The influence of competition for scarce resources, and of imbalance of power and mistrust which characterized this closure is carefully explored by Lord and Hearn. In a system which appears to be predominantly adversarial, some interesting coalitions develop (e.g., the BCMHP and BCGEU). In these respects, the authors identify three themes which emerged at an early stage in the deinstitutionalization process, but which had ongoing implications through the entire process: the need for clear communication involving all stakeholders at every stage; the need for widespread consultation and an open participatory planning process; and the need to recognize the dynamics of organizational relationships with respect to the way each sector positions itself in relation to government and to other sectors or interests. It is suggested that each of these themes are relevant considerations for future institutional closures.

Lakin (et al) have drawn our attention to the dismal history of the way in which social policy has been applied to developmentally handicapped persons and how "in the absence of systematic scrutiny, sheer *belief* that what we are doing is appropriate has led to faithful adherence for years to counterproductive treatment models" (1981:407). Accordingly, we need to be cognizant of the significance of research which looks more carefully at the impact of our policies relative to the reality of community adjustment following deinstitutionalization. The concluding chapter of *Return to the Community* does just that by presenting the findings of a small exploratory study which was conducted a little over a year after closure of the institution. While it would be inappropriate to assume generalizability of these findings given the relatively small sample size, it is possible to identify significant patterns which parallel the findings of other studies. For instance, while Lord and Hearn conclude that the people from the institution had adapted well to living in the community, there was limited evidence of interaction and involvement with people other than staff and fellow group home residents, suggesting minimal community participation. As

well, the role of staff is seen as crucial in fostering interaction and relationships with families and neighbours. Given the potential value of social networks and relationships within the community in terms of enhancing a sense of well-being, it is suggested that planners be aware of and address these issues in future deinstitutionalization efforts.

Return to the Community is much more policy research than it is frontier research in that it is truly action-oriented. While it might not bring forth much new knowledge, it provides a clear articulation of how not to go about the closing of total-care facilities and placing former residents into community-based living situations. The implications of Lord and Hearn's research are considerable and will be a valuable resource to decision-makers, planners, service providers, advocates, people with mental handicaps and others involved in the deinstitutionalization movement.

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Planning in Eastern Europe

Andrew H. Dawson (ed.)
1987, London: Croom Helm, 348 pp.
ISBN 0-7099-0863-6

Planning in Eastern Europe focuses on the stated aims and recorded achievements of spatial-economic planning in the eight countries of eastern Europe. The book does not seek to evaluate how these countries establish goals, perform tasks or make decisions. It discusses central planning of state-owned means of production within the ideological context of building socialist societies. *Planning in Eastern Europe* is meant to complement Pallot and Shaw's 1981 *Planning in the Soviet Union,* and to offer spatial perspective on eastern Europe lacking in other recent books on that region. The book is thus a geographical analysis of the role of planning in the development of the region's space economy.

Planning in Eastern Europe takes a country-by-country rather than thematic approach to central planning, but treats historical background, CMEA (COMECON), and the general role of planning in the region systematically. The analyses are well supported with tables, maps and diagrams. References are provided at the end of each chapter, but the book has a unified index. The methodology of *Planning in Eastern Europe* is thus quite appropriate to the great variation of individual priorities and policies among the region's eight countries.

The book comprises twelve chapters written by six authors, all of whom are British geographers with extensive expertise in eastern Europe. Five of the chapters are written by the book's editor, Andrew Dawson, who introduces the volume (Chapter 1), describes the region's economic and political background (Chapter 2), analyzes Polish (Chapter 8) and Yugoslav (Chapter 9) planning, and concludes with an assessment of the general role of planning in eastern Europe (Chapter 12).

Dawson commences his succinct regional overview in Chapter 2 by describing the dilemmas facing the region in 1945, some imposed by the war, and others stemming from longstanding differential factor and resource endowments. Subsequent developments, although not uniform, were largely dictated by the Soviet Union and by differential reactions to the Soviet hegemony, particularly in Albania and Yugoslavia. Economic planning and development for the first period of the post-war era in eastern Europe as in the USSR was largely dictated by the Stalinist model which was subsequently modified and then largely renounced. Dissatisfaction with this model not only prompted various forms of direct or threatened intervention by the USSR in eastern Europe, but also led to great temporal and operational variation in planning among the eight countries. The model has been drastically overhauled in the Soviet Union itself. In fact, the nine countries continue in their own way to seek effective planning mechanisms, and to resolve myriad managerial dilemmas.

Planning experience in the eight countries since 1945 has varied greatly in efficacy. Poland and Yugoslavia are today clearly in ferment due to economic disappointment. Albania and Romania are still rigidly adhering to relatively unsophisticated planning procedures. Although Bulgaria is quite different in level of economic development from either Czechoslovakia or the German Democratic Republic (GDR), all three seem to be at a similar impasse in how to achieve the desired breakthrough to higher levels of performance. Hungary also has reached the apparent possible limits of growth associated with current forms of central planning, but is proceeding onto higher planes of activity under a modified management system. If arranged on a continuum according to their current degree of satisfaction with central planning, the eight countries of

eastern Europe thus seem to extend from a state of unrest (Poland, Yugoslavia), to simple acceptance (Albania, Romania), comprehensive accommodation but increasing frustration (Bulgaria, Czechoslovakia, GDR), and finally tactful replacement and innovative though still incomplete modification (Hungary).

Dawson (p. 195) describes planning in Poland (Chapter 8) since 1945 as "a fragmented activity". Planning in Poland has not provided the economic growth desired by the state, and is today at yet another crossroads. Growth is still problematic, and authorities have not yet decided whether to enforce "accelerated investment and accumulation, at the expense of consumption and the environment" (p. 225), or to pursue economic reform and permit the market to influence prices, the allocation of resources, and the location of production. Dawson concludes that these choices really cannot be made by Polish leaders until the Soviet Union decides what course it will follow and thereby indicates what might be tolerated among its satellites.

In his analysis of Yugoslavia (Chapter 10), Dawson notes that it has "moved further along the road of market socialism than the rest of Eastern Europe" (p. 275), in part because of its own regional, ethnic, economic and historical diversity. These great internal disparities, however, have become even more manifest since this book was completed, and Dawson's concluding comments are quite prophetic: "The fundamental problem of the Yugoslav state and economy – the balancing of economic growth against the demands of regional equality – which has characterised the country since the Second World War, has yet to be solved" (p. 290). Popular unrest has been severe in both Yugoslavia and Poland during the 1980s, probably due in large measure to the manifest failure of state planning.

Albania (Chapter 3), analyzed by Derek Hall, is the least developed country of Eastern Europe and has come under more influences than the others from a combination of Yugoslavia, Russia and China. Like the others, however, Albania's future course is uncertain, but this may stem more from the legacy of one ruler's influence throughout most of the post-war era (until 1985), than from the universal inability to transform Marxist-Leninist ideology into an effective managerial system. This chapter needs to be read in conjunction with that on Yugoslavia because of the myriad connections which the two countries have had in the past, and the current unrest among ethnic Albanian's in Yugoslavia's Kosovo region.

Romania's (Chapter 9) economic development has accelerated since World War II but as David Turnock (p. 229) notes, despite the "internationalist ethic of Marxism" the country has focused on the nation state and has resisted many close ties with CMEA. Planning and economic administration in Romania, however, continue to be highly centralized and immune to reform. More effort appears focused on plan implementation than assessment of operational efficacy. Planning difficulties thus seem not to be viewed as flaws but as temporary aberrations in the system which can be overcome by enhanced personnel training.

The assessments of Bulgaria (Chapter 4) and Czechoslovakia (Chapter 5) by Frank Carter offer an incisive treatment of two societies very different from each other. Carter (p. 95) notes that the backward, rural Bulgaria of 1945 has indeed undergone an economic revolution on the basis of Soviet-style central planning and investment, but that so many economic, settlement and environmental problems have emerged that "before the end of the century a new economic revolution may be necessary ... but, if this is to be achieved, new systems of government may be required both to engender and direct it". Much of Czechoslovakia, on the other hand, by 1945 had already experienced economic development under a free-enterprise economy. Subsequent events have largely been associated with problems of adapting the economy to central administration and planning, and to reducing many of the disparities among the Czech and Clovak lands. In the 1980's, however, the rigid economic and regional planning system is still being questioned, particularly in its ability to affect technological change, control environmental pollution, provide adequate housing, and reduce commuting to work. Despite the upheavals of 1968, therefore, planning in Czechoslovakia has not been effectively transformed and still needs to pass on to major new thresholds of modernization. As the apparent diseconomies of scale in the existing agglomerations are overcome, future patterns of settlement and industry will be profoundly restructured.

The region now comprising the GDR emerged from World War II with strong traditions of commercial agriculture, industrialization, and urbanization, but in a truncated spatial and political form. Roy Mellor (Chapter 6) notes that the GDR has subsequently focused on adjustment more than development. It is the only country in the region also to have undergone population decline since 1945. Although the GDR has realigned the spatial structure of its economy to accommodate its "independence" from a greater Germany, and new ties with the USSR and other CMEA countries, it has more special trade agreements with the Federal Republic of Germany than any other CMEA country which are likely to become even stronger in the future. Environmental pollution, however, is one of the greatest planning challenges in the GDR, and may damage the country's space economy more than systemic shortcomings per se. Environmental degradation appears to be more severe in the GDR than in any other east European country, although the effects of its pollutants are felt throughout much of the region, including western Europe and the USSR.

Hungary (Chapter 7) is described by Paul Compton as a planned economy which recently has retreated

from central planning toward a system employing a number of fiscal measures and incentives in place of myriad central commands. In this manner, planning in Hungary is now quite different from that practiced by other east European countries and indeed is of considerable interest to the USSR itself. Furthermore, Hungary may be the first east European country to enter the post-industrial phase of development although the planning system does not seem to have kept pace with the attendant changes this evolution is likely to engender.

No volume on planning in eastern Europe would be complete without assessment of COMECON (Chapter 11) which by definition is a planning system linking planned economies, particularly in those sectors beneficial to the USSR. Although it includes countries outside of eastern Europe and excludes Albania, COMECON really is intended to facilitate economic links between the USSR and its eastern European client states. Roy Mellor (p. 296) describes COMECON as "a rigid, hierarchical bureaucracy, typical of the management patterns of the socialist bloc," and having a "cumbersome administration". Nevertheless, COMECON has undergone five stages of development since its establishment in 1949, although a little publicized sixth phase since 1973 may have effectively confined the organization to dealing with major projects and avoiding attempts to ensure comprehensive integration of members' economies. The full potential of COMECON for international planning in eastern Europe clearly has never been realized, and a positive assessment of the organization's effectiveness will probably have to await the outcome of myriad economic reforms in eastern Europe and the Soviet Union.

In his general assessment of planning in eastern Europe (Chapter 12), Andrew Dawson (p. 338) suggests that "its 'ability to deliver' has been limited." He adds that, "looking back over the post-war period, it is not all clear that the changes which have occurred in the space economy can be credited to regional, urban and environmental planning". The resources to ensure effective planning are increasingly in short supply in eastern Europe, leading Dawson (p. 339) to conclude "it is ironic that, at the moment when spatial planning has reached its most established position within the government machines of eastern Europe and has produced its most detailed and complex plans ... its real opportunities for affecting the pattern of the space economy may be at their most limited". This irony, ironically, may also pertain to many western countries and regions, including Canada and its provinces.

Planning in Eastern Europe is thus highly germane not only to our understanding of the region and its countries, but also to the problem of state planning in general, especially when political, ideological or administrative rigidities turn the exercise into a bureaucratic morass. This book demonstrates in particular how planning, or administration called planning, can be highly instrumental in transforming a country from a state of underdevelopment into one of low order, unsophisticated industrialization. Modernization and international competitiveness, however, are not facilitated by the planning described in this book, nor is protection of the environment guaranteed because enterprises are owned by the state. In reality, both are impeded by state planning, or at least by central management of a country's industrial and settlement systems. *Planning in Eastern Europe,* despite the unfortunate typeface employed, is an impressive volume whose value derives not only from the prowess of its individual contributors, but also from the consistency and continuity provided by its editor, Andrew Dawson.

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The Milton Park Affair: Canada's Largest Citizen Developer Confrontation

Claire Helman
Montréal: Véhicule Press, 1987, 183 pp.
ISBN 0-919890-74-1

In 1983, Canada's largest housing co-operative was officially opened in the Milton-Park neighbourhood of downtown Montreal. With 597 dwellings in 135 buildings, the Milton-Park co-op was huge by any standard. In this book, Claire Helman has presented an engrossing account of the formation of the co-operative and recounted the human struggle that led to its creation.

This study is about much more than housing structures; it is essentially an analysis of power and political strategy. The grass-roots struggle to obtain control over the neighbourhood spanned fifteen years, 1968-1983. Inevitably it became interwoven in the massive political, cultural and social upheaval that existed in Montreal throughout the sixties and seventies.

The Milton-Park co-operative was the culmination of events that began with the planned redevelopment of the neighbourhood by Concordia Estates in 1968. Concordia sought to rebuild the area on a grandiose scale and, in the process, force a relocation of the largely tenant households who then resided in the neighbourhood. Most would not be able to afford the vastly increased rents in the new structures and thus had no hope of ever returning.

On the surface, *The Milton-Park Affair* studies the methods by which the neighbourhood mobilized to confront the developer. The battle that ensued was filled with irony and intrigue. Through the accounts of then active neighbourhood organizers it is clear that the Milton-Park Citizens Committee (MPCC) came under intense police scrutiny. Given the time and

place, this may not in itself appear surprising. However, the MPCC had to endure the presence of much more malevolent influences including mysterious members who attempted to instigate unlawful activity in the name of the MPCC. It would appear that neighbourhood based citizens groups were not immune to the same kinds of police undercover "dirty tricks" perpetrated on other political and labor organizations during this period.

The bulk of the book, however, deals with the internal operation of the MPCC: how does one bring together a six block neighbourhood for a fifteen year period in the face of major setbacks, failures and unscrupulous attacks: Helman's analysis is set within the rich ethnic mix of the neighbourhood and she continuously stresses its cultural vibrancy. In this respect, the accompanying photos by Clara Gutsche are especially effective. A primary obstacle to neighbourhood organization in Milton-Park was the ethnic heterogeneity of the population. Helman concludes that the fight for the viability of the neighbourhood transcended ethnic divisions and, in fact, "was the glue that held the neighbourhood together." (p. 94)

The citizens of Milton-Park faced their apparently ultimate defeat in 1972 when they were unsuccessful in preventing the preliminary phase of the Concordia Estates project, and the MPCC all but disappeared until 1977. In the interim, the climate for development in Montreal changed radically in the wake of economic recession, high vacancy rates and the construction fiasco associated with the Olympic games. In addition, public protest against redevelopment generally had moved beyond organized citizen groups and reached a wider base of public support as evidenced, for example, by the electoral success of the Montreal Citizens Movement (MCM).

It was in this somewhat more congenial environment that the citizens of Milton-Park were finally able to take control of their neighbourhood through the formation of a housing co-operative, with the financial assistance of Canada Mortgage and Housing Corporation. The second phase of the Milton-Park "protest" occurred during the period 1977-1983. The approach of the MPCC in their latter phase was more pragmatic than the idealism which characterized the group in its initial years. Although Helman refers to the importance of a change in the active membership of the MPCC itself that occurred between the two periods, she does not adequately explain the root causes of this fundamental shift away from confrontation in organizational tactics. Such a shift seems to have occurred generally in all Canadian community protest movements over the past two decades.

Related to the issue of tactics is the role of Milton-Park in the political agendas of various groups operating in Montreal during the tumultous period of the latter 1960s and 1970s. As a grass-roots movement it seems the MPCC was a clearing-house for activists of all political stripes. Helman provides an inside look at the development of Montreal's urban protest movement as it grew out of the Milton-Park affair. As such, it adds valuable insight to our knowledge of the role of such groups and individuals as the Montreal Citizens Movements and Dimitrios Roussopoulos.

Despite a rather choppy style, Helman has provided a fascinating account of "Canada's largest citizen-developer confrontation". This battle had repercussions that went far beyond the neighbourhood where it was fought. However, from the perspective of Helman's community-based social analysis, the most significant result of the Milton Park "affair" occurred in the lives of the residents. As members of the housing co-op, residents would, "gain new perspectives, learn new skills...People stretch and grow in ways they could not have foreseen." (p. 171) If, as Helman concludes, such an undertaking is unlikely to be repeated in Canada due to the expense of the project, then, ironically the success of Milton-Park has impeded the success of future Canadian housing alternatives.

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es had branched into mathematical models in which operational researchers replaced troops with equation. They manipulated these equations with slide rule and graph, or mechanized them in analogue computers. Thus, they simulated reality with model soldiers fighting model battles with model bullets. Now, greatly enhanced in sophistication and detail, experimental battles are programmed into complex digital simulations which warn the military adventurers of the 1980s about real life experiments that should not under any circumstances be tried. Since those simulations predict futures that must never happen, they are not in the business of prophesy.

Military and ecological strategists have much in common. Both have found in simulation a solution to the complexity they study. Both have used simulations to contemplate the possibility of doom. Both use the rigor of scientific law to describe the physical context. However, the ecologist has not been steeped in a 3,000 year tradition of plans gone awry, of battles in which adversaries failed to follow each other's scripts, and where natural obstacles proved unsurmountable. Lacking this experience, ecological strategists have tended to "hard wire" into their models dubious but plausible feedback mechanisms depicting how the human economy interacts with its environment: they include unrealistic schedules, unproven laws of behaviour and technologies yet to be invented. In doing so, ecological strategists have suffered the humiliation of a legion of military losers who failed to run worst case scenarios through their models.

Past efforts at simulating human ecology have thus been fraught with controversy. The models have been flawed, and people have expected too much of them. The pioneering effort was the Club of Rome's "Project on the Predicament of Mankind" which was reported in the 1972 best seller *The Limits to Growth.* (Meadows, et al. 1972) That book started a controversy in which the natural science establishment supported the book's general thrust and the economics establishment discredited it. But far from driving the issue from significance, as some partisans believe, that controversy has generated hundreds of millions of dollars of research, which has transformed the debate. The situation obtained in the late 1980's is different from the one seen in 1972, but it is more consistent with the Club of Rome's simulation than with the heady optimism of its critics.

Yet the critics persist. An example will be found in *The Resourceful Earth: A Response to Global 2000*, edited by Julian Simon. It concerns a key issue: population growth. Between 1931 and 1943, the 1980 population of the United States was projected by seven different authorities. All were much too low -- from 20 to 30 percent. (Simon, 1984:66) The forecasters are thus assumed to be wrong. Experience with energy forecasting has been even worse. (Robinson, 1988:59) Opponents of econo-ecology simulation, such as Simon, argue that with such a record, long-term *forecasting* is at best pointless, and at worst deluding. However, in a context of exponential growth, a 50 year projection, even with a 30 percent error, is still useful. In the exponential context the population projection is qualitatively correct, for it did not falsely warn of crisis and did indicate what might happen. Its 30 percent error is just a lesson about living with uncertainty.

A recent school of modelers talks of "non-predictive" projection, used heuristicly to understand the socio-economy-environment. Since the object is clearly to guide the system into the future, their terminology seems contradictory. How can you guide something if you can't predict what it will do? They say "the future is, in principle, not knowable for it is not possible to predict what has yet to be learned". (Hoffman, 1988) But their models are just as predictive as a physicists model of a pendulum. The physicist knows real pendulums are not quite like the model. Mathematics does not capture all the nuances of the apparatus. The physicist knows about the risk of catastrophe -- the apparatus might collapse, or there might be a power failure. As part of the process, the physicist may set the apparatus up incorrectly, or be sick on the day of the experiment. The fact that the model deals only with hypothetical situations is not in question. *If* there is a pendulum, *if* it behaves in accordance with the equations and, *if* the measurements are not taken too literally, then the model will predict its behaviour for a while, but not forever. In exactly the same way, simulations of the socio-economy-environment are based on approximations and limited knowledge. They project the consequences of hypothetical situations that bear a resemblance to the real world. Such models can be used to assess prognosis of policy, and to determine whether or not a path can be found to some desirable future state. In their guise as mental models they are all we have to work with. Like strategic simulations and models of the physical pendulum, they do not prophesize. But they are closer to reality than mere philosophical discussion.

A recent approach to modeling long-term economy-environment interaction deliberately leaves out the controversial self-correcting feedback loops that got the pioneers in difficulty. The idea is not to show how well or badly the system deals with its problem, but to evaluate what its feedback systems must accomplish in order to keep the hypothetical economy out of trouble. The systems of its simulated world are deliberately allowed to diverge, and the resulting "tensions" are measured. Then the investigator puzzles over those tensions, speculating what the inhabitants of the model world could do to remove them. Next that world is redesigned and the simulation is run again to see if the

tensions were relieved. In so doing the investigator is not forecasting, but is *designing*: looking for a path that works. If a path is found, one says what it is, *not whether or not real people will in fact follow it.* This process is christened the "design approach" to socio-economic modeling. (Gault, et al. 1987)

Design models of sustainability are not for telling how good things will be. They are for seeking paths to survival, for assessing risks and for warning environmental adventurers. They are for limiting social menus to what is prudent and safe and possible. Given that, they have nothing more to say, for when the menu is safe, choice can be freely made, be it by theory, ideology, welfare or whim.

Conundrum: Foreseeing Technology

The two major criticisms of *The Limits to Growth* were its failure to account for (1) the principle of *substitution* (the routine and reliable adjustments economies make to scarcity) and (2) the power of technology to compensate. The two are more or less the same, for at the minimum, substitution implies a redeployment of existing technology, but more likely, the development of something new. Substitution is therefore a strategy by which an economy uses technology to adapt. The major defect of *The Limits to Growth* is thus its failure to account for technological change.[6] We have already seen how the mainstream Economics establishment has dismissed the Malthusian proposition, because it did not take that important matter into consideration. With considerable justification those economists ask how Malthus could have foreseen a world dominated by heat engines, television, chemical agriculture and data processing. By corollary, they ask how modern long-term planning is to cope with the unpredictability of future technological evolution. They do not get a very satisfying answer. But they are wrong to then dismiss the problem, for they ask the wrong question.

The conventional view of technology is implicit in science museums and in most written descriptions.[7] This view sees technology as a catalogue of techniques which owe their existence to humankind's knowledge of science. The catalogue is usually accompanied by a reverential account of the social benefits attributed to its contents, and admiration for the genius that created them. It is often associated with intense but uncritical optimism about how technology will grow into the future.

Although there are erudite, and often successful attempts to forecast future technology (National Academy of Sciences, 1983) this approach is of little help in assessing the long-term sustainability of an economy. It is rather like trying to understand trees without considering forest ecosystems. In the context of sustainable development, it is better to think of technology as society's institution of adaptation. As an institution it contains a community of technologists, a set of processes, and a mostly unwritten constitution containing all the scripts which specify human technological behaviour. To the extent that the processes are physical (and that is large extent) they are constrained by physical laws, an important component of which are the laws of thermodynamics and information processing. To the extent that the processes are economic they are constrained by principles governing choices that society has to make when allocating labour and resources to competing human activities. Taken together, these constraints are much like the ones that operate on ecosystems and shape their evolution.

This approach to technology is a large, and mainly virgin field which cannot be discussed here in any depth. However, its general themes should be identified. There are at least four basic thrusts: the creation of energy slaves;[8] materials and energy conservation; skill enhancement; and hazard control. Most artifacts now embody more than one of these thrusts and some embody all of them. Unfortunately, progress made in the direction of any one of these thrusts comes with a cost, which may be in proportion to the quantity of a particular artifact in use, or may increase continuously for every one that remains in stock. These costs may appear as environmental degredation, emotional stress in the population, disease, political tensions, increased infrastructure, unemployment, labour scarcity, resource depletion, or pernicious destabilization of the system. Regardless, the costs must in some way inhibit the rate at which technology both develops and diffuses. Furthermore, there are substantial lags between the deployment of an artifact and the subsequent rendering of its account -- by the society, by the environment, or by both.

Technological development is constrained by the resources it demands, the most important one being energy. Technology is very energy intensive, and although there is still much scope for better energy conservation, it is hard to imagine significant technological growth without an accompanying increase in energy demand.

Secondly, technology is almost synonymous with complexity, which is manifest as detailed protocals, regulations, legislation, procedures, menus, training programs and so on. (A measure of the growth of society's complexity is in the size of the service economy.) There are practical limits to how much complexity a society can tolerate. Eventually there comes a time when all the protocals become so burdensome that people can no longer cope with them. Then they begin to lose their effect.

Complexity is also becoming understood as a thermodynmaic concept; like everything else in the uni-

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