

Hanna Newcombe

Essays on World Affairs

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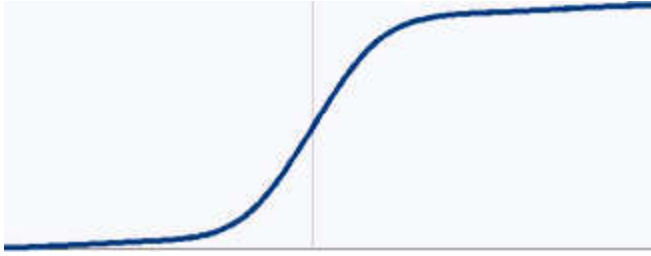
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PAX DEMOCRATICA.



The New World Order should not be Pax Americana. It is time to end the so-called “long cycle” of the historical succession of hegemonic empires. These began with the hegemony of Portugal (1517-1580), which ended with the Dutch Independence War against Spain (1585-1608), Portugal’s primary challenger, and ushered in an era dominated by the newly independent Netherlands and its commercial empire (1609-1713). This era ended with the Wars of Spanish Succession (1689-1713) which culminated in the Treaty of Utrecht (1713). France under Louis XIV had been the Netherlands’ main challenger for power, but actually Britain became the new hegemon (1714-1815). Britain was challenged by France in the Wars of the French Revolution and Napoleon (1793-1815), but Napoleon lost at Waterloo in 1815 and Britain won another term of world rule (1816-1945) after the Congress of Vienna (1815). The new challenger in World Wars I and II was Germany, but the actual successor became the United States, from 1946 on. The challenge by the USSR has now been beaten back without a war. The U.S. could have an uncontested second term, and shows signs of wanting it. But periods of hegemony have usually ended in big wars (the last period is an exception, perhaps because of nuclear deterrence). We should now look beyond hegemony, to the rule of a new principle, and break the deadly cycle of empires.

(Information about the “long cycle” is taken from *International Studies Quarterly*, Sept. 1983, article by William R. Thompson.)

In the search for this new principle, we should note the patterns of findings emerging from recent research on peace, international relations, economics, demography, and ecology. Remarkably, all but One (ecology) seem to converge on a single pattern: the ‘lazy S’ logistic curve placed at the head of this article.

The lazy S curve is well known from Rostow’s book on “Stages of Economic Development”. The lower, almost horizontal, gently rising portion represents the steady, almost non-growing subsistence economy of traditional societies. Households or clans of extended families were nearly self-sufficient and self-supporting, in both hunter-gatherer and early pastoral-agricultural societies, with only moderate barter-trade exchanges of surplus goods. This seemed indefinitely sustainable at the then-existing low population levels.

There followed the steep rise in productivity following the agricultural revolution, and an even steeper rise following the industrial revolution; the world is still at this stage of what has been called “the transitional economy”. Economic growth proceeds at a rate of a few percent each year, which overall means an exponential growth curve (the rule being: the bigger it is, the faster it grows in absolute terms). The steep rise is a time of turbulence and rapid change; in other words, a time of protracted “crisis”.

Some countries at this time are still at the very beginning of the “take-off” to the rapid rise, which has been termed “economic development”; others are already near the end, at, or past the point of levelling off to the higher plateau, again of no growth or little growth; these are the “modern” or “developed” or “industrialized” economies. Our present “development gap” or “poverty gap” is the differential between nations near the lower end of the rapid rise curve and those on the upper plateau; a phenomenon which may be caused either by a historical timelag (the fact that “first-comers” gain an economic advantage, as already pointed out long ago in an essay by George Bernard Shaw); or by a deliberate, or perhaps an inadvertent (“structural”) exploitation of the poor by the rich, depending on one’s ideological inclination. The cause of the poverty gap is of no practical importance in efforts at overcoming it; but it makes a tremendous difference in our perceptions of justice. The final part of the Rostow curve is the (already mentioned) upper plateau of the prosperous wealthy societies.

Another lazy-S curve closely correlates with the Rostow stages of economic development: this is the well-known curve of the demographic transition. Again we start with the nearly horizontal lower plateau of slow natural population growth in traditional societies, representing a natural near-equilibrium between high birth rates and high death rates (low life expectancy). There follows the stormy transitional stage of a steep rise in population (the “population explosion”), due to

the dramatic drop in death rates (from life expectancies less than 40 to over 70) due to greater wealth, better nutrition, better hygiene, and medical advances in curing infectious diseases; meanwhile, however, the birth rates remain high because of the inertia effect of traditional and cultural customs. Finally, at the higher plateau, birth rates drop to again approximately balance the death rates (both now at a low level), as women are more educated and more commonly in occupations outside the home.

Now let us look at some other correlations. It has been shown in studies by Dean Babst and separately by Rudolph Rummel, that democratic states never fight wars with other democratic states, although democracies continue to fight wars with dictatorships, and there are also wars of dictatorships with each other. “Democracy” is rather stringently defined here as the presence of representative or responsible government with parliamentary institutions and multi-party fair and honest elections, the absence of press censorship, an independent judiciary, and the observance of the civil and political rights of individuals and minorities.

There were relatively few states that qualified as democracies under all these criteria until fairly recent times, and this might partly explain why they fought no wars with each other — there were simply too few to find each other or be neighbours likely to have disputes in times of slower communications. Nevertheless, there are more democracies nowadays, and their number has just spurted ahead in the late 1980s and early 1990s. And the correlation still holds — no wars between democratic states. Moreover, it is more than a simple high correlation between democracy and peace — the number of wars between democracies is literally zero. Correlations between sociological phenomena are usually much lower than this.

Immanuel Kant (in his “On Perpetual Peace”) has predicted such a correlation, on the basis that if the people as a whole were making political decisions, they would never choose war over peace, especially with nations who were perceived as being very similar to themselves in their political institutions. Therefore he specified that the states in his world federation would have to be republics, not monarchies (the classification used in his time more commonly than ours into democracies and dictatorships). But whether this is the explanation or not, the empirical correlation remains highly significant.

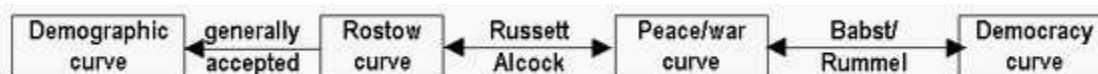
And here is another correlation: the “islands of stable peace” (where war has not only been absent for a long time, but is now almost inconceivable) in the world are found invariably only in the wealthy parts of the world. The examples usually cited are Scandinavia, North America, and Western Europe. This finding comes from the work of Norman Alcock and independently Bruce Russett. It also follows the definitions by Kenneth Boulding of the four phases in different world regions — stable peace (as in the regions mentioned above), unstable peace (occasional wars, but mainly peace), unstable war (usually war, but occasional peace), and stable (almost constant) war, as in Cambodia and Lebanon.

These observed correlations between democracy and peace, and wealth and peace, mean that we probably have two more lazy-S curves. Political regimes have grown from the traditional authoritarianism (perhaps of tribal elders) in primitive societies, through a stormy rise in social complexity characterized by tyrants, dictators, and revolutions, to a final stable plateau of orderly democratic government {almost like Fukuyama’s “End of History”, except that it does not specify capitalism, only democracy). The world is still largely in the stormy crisis stage, but perhaps approaching the higher plateau.

The second lazy-S curve, linked to the first by an extremely high empirical correlation, is the rise from the relative peacefulness of early pre-civilized societies (noted e.g. by William Eckhardt and others), through the turbulence of many wars in which the world has laboured for perhaps about 5,000 years, and in which we still find ourselves, to the upper plateau of stable peace in rich civilized societies. (Note, by the way, that the statement ~ “we have always had wars” is not true; only for the last 5,000 years has war been a human institution.)

And what is more, the curve of peace-war-peace has been found to be correlated to the curve of the rise of wealth (the Rostow stages of economic development), and thereby also the demographic transition curve.

We are now ready to represent these findings in a common diagram.



The pattern that seems to emerge is one of an overall lazy-S curve of a society that changes from being poor, with high birth and death rates, peaceful, and authoritarian, through a transitional stage in which the economy is growing, the

population is exploding (high birth rates and low death rates), wars are frequent, and dictatorships abound (the present time of storm and crisis, from which we may be emerging), to an upper plateau of a world with a steady prosperous economy, stabilized though high population levels (birth rates and death rates both low), stable peace, and democratic institutions.

The lazy-S curve pattern is no accident. It is an extremely common pattern of development in many natural occurrences, from pH changes in a titration curve in chemistry to the growth and saturation of bacterial growth in a Petri dish. It is also seen in the psychological development of children (e.g. the late childhood latency plateau, but also further stages of maturity — a series of S curves rising like a staircase) (the Erikson stages of development are alluded to here), and perhaps in “punctuated biological evolution” schemes of Steven Jay Gould. The common occurrence of this pattern is easily explained by the exponential growth to saturation: exponential growth is at first self-sustaining as it “takes off” and progresses, but it must eventually stop and level off when saturation is reached or natural obstacles to further growth are encountered.

In view of the ubiquity of this pattern throughout the natural world, we should not be surprised at its appearance in social-historical development as well. We have not noticed it before, except in fragments, because we did not observe a sufficiently long stretch of time, and not various aspects of it in their entirety.

As an outlook for the human future, the S-curve patterns can give rise to an overly-facile optimism. We still have to ask two very important questions: (1) Can we actually reach the upper plateau FOR THE WHOLE WORLD? (2) Can it be done in a long-term equilibrium with Nature? Positive answers to these two questions are by no means assured.

If only a part of the world reaches the upper plateau while another part does not (the classic North-South gap); or, even worse, if this is due to exploitation of the South by the North, we are in a “Lifeboat Ethics” situation (cf. Garret Hardin). Some of us in the North are safe in a lifeboat and doing rather well with plenty of supplies, while the others all around the boat are drowning. We deliberately do not give them room in the lifeboat, or we might not survive either — the supplies would be insufficient or the boat would sink under the weight of so many people. Apart from the ethics of the situation (reminiscent of shooting your neighbours if they try to get into your fallout shelter in a nuclear war), there is the danger that the drowning in their rage will overturn the lifeboat, or punch holes in it and sink it. Garrett Hardin’s metaphor of the lifeboat was not at all fanciful or futureoriented; we are already practicing lifeboat ethics in real life in North-South relations.

We are also in trouble if balance with Nature is not reached. (I capitalize Nature to indicate that she is to be regarded somewhat as a foreign power to be dealt with in fear of retaliation for any mistreatment on our part. That metaphor is due to Ursula Franklin.) Today’s wealthy societies (the very ones already on the upper plateau) are extremely wasteful of resources and highly polluting; ecological mismanagement has also grown, as another, highly malignant, S-curve. In this sense, we have grown like a cancer on the Earth. True, on the upper plateau growth will stop; but the high level of consumption on that plateau may nevertheless not be sustainable in the long run.

Thus we see that the high population levels and the high consumption rates at the upper plateau are colliding headlong with both social and natural problems, and may turn out not to be attainable universally and not stable over time even for the fortunate few who have reached it. Unless the social and natural problems are overcome, we may be in the position of Moses who caught a glimpse of the Promised Land, but was not allowed to enter it. It is a Paradise lost before it has been gained.

Are there any solutions? Possibly, possibly not. Let us at least try to explore a few options.

We may note, as a start, that the ecological problems, both of wasting resources and pollution, increase in proportion to three factors: overpopulation, excessive wealth, and damaging (inappropriate) technology. This threefactor relationship has been used previously, both by Barry Commoner and by Paul Ehrlich in the 1970s, although they got into an argument about the relative importance of the three factors. Disregarding the controversy, we shall use these three factors as the basis for the discussion of options which follows.

(1) It would seem that the upper plateau need not be reached at any pre-defined world population level. If we let nature take its course, as we have been doing, we will level off at 9-10 billion, which is too high for sustainability, even if most of us remain poor and therefore less wasteful (in which case we face the social inequity problem). If we knew how to regulate population, we might be able to combine sustainability and equity with the high plateau of peace and democracy (the Pax Democratica), at perhaps 1-2 billion population.

This seems almost impossible to reach. Family limitation to one child or no child per family would cause population numbers to plummet in the next generation, but such policies have failed in India and China — even though in China highly repressive and drastic measures were used. Potential parents seem to be fairly willing to limit their families to two children per family (the natural replacement rate), but it has proved much more difficult in practice to go below that. Perhaps we are confronting some basic biological imperative.

Nature is capable of achieving a very high rate of “cull” through epidemics such as AIDS or something far more contagious (e.g. spread by sneezing rather than only intimate contact), but surely we would not deliberately engineer this, except in biological warfare. Could we stabilize at the present 5 billion? Would that be sufficient? Perhaps, if the further conditions suggested below are fulfilled; but we do not really know.

(2) Is the high consumption rate of the presently prosperous countries really necessary for being at the upper plateau? Again, this happened when we let matters proceed without interference or regulation. The important point at the upper plateau is not the absolute wealth level — we would conjecture — but the fact of saturation, i.e. no further precipitous growth. However, we note with caution, this is a conjecture which does not directly follow from the empirical correlations; but neither does it contradict those correlations. We would probably need to be (and want to be) above subsistence levels (as at the lower plateau), but perhaps somewhere between subsistence and prosperity as now defined.

Alcock et al in 1978 suggested a GNP per capita of about 700 US dollars per year as a reasonable medium level at which basic needs would be satisfied without going into luxuries. These authors reached their conclusion on the basis of a sharp change of the slope in the semi-log plot of average life expectancy against GNP per capita, as observed for all the world's nations. In this plot, we see a steady increase (linear in the semi-log graph) to a GNP per capita of 700 US dollars, after which further increases in GNP per capita have only slight effects on life expectancy. We can assume that increases in wealth beyond this point are merely adding luxuries and no longer necessities; they affect the (material) quality of life only, not the quantity of life.

We hasten to add (and expand on it later) that quality of life need not be defined as material quality; the nonmaterial aspects of quality would not be affected by this limitation of wealth. At these lower consumption rates, we might be able to combine sustainability with existence at the upper plateau, especially at lower population levels. Studies by Bruce Russett have reached similar conclusions. The recommendation following from this is for a life-style of voluntary simplicity, long recommended by Gandhi and the Quakers, among others.

It is also recommended that the level of 700 US dollars in annual GNP per capita should apply to all nations, and also internally within nations, at least approximately, with a spread of not more than a factor of 5. That is, everyone should be between a GNP per capita of, say, from 300 to 1500. The deviation from absolute equality is an allowance for cultural differences and in the interest of diversity. The elimination of the present huge rich-poor gap should be an essential part of the change toward sustainability, for reasons already explained above.

The equalization could be achieved by something like the Guaranteed Annual Income Plan for Nations (GAIN Plan) calculated previously by the present author, or by allocating a “peace dividend” or a “tax on overarmament” in a Disarmament Fund for Development as proposed at the United Nations.

(3) Since ecological deterioration is also caused by the use of inappropriate or harmful technologies, as already stated, we would need to pay attention to this factor also. By being careful to use only environment-friendly technologies, we could further contribute to sustainability while maintaining ourselves at the prosperity-democracy-peace high plateau of a mature civilization.

The main changes must be in the energy sources and the raw materials that we use in industrial processes. The alternatives in energy sources are fossil (coal, oil, natural gas), nuclear (fission and fusion), current solar (space and water heating, photo-voltaics, wind, biomass, hydro-electric, ocean currents, ocean waves, ocean temperature differences), geothermal, and tidal (dependent on the Moon) .

Fossil fuels must be ruled out because they add carbon dioxide to the atmosphere; anyway, they will sooner or later be exhausted. Nuclear fission is too dangerous, both because of radioactive waste disposal problems and the possibility of accidents or terrorist sabotage; and also too expensive. Nuclear fusion has not yet been invented and may never be; and it too might have problems of radio-activation of the surroundings by the high neutron flux. Current solar must be more vigorously pursued in research, to make it cheaper and more accessible; but hydro-electric power generation by building huge dams has adverse environmental impacts, as in the proposed James Bay II project. Micro-hydro has possibilities:

generating local electricity supplies by utilizing small waterfalls or rapids surrounding many communities. Geothermal can be used only in Iceland or Yosemite Park, or where these sources are located. Tidal has been explored in the Bay of Fundy, but might have some adverse environmental effects and is not yet cheap enough. Direct solar, wind, biomass, and micro-hydro remain the best candidates for future energy sources, but they are not ideal. It is a toss-up if we can achieve sustainability in energy.

Regarding raw materials used in manufacturing, these must be not only renewable, but also actually renewed (reused or recycled). Industrial processes must run in closed cycles like natural processes do; i.e. "waste products" must be used somewhere else, not discarded. The free-energy (negentropy) costs of production and consumption processes must be considered more important than the money costs.

Overall prognosis: We can be cautiously hopeful, but only if some very stringent criteria are fulfilled. To be realistic, we must be aware that fulfilling them amounts to a true social revolution and a transformation of values, not mere tinkering at the periphery.

This leads to a final point. A truly mature civilization at the upper plateau would necessarily, because of the change in values needed to reach it, be highly developed ethically, spiritually, culturally, artistically, and intellectually. There are no limits to growth in the mental realm. This type of development would more than compensate for the necessary limitation of economic development, and would in turn reconcile us to the absence of consumer-type luxuries. We would no longer crave these, since far greater spiritual treasures would be widely accessible and freely available to all.

THE GAP.

To combat global warming, governments talk about reducing CO₂ emissions by 20% (i.e. to 80% of the present) by 2010 or 2005; but some think that is too costly and want only to remain constant without further increase. On the other hand, a recent expert study reported in *Greenpeace Magazine* concluded that a reduction by 70% (i.e. to only 30% of today's rate) by 1995 is necessary in order to hold the warming to the level at which it is already. That is a huge gap, even if the plan by governments is implemented, which is doubtful.

To achieve a global 70% reduction, North Americans and Europeans would have to reduce use of fossil energy by 90% (because they are the major users) by 1995, in only 5 years; otherwise developing countries would be close to zero, which is intolerable. A 90% drop is almost a total stoppage, a social revolution.

How do you get an addict to quit "cold turkey"? Only by making them realize that it's either quit or die. Even then some cigaret smokers persist. The pain of withdrawal is severe, maybe worse than the pangs of death. The difference is that there is life after withdrawal, but not after death (I assume). Will we addicts take a long enough point of view? Do we yet sufficiently believe the stark alternatives? Will we wait till the 39th day to try to clear the water lilies that are choking the pond?

Life is so comfortable and denial is so strong. The future seems so far off. Maybe the predictions are wrong; maybe something will pop up; science will find a way; God won't let it happen.

I hate to be a spoiler and a Cassandra, but I don't believe such excuses. Of course the predictions may be wrong, but a rational risk-averse person would choose the worst-case scenario to react to, just as safety insurance. How come the nuclear war hawks always assume the worst about the Soviets and the eco-hawks always assume the best about nature?

World Federalists think that they would solve the problem by creating a world agency, but that is only passing the buck. The question is what would the agency DO. If it merely listens to governments, we are lost. It will take action all along the subsidiarity spectrum, from person to planet, to solve the problem.

It is not so much a question of what we must do, but what we must refrain from doing. We must lose life in order to gain life, as the Bible says. Translated: we must lose our present way of life in order to gain life on a respectably long scale of geological time. When asked "your money or your life", we must choose life. The motto must be: Pass from denial to self-denial.

THINK AND WORK.

In some previous essays, especially “Fear and Hope”, “Models of the Future”, and “Night Fog Lifting”, I have done too much feeling and not enough thinking. It is time to restore some left-brain activity to the balance. In view of the story of the two little girls in the boat drifting out to sea (essay on), we need to do more paddling and less praying.

Talk of hope and despair comes cheap, but is fundamentally unhelpful. We can work for our future without either hoping or despairing, just doing our best.

Cutting down CO₂ emissions by 20% by 2200 seems like a modest goal; not entirely sufficient to counteract the greenhouse effect. Yet it is extremely difficult to achieve when one considers the economic measures needed and their repercussions. Very difficult and yet not sufficient — we are having trouble “making ends meet”. There is a gap between the need and the possibilities.

Cutting by 20% by 2020 would be costly in terms of GNP decrease, especially for countries like China (see Scientific American May 1990), which are still on the rising curve of development. How can this cost be exacted? Can it be spread over the rest of the countries? Would the rest be willing, since they would suffer themselves from the cuts (though not as much)? Many are antagonistic to China right now, for political reasons. Would this be used as an excuse? Would we use the “Lifeboat Ethics” (according to Hardin) and let some people drown? (Perhaps literally, in flooded Maldives and Bangladesh.)

In the rest of this essay, I will state some of our difficulties with the global change problem in point form, though the considerations overlap somewhat. I am deliberately limiting this essay to the global change problem alone, in order to simplify somewhat, although I am aware that in real life we have to deal with many problems at once, so that the difficulties are really greater than outlined here.

(1) The 20% drop in using fossil fuels would mean economic hardship — no use glossing over that fact. But in time fossil fuels will run out anyway and then the hardship will be unavoidable, and will be even more severe, because we would face a 100% drop, not 20% (though perhaps not suddenly overnight). We would be forced by circumstances to quit “cold turkey” on our long-time addiction, and suffer whatever withdrawal symptoms there might be.

(2) In spite of subjecting ourselves to this economic hardship, we may be “too late with too little” to prevent a flip in global climate, if there is a positive feedback between CO₂ build-up, temperature rise, increased evaporation of ocean water, more greenhouse effect from the water vapour, etc. If this chain reaction starts, we won't be able to stop it, even if we quit cold turkey on fossil fuel use. It will be like going beyond the point of no return on the upper Niagara river in a boat without a motor or oars.

(3) The scientific uncertainty in modelling and predicting climate change and its consequences are still very large. We cannot confidently say what it is that we are facing. It could turn out to be quite minor and we could easily adapt; or it could be major and drastic, depriving us of the ability to grow enough food for the 10 billion people we will have by then. Not knowing what to prepare for, even if we could prepare, is a major problem — but caution requires preparing for the worst even if its probability is low.

(4) In the drastic case, how would we respond to a mass famine? By attempts to share dwindling supplies with some equity, or to provide for the most sensitive groups like pregnant or lactating women and small children, or like walrus on the beach when the fish come in, by each grabbing what we can? I would expect us to act like walrus, in which case war and violence would result in further loss of life on top of the starvation. If we add disease resulting from lessened resistance due to malnutrition, we have the Four Horsemen of the Apocalypse — a death process in which positive feedbacks accelerate the downward spin-out. Yet this might not happen — either the environmental stress will not be as severe, or our response may not be so inappropriate.

(5) Besides the scientific uncertainty about physical nature, we thus have the other great uncertainty — concerning human nature and behaviour. We don't know how we would react to a demand for preventive sacrifices of economic benefits (no politician has yet dared to suggest it), nor do we know how we would respond to extreme stress — by fratricidal conflict or closing ranks in solidarity and cooperation. There are even fewer models of “social climate” than of physical climate — none that we could use for even approximate testing in computer simulations.

Our problems thus are aggravated by ignorance and uncertainty. While there is pressure to act with urgency, there is no

sure way to predict the efficacy of the actions advocated; and so our urgings may lack credibility in the view of a public eager for clarity and crisp certainty.

The picture I have painted prompts more despair than hope, but many surprises are possible. Who would have predicted that the Cold War in Europe will end so suddenly, or that Mandela would be released and the ANC recognized in South Africa? Certainly not the “realists”. Humanity may have inner resources as well as inner weaknesses; and the resources and strengths may come into play under adversity, just as surely that People Power has come into its own in world politics. This kind of hope is possible, but not certain. We are also the species that perpetrated Belsen and Hiroshima.

So what do we do, in a nutshell?

- (1) Think hard; this is our evolutionary strong point, and, if I may use a military metaphor, every commander in the battlefield tries to use his army’s strengths to greatest advantage. We must pursue vigorously the physical science of climate and the social science of human behaviour.
 - (2) Act even before all the facts are in. Don’t ever let the need for more research be an excuse for inaction or delay. This is a situation in which the “worst case scenario” must be achieved, to give us a safety margin.
 - (3) Aim for a long-range future, not immediate advantage; and for the general good, not that of our own exclusive group.
 - (4) Stop expecting success or failure; instead, just work tirelessly in the face of uncertainty. Hope is not essential for effort.
 - (5) We might occasionally pray as well as paddle.
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APOCALYPSE NOW.

We are already quietly practicing Lifeboat Ethics: we are allowing the Third World to drown because we deny them access to our luxury Lifeboat. We are pushing them over the edge of survivability unnecessarily and prematurely, just to prolong our time of luxurious living in the North. We may all go over the edge eventually, but we are not keeping solidarity in the process. We are not even waiting until the scramble is on for necessities; we are keeping our luxuries at the expense of their necessities. It is not a zero-sum game, we win and they lose. It will either be a both-win game now, or a both-lose game, sequentially.

The distribution system is stacked and skewed in an incredibly cruel way. The marginal people (meaning those being pushed over the edge) are the poorest people in the poorest countries, mainly children. They are invisible to us. While millions of them die, we don't perceive them as brothers and sisters. There is no grief or pity in our hearts, no sense of loss — except in times of unusual publicity, as in the Ethiopian famine of 1987.

In the coming eco-catastrophe, if the Netherlands is flooded, we will respond and fight to save their land by building dikes, because we see them as real persons. If the Maldives, Egypt and Bangladesh are submerged, we will look at the newspaper headlines, sigh briefly, and go on our way.

I am not saying that we deliberately exploit them. There is no evil intention. It is structural violence and perceptual blindness, perhaps fed by latent racism.

Yet they are our predecessors into the abyss. The centre will simply sink later than the periphery; not literally through submersion, but figuratively: we will slide into extinction for other reasons — food shortages through drought, or whatever. And the centre will have farther to fall, because we are so accustomed to the soft life. We are not used to daily suffering as they are. We are used to three meals a day and snacking in between, then going on diets against obesity. We consider it a hardship if we have to skip meals while traveling. “I am hungry”, we wail, in temporary discomfort. Yet their chronic hunger hurts, more than we have a way of knowing. It is a failure of the imagination.

Apocalypse is not in the future, it is now — for them. They go first into the Black Hole from which no one ever returns. They are the first lemmings over the cliff in our overcrowded world — the first, but not the last. We are behind them in the queue and pushing. Our time will come soon enough, but meanwhile we fiddle near the site of the all-consuming fire. We don't hate them who fall in, we just ignore them, unaware that we pushed them. If we took notice, we might glimpse our own approaching fate; but we would rather fiddle and dance a bit longer. Closing ranks in solidarity does not appeal to us; does not even occur to us.

Our economic system is based on individual utility maximization. Economists never heard that “no man is an island...ask not for whom the bell tolls, it tolls for thee”. We are not a family, but two cultures separated by a gulf of ignorance, almost two quasi-species in the sociosphere, though not in the biosphere. Divided in this way, we are far more likely to fall in the coming showdown with natural forces. United we might have a chance to stand

FOUR WORLD REPORTS.

Question: In our search for common security, in spite of our common crisis, do we have a common future?

["Common Security", report by Palme Commission on Disarmament and Security.

"Common Crisis", second report by Brandt Commission on North/South issues.

"Common Future", report by Brudtland Commission on Environment and Development.]

Answer: safe and sound.

["Safe and Sound", report by Thorsson Commission on Disarmament and Development, as popularized by Clyde Sanger.]

LIMITS TO GROWTH VERSUS SUSTAINABLE DEVELOPMENT.

In the 1970s, we were startled by the stark predictions of the Club of Rome report "Limits to Growth" (Meadows et al.). We came to understand the implications of exponential growth, and why it could not continue; and why even discovering new deposits of metal ores or crude oil would lengthen the time to exhaustion by only a few years if exponential growth continued. The Forrester-model world system simulations predicted a population crash by 2030 for almost every combination of the 5 or 6 variables used.

Many subsequent modellers criticized the assumptions underlying the Forrester-Meadows simulations, but surely the simple statement that exponential growth must hit a limit still stands. The growth curve must at least plateau out to a lazy-S logistic curve, even if a crash is avoided.

In the 1980s we were treated to the more hopeful, though still concern-arousing Brundtland Report, with its message of "sustainable development". Unfortunately, the term can mean many things to many people. "Development" still means "growth" to most of us, especially GNP growth. Yet GNP growth and population growth, especially, must hit those limits we were warned about in the previous decade. Mental and spiritual development would pose no problems and should be applauded; but that is not what most people mean or what first comes to mind when the word "development" is used. Development could also mean better health and education and social programs, which would be possible without overall GNP growth if we rearranged our priorities and took the money from military expenditures; this too seems appropriate and praiseworthy. But if we define "development" as GNP growth, then the expression "sustainable development" is a contradiction in terms.

The Brundtland Report makes the point that the developing countries have to get richer, because poverty itself drives people to despoil the environment; e.g. to cut down trees for firewood or cut down whole forests to get more land for growing crops to feed their families. This is a valuable point to make, one that was missing from the Club of Rome reports. However, and this proviso must be underlined, since overall global growth is no longer sustainable, the rich countries will have to DROP in their material living standards so that the poor countries can improve theirs.

To soothe the outrage that inhabitants of rich countries will feel at this statement, let me stress that it is not a zero-sum game: it will not hurt the rich countries anywhere as much as it will benefit the poor countries, for the three reasons outlined below. Even if we think of the Great Equalization as a transfer of wealth in monetary terms from rich to poor countries (which is a bit simplistic), there are the following ameliorating circumstances that make it easier and more acceptable.

(1) Transfer of a fixed amount of wealth would be a much smaller percentage of the big economies of the rich countries than of the small economies of the recipient countries; so the relative gain would far exceed the relative loss.

(2) As Alcock has shown (in the book "1982", CPRI Press, Oakville, 1978), the plot for countries of average life expectancy against GNP per capita shows a steep slope of increase up to a GNP per cap. value of about 700 (\$ US), at which point there is a sharp change to a much gentler slope (though still increasing) for the higher GNP per cap. values. This is not only because there is a natural limit to the human life span, but also because in relative poverty more of the increase in wealth is used for necessities, such as food and basic health care, which really increase life expectancy; while in relatively richer societies, more of the wealth increase is used for luxuries, which have little effect on life expectancy. Some luxury goods may even shorten life, such as tobacco, alcohol, or high dietary sugars and fats.

(3) The quality of life is even less correlated with wealth than quantity of life (as measured by the average life expectancy). Beyond providing the basic necessities, quality of life depends mainly on the higher needs in Maslow's hierarchy of needs: a sense of belonging, a sense of achievement, and self-actualization. These are personal and inter-personal values not dependent on wealth.

Coming back to the Brundtland Report, we also have to define the word "sustainable" more carefully. At the time of the Stockholm Conference on the Environment in 1972, Paul Ehrlich and Barry Commoner, both prominent environmentalists, had a heated argument. Both were using the same equation

$$E(D) = k_1(P - P_0) + k_2(W - W_0) + k_3(T - T_0),$$

where $E(D)$ is environmental deterioration, k_1 , k_2 and k_3 are proportionality constants, $(P - P_0)$ is population excess, $(W - W_0)$ is excess wealth or affluence, and $(T - T_0)$ is excess technology. "Excess" means excess over the

sustainable values P , W , and T . The argument, which does not matter now, was over whether P was the most important factor (said by Ehrlich, the author of "The Population Bomb") or W was more important (the rich-poor gap was stressed by Commoner). Dismissing the argument, the equation can still be used, since it still seems plausible.

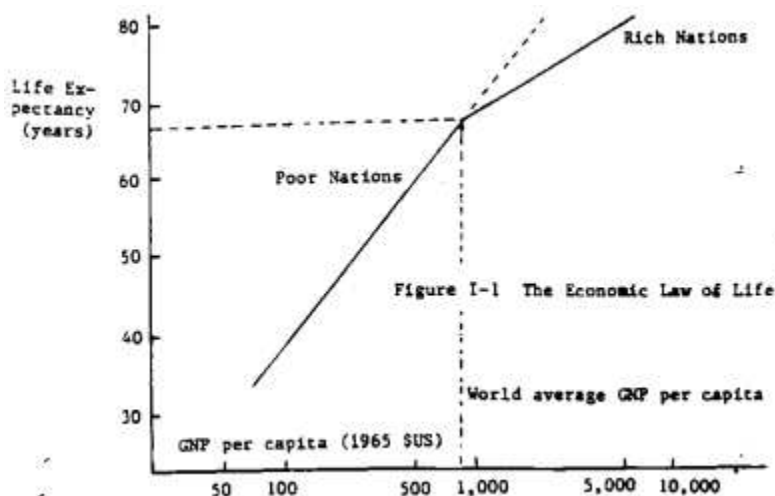
Assume that "sustainable" means that $E(D) = 0$. This can be satisfied only if at least one of the bracketed expressions on the right side equals zero; i.e. when either $P=P_0$, or $W=W_0$, or $T=T_0$, or two of these relations hold, or all three. In words that means, very sensibly, that we hold either population, or wealth, or technology, or any two of them, or all three, to sustainable levels. But the whole crux of the problem depends on the definitions of P , W , and T . Let us try a few guesses.

W might be the value of GNP per capita at the point where the slope changes in Alcock's plot of life expectancy vs. GNP per cap. (See above.) We really have no proof that this is the value of W_0 , but it seems plausible. T_0 might be defined in terms of "appropriate technology" (E.F. Schumacher "Small is Beautiful"), soft energy path (Amory Lovins in a book of that name), use of renewable resources, and "the three Rs" (reduce, reuse, recycle). What is P is not yet clear. It might be the 10 billion that we will have in 2200 when the world population is predicted to stabilize, but actually that may be too high. Perhaps, if we hold W and T at sustainable values (remember, only one needs to be, but we are playing it safe with two), we might be able to get away with P being too high, but not more than 10 billion.

However, Deep Ecology (looking at the world from the perspective of the whole biosphere, not only our species) introduces another consideration. The value of P we should aim at should be such that we minimize crowding too many other species from their habitats, possibly driving them to extinction, as is already happening. What might that value of P_0 be? How many other forms of life do we want to save to what extent? These are very painful trade-offs to consider. Someone recently suggested at a conference that human population should go down to 0.5 billion. That is only 10% of the present size. It need not be done by a 90% die-back, but the birth limitations necessary to achieve it would make China's drastic population reduction policies seem like child's play. I stared at the speaker in disbelief, and asked him "If these other species had the ability to compete as successfully as we can, would they do this for us?" "No", he said without hesitation. "But they can't make moral decisions and we can. And diversity is a value."

How far can altruism be stretched? Most people still have trouble widening their concern to all of humanity, i.e. beyond their own nation. A further widening to take in the whole biosphere on some basis of species equality is beyond MY capability, to be quite frank. I would have trouble giving up my grandchildren for a bunch of wild animals in the jungle or on the savanna. And do we go beyond mammals to insects? I cannot do it, I confess. I doubt that many people can. Nature may do it for us if we misbehave, but then at least the foul deed will not be done by our own hand.

The Brundtland Report did not sufficiently define either development, or sustainability, and ignored previous warnings about limits to growth. It is not a sufficient blueprint for Our Common Future. A combination of Meadows and Brundtland might be a better plan.



INTRANSITIVITY.

According to recent studies (Rudmin, Eckhardt), one cross-cultural variable among the several that correlate with frequency of war is “domination”. This variable includes domination of rulers over subjects, upper class over lower class, men over women, masters over slaves. Riane Eisler also described such “dominator societies” in “The Chalice and the Blade”.

These patterns are thought to have come into existence when agriculture began; in fact, “war frequency” also correlates with a factor called “agricultural production”, and with another that comes close to “industrial production”. Eckhardt concludes that civilization in general, compared with a primitive life-style, is conducive to war. These correlations are not necessarily causal, but they might be — it’s just not proven. To abolish war, it might be profitable to control these variables and see if it helps.

So do we have to throw civilization overboard, including not only industry, but even agriculture? “We can’t reverse progress”, you say? But is it progress if it threatens to destroy us? If we have taken a wrong turn at a crossroads, even very far back, it is rational to go all the way back and take the correct turn. Don’t throw good money after bad, don’t succumb to the sacrifice trap...

But it may not be necessary, after all, to throw out the baby with the bath-water. With loss of industry and agriculture, we could sustain only much smaller populations. Maybe all we have to do is get rid of dominance.

As we look at natural systems, many seem to be hierarchically organized. Barnyard chickens have their pecking order, as do male apes; every hive and ant colony has its queen; our brain takes its lion’s share of blood in preference over other organs; many hormonal systems work through cascades (e.g. ACTH releasing factor to ACTH to cortisol); food chains have big creatures at the top and small ones at the bottom. Are we then doomed to operate an increasingly fascist society? Let us take a closer look at other patterns.

By criteria of normal rationality, if A is greater than B and B is greater than C, then A has to be greater than C. This is most certainly true of numbers. But if A is more beautiful than B and B is more virtuous than C. we do not know how A and C compare in either beauty or virtue. If two qualities are compared between the three entities, we can quite rationally have intransitivity, which is that A goes over B, B goes over C, but C goes over A. A children’s game, which compares 3 qualities of 3 objects, says it all: Scissors cut paper, paper wraps stone, stone breaks scissors.

We see intransitivity in action every time we fold the four flaps of a box so that each flap is under the one on its left (say) but over the one on its right, all the way around. We may have to work a bit harder on the last one to make it fit, but when it’s done, it keeps the box securely closed.

Intransitivity also figures in “the voter’s paradox”, where a voter may prefer A over B and B over C, and yet prefer C over A, if these candidates or issues are presented two at a time. Such voter preference schedules may seem irrational, but only if we see them as being compared along a single dimension (like forming a Gutman scale); but a voter may be thinking of two or more terms of comparison between the alternatives presented. One concrete example is a voter in a golf club, who prefers the building of a new club house over continuing to use the old club house (because the roof leaks in the old one), and prefers a new club house with a bar over one without a bar (because it’s cheaper to include it during construction than to have to retrofit later); yet he may finally decide that he would rather stay in the old club house and get a little wet with rain occasionally than to have to deal with drunks at the bar at all times.

While the voter’s paradox is considered to be a nuisance in theories of voting and elections, intransitivity is worth considering as a “non-dominator” pattern. The question “which is stronger: scissors, paper, or stone?” has no answer, because each is under one other object and over the other, like the four flaps of the box. There is local dominance, or dominance in a single quality only, but no universal dominance in all qualities, that could describe one of the terms of comparison as stronger or higher or better or a winner or a leader or a king.

In society, could we have division of labour without dominance? It would seem at least conceptually possible. In the play “Creighton”, the servant becomes the master when the family is shipwrecked on a desert island, because he is better able to cope with the new situation. When they are rescued, they revert to their original social roles. Could we vary our social hierarchies in a way dependent on the situation? It already happens in the army, where the officer may have a lower social rank in civilian life than the private has. Let us have the “fittest” or “fittingest” on top, but the quality of “fitness” is necessarily defined by the situation or the environment, in society as well as in nature.

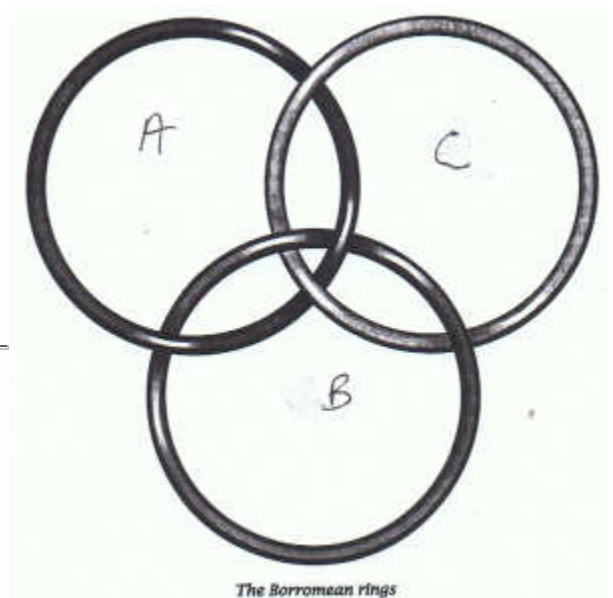
Most suggestions for getting rid of dominance opt for “equality”, but this suggests a gray sameness and uniformity. Division of labour is functional and some people will always be better at some tasks than other people are, but worse at some other tasks. It seems more “ecological” to find for each person’s talents a particular niche, in which he/she has sets of superiors and inferiors for various talents. The overall consequence would be approximate equality, and certainly absence of dominance; and perhaps society would fit together as tightly and securely as the four flaps of a box. A good visual symbol is four right hands in a circle, each clasping the wrist of one neighbour while being clasped at the wrist by the other neighbour. We note that an intransitive relationship has to be a cycle; and like a simple knot (which also illustrates intransitivity) has to have at least a certain minimum degree of complexity.

With the recognition of cyclicity comes the realization how “natural” intransitivity can be, since nature abounds in cycles. It is cycles that maintain active homeostasis. Carbon to methane to carbon to carbon dioxide and back, with all the in-between stages of half-reduced and half-oxidized, has no “better” or “superior” stages — the whole cycle is of value, and the continual circulation of matter through the cycle from stage to stage is of value. Hierarchies exist locally: methane is the most reduced and carbon dioxide is the most oxidized, but they harmonize in the overall pattern.

We do not follow a linear pattern A over B over C over D etc., as in the pecking order of dominance; not a linear arrow to a final goal. Rather we practice pattern maintenance in a dynamic way, like a good Prigoginian dissipative structure should. This, not “progress”, is truly sustainable, truly equitable, and truly peaceful.

The Borromean rings (see illustration, facing) are a perfect example of intransitivity. Ring A lies entirely above ring B, ring B lies entirely above ring C, but ring C lies entirely above ring A. None of the three pairs of rings, AB, BC, CA are linked, but if the three rings are interrelated in this intransitive way, the three are linked like a knot — like a good interdependent society of independent individuals.

If the structure is made of physical rings, either each ring has to be slightly twisted or deformed, or (with rigid rings), the structure is not co-planar. In either case it has a profound beauty.



PEOPLE'S PEACE.

Introduction.

Mao Zedong and his theorists used to talk about "The People's War" as being a new variety of warfare, in which people matter more than technology. It was part of the ideology of the new China, which had plenty of people, but had a lot of catching up to do on technology. The theory was not entirely followed in Mao's China, which did acquire nuclear weapons and joined the nuclear powers; but there remained an emphasis on guerrilla warfare, in which the people fighting in their own homeland can defeat a foreign invader wielding modern weapons. Vietnam was an example of it, as was Afghanistan. Strategic thinkers have always stressed that home defenders have an advantage over outside invaders, both for logistics-supply reasons and for morale reasons. So maybe this emphasis was not so new with Mao, but it certainly remains relevant even in our high technology age.

I will argue in this paper that the emphasis on people over technology is just as applicable to peace as it is to war. In the light of the recent examples of massive People Power, starting in the Philippines, running into a brick wall (hopefully temporary) in Tiananmen Square, and then rapidly transforming Central and Eastern Europe in a country-to-country chain reaction, we certainly have to believe in its reality and vigour. If people power can be successfully applied to political transformation, how can it be similarly applied to promoting and securing peace, in the narrower sense of preventing war?

Four ways of doing this will be described below. These four do not necessarily exhaust all the possibilities, but they will indicate the type of activity or institution that is needed. There is already a large literature available on some of these possibilities; all that is done in this brief paper is to tie them together under a common heading.

Citizen Exchanges — for reducing enemy images and building friendship across national borders.

The threat of war has two components: capability and intent. To lower the capability to make war, we want to promote disarmament; to lower hostile intent, we have to remove or transform enemy images. While disarmament is partly a technical problem, the lowering of hostility is primarily a psychological problem. (Both are to a large extent political problems as well.)

Contacts between citizens of two hostile countries can have a beneficial effect in decreasing hostility perceptions. It does not, of course, resolve any substantive conflicts that may exist between the two countries, but it improves the climate in which such conflict resolution can be carried out, whether by direct negotiations or a third-party process.

Tourism provides superficial contacts, but has marginal benefits if visitors are confined to hotels and other enclaves, without really entering the host-country culture. It might even be harmful if the visitors behave badly toward the local environment or culture, or are contemptuous of it or condescending. Home-stays have long been recommended as much to be preferred for cultivating deeper contacts. There are excellent organizations of long standing which promote home-stays; among them Servas and Experiment for International Living.

Even better might be collaboration on common projects, as promoted, for example, by Canada World Youth. Cooperating toward common goals is known to reverse enemy images, especially if superordinate goals are involved (goals which each side cannot reach alone, and which are of vital importance to both). This proposition is supported by sociological experiments in boys' camps, performed by Muzafer Sherif et al. (Robber's Cave experiment.)

Other variations on this theme are student exchanges, now widely practiced in many parts of the world. Sometimes there are difficulties: there have been incidents of racist riots against African students in the Soviet Union many years ago, and more recently in China. It all depends on how the contacts are managed. Contact alone is not a panacea: the idea that if we get to know someone better, we will like them more, is not always true; we may get to like them less if we get to know them better. That happens in social contacts in our own localities; we do not automatically like everyone we meet. There is no reason why this would not also apply in cross-cultural contacts. Also, real rivalries and competition may arise; e.g. over foreign male students going out with local women. Yet, the hope is that, in most cases, we will recognize the common humanity of visitor and host across the cultural and/or ideological barriers, and at least refrain from seeing each other as devils or subhumans.

Cross-cultural contact is actually so common now that it extends naturally far beyond these deliberate attempts. Transnational business firms send experts abroad, and exchange personnel freely over their far-flung subsidiaries. The

U.S. Peace Corps, Canada's CUSO, and the equivalents in other countries send young people to developing countries, partly to help the host countries and partly for the young people's own education, to acquire knowledge which they can then spread by speaking to groups at home after they return. Many people travel, for many reasons. Some have family members abroad. The point is that nations are no longer isolated boxes with impermeable walls, if they ever were. Those walls are very leaky now, as travel opportunities increase. The world is in an active process of unification, whether we like it or not. I would argue that for peace purposes this is beneficial on the whole, even if some of the contacts are exploitative. For the oppressed are uniting across frontiers as well as the oppressors.

Perhaps we now need to improve the quality of the contacts more than their quantity. Allport stipulated that four conditions should be satisfied if cultural exchange is to be successful: Equal status (no patronizing attitude of "we will teach you better ways"), positive sanction (official approval, not necessarily by government, but by some authority like the church or a university), common goals (on which comment has already been made), and interdependence (mutual need of each other). Careful attention to these simple requirements would improve the effectiveness of cultural exchanges in promoting international peace.

The Hostage Plan — for confidence building and reassurance of peaceful intentions.

This plan has been proposed several times by different writers, most recently by Kenneth Smail. The basic idea is to place the children or relatives of national political and military leaders in the cities of the opposite country. This would presumably decrease the likelihood of the leaders ordering their military forces to bomb each other's cities. The plan was designed for the prevention of nuclear war between the superpowers, but could be adapted to other conflict situations, such as regional conflicts in which conventional air raids or land or naval bombardment may be threatening. The presence of the "hostages" in the cities should be on a rotating basis, not permanent, so that they would remain vividly valuable to their country of origin.

The hostages could be simultaneously good-will ambassadors, thus overlapping with the functions of cultural exchanges. However, they should never act as spies; provisions should be made specifically to prevent this. If spying must take place, it must be done by other persons, so as not to confuse the roles. After they have stayed abroad for perhaps 5 years, the hostages would be replaced by others of similar status (i.e. close relatives of leaders).

It might be said that the city populations as a whole are already hostages to each other in the nuclear deterrence situation, especially in its MAD variant (Assured Mutual Destruction). However, a specific hostage exchange might dramatize the situation sufficiently to reinforce the inhibitions. It is a psychologically based plan, not one deriving from military logic.

Citizen Reporting — for arms control verification.

Arms control verification is normally a highly technological subject. Locations of missile silos are pin-pointed by satellites equipped with sensors; underground nuclear explosions are monitored by seismographic arrays; manufacture of chemical weapons might be detected by downstream or downwind microanalysis of chemical effluents or gas emissions. In no way would I want to devalue such methods, or the mixed (people plus machine) methods used in on-site inspection, which is now coming into operation under several new treaties. However, some weapons detection or identification (either their deployment or their manufacture) presents technical problems, and it would be useful to be able to supplement the current methods by something new.

This new addition I call "citizen reporting"; it used to be called "inspection by the people"; it might also be called "whistle-blowing". As the names indicate, it depends on the people, and therefore forms part of the "people's peace" system that is being described here. I have described this method in a recent 8-page article, which was presented as a paper to the Canadian Peace Research and Education Association in June 1988, and therefore I can afford to be brief here. (Copies of the previous paper are available.)

The inspection agency would benefit from information provided by at least a few of the many people who would have to be employed in any large-scale illegal weapons production or deployment. Reporting would be encouraged by (a) making it legitimate rather than treasonable to report violations by one's own government, and (b) protecting the anonymity of the whistleblower in case the offending government threatened retaliation.

The first aim (legitimacy) would be provided by requiring the national leader of every state acceding to the arms control treaty to proclaim publicly and solemnly that it is the duty of every citizen to report any suspected violation to the

inspectors. If their own leader said so, citizens would be much more willing to report.

The second aim (protection) could be provided by procedures such as all employees of sensitive plants being required periodically to deposit a piece of paper in ballot boxes; most would be blank, but some might contain messages pointing out irregularities and suspicions. The inspectors would follow up messages that seemed serious, discarding the crank messages. A second level of protection to informers could be provided by U.N. embassies in every major centre offering asylum to persons persecuted by their company or government for reporting, if their action had somehow been disclosed.

Civil Disobedience — for resistance against militarism and injustice.

There is already a vast literature on non-violent civil disobedience by Gandhian or related methods; I will mention only Gene Sharp as a prominent writer in the field. The instances of “people power” that we have seen recently fall mainly in this category.

If conflicts (about injustice or otherwise) are to be resolved without violence, they may nevertheless still require struggle. The ideal situation would exist if conflicts could always be decided on the merits of the case, by some impartial judge or arbitrator. This is not always possible, either because no authoritative third party is available (no one has come forward to serve in this capacity, or those who have offered their services are not accepted as impartial by one of the parties), or because no laws or precedents exist to decide the case, and “justice” seems elusive. Under such circumstances, the conflict would still have to be decided by a power struggle between the parties, but the rule must be that all violent methods be avoided.

Even under an enlightened and benevolent government, cases will arise where a perceived injustice has occurred, and no legal redress is forthcoming. There must be the possibility, as a last resort, for the aggrieved group to resist, by refusing obedience to the authority which normally citizens give without question. This can be done by sit-ins, strikes, boycotts and the like.

This certainly seems relevant to justice, but is it relevant to peace in the narrow sense of war avoidance? Its relevance to peace concerns is easily shown. A simple example is that of citizens refusing to pay the part of their income tax that would go toward military expenditures. The classic case, of course, is refusal of military service (conscientious objection). In addition, the sit-in or blockade or fence-jumping can be used to protest against military installations. People tried to stop the “white train” carrying U.S. nuclear warheads, and others jumped the fence at Littons in Toronto. Even sabotage can be judged non-violent: such as hammering weapons to damage them after illegal entry into a plant (as in King of Prussia, USA).

Not every peace activist will want to carry out such actions and go to jail. (They might risk more: Brian Wilson lost both his legs while trying to block a train carrying weapons when the train did not stop.) It is a method of last resort — if violence is ruled out. But no list of “people’s peace” activities would be complete without it.

Conclusion.

If war is too important to be left to the generals, so also peace is too important to be left to the governments. War prevention is everybody’s business, if for no other reason than that we would all suffer in war. This article has outlined some roles that ordinary citizens can play in preserving peace: as cultural ambassador, as voluntary hostage, as reporter of disarmament treaty violations, as refuser of cooperation with militaristic activities.

But beyond all this is the well-accepted role of citizen advocacy, a role in influencing political decisions toward establishing a peace system. We did not enlarge on this here, because it has been said many times. The peace movement deserves part of the credit for the improved situation since 1980, but our efforts must not flag, because we are not home safe yet. Governments will carry out policies that are acceptable to the people, if the people will VOCALLY AND INSISTENTLY make their wishes known. But we have to know not only what we oppose, but also what future we want to build in a positive way. Some of these parts of a peace system are outlined here, and more exists in the literature. (I have elsewhere collected over 60 peace plans.) So let us talk about these alternatives at every opportunity we get.

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MAKING STABLE PEACE IN EUROPE.

The difference between temporary and permanent peace is the same as between economic growth and sustainable development; i.e. the difference between looking only after today and extending our horizon to the future. The developments in Central and Eastern Europe are encouraging, even exhilarating, but we might slip into instability, or back into rigidity, or into a new danger resembling an old one — the situation before World War II. Our gains (“our” meaning all of humanity) have been considerable, but they must be pinned down, by some sort of ratchet effect, in order to be secured as a basis for further progress.

Economist and peace researcher Kenneth Boulding is fond of talking about four “phases” — stable peace, unstable peace, unstable war, and stable war. The examples might be Scandinavia, bipolar Europe until recently, India-Pakistan, and Lebanon. This scheme might be used as the basis for a “new geo-politics”. The old geo-politics was all about power struggles between maritime powers and land powers, i.e. it dealt with war and strategy. The new geo-politics would map areas in the world of the four Boulding phases of peace and war. It is appropriate to our time, which I see as a transition from the war system to the peace system. Boulding’s four phases are stages in that transition, and some areas of the world are further along than others.

Areas of stable war and unstable (occasional) war snake through Africa, the Middle East, and South and South-East Asia in a great arc which Alan Newcombe and I have called “the fuse”. Areas of stable peace include Scandinavia, North America, and since World War II Western Europe. Our task as peace people and agents of the great transition is to shrink the “fuse” area and expand the peace area. We have made remarkable progress on both parts of this task since 1987. That was the time when many local and regional wars along the fuse were settled or set on the way to settlement, often with the help and supervision of the United Nations. Examples are the Iran-Iraq war, Namibia, Cambodia, hints about talks between India and Pakistan, Soviet withdrawal from Afghanistan. The area of stable peace, which until recently has occupied part of the great belt through the Northern temperate latitudes (Japan — North America — Western Europe) now shows the promise of “closing the ring” by also including Eastern Europe and the Soviet Union. But of course, it is still only a promise. We are not there yet. For one thing, the weapons are still in place; the planet is still booby-trapped. The intent to use the weapons has evaporated, but accidents could still happen.

While we work diligently on dismantling the weapons stocks, we must also devise viable political rearrangements. We must avoid re-creating the situation of a strong reunified Germany in the midst of disunited weaker neighbours, as well as the revival of old Balkan rivalries which once upon a time ignited World War I. We must also avoid the psychological trap of carelessness born of exhilaration. I am thinking of the analogy of an old movie called “The Wages of Fear”. In it, the main character was hired to drive a truck full of highly sensitive explosive, liquid nitroglycerine, to the site of an oil-well fire in Venezuela through mountain territory. He managed to deliver the load, after undergoing a series of hair-raising episodes and emergencies. Driving the empty truck back over the mountain roads, he was so happy to have survived that he danced the truck along to the music on his radio, crashed over the mountainside, and was killed.

Let us then look at some possible structures in Europe that could produce sustainable peace. One is the old Rapacki Plan: neutralized and demilitarized West and East Germany, Poland and Czechoslovakia. This could adjoin a Scandinavian denuclearized zone in the North and a Balkan denuclearized zone in the South. If this area also developed some common political and economic institutions in a semi-federal manner, Germany, whether reunified or not, would be “diluted” and rendered harmless, while attaining its own legitimate national goals. The overlap with the European Community and Comecon would be acceptable, even beneficial, as some nations would be members of two regional associations. It is well known that such “cross-links” or multiple loyalties are peace-producing.

It would be better to use EEC and Comecon, the economic associations, than NATO and Warsaw Pact, the military alliances, for this process of overall European unification. However, one advantage of the latter is that North America would be included, i.e. a bigger chunk of the Northern belt of industrialized nations which constitute the present stable peace area.

But there is a still better format for including this larger area, as well as the European neutrals: the CSCE (Helsinki) framework, recently suggested by M. Gorbachev.

If this rather loose and rudimentary grouping could be deepened into additional fields of economic and political cooperation, this would probably produce the most stable and peaceful results. The conventional disarmament negotiations are already taking place in this framework, and seem to be developing in a more promising way than the old MBFR negotiations between NATO and Warsaw Pact alone.

It has also been suggested that gradual disarmament might now take place spontaneously, for economic reasons, because of the perception that weapons are no longer needed in the absence of an enemy. Negotiations and treaty-making is rather slow, while political events are now moving much more rapidly. The process would be like GRIT, reciprocated unilateral reductions, but maybe not even coordinated, just to save money in national budgets. The problem again is that, without treaties, eventual back-sliding would be easier if tensions rise again. We need to bring in the old ratchet effect to secure our gains, and only treaties can do that. However, mutual unilateral reductions could precede the treaties, and be only confirmed and stabilized by the treaties.

If we are looking for a gradual automatic process for disarming our stocks of H-bombs, we could simply cut off the tritium, and the bombs would be duds in 5 or 10 years. We would have to think up other technical fixes for other types of weapons.

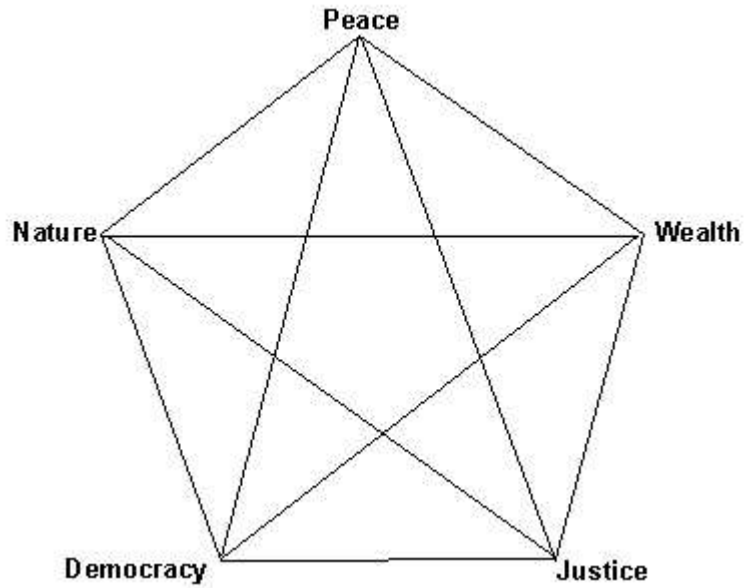
Why do we have this "peace crisis" right now? One explanation offered is that it is all due to Gorbachev, in which case it might be quite fragile. However, another Russian, Leo Tolstoi in "War and Peace", had argued against the "great man theory" of history, at that time with respect to Napoleon. Better look for "social forces", whatever that might mean.

Perhaps even national leaders, maybe subliminally, realize that the world has to cooperate on the prevention of ecological disaster. (As someone said "If you're waiting till the 11th hour to act — move! it's already 11:30.") This may be the "common enemy" to unite us — a superordinate goal which transforms former enemies into allies in the common effort.

Are we going to make it after all? (I have despaired many times.) Who knows? Nature is testing us for fitness, and the experiment is still in mid-stream. Only the first phase of it has ended in Europe. Our major asset has always been the ability to think. Problem-solving must now extend from technology to socio-economic and geo-political situations. The roots of ecological problems, too, lie mainly in human behaviour, individual and aggregate. But first, we must secure the gains already made by inventing a stable political arrangement in Europe.

THE PENTAGON OF VALUES.

The five world order values were formulated by the World Order Models Project of the Institute of World Order (now World Policy Institute) as: Peace (or minimization of violence), Economic welfare, Social justice, Ecological balance, and Democratic participation. (See e.g. Mendlovitz.) We will use this framework here in slightly abbreviated, reworded, and rearranged form, as follows: Peace, Wealth, Justice, Democracy, and Nature. The symbols will be P, W, J, D, and N.



These five values form a Pentagon of Values, as shown in the diagram on the front cover. It can be visualized as a completely connected graph, or the most dense network, forming a five-pointed star inscribed in the pentagon. The connecting lines (sides and diagonals) represent binary relationships between the values. There are also 10 inscribed triangles (5 using 2 sides and 1 diagonal, 5 using 1 side and 2 diagonals) representing triadic relationships.

When reversed into their polar opposites, the 5 values are converted into 5 world problems: war, poverty, exploitation, tyranny, and nature degradation. Four of the values (and problems) refer to the socio-sphere, the last one to the biosphere. Four refer to goal values (what our decisions should aim at), one (Democracy) is a means value (specifying how to reach decisions).

There are complex relationships between the values, as indicated by the lines and triangles in the diagram. The whole Pentagon illustrates the “world problematique” of interlinked crises, or more optimistically the Guiding Star of the goal of harmony being pursued.

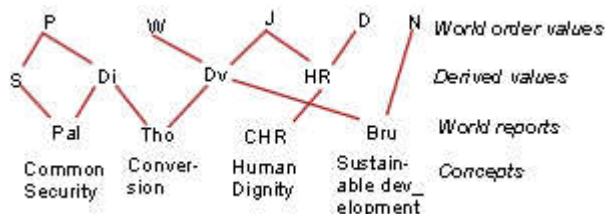
Some of the links have been investigated in several world reports by UN Expert Commissions or Independent Expert Commissions. But before getting to this, let us define a few more values derived from the basic five, either by combination or subdivision.

We shall define Development as a compound of Wealth and Justice; i.e. $Dv = W+J$. Let us also define Human Rights as a compound of Justice and Democracy; i.e. $HR = J+D$. And finally, let us divide Peace into Disarmament and Security; i.e. $P = Ds+S$.

There have been world reports on Disarmament and Development (Thorsson), on Disarmament and Security (Palme), and on Environment (or Nature) and Development (Brundtland). If we also add to the list the Covenants on Human Rights, then all the five world order values are covered in these recommendations.

Summarizing the most basic insight of each report or covenant in the most succinct possible term, we come up with the following list: Common security (Palme), Conversion to peacetime production (Thorsson), Sustainable development (Brundtland), and Human dignity (CHR).

What has been said so far can be diagrammed as shown below.



where Pal = Palme Report, Tho = Thorsson Report, CHR = Covenants on Human Rights, Bru = Brundtland Report.

We now provide some discussion to flesh out the bare bones of this framework.

Definitions of world order values and derived values.

PEACE (P) means assured (stable) absence of war and of violence. This somewhat narrow (“negative peace”) definition is justified here because the other 4 values add the other ingredients of “positive peace”, and because the original definition from World Order Models Project said “minimization of violence” which is even narrower. We say “absence” rather than “minimization”, because the latter can be seen as a partial approach to full absence, which is the end-point of the spectrum. We add the term “assured (stable)” to the WOMP definition, to signify that we mean more than a temporary truce or suspension of violence; in Boulding’s terms (Boulding 1978), we mean “stable peace”, not “unstable peace”.

WEALTH (W) means roughly a larger Gross National Product, although we are aware of the shortcomings of the GNP as a quantitative measure of national wealth. We do mean material wealth, since the other 4 values add the other ingredients needed for high quality of life, which is certainly more than wealth, or even quite different from it. Nevertheless, a certain amount of wealth is a value, since it brings access to the basic needs of food, clothing, shelter, health and education.

JUSTICE (J) could be defined either by merit or as equality, and this constitutes an ideological problem that we wish to avoid. Therefore, following Rawls (1971), we define justice as a compound of freedom and equality, thus partaking both of capitalist and of socialist values. In addition, justice also means non-discrimination on the basis of race, nationality, religion, class, gender, etc.

DEMOCRACY (D) means rule by the people, and it means not only the right to vote in electing leaders or directly deciding issues, but also active participation by citizens in the political process between elections. Its realization depends not only on the presence of mechanisms for participation, but on the efforts by ordinary people to utilize these mechanisms. We leave unspecified such questions as whether decisions should be made by majority vote (simple or qualified) or by consensus, whether democracy should be direct, representative or “responsible”, or whether it should be a parliamentary or presidential system. However, one important stipulation should be added: even where the majority rules or decides, all minorities should have the right to express their opinions and to form organized oppositions.

NATURE (N) is often called “the environment” in discussions of world problems or world values, but, following Ursula Franklin (1989), I prefer the term “nature”, because it denotes an independent power with whom we have to accommodate and negotiate, not an inert outside “environment” which we can in principle totally control. Other possible terms are “ecology” — but this is a science describing the relationships between different animal and plant species in a region like a forest or a meadow or a stream. A good term would be “biosphere”, because it denotes that we are part of it, not outside of it; but it might require too much explaining when used in political discussions.

PEACE AS A COMPOUND OF SECURITY AND DISARMAMENT. It has been said that “threat” depends on both capability and intent, i.e. on the presence of armaments and on the presence of hostile intentions. If peace is attainable only by the removal of threat, we must remove both the capability and the intent to harm one another. Removing the capability means removing the arms, i.e. disarmament. Removing the intent might be called, first of all, confidence and trust building, in the second stage the resolution of concrete conflicts, and in the third and final stage active cooperation between the formerly hostile nations. (Cf. Dietrich Fischer, forthcoming.) These three stages of removing hostile intent (making friends out of enemies) can be seen as building security from military attack. (There have been attempts to define security in a wider sense, including economic and ecological security; but we choose the narrow definition again here, because the other meanings are covered by the other values.) To realize peace, we have to simultaneously disarm and build security.

DEVELOPMENT AS CONSISTING OF BOTH WEALTH AND JUSTICE. The old concept was that “development” means simply increase in GNP, and is thus synonymous with wealth. In fact, the cluster of indicators that closely correlate with GNP per capita, such as the degree of industrialization, the degree of urbanization, percent literacy, energy consumption, number of radios etc., in a nation used to be called “the development index”. But then the realization dawned on development economists that the internal distribution of wealth was also important; that to have wealthy modern enclaves in cities and a poor primitive countryside population is not to have true “development”. It is for this reason that we require Justice to be a component of Development along with Wealth. An approach to equality in land distribution and income distribution would be factors contributing to Justice. A good index of Development (Wealth plus Justice) would be average life expectancy, or a low infant mortality (see Alcock et al., 1978.), because these indicators take into account

the distribution of wealth as well as its absolute amount.

HUMAN RIGHTS AS A COMPOUND OF JUSTICE AND DEMOCRACY. This formulation emphasizes that humans have a natural or moral right both to substantive end-satisfaction (as specified under Justice) and to fair procedures for determining what these ends should be (as implied by Democracy). The CHR, like the preceding Universal Declaration of Human Rights, is divided into the two categories, civil and political rights on the one hand, and social, economic and cultural rights on the other hand. This division reflects the previously mentioned division of Justice into its components, Freedom and Equality. Freedom refers to the civil and political rights, Equality to the social, economic and cultural rights. We shall leave out of the discussion here the so-called "third generation" rights (group rights) as introducing too much complication.

Some Binary Relationships Between the Values.

PEACE AND WEALTH. There are regions in the world where stable peace prevails, i.e. war is not only absent and has been for some time, but is almost unthinkable in the future. Such regions are, for example, Scandinavia, the undefended border between the U.S. and Canada, and since World War II (in which France and Germany fought each other for the last time) Western Europe (EC). Now Bruce Russett (1982) thinks that the zone of stable peace should be widened to include all of OECD (Organization for Economic Cooperation and Development), i.e. not only merge the North-American and the West-European stable peace zones into one, but also include Japan.

Matthew Melko (1990) argues that East and West Europe have been living in a state of stable peace, along with their superpower leaders US and USSR, all through the years of the Cold War, in spite of ideological tensions and occasional military crises. This has already been called "the Long Peace", even though truly a negative peace only. Whether it was motivated by nuclear deterrence, substantial balance of power, remembered horrors of World War II, high intentions and lack of aggressivity by the leaders, or the absence of real down-to-earth issues to fight about, we shall leave undecided. The significant new development is that this Long Peace now promises to continue, after the Soviet perestroika and the revolutions in Eastern Europe in November 1989, in a much friendlier spirit after the Cold War has ended.

Thus the Zone of Stable Peace, covered by the overlap of OECD and CSCE (Conference of Security and Cooperation in Europe, or the Helsinki Accords), now extends through the entire geographic belt in the Northern temperate latitudes of the Earth. This is still very new and needs testing and confirmation through time, since new instabilities could well develop within this vast region, as already appears to be the case in the incipient break-up of the USSR into its constituent republics. But this may in fact proceed peacefully — we shall see.

In sharp contrast to Melko's view of stable East-West peace (already during the Cold War, and presumably even more so now) stands Michael Andrej's prediction (1990) that "the next general war should begin between 1997 and 2001"; he gives several plausible arguments for this prediction. So on the whole, it is still too early to tell if the whole Northern temperate zone is in fact a Zone of Stable Peace, but there is at least a real possibility. However, Andrej is too optimistic regarding the world as a whole, where general war could start any day now. (Written in August 1990.)

This same geographic region (i.e. the Northern temperate zone) is also the wealthiest in the world, in sharp contrast to the "Third World" extending through the tropics. Parts of the Third World are still in a state of "stable war" (Boulding's term (1978)), i.e. almost perpetual war with occasional short interludes of truce. Alan and Hanna Newcombe (1980) outlined a chain of nations extending from South Africa through East Africa, the Middle East, South Asia, Southeast Asia, and Northeast Asia, along which most of the world's recent 200 wars have occurred or are occurring. Each nation along the chain is surrounded by two hostile neighbours who are in alliance with each other, so all feel threatened, and war can spread or diffuse, as if by contagion, from one pair of enemies to the next all along the chain. As a result, all are overarmed. Some are actual or potential nuclear proliferators. Many have chemical weapons and modern missiles. Many support rebels in each other's civil wars. This whole region has been compared either to a "fuse to the bomb which is the world", or to an earthquake fault along which the Big One will come. This seems uncannily real today (August 1990), a time of high tension in the Persian Gulf. In this regard, Andrej's prediction of the next general war occurring between 1997 and 2001 may be entirely too optimistic.

The Third World as a whole is a region of poverty as well as chronic wars. Some Third World regions outside the Fuse chain are not in a state of Stable War, but only in a state of Unstable (occasional) War, or even Unstable Peace (peace interrupted by occasional short wars). But in any case, the wealthy North is much more peaceful than the poor South (really tropics), and so correlations between Wealth and Peace, in quantitative studies such as Russett's (1983), are high.

The Southern hemisphere of the Earth is mainly ocean, but Australia and New Zealand are a part of the Northern Zone of Stable Peace, though geographically displaced; South Africa used to be the Southern anchor of the Fuse, but is undergoing a vast transition at the moment which makes its future unpredictable; Chile and Argentina in the Southern cone of South America seem sometimes like the Third World and sometimes like the North; and Antarctica is largely uninhabited, but a harbinger of the future, positively as an area demilitarized by treaty and a World Common, negatively as the site of the first hole in the ozone layer.

Why is Peace and Wealth linked in this manner? William Eckhardt (1977) thinks that, just as the North's wealth is extracted from the South by imperialistic methods (e.g. unequal trade), so also the North's peace exists at the expense of the South's wars. Put in another way, the North exports both poverty and war to the South, the latter by such means as proxy wars, interventions, the arms trade, and political support for military dictators.

In opposition to this theory of imperialism, we can put the theory of delayed development. In Rostow's scheme of economic development (Rostow 1960), there is a sharp transition (in the form of an S curve) from a traditional (subsistence) society through a transitional society (on the steeply rising part of the S curve) to a modern wealthy society (on the upper plateau). (See diagrams at the end.) Accompanying this, there is a demographic transition from high birth rates and high death rates in a traditional society, through high birth rates and low death rates in a transitional society (which produces a population explosion during this stage), to low birth rates and low death rates in a modern society. Nations in the North have entered these growth curves at an earlier time in history than did the nations of the South. The reason for this may indeed have been colonialism with its attendant exploitation of the South, but we need not assume that this exploitation continues today, for the time delay itself may account for the difference between present conditions in the North and the South.

But now we should perhaps add a third transition to the previous two: the transition from traditional stable peace under fragmented tribal conditions of low contact between societies, through periods of unstable or even stable war during a rapid-rise transitional period of turbulence or "crisis", to a new plateau of stable peace in wealthy modern societies after the transition. The North is only just entering this higher plateau, while the South is still in transition, because of the historical time delay. This is why Eckhardt (1990) and others find that there were fewer wars in primitive societies than in present-day "civilized" societies — because so many of the latter are still in the turbulent transitional stage.

According to this theory, we could all enter the Zone of Stable Peace, if we could only survive the extreme dangers of the transitional crisis. (This should be compared with my essay on [The Rise and Run](#), unpublished.) The main difficulty is that the economic transition to Wealth (the original Rostow scheme) is not possible for all the world's people in their present or future-as-predicted numbers, because the Earth's resources would run out. Either we limit our numbers or change our definition of Wealth — or both. (More about this in a later section.) But perhaps the economic S-curve and the stable-peace transition are not strictly linked, and we could have a transition to stable peace without all of us becoming extravagantly wealthy. The demographic S-curve might also be independently manipulable.

So we may not have to go back to primitive society and abandon civilization in order to become peaceful. There is another state of stable peace at the higher plateau of development if we could just manage to reach it. It is there like a sand-bar on the beach, but we have to swim through deep water to get there. On that plateau we may also have demographic stabilization (constant population numbers, at whatever level), and some reasonable level of economic wealth, above subsistence but perhaps without extravagant luxuries and certainly without waste, using intermediate technology and renewable energy in a conservation and recycle mode. But I am getting ahead of myself and introducing concepts from the value of Nature, to be discussed later.

PEACE AND JUSTICE. The relationship between (negative) peace and justice is ambiguous: stable peace requires justice as its foundation, but the cry for justice is the most frequent cause of war. But on closer inspection, these two statements really say the same thing: in the absence of justice, peace cannot last.

Since the definition of justice itself is so highly ideological, and depends so strongly on the perceptions and the definition of the situation by the "oppressed" and the "oppressors" (who deny that they are such), we are really in the thick of things with this pair of values. This is the very crux of war/peace issues as well as justice issues: when is the use of violence justified? Theories of the "just war" have grappled with this question, and more recently theories of the "just revolution". (See Klaassen 1978.)

Application of the methods of nonviolence on the Gandhian model seems to be the solution to this question. This makes it possible to oppose injustice without harming fellow-humans. And indeed, much has been accomplished by nonviolence,

as attested to by Gene Sharp's book (1969), as well as the recent East European revolutions (except Romania). The wave of "People Power" that started in the Philippines, then jumped to Poland, East Germany, Czechoslovakia...and eventually South Africa was an exhilarating experience for all of us. It failed in China and in Burma, but then you cannot expect 100% success — the use of violence also often fails to attain its goal.

The East European independent groups emphasized both peace and human rights in their struggles, as pointed out in my essay "Quantity, Quality, Equality of Life"/quantity-quality-equality-of-life (unpublished). It was difficult for Western peace groups to understand this close coupling, because logically they thought that survival (peace) must come first. But for those experiencing injustice at first hand, the coupling is very close indeed. Even in the West, one of the largest and oldest peace groups is called "Women's International League for Peace AND FREEDOM", and the Catholic Commission for Peace and Justice is also well known.

Nevertheless, trying to serve both peace and justice is fraught with great difficulties. Fighting a war or a revolution to obtain or restore justice does not always succeed in doing so. There are two kinds of outcomes of violence that may thwart the drive for justice: one is the possibility of losing, in which case the sacrifice of lives will have been in vain; the other is the possibility of winning and then lapsing into another type of injustice, which may be even greater than the original injustice.

Let us illustrate this for the case of revolutions. The French Revolution and the Russian Revolution were both fought for the sake of justice (though defined differently in the two cases), and both ended up in dictatorship and terror. This is because the same ideological zeal which is necessary to start and carry out the revolution in the first place, later interferes with the art of governing when the victory is won. Revolutionaries make bad rulers. The two roles require different qualities: a revolutionary must be zealous and austere, and somewhat fanatical and dogmatic; a ruler should be open and sensitive to others, a mediator and a reconciler, able to accommodate to circumstances.

A similar type of reasoning applies to international wars. The original war aims are rarely achieved, especially in a long war. The aims may be modified during that time; vengefulness toward the enemy may emerge, especially when one has suffered heavy losses at his hands. The aim of even-handed justice then fades into the background, and the initial high-mindedness disappears when dragged through the horrors of war.

A proponent of principled nonviolence, like Gandhi or M.L. King, would insist that not only does the end not justify the means (thus invalidating the entire Just War theory), but the means determine the end: i.e. if we use violent means, this changes us into violent people and we continue to be such even after victory, as do our opponents. If they win, they oppress us unjustly; if they lose and we oppress them, they will plot revenge the next time around and violence will keep recurring. In either case, justice is not really achieved.

It is a romantic idea to fight for justice, but if violent fighting does not actually achieve justice, practical-minded and rational people will avoid it. For what counts in judging ethical behaviour is consequences and not motives or intentions. That is the ethic of responsibility, and we have an awesome responsibility to preserve life on this planet. We cannot afford to indulge in the romantic impulses of the ethic of purity. Turning the Biblical saying upside down: What would it benefit us to save our soul and lose the world?

Nonviolent struggle offers us another kind of purity: that of total deliberate harmlessness (ahimsa). Perhaps this too should not always remain 100% pure; a pilot gone crazy who is intent on bombing the enemy and starting a nuclear war must be shot down. SOME ends DO justify SOME means. But we must be extremely careful not to get on the slippery slope of too much justification, as the Just War theory has done in practice. Strictly applied, the rules of the Just War (proportionality, exhaustion of all other means, reasonable expectation of winning, non-harming of civilians and neutrals) would make nearly every war in history unjust; yet every nation at war has always claimed that its war was just — usually on both sides of any given war. And the slippery slope of justification leads straight to a Holy War or Crusade or Jihad, as has happened historically — and all limiting rules are then left by the wayside in the pursuit of one's holy cause.

PEACE AND DEMOCRACY. In this pair of values we have an interesting finding of historical peace research: democratic states do not fight wars with each other, though they do fight wars — but only with totalitarian or authoritarian states. This empirical observation (e.g. by Dean Babst (1964) and Rudolph Rummel(1985)) may seem surprising at first. It may still prove to be an artefact, due to the scarcity of democratic states until recently (the lists of wars for testing this theory extend quite far back), and not so abundant even now. Perhaps there have not been enough of them to have had the opportunity to get involved in wars with each other.

However, I consider it more likely that we are dealing here with a real phenomenon and not just an artefact. The explanation for the relationship may be the same transition to stable peace that we have already encountered while discussing Peace and Wealth. There we had three curves of transition: the economic, the demographic, and the stable peace transitions. Here we should add a fourth: the transition from the original traditional authoritarian regimes at earlier times; through the steep part of the curve on which harsh totalitarian regimes flourish, with occasional excursions into brief democratic episodes; to the later plateau where we find stable democracies. Perhaps K. Boulding's (1978) fourfold scheme for war/peace (stable war, unstable war, unstable peace, stable peace) should be extended to another fourfold scheme: stable dictatorship, unstable dictatorship, unstable democracy, stable democracy.

In any case, if this theory is true, the reason why democracies are peaceful (as well as wealthy and not growing in population) is that they are on the upper plateau of development — an advanced stage that all nations will eventually reach, unless all are destroyed first. Of course, the links should still be traced in detail as to the mechanisms. Are nations wealthy because they trade rather than fight? Are they peaceful, because the common people who help run democracies have never wanted wars, but could not get their way under dictatorships? Are they democratic because they are wealthy and don't have to compete with each other so fiercely any more for basic necessities? All these causal links are plausible. Probably there is a self-reinforcing cycle that could be drawn for all these variables, with mutually reinforcing feedbacks that maintain the system at the high plateau of civilization.

PEACE AND NATURE. Nuclear war would be the ultimate eco-catastrophe, and any war is a source of environmental destruction, whether through bomb cratering of fields as in Vietnam, or the destruction of jungle vegetation by herbicides, in the same unfortunate country. Arthur Westing of SIPRI has written extensively about this. (Most recently in Westing (1988).) Even preparation for war has adverse ecological effects, since arms race spending diverts financial resources to destructive ends, with not enough left for beneficial applications.

While the above is a link between negative anti-values, there are also links between the positive values. The coming of peace and disarmament could free up resources which could be used to remove environmental dangers. In reverse, the need to overcome global environmental threats might act as a superordinate goal to help nations to overcome their hostile mutual images and to cooperate. (Cf. Sherif et al., 1961.)

WEALTH AND JUSTICE. Again, it has been observed that in the wealthy, peaceful, democratic, demographically stable nations, there is a greater equality of land ownership and income than in the rest of the nations which have not yet reached that stage of development.

Perhaps no more needs to be said about this, except that we seem to observe a convergence of four of our five World Order Values at this high-development plateau. The exception is Nature (the high-plateau nations are generally more polluting and more wasteful), which may be a fatal flaw, unless we can manage a radical S-curve transition there too — and rather quickly, in this “turn-around decade” of the 1990s.

WEALTH AND NATURE. The preceding paragraph leads us straight to this troublesome binary relationship, usually conceived as a trade-off: it seems as if we can get wealthier only at the expense of exploiting and degrading Nature (on whose health and beneficence we ultimately depend), or we can become kinder and gentler to Nature only if we lower our material standard of living.

In the Ehrlich-Commoner equation with which I dealt in my essay [Limits to Growth versus Sustainable Development](#) (unpublished), wealth is one of the three terms which contributes to environmental degradation, the other two being overpopulation and technology. There it was stated that each of these additive terms will have to be held to some limiting (no longer increasing) level if environmental degradation is to become zero, as it must in order to attain long-range sustainability and survival.

The particular level of wealth which is sustainable may be argued about; but it is known that beyond a level of about \$700 per capita Gross National Product, the average life expectancy no longer increases very much, and infant mortality does not decrease as rapidly as at lower GNP per capita levels; there is a sharp change of slope in the curves, as shown by Alcock et al. (1978) in their “Economic Law of Life”.

That GNP level is rather lower than that for the high-plateau nations at present, but we have been warned that it will be impossible for all nations to attain that level, because resources of Nature would not be sufficient, certainly not for the long run. We could choose, of course, to blow everything in a great big binge or orgy of luxurious living, but it could be done only at the expense of survival for our children and grandchildren.

At the lower, sustainable level of wealth, the Quality of Life may still be high, even if the material standard of living is only medium-level. Quality of Life depends on such things as a healthy happy family life, low crime rates in our cities, access to satisfying fulfilling kinds of jobs and careers — in general, Maslow's higher values of belonging, achievement, and self-actualization. Quality of Life does not depend, as much as we now think, on being able to buy the latest gadgets or cars or clothes or entertainment.

In other words, happiness is attainable without excessive wealth, although a certain minimum level of wealth is essential to satisfy basic material needs, and a small excess saved up for contingencies is also desirable. But that minimum material level would be available at GNP per capita of \$700, if evenly distributed within each nation.

Very relevant in this connection is Gandhi's statement that Happiness equals the fraction of perceived needs that are satisfied. We have been trying to increase happiness by increasing the numerator of that fraction (needs satisfied), but happiness could also be increased by decreasing the denominator, i.e. the needs perceived. This means simple living, as long advocated and practised by Quakers and other groups.

WEALTH AND DEMOCRACY. This relationship has already been discussed as part of the complex at the higher plateau of development.

JUSTICE AND NATURE. Here we should note the point made by the Brundtland Report, that poverty (not only wealth) harms the environment. This is shown for example in the case of deforestation, when poor peasants need land for cultivation or firewood for cooking.

JUSTICE AND DEMOCRACY. While these two values go together in the compound which we have called Human Rights, we should also note a possible negative link. Democracy is only a means value; the "sovereign people" (in practice the majority) can decide to perpetrate injustice on the minority. This is, of course, quite common, and has led to secessions and civil wars, as well as positive experiments in federalism and consociational democracy. There is a tension between these two values, but solutions have been invented and are available.

The same kind of tension also exists between Democracy and some of the other values, e.g. Peace and Nature. The people in a democracy could decide (unwisely) to wage war or destroy the environment. I don't believe that the Voice of the People is the Voice of God, necessarily. The value of Democracy must be moderated by Wisdom — a sixth value.

DEMOCRACY AND NATURE. This last binary link has been adequately covered in the preceding paragraph.

Concepts Developed In the World Reports.

COMMON SECURITY as defined in the Palme Report, means that Peace must henceforth be defined in a universal, global manner, because we live in an interdependent world. Specifically with respect to modern weapons of mass destruction, we live at each other's mercy, or as Boulding (1962) put it, we are only conditionally viable. For this reason, depending for our security on unilateral national means is no longer functional.

CONVERSION TO PEACEFUL PRODUCTION, as defined in the Thorsson Report, highlights the vicious and virtuous cycles of interconnection by the metaphor of the intermeshing gears. (This is done in Clyde Sanger's (1982) popularization of the Thorsson Report.) The three intermeshing gears are called Security, Disarmament, and Development. In the vicious cycle mode, insecurity leads to armament which leads to maldevelopment which leads to insecurity, and so on around again. But the direction of the gears can be reversed to the virtuous cycle, in which security promotes disarmament which promotes development which promotes security, and round we go again.

Another idea from the Thorsson Report is the creation of a United Nations Disarmament Fund for Development, into which the savings from disarmament (the "peace dividend") would be put, and from which Third World Development would be financed. This very reasonable idea was not accepted by the donor nations at the U.N., but perhaps could be resurrected at a later time.

SUSTAINABLE DEVELOPMENT, as advocated by the Brundtland Report, is a concept fraught with certain difficulties, in view of our previous discussion of the negative link between Wealth and Nature. Certainly, if "development" is to mean unlimited growth, then this could never be sustainable, and we have here an inner contradiction in the term. However, if "development" is redefined as recognizing the limits to growth, especially in wealth, and emphasizing instead the non-material aspects of the Quality of Life, then the term "sustainable development" can be made meaningful. One thing we must not do is redefine "sustainable"; this must continue to mean "NO long-term degradation of Nature — that is,

ZERO". There is no such thing as "almost sustainable".

CONCLUSION. The Five World Order Values provide a fairly well-integrated whole, with Peace, Wealth, Justice and Democracy possibly stabilized at high levels at a high plateau of civilization. However, there are troublesome trade-offs and tensions between Nature and Wealth, and between Democracy and some of the other values. Nevertheless, possible solutions to these problems were outlined here, though their attainment will not be easy.

The Five World Order Values define an accessible Utopia, but much effort, determination and wisdom will be necessary in order to reach it.

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POSTSCRIPT TO CONCLUSION.

It would seem possible, if the tentative conclusions reached here are valid, to reach a high stable plateau of social order characterized by peace, justice, democracy, and stable population, as well as wealth, for in all these cases, transition curves may connect the primitive balances to the final post-modern balances.

The transition times are and will be stormy, plagued by war, injustice, dictatorship, and runaway population growth; but in these extended times of crisis, we already see the glimmerings of a light at the end of the tunnel — more democracy in Eastern Europe, Philippines, and Latin America, more justice in South Africa, more peace in Europe and the whole Northern hemisphere.

The worrisome aspect is the difficult reconciliation between wealth and nature. Wealth is a part of the configuration of the higher plateau of social order, but it seems inaccessible to the rest of humanity, for reasons connected to nature. Does that make peace, justice and democracy on a global scale inaccessible as well? Are we condemned to crash from the stormy transition crisis, perhaps to oblivion, while already in plain sight of bliss? Is the promised land destined to remain a chimera, a Fata Morgana in the desert? Is the light at the end of the tunnel only the headlight of an oncoming locomotive?

I received new hope that this need not be so at the recent (September 1990) Pugwash Conference, where a speaker reminded us that, in principle, solar energy could supply 4000 times the energy needs for the present population size at the present U.S. level of energy consumption. Much of this will be technically too difficult to use, but 4000 is such a large factor that we may be permitted to be hopeful.

Other resources, such as metals, will dwindle, but availability of energy can overcome this by developing substitutes, or recovering metals from very lean ores or clays or scrap. Energy is the basic currency of both the biosphere and the sociosphere/technosphere, and if its supply is assured, we may get through the transition crisis.

Solar energy has powered the biosphere at least from the times of the transition crisis in which photosynthesis was invented by the cyanobacteria. Perhaps it is the Sun to the rescue again in our present crisis.

ODE TO THE SUN

Peace and justice, people's might,
widely practised as a right
by small bands at human dawn,
when free and equal links were drawn.
Agriculture, technique, skills,
raised subsistence up to frills
beyond needs, to worship wealth,
as pollution threatens health.
In transition to this stage,
wars increased; and to assuage
cries for justice, now more lacking,
dictators received more backing

from the military leaders
and from other special pleaders.
Poor and rich, now deeply split,
at two sides of deep gaps sit.
While transition is so troubling,
wildly turbulent and bubbling,
we do catch a fleeting view
how we might get safely through.
Higher level, as a fusion
of peace, wealth in great profusion,
justice, free and equal powers,
like a leading beacon towers.
In our aim to reach this state,
what would this necessitate?
High wealth level has meant harm
to Earth's climate, town and farm,
by waste dumps heaping up fast
and resources that won't last;
air and water now less able
to keep Earth's biosphere stable.
To reconcile wealth and nature —
please note, every legislature —
needs new economic thinking,
closer ecology linking.
Energy from Earth and Sun
and the Moon, as now begun,
may yield sustainable basis
for the tasks that mankind faces.
Four thousand times present need
to the whole world the Sun can feed;
if a fraction is employed,
wealth to all can be deployed.
We may reach the Promised Land,
where together values stand:
peace and justice, wealth and rule
by the people, in a pool
of unspoiled nature, safe and whole,
can coexist in focused role,
at high plateau, as end state,
all our aims to integrate.
All high values we desire,
that for ages us inspire,
we can have them all, and fun:
let's pin our future to the Sun.
Let's hitch our wagon to our Star
and happily we'll travel far;
to a future calm and bright,
with nature bathed in clear Sunlight.

DAY AND NIGHT BRAINS IN THE USSR.

(Essay by Robert Betchov, Nov. 10, 1989.) (Edited by HN.)

To try to understand the nature of the situation in the USSR, I will start from the assumption that the human brain works day and night, but in two different modes.

When we are awake, the brain uses the eyes, the ears, the fingers and the vocal chords to communicate with the outside world. When awake, we can direct our brain to study a particular problem and carry out a particular activity.

When our body is asleep, the full power of the brain is available, but we are not able to direct it. Sometimes the brain dreams, sometimes it re-examines a problem left over from the day-time, with full freedom to explore and imagine. When we awake, a new answer to the problem comes to our mind, unexpected and luminous.

After the Russian Revolution, the new leaders decided that land and natural resources would be the common property of the nation, and that the economy will use a system of five-year plans. A few specialists in Moscow will prepare directives to be carried out by workers and farmers. These specialists are presumably thinking day and night to reach the best possible plan. But the workers and farmers spend their energy on working in the day-time and restoring their energy at night, in deep sleep, confident in the wisdom of their leaders.

Experience showed that, when a farmer informs the administration that something is wrong, he is not listened to. So he works only as directed and at night he sleeps, without trying to solve any problems.

As the years passed by, the children imitated their parents. They used their day-time brain for the assigned daily task and the night-time brain for their personal life.

Since the daily task did not require much thinking on their part (that was up to the planners), they did a lot of night-type of thinking also in the day-time.

The USSR produced a steady stream of chess champions and outstanding mathematicians. The creativity of its artists has gained world recognition. But its agricultural production did not grow as expected.

The day-time brain of the Soviet farmer thinks by square kilometers, according to the plan. But his night-time brain thinks of the tomatoes and lettuce that he can grow in his back-yard; he thinks by square meters. Eventually he thinks (in an imaginative leap) of selling them downtown.

With the space age and the spreading of computers, a new generation appeared that increasingly relies on night thinking. The free brain formed its own opinion on communism and the centrally planned economy.

A law excluded every use of machines that can produce multiple copies, except for those under police control. In 1970, Soviet engineering students could practice on small computers, but all printing had to be done through one central office, with delays. But the modern information revolution cannot proceed without printers. These can print pictures as well as texts. A political message can easily be coded, copied, and any number of diskettes mailed around and decoded. The freedom of the press has become the freedom of the needle and the freedom of the bit.

The night brain is now breaking through to see the light of day.

THE UNSEEN HAND AND THE UNSEEN FIST.

Some social mechanisms distil social good out of individual selfish decisions (e.g. Adam Smith's free market system), as if by an unseen hand. Other social mechanisms distil dilemmas and tragedies out of individual selfish decisions (e.g. Prisoner's Dilemma, Chicken, Tragedy of the Commons), as if by an unseen fist. In both cases, the consequences are unintended, even counter-intuitive. The individual, as Economic Man or Rational Player (maximizer of individual gain) is just minding his own business, without intending to benefit or hurt anyone.

Why the difference between the Unseen Hand and the Unseen Fist? Perhaps because the free market deals with private goods and the Tragedy of the Commons with public goods. Garrett Hardin suggests that the public pasture should be privatized to prevent overgrazing, i.e. individual parcels of land should be given to individual cattle owners. The opposite (socialist) remedy is to constitute a planning authority to regulate the use of the pasture. Both methods prevent the Tragedy. The Common, which originally belonged to no one, is converted either to belonging to many separately or to everyone in common. Originally no one was responsible for managing the resource; everyone opted to be a "free rider"; now there is either individual or common responsibility and stewardship. Either way, capitalist or socialist, removes the Unseen Fist, converting it either to the Unseen Hand or to the Common Heritage of Mankind.

But some public goods cannot be privatized, e.g. provision of clean air and water. In that case of "true" or narrowly defined public goods, only the second solution is possible. True public goods are those to which there necessarily exists unrestricted access once they are produced, by everyone, whether they contributed to their production or not; which cannot be appropriated by anyone or divided into individual parcels.

Tragedy of the Commons is essentially an n-person Prisoner's Dilemma game, in that the pay-off for unilateral (individual) non-cooperation is high, but in multilateral non-cooperation all do more poorly than in multilateral cooperation, and the unilateral cooperator is the worst off. But multilateral cooperation is not self-enforcing; in fact it is not a "natural" equilibrium solution of the game at all (multilateral non-cooperation is). So multilateral cooperation must be enforced; either by a binding contract, or by external sanctions ("side-payments"), or by people acting unselfishly, following various moral rules: the Golden Rule of Jesus, the Categorical Imperative of Kant, the General Will of Rousseau, the Greatest Happiness of the Greatest Number of J.S. Mill, Sarvodaya in India's Gandhian tradition, or "What we desire for ourselves, we desire for all" of Canada's own J.S. Woodsworth. There is no shortage of ethical paradigms; they exist in all cultures and all philosophical traditions, because overcoming Unseen Fist mechanisms is and has always been the central problems in ethics and politics, indeed in all social life.

As models of man, Economic Man and Rational Player have to yield, in public goods situations, to Conscious Moral Agent. Since many public goods are now global in scope (e.g. climate change), the planning authority will have to be global, because nations too can no longer be permitted to be selfish utility maximizers. The alternative, a Global Tragedy of the Commons, is too painful to contemplate.

VIOLENCE CONTROL IN A CRISIS SITUATION: CASE STUDY OF THE MOHAWK BLOCKADES NEAR MONTREAL, SUMMER 1990.

While the total prevention of the use of violent methods remains the ideal, it is also useful to consider methods in which the use of violence is reduced, minimized or controlled. It is therefore important to examine cases in which this has occurred, because these might then become examples to guide us in other crisis situations.

Much can be learned from the recent Mohawk blockades in Quebec province, in which the Canadian army was called in to massively intervene. While this was a very acute crisis in which tensions were extremely high, and while both sides were heavily armed with lethal weapons, bloodshed and injury was almost totally avoided, as the parties maneuvered to achieve their aims.

Intensive negotiations were part of the process, as were threats, accusations of intimidation and violations of rights, and vilification and verbal abuse at the barricades. It was by no means a case of Gandhian nonviolence on either side, no exercise in "loving your enemy". And yet, the only fatality occurred at the very beginning of the outbreaks, when a Quebec provincial policeman was shot when the police tried to storm the barricades at Oka. It is not known if the shooting was accidental or deliberate, or whose bullet found its mark. There were also injuries when an undisciplined crowd of white residents of Chatauguay threw stones at Mohawk civilians evacuating Kanawahke, and the police did not intervene. But no shots were fired by the heavily armed Mohawk warriors and the Canadian army personnel, who faced each other for weeks at close distances from each other, so close that they could (and did) shout insults at each other.

We are describing here a hybrid case, neither pure violence nor pure nonviolence. While pure nonviolence would have been preferable, since the action did not start out that way, it is possible that what actually happened was the best that could be done under the circumstances.

We are leaving out of consideration here altogether the question whether the army should have been called in at all; whether immediate substantive negotiations on the Mohawk land claims and nationhood claims, which were the fundamental causes of the outbreaks, should have taken place instead. We are taking as given the situation after the army WAS called into action, and discussing only the merits of the tactics that were then resorted to to minimize the threatened violence.

We are tempted to call the army's actions "non-offensive offence", in an obvious wordplay on "non-offensive defence" as advocated in Europe. The army's task was to take down the Mohawk barricades, and this action is "offence", in the sense of initiating actions that would take away the adversary's existing tactical advantage. However, the prominently proclaimed tactic of the army not to shoot first (though they would shoot if fired upon) could be labelled as "non-offensive". The army publicly pledged itself (and the whole nation witnessed this on television) not to initiate violence, in spite of its overwhelming military superiority over the Mohawk Warriors in both numbers and weapons. The army would not rush the barricades in a surprise attack, since such tactics elsewhere had resulted in bloody massacres (e.g. in the Attica prison riots in New York state).

The actions carried out were not nonviolence, as already mentioned, but they were also not "non-offensive defence". The weapons possessed by the army were NOT of a purely defensive character; they were quite capable of strong offensive action at a high level of violence. So the CAPABILITY for offence was certainly there, but the announced INTENT was not to use it, or rather not to use it first. To make this intent credible, extensive use was made of the public media; reporters were present during some very intense episodes of confrontation, so the public could have a look on their TV sets at situations that threatened to erupt at any moment. It may have been partly the knowledge of this public exposure that prevented the worst from happening.

The army also made use of press conferences. The press conference of August 28 was held at a high point in the crisis, when negotiations had broken off and the army was asked by the government to take down the barricades. There was widespread public fear of impending violence. At the press conference, the army commander announced that he will carry out the order and "will succeed", but at the same time pledged that his men would not be the first to fire at the Mohawks. He also promised to keep the Mohawks and the public fully informed beforehand of any moves that they decided to take, i.e. a pledge of no secrecy and no surprise. (There was later a partial retreat from this pledge, however.)

How were the barricades to be taken down without a bloody assault? the reporters asked. The army explained, at this memorable press conference, that their first hope was that the Mohawks themselves would cooperate in the removal of

the barricades, without this being regarded as a surrender. (Substantive negotiations of all Indian land claims were promised in a separate speech by Prime Minister Mulroney, but the credibility of this promise was not very high, because similar promises were broken many times before.) If Mohawk cooperation cannot be obtained and resistance continues, the army would proceed to demolish the barricade by using their tanks as bulldozers, after giving ample warning to all persons to remove themselves from the scene. The army spokesman sounded calm, confident, professional — trying to soothe public fears, though he could not in fact be sure that such an operation could be carried out without casualties.

In the question period, one reporter asked when the army's move to dismantle the barricades would begin. The stunning answer was "It has already begun. Don't expect a frontal assault. This press conference is part of our tactics." This means that the army's tactics included verbal and psychological tools as well as military hardware; the verbal language of words as well as the body language of tank movements. Perhaps this is nothing new, but the conscious and deliberate use of this combination might serve to minimize violence in other confrontations.

While the official substantive negotiations had ended, the press conference was immediately followed by intense "tactical" negotiations between the adversaries, in a hotel in Dorval near Montreal. These negotiations worked out the details of the cooperative taking down of the barricades, by the army and Mohawks together, at Kanawahke. But at Kanasatake near Oka, where these troubles began, the Mohawks did not agree to cooperate. Eventually, most Mohawks at Kanasatake left the barricades in the face of predominant army strength, but a small remnant of 30 (including women and children) holed up in a building and decided to stay to the end. On September 2 began a close army encirclement of this building, an extremely tense situation, but still, astonishingly, with reporters present. On September 3 a shot was fired, it is not known by whom, but no one was hit. The Mohawk leader in the besieged enclave was seen running around from one armed post to another, his morning coffee cup still in hand, yelling "Hold your fire!" Fortunately they did and no one panicked. Later that morning, the army announced that they would not tighten the perimeter any tighter. This small band of Mohawks eventually agreed to leave, and there was an angry scuffle at the end, when the hated Quebec police (whom the Mohawks feared more than the army) tried to arrest some. But again, no one was hurt.

I did not recount all the events of this "Indian summer" in Canada, only the parts that I watched intensely on the media. Someone should do a more detailed case study. But my main concern is the applicability of what I have called "non-offensive offence" to other threatening situations. Would such methods be applicable in the Gulf crisis? Obviously, Iraq should withdraw from Kuwait, because they occupied and annexed it in violation of international law. (Never mind that other nations in the past have performed similar actions and got away with it.) But a major war in the Gulf area would be such a disaster, certainly to the region and perhaps to the world, that we must explore all other possibilities.

Could a U.N. force (and it should be under U.N. command, not "multinational") announce that it will enter Kuwait and attempt to reoccupy it, but not fire the first shot? Perhaps this is far-fetched, but we don't have any other "good" choices left.

THE U.N. IS FINALLY OPERATING AS IT WAS DESIGNED TO OPERATE -- BUT DO WE LIKE IT?

We are certainly fortunate that the Cold War ended before the Iraq crisis broke out. Otherwise we would have had a superpower confrontation in the most dangerous hot spot in the world — the Middle East. Imagine facing not only Iraq's chemical weapons and Israeli nuclear weapons (it doesn't matter that the latter are on "our" side; we are all on the same side, like a Moebius strip), but in addition also the entire U.S. and Soviet super-arsenals aimed at each other.

But the Cold War did end in the nick of time (we don't deserve to be so lucky), and we now have a different configuration, about whose consequences we might also be doubtful. Effectively there is now only one superpower in the world — and who will keep the U.S. in check? They feel that they "won" the Cold War, and that they can do no wrong. Such self-righteousness, combined with unchecked military might, spells pride, the deadliest sin which precedes a fall.

However, it will be objected that there is now a much better chance for cooperation of the Big Five in the U.N. Security Council, and in fact, we have witnessed this cooperation in the Gulf crisis. They not only declared military sanctions against Iraq when Iraq invaded and annexed Kuwait, but also approved the use of minimum force to enforce the sanctions — really a blockade, though it is euphemistically called a quarantine (because blockade is defined as an act of war). It does not demand such use of minimum force, but only permits it; the USSR was able to soften the wording of the resolution to this extent from what the U.S. had originally proposed.

To have the Big Five cooperate in the U.N. Security Council is something new, and some would say hopeful. They used to veto each other's resolutions during the Cold War, thus blocking effective action in crises in which their proxies or client states were involved. As we were repeatedly told, this Cold War polarization of world politics prevented the U.N., especially the Security Council, from operating as the founders had intended. But now, with the polarization dissolved by the great changes of 1989 in Eastern Europe and the USSR, The original U.N. design can be realized and the founders' dreams can come true. It is claimed that we are seeing the first example of this new mode of U.N. operation in the Gulf crisis. So how do we like it?

This mode of operation is called "collective security". Its essence is that, if any nation commits aggression against any other nation, all the nations in the U.N. (i.e. in the world) will unite and cooperate to oppose the aggression, and will take appropriate joint actions to force the aggressor to retreat from its conquest and restore the situation as it was before the aggression (i.e. to return all loot and pay reparations for damage done). The "appropriate actions" might include economic sanctions or military intervention or both. This type of U.N. enforcement action is quite different from U.N. peace-keeping, which usual means impartial supervision of an armistice, truce or cease-fire. U.N. enforcement was tried only once before, in the Korean War in the late 1940s, and this developed into a large-scale war with millions of people killed, civilians as well as military.

The application of U.N. collective security in the Gulf crisis has its positive side: the near-unanimous consensus of all nations to condemn Iraq's aggression and to stay united as a coalition; moreover, this coalition includes most of the Arab nations as well. But there is also a negative side, such as the U.S. acting too fast (ahead of U.N. authorization), not putting its forces and those of its allies under U.N. command (as had been done in the Korean War), the U.S. reacting with excessive vigor, pressing at the U.N. to allow military intervention before the economic sanctions had a chance to work, and sometimes declaring that they might intervene militarily even without U.N. authorization, which would be illegal according to the U.N. Charter.

However, supposing the negative effects had not occurred, and U.S. actions and words had always been in strict accordance with U.N. requirements, the question still remains: are we happy with the application of the collective security system by the U.N. Security Council in the Gulf crisis? Do we want to see similar actions in other future crises? Is this how the future global military security system should operate?

Even those of us who are strong supporters of the U.N. have serious doubts. The confrontation over Iraq-Kuwait is very dangerous; it might even trigger nuclear war and spread beyond the region, giving rise to World War III. This of course is the worst possible outcome for all of us. Even if the consequences turn out not to be quite so extreme, it would be a very large war which would kill millions of people, most of them largely innocent of any wrong-doing, and might be fought with local mass-destruction weapons whose fall-out would be felt outside the region. Are we prepared to risk this for the sake of a principle of international law? (The cynics would say "for the sake of oil", but I want to refrain from imputing improper motives to anyone.)

The risk of World War III exists in spite of the fact that the U.S. and the USSR are on the same side in this dispute, because of the presence of mass-destruction weapons in the arsenals of regional powers, as already mentioned. We are, in the 1990s, into an age when weapons of mass destruction have proliferated to ambitious regional powers who feel themselves under military threat. This includes Iraq and Israel in the Middle East, but also, further along the chain of nations called “the fuse” along which war might spread if ignited anywhere along it, such mutual adversaries as India and Pakistan, both also actual or potential proliferators.

The trouble with collective security is that you sometimes have to fight a war to stop a war. That might have worked for the times of the League of Nations (when it was unfortunately never used, even in terms of economic sanctions against proven aggressors), but it is too dangerous in the age of nuclear and chemical weapons. The only way to go now is to prevent a war before it starts, not to punish the guilty party afterwards; and eventually, gradually, to abolish war altogether — even a “just war” to defeat aggression. Otherwise we might bring to reality the old Latin saying “Fiat iustitia, Pereat Mundus” (“Let Justice Prevail Though the World Would Perish”).

Having said that, it behooves us to specify alternative courses of action, or we would be immobilized in the face of evil-doers on the international scene. (In fact, we already are almost powerless against the real big evil-doers when they commit aggression, like the U.S. in Panama.)

In the long-range ideal situation, of course, there would be a world federation in a disarmed world, and law-breakers would be simply arrested and brought to trial, without involving the innocent people of their nation in any way. But we do not yet live in such a world, and cannot hide behind future Utopias when asked for alternative ways of acting in the present imperfect world. The other long-range ideal solution advocated by another section of the peace movement, namely a principled application of Gandhian nonviolence, may also not be fully applicable to the present problem, though it should be kept in mind as a part of some larger strategy mix.

What we are saying is that, while world federation and principled nonviolence are long-range alternatives, it may already be possible to start applying parts of them piecemeal. This might not only help in the present predicament, but also act as a building block in the transition to that long-range future. To act “as if” desired institutions already exist is often more powerful than a thousand words in making it actually happen in the real world. Some of this is, in fact, already happening, in recent successes of U.N. peace-keeping and mediation efforts in regional disputes such as Namibia, Afghanistan, Cambodia, Angola, and Western Sahara, and in the people-power demonstrated successfully in the Philippines, Eastern Europe, and South Africa.

Still, we must have other, more immediate, alternatives available as well. The U.N. should be transformed from the collective security model to the common security model (see my article in [Peace Magazine, August 1990](#)). Briefly, while collective security uses a model of criminal law (push back and punish the aggressor), common security is more like civil law, looking for equitable resolution of disputes between parties who are both partly guilty and partly victims; essentially, they have a problem that needs to be solved, rather than dealing with a one-sided injustice that must be righted. Collective security is more legalistic and focuses what must be done after war breaks out, while common security is more sociological and concentrates on how war should be prevented. Collective security is very definite in its prescription, common security is more vague but also more flexible. U.N. peace-keeping should continue to play a role in future U.N. common security practices, as should conflict resolution by mediation, arbitration, adjudication, votes and referenda, or various innovative methods recently suggested.

Dietrich Fischer (“Components of an Active Peace Policy”) advocates three lines of “defence in depth” against the possibility of war. First, very generally among all nations in peace-time, practise functional cooperation on global problems — which is very necessary anyway as these problems are urgent. It is a well-documented finding of peace research that cooperation on superordinate goals tends to abolish enemy images and overcome hostile feelings. (See Muzafer Sherif et al, “Robber’s Cave Experiment”). Secondly, when disputes still arise (as they will), practise conflict resolution in all the myriad forms invented and perfected by social scientists in recent years. The repertory of skills is really quite large and the literature in this fast-growing field is extensive. It is important not to give up too soon on conflict resolution, as success often requires patience and time. Thirdly and finally, if military force begins to be used, we should depend on non-offensive defence (NOD) in order to moderate the dire consequences of military violence. If the armies before the war adopt the NOD stance,

they will be perceived as less threatening to each other and will make an outbreak of war less likely. NOD consists of never initiating war, never invading foreign territory even “in hot pursuit”, but defending one’s own territory if invaded — and making that intention clear to the opponent not only as declaratory policy statements, but reflecting it in the type of

military equipment and forces deployed.

How would we apply these prescriptions to the Gulf crisis? It is too late to apply some of them — like functional cooperation — but not too late for conflict resolution. Negotiations should never be refused just because some pre-conditions have not been satisfied. There is a problem with applying NOD: we want to get Iraq out of Kuwait, which implies offensive action at this point. Still, perhaps it could take the form of “non-lethal offence”, on the model of Canadian army actions in last summer’s Oka stand-off — declaring not to shoot first while going in, admitting reporters to the scene of action with a full blare of publicity, avoiding surprise and secrecy, and engaging in intensive tactical negotiations with the adversary (who does what to whom tomorrow). (See my separate article on this for more)

PEACE PROCESS AS A LIFE PROCESS.

According to current thinking, life is a non-equilibrium process. For an understanding of that statement, some explanation is required.

All physical and chemical processes tend to approach equilibrium, which is a state of minimum energy. For example, an iron rod heated at one end and then removed from the source of heat will soon have the same temperature at both ends, as heat flows from a high to a low temperature. Similarly, when a concentrated salt solution is put in contact with a dilute salt solution so that they can mix, the salt concentration will eventually be the same throughout because the dissolved salt moves (diffuses) from a high to a low concentration. It is the same kind of process when water flows downhill, as all rivers do. All such processes end in uniformity (of temperature, concentration, or water level) where before there were differences. It is possible to reverse such processes only if energy is fed in, e.g. by heating one end of the rod or pumping water to a higher level. The science that deals with such phenomena is thermodynamics. The famous Second Law of Thermodynamics states that in spontaneous processes in closed systems (i.e. those where no energy is fed in), entropy always increases. Entropy is a measure of uniformity, and also of disorder, i.e. lack of structure or of differences (in temperature, concentration, etc.). Another statement of the Second Law is that all natural process tend to go to equilibrium, which is a state of minimal free energy and maximum entropy.

The Second Law applies only to processes in closed systems, i.e. those into which no energy or matter flows in and from which no energy or matter flows out. An example of an open system might be a bathtub with open tap and open drain, so that water flows in and also flows out. Such a bathtub can maintain a constant water level, if the inflow of water equals the outflow of water; this can be regulated by adjusting the tap and the drain. The condition in which the water level remains constant is called a steady state it is not strictly speaking an equilibrium.

Physicist Ilya Prigogine noted that when a system is open and far from thermodynamic equilibrium, it can maintain complex structures or patterns in both space and time. His example was a chemical system (the “Brusselator” because it was built in Brussels where he worked) in which precisely timed colour changes occur periodically. Another example is the formation of regular spatial stripes of colour formed in another chemical system. Yet another example is the heat convection pattern observed when a shallow pan of liquid is heated from below. Prigogine called such systems “dissipative structures”, while they decrease entropy within themselves, they dissipate the excess entropy to their surroundings — because, of course, the entropy of the whole (being a closed system) must increase according to the Second Law.

Dissipative structures are models of the first very simple living cells. They create and maintain complex structures (low entropy) by exporting entropy (disorder) to the environment. They can only do so because materials constantly flow through (nutrition, respiration and elimination), and because energy is fed in, ultimately from the Sun.

Such structures can not only maintain themselves (homeostasis) in a constant state like our bathtub example (with many feedback cycles added), but they can also slowly over time evolve toward more and more complexity, as life on Earth has done over the last 4.5 billion years. While evolution is seemingly in contradiction to the Second Law of Thermodynamics, this is not really so, because the entropy of the environment increases. Actually cycles are often formed in which one organism’s wastes become another organism’s input e.g. carbon dioxide breathed out by animals is used by plants in photosynthesis; but note that this cycle requires sunlight as another input, i.e. an energy inflow.

The point of this somewhat lengthy explanation is that life is a non-equilibrium process, a balancing act, like a ping-pong ball dancing on top of a water jet. While equilibrium systems can be called “stable” (like a ball at the bottom of a valley — there is no tendency for it to move out of it), living systems have been called “hyperstable”; though always tending to fall toward equilibrium (which is death), they are supported in a high free energy state (which is life) by the constant influx of new energy and materials, as in the water jet.

Now I wish to transpose this metaphor to peace. Peace is sometimes seen by “realists” as the result of a balance of power, which is a kind of equilibrium. On the other hand, “idealists” tend to define peace as total social harmony, which is another kind of equilibrium. I want to argue that both are wrong.

Peace is a complex balancing act in a world full of conflicts. We cannot and should not expect the conflicts to end; they are a means which human society uses to remove injustices, adjust inequalities, solve problems, remove oppression — in other words evolve toward more viable structures. Conflicts are a way of negotiating our differences through hard bargaining. Sometimes the changes that arises out of the conflict process are harmful rather than beneficial, in which

case they will probably lead to further conflict. Living organisms that evolve in nature are not always successful, and then they become extinct, as 99% of them have over time. The same can be expected to happen in social evolution through conflict. Unjust structures will die out while just structures will survive.

This selection process will occur only if the social system is evolving in a healthy way. It could go wrong and “evolve” toward injustice, but this would probably be self-destructive in the end and the whole system would pass out of existence. Life is never assured; death is always a possibility.

While conflicts keep the social system open to change, they must not be allowed to degenerate into violence. Violence destroys living systems, biological and social, and this is very rarely beneficial — except when destroying something like a cancer cell. But in society, we should refrain from labelling even criminals “cancer cells” without a great deal of caution, because all human beings are valuable, if not to others at least to themselves, and extra care must be taken to protect the human rights of all.

What is emerging from this discussion is a definition of peace as a social order in which we deal with conflicts creatively and constructively. Peace is not the static equilibrium of a balance of terror in which conflicts are suppressed — creating havoc in the “collective unconscious”. Peace is also not a state of harmony and universal love, precisely because it is not in some final state of equilibrium (“the end of history”), but is still evolving. Peace is a continuing process which is never finished. Margaret Mead put it well; “Peacekeeping is like housekeeping; you have to keep doing it every day.” This again is like life; we cannot eat today and say “now it is done”, we have to eat again tomorrow. And so it is with peaceful resolution of conflicts, we solve one in Namibia and another emerges in Ethiopia. We have not yet learned how to deal with conflicts nonviolently in a consistent way, but we are learning. Change was non-violent (more or less) in Iran, the Philippines, Poland, Hungary, East Germany, Czechoslovakia ... We slipped into violence again in the Gulf War, and South Africa on its way to abolishing apartheid has slipped into communal violence. But we have not yet killed human society, though we still might. It's like the dawning of life on Earth; it might have failed to achieve a take-off, as on Mars or Venus. Our incipient peace take-off might fail, but it might succeed. There never was a guarantee for life and there is none for peace. Death and equilibrium is easy — all you have to do is do nothing. But to keep that water jet going, you must apply effort and energy. Just like a garden needs constant care, so does peace. Never relax that effort. You will never launch a ship called Peace with a bottle of champagne and then go home and rest. You must cultivate carefully the art and science of peaceful conflict resolution, never flag in your effort, and never give up hope.

Life on Earth probably started many times only to flicker out again, until some primitive cells were persistent enough to stay with it and not give up. Everything depends on patience and persistence and continued effort even if it seems hopeless. Let us keep peace growing, in order to keep life on Earth going.

WHO OR WHAT MAKES HISTORY?

Like a laser beam that shatters a gallstone, the winds of change fractured the Soviet Union into 15 pieces. What IS that laser beam? What ARE those winds? How little we know about the dynamics of history; almost as little as we know about evolution. We have lost our sense of being in charge.

Both as (presumed) actors and as (knowledgeable?) observers, we are constantly surprised by the shape of reality.

Who or what is doing this to us? Are we doing it ourselves as semi-conscious collective agents? Are there just so many of us now that we cannot keep track of each other's doings, in spite of the much-praised communications revolution? Or are there "tides in the affairs of men" (and women), outside forces, like Alcock's cycles? Why are old certainties toppled now and not 10 years ago? (Who knows about 10 years hence? Who would now dare to predict?)

What determines when an iron bar breaks in a tensile test? The tension has been there for some minutes or seconds preceding the break, unseen; it holds and holds, and then quite suddenly stretches and breaks, just gives way. We think we know a bit about the growth of microscopic cracks propagating before the break; but what do we know, really, about the precise timing?

What about the growth of social cracks? We know as little as the metal crystallites in the iron bar know about the physical cracks. Can we even generalize across societies? Across time? Is the crack growth model transferrable from the physical to the social and political?

How do we act in the flux of uncertainty? What happened to the old rules, when we thought we knew what we were doing, who was who and what was what, and which way to go to reach our goal? These were rules of coping, rules of survival. They are gone with the shattered granite structures of the KGB and the CPSU.

It was not a happy world, but familiar. Now we are like newborn babes without any basic security or basic trust. We are back to square one, to figure out new rules, which may or may not last. Anybody might be anybody, anything might be anything. It is like being struck blind while driving on the 401 at 100 kilometers an hour.

I spoke of "critical opalescence" (the uncertainty of a crisis state, when a substance is neither liquid nor gas but somehow both) already some years ago, but I didn't know what I was talking about, except intellectually. Now it's not just words and speculations, it's existential confusion.

May the Spirit of History have mercy on our souls.

CONVERGENCE OF PEACE MODELS.

Many proposals have come over the years from the peace movement; but when we focus only on long-range, fundamental proposals, and omit the partial measures and oppositions to single weapons and particular wars, we find that there are basically two proposed models; one is world federal government and the other is principled nonviolence.

The proponents of these two alternatives to the present war system have not always been on friendly terms with each other. The pacifist wing of the peace movement saw world government as still using violence (i.e. enforcing world law against international criminals, U.N. peacekeeping forces using weapons even if rarely). The internationalist wing of the peace movement saw nonviolence as offering no answers to the problem of deliberate evil-doers. This leaves us wondering if the two approaches could be combined so as to complement each other; perhaps they could fill each other's gaps while retaining their good features.

Taken to extremes, each approach has definite drawbacks. At its worst, the world government proposals are too centralizing (even if federal structure is postulated). They make Hobbesian assumptions about human nature: just as individuals need a government to prevent them from mutual killing and stealing, so nations do likewise. The world federalist analysis sees the inter-nation system as "in a state of nature", making repeated warfare inevitable. Yet the Hobbesian assumption about human nature may not be quite true though elements of it can be observed. The Hobbesian solution is adopted, namely giving the government (Leviathan) a monopoly of violence. Some schemes suggest that nuclear weapons should be transferred to the world government, not dismantled; while the individual nations are disarmed. This begs the question of tyranny — what if those centralized weapons of mass destruction are used to terrorize everybody into obeying a tyrant? The words "deterrence" and "terror" both come from the same root. The world government model at its worst is also too state-oriented ignoring other actors on the world stage — people's organizations, churches, multinational corporations etc.

The nonviolence movement at its worst also has drawbacks. It tends to be anarchist, as does the Green movement. While "small" may be "beautiful", global problems still require global solutions. Radioactive contamination (e.g. from the Chernobyl accident) acid rain, and global warming do not respect national borders, or even the borders of bio-regions. The movement's model of human nature tends to be in the "noble savage" tradition (of Rousseau); people would get along just fine if governments left them alone. If this belief becomes a rigid doctrine, it is probably false. Human nature is likely to be somewhere between the conceptions of Hobbes and Rousseau. The prohibition of violence is sometimes too extreme; a pilot gone crazy and about to bomb the Soviet Union and trigger nuclear war should not be shot down, according to this absolutist view. Also, avoidance of verbal and psychological violence as well as physical violence would leave us almost unable to communicate in conflict situations. No manipulation or coercion? This seems equally unrealistic; we all do it all the time, though usually without physical violence. Moreover, in practice the nonviolent movement also manipulates and coerces other, it does not always use the "love your enemy" model. While the world-government movement is too state-oriented, the nonviolence movement is too individual-oriented. Again, a happy balance seems to be called for.

What has been said above is summarized in a comparison table below:

World government Nonviolence

World structure	Too Centralizing	Too decentralizing
Human nature	Hobbesian model	Anarchist model
Role of violence	Government monopoly of violence	Zero violence even verbal and psychological
Units emphasized	State-oriented	Individual-oriented

We must remember that the drawbacks of the world federalist and nonviolent peace movements sketched above deliberately concentrated on the extreme forms of each doctrine, not the much milder, less dogmatic positions usually put forward by their proponents in practice. These milder positions in the real world can be much more easily reconciled with each other than the extremes could. They would also have fewer disadvantages, the rough edges being removed, so to speak.

The convergence of the best aspects of both approaches could follow the principles outlined below.

1. To avoid both too much and too little centralization, the suggestion is (a) to use the principle of subsidiarity (problems should be solved at the lowest level at which there are no significant external effects (see H.

Newcombe 1), and (b) to aim at constructing a multi-level world, going from the individual to neighbourhood government to municipal to provincial to national to continental to global government, in six steps from person to planet (see H. Newcombe 2)

2. Human nature should be initially trusted, or given the benefit of the doubt; but means must exist to deal with cases where this basic trust is proved to be unjustified. We spontaneously do this (those of us who are neither paranoid nor gullible); social life depends mainly on mutual trust, not on the police, but the police must be there as a backup in case it is needed.
3. Nations should be disarmed down to police levels — i.e. conventional as well as nuclear, chemical, and biological disarmament. The world government should have only a lightly armed World Police Force, certainly no weapons of mass destruction.
4. To attain a dynamic peace defined as a world order in which conflicts are resolved justly, non-violently, and creatively, all social units must be taken into account, individuals, states, the world government, and all stages and structures in between and across national borders; as well as multinational corporations, non-state actors, and non-governmental organizations.

These four points correspond to the four aspects summarized in the Table. But something additional must also be stated, about the complementarity of the world government and non violence approaches.

1. In normal operation, conflicts will be resolved through negotiation, mediation, arbitration, adjudication, voting in elections and referenda etc. (See H. Newcombe 3) However, if this fails, or if the world government shows signs of becoming unjust or oppressive, citizens would have the right to organize for extra-legal nonviolent direct action. Moreover in order to keep this option well-furbished and ready, citizens should be trained in the effective use of nonviolent methods. However civil disobedience of this type should be used rarely, only as a last resort.

Would such a convergence of peace models be acceptable to most of the peace movement? It has a good chance of being so. The larger question of acceptability to the general public and the leaders can be answered only by experience. Let us give it a chance.

Notes:

1. H. Newcombe, "Subsidiarity, Canadian World Federalist.
 2. H. Newcombe, "Design for a Better World", Univ. Press of America, Lanham, MD, 1983.
 3. H. Newcombe, "Conflict Resolution in the Light of Peace Research", unpublished paper.
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WORLD CITIZENS ASSEMBLY COMMISSIONS.

PRELIMINARY DRAFT OF THE MANDATE OF THE FOUR COMMISSIONS AGREED ON BY THE PLANNING MEETING OF JUNE 14-16, 1991, AT STONY POINT.

Please note: This is only my interpretation of the results of the discussion, subsequently amended somewhat by my own preferences. It definitely needs further input before it is finalized. But I would like to have it circulated.

COMMISSION I — GLOBAL STRUCTURES FOR GLOBAL SECURITY.

This is a merger of the previous Commission I (Global Security) and IV (Global Structures). "Security" is to be interpreted in the wide sense: not only military security, but also economic and ecological security; i.e. the lessening or removal of any threat to human survival in dignity. The Commission is to consider only the global aspects of this wider security, and the global structures (governmental and non-governmental) needed to achieve global security.

COMMISSION II — ENVIRONMENT AND SUSTAINABLE DEVELOPMENT.

Some clarifications are needed: 1. "Development" does not mean GNP growth, which, for the world as a whole, would not be sustainable (though the poorer countries could grow if the richer ones shrink). "Development" should mean social, cultural, ethical, and spiritual development, and also qualitative economic improvements (such as greater equity) without further quantitative economic growth.

2. "Sustainable" means capable of lasting indefinitely, not only for the next 10 or 100 or 1000 years. This requires as a precondition the use of renewable energy and renewable material resources EXCLUSIVELY, as well as the actual renewal of the material resources (through reuse or recycling or regrowth). (Energy resources are replenished by nature from the Sun.)

3. To consider environmental issues properly, certain insights from physics, especially the concept of ENTROPY, is essential. A cross-disciplinary link between physics and economics, which might be called "ecological economics", as already pioneered by economist Georgescu-Roegen, is recommended. (Someone remarked recently that ecology and economy are now united in holy wedlock until death do them part.)

COMMISSION III — GLOBAL EDUCATION AND GLOBAL ETHICS.

"Education" should be interpreted here as involving not only formal schooling, but also public media and other social instruments for influencing the attitudes of citizens or adding to their store of knowledge or skills. The desired direction of the influence on attitudes is: 1. towards global rather than selfish or parochial or merely national values, and 2. towards ethical principles which favour the survival in dignity of individual persons, of humanity as a whole, of separate human cultures and subgroups, and of as many non-human species as possible.

COMMISSION IV — HUMAN RIGHTS AND RESPONSIBILITIES.

Questions arising should include: 1. How best to implement and enforce the rights already proclaimed in the 1948 Universal Declaration of Human Rights and the later Human Rights Covenants. These documents include 3 classes of rights: civil and political rights, social, economic and cultural rights, and non-discrimination on the basis of race, colour, nationality, religion, gender, or any other differences. This would include new structures and procedures, such as courts, arbitration tribunals, etc.

2. What new rights should be added to the 3 classes of rights named above? Suggestions have been group rights (preservation of language, national self-determination, etc.) and universal rights, such as the right to peace, to a healthy environment, and to development.

3. What responsibilities of world citizens should accompany these rights? No benefits will be available unless a sufficient number of persons contribute to the common good. Benefits (such as clean water and air) cannot be denied to anyone, whether that person is a contributor or a violator or a free-rider. How do we convince enough people of their responsibility to contribute? Parables such as "The Tragedy of the Commons" illustrate this paradox.

The above are the 4 Commissions that we said we would have next year. However, another one was mentioned, while its establishment was postponed. It is described below.

COMMISSION V — CONVERGENCE OF ECONOMIC SYSTEMS AND ALTERNATIVE ECONOMIC SYSTEMS.

Communism, socialism, mixed economy, and capitalism each have advantages and disadvantages. Can we merge the advantages and discard the disadvantages, to produce a better system than each separate one? Or would it be better to resort to alternative economic systems, such as cooperatives, local currency systems, or so-called Green or Buddhist or Gandhian economics?

There are some overlaps in the mandates of the Commissions, e.g. Green economics belongs to both Commissions II and V. Also, the wide definitions of security, development, and human rights begin to overlap. However, this need not be a drawback; the relevant commissions should cooperate on these tasks, coordinate their work, and arrive at some useful division of labour.

Submitted by Hanna Newcombe, 25 Dundana Avenue, Dundas, Ont., Canada, L9H 4E5. Telephone 416 628-2356. I would appreciate receiving your comments.

DEMOGRAPHIC BLACK HOLES.

Huge streams of migration flow from the countryside villages to the cities in the Third World, in hopes for a better life. Poverty awaits the new migrants in the cities in shanty-towns, but the urban poverty is less than the rural poverty from which they have escaped, and so the magnet still operates to draw them in. (They don't come simply because they are misinformed about the urban poverty; information spreads efficiently and reliably through kinship and friendship networks.)

While on the land, they may have owned small plots of land or been tenants or share-croppers or farm workers. In any of these situations, they needed large families to help work the land. The move to the city still maintained the social traditions of large families for a time, but gradually the children became a burden and not a help, as the family breadwinners moved from subsistence on the land into the money economy — perhaps first to the informal sector, but eventually into wage employment, even if part-time, temporary or seasonal. If they managed to move up in the social scale and into better housing, the children would go to school rather than labour in the fields or beg in the streets, and in the next generation even the mothers would have an education (at least be literate), and perhaps outside employment. Then they would begin to have fewer children.

THE DILEMMA AND THE ESCAPE.

1. Communism has collapsed. Socialism is under suspicion, and either losing elections (as in Europe) or knuckling under to business interests when elected (as in Canadian provinces). Everyone sees capitalism as the rising star, or even the End of History.
2. Yet capitalism too is collapsing in a worldwide recession, more realistically called depression. And capitalist reform of the former Soviet Union is producing incredible hardships for the people. This also applies in Poland and the former East Germany.
3. This double collapse (one complete, the other in progress) is the result of chronic overspending on armaments during the prolonged Cold War arms race. Lucky it did not end in nuclear war, but it did bankrupt both contending economic systems.
4. Capitalism could recover only in a growing economy. But growth is precluded in the long run by the ecological imperative of "limits to growth" — it is not sustainable.
5. So even if conversion from arms production is managed successfully, we are in trouble. Either we have growth in order to recover from the depression, only to succumb 50 years later to global warming and/or the exhaustion of oil supplies; or we make the transition to non-growth and have chronic unemployment, poverty, and inequality. Unless...
6. Unless we totally change our economic system and the values we live by, in ways more drastic than Marx ever dreamed of, and do it without a violent revolution which could obliterate us through war.
7. A totally new economic system is needed which does not depend on growth and works both efficiently and justly, as well as sustainably in perpetuity. We had better invent it and implement it awful damn soon.
8. I am not the inventor, but it needs to contain the following elements:
 - a. Production and consumption must be balanced at a level that would give everyone enough for their need and nothing for their greed.
 - b. Production and consumption at balance must be such that all resources used, including energy, are not only renewable, but actually renewed, at least at the rates to make up for consumption. (A "sustained yield" operation.)
 - c. Distribution of goods for consumption should not be totally dependent on work done; there must be a wholly secure safety net (without meshes that some can fall through) for those too old or too young or too sick or lame to work. We are not to operate on a "lifeboat ethic" (letting some sink so others, usually ourselves, can survive), but operate as a worldwide extended family.
 - d. This can best be done by implementing a comprehensive guaranteed annual income plan, which would replace all other social benefit plans, and be linked to the tax system. A GAI plan would operate both within nations for individuals or households, and between nations through a U.N. fund.
 - e. All people able to work should work, and have jobs available for them to work at. They could be self-employed. These are really two requirements: (i) willingness to work if able (inculcation of a work ethic) and (ii) a socially or individually arranged policy of full employment.
 - f. Since self-employment possibilities are limited, work places available must be shared among all those seeking work, leaving no one out. Various choices of part-time and flexible-time schemes should be offered.
 - g. Flex-time is also good for families in which both father and mother want to do parenting and also work outside the home; for them, family arrangements should be available. Some of this may be solved by working at home, using home-based computers, for outside employers. Such practices are already spreading.
 - h. As much as possible should be done by market mechanisms, which are efficient, and can also be equitable as long as all buyers and sellers (including buyers and sellers of labour) are of approximately the same size.
 - i. But since there is a natural tendency for some to get bigger while others get smaller (i.e. the rich get richer and the poor get poorer, because "the bigger it is, the faster it grows", like invested capital), inequality would spontaneously increase. This must be curbed, or it will create perceived inequity, result in undue exercise of political power through wealth, and increase production of luxuries at the expense of necessities.
 - j. The curbing should be done through redistribution by means of a steeply graduated income tax, with all loopholes closed. The proceeds of this should pay for the guaranteed annual income plan. There should be no sales taxes of any kind.
 - k. State-level planning of industrial production has proved in practice to be inefficient. Central planners can never have enough knowledge of the micro-economic events at grassroots levels. (On this Hayek is right.) However, governments at various lower subsidiarity levels (e.g. municipal) may be able to operate public enterprises efficiently enough.
 - l. The proper and essential role of national governments is to enforce the strict sustainability standards mentioned

at the beginning, and to run the redistribution scheme (steeply graduated income tax plus guaranteed annual income plan) .

- m. Community-level spontaneously locally formed cooperative enterprises should be encouraged. Measures should be taken so that they do not become bureaucratized, which is also a natural tendency of all organizations unless deliberately counter-acted.
 - n. Incentives to entrepreneurs and innovators should work on the same principles already used to encourage inventors, i.e. a modified patent system. Profits from a new enterprise should not continue to accrue in perpetuity, but only until a pre-agreed percentage of return on investment plus the whole original investment is recovered. For MNCs operating in developing countries, such contracts are called "fade-out joint ventures" and have been used e.g. in Andean Pact countries.
 - o. After the original innovator has achieved this pre-agreed reward for his socially useful innovation, the enterprise should either become the property of the employees, who could buy government-subsidized shares, and administered as a producers' cooperative, or it should be similarly bought out by consumers and become a consumers' cooperative. Cooperatives are good for maintaining equity, but not good at innovation, which is why the originators of new enterprises should be rewarded, but not in perpetuity.
 - p. An effort should be made to have family or household incomes within a range of a 1:10 ratio, i.e. no one should be paid more than 10 times the lowest existing pay. The aim need not be total equality, but avoidance of extreme inequality.
 - q. Since energy is the basic resource in any economy, the currency should be tied to energy as it once used to be tied to gold. (Energy shares instead of money are advocated by an organization called Technocracy Inc.) The government should be forbidden to issue more paper money than can be backed up by energy units, thus preventing inflation.
 - r. The system would be non-dogmatic and open to a mix of methods — modified capitalism plus modified socialism plus modified Gandhian/Green/Buddhist economics. The only strict dogma would be absolute long-range sustainability in balance with nature.
 - s. The system is really doubly truncated capitalism (with both a floor and a ceiling on individual and corporate wealth) mixed with grass-roots voluntary socialism, within a framework of natural balance and a life-style of voluntary simplicity without economic growth.
 - t. Before I run out of letters of the alphabet, I will end this highly preliminary exposition.
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WATERSHED BIOREGIONS AS UNITS IN WORLD ECONOMIC STRUCTURE.

The term “bioregion” is attractive, but not often rigorously defined. It seems to be either a river valley (watershed) or a region with similar flora and fauna. These two definitions may often overlap to delineate the same region, but sometimes not; for example, if we are dealing with a very long river or one with many tributaries.

Even in the watershed definition used alone, there are ambiguities. There are many small and even tiny streams running straight into the sea rather than into a larger river, especially in regions where mountains are close to the seashore. These “micro-watersheds” are far too small and numerous for what is intended here, and yet must be somehow included if we are contemplating a system that would cover the Earth’s land areas completely and exhaustively. To avoid this over-fractalization, the micro-watersheds would have to be joined together or to adjacent macro-watersheds. Perhaps this would not be too difficult to do, if we use the watershed definition in a non-dogmatic way, only as a primary guide.

The tentative initial definition of a watershed bioregion would be the land area drained by a stream which runs into the sea or into a lake without an outlet, such as the Caspian or the Aral. The Great Lakes at the Canada-U.S. border would be part of the St. Lawrence River system.

The patchwork of river valleys so defined could not serve as the basis of a political division of the world. The political division should be either the existing nation state system (but this is not very stable, it keeps changing; and also the areas and populations are grossly unequal) or a scheme of equal-population voting districts, about 5 million people each (i.e. a total of 1,000 of them), as described in my paper by that name. But for an economic division of labour and for ecological supervision purposes, river valleys (watersheds) might be very suitable units.

Units for economic-ecological planning (eco-eco districts) do not have to coincide with political, cultural, or national/ethnic units. There can be a reasonable separation of functions here, creating patterns of overlap which could usefully knit the world together in two alternative ways. The two kinds of division would correspond approximately to physical and cultural geography, two branches of the overall science of geography, usually presented in atlases in two different sets of maps.

In the present nation-state system, rivers often coincide with national borders, which is an occasion for conflicts between the two neighbouring countries over their rights to use the water for irrigation, household use, power generation, and navigation, or over pollution prevention and clean-up. Wars have been fought over the Tigris-Euphrates system (between Iran and Iraq), the Jordan (between Israel and Syria and Israel and Jordan), and the Indus river (between India and Pakistan). There is a dispute over the Ganges-Brahmaputra between India, Bangladesh and Nepal, and over the Nile between Egypt, Sudan, and Ethiopia/Uganda. These river valleys are cradles of civilization, with long histories of human habitation. (Only the great rivers of China are all within one nation-state.) It would be more conducive to eco-eco cooperation if each river were in the middle of the region being managed, not at a border between two regions. In the proposed new system, the borders between regions would run along mountain chains, or at least the locally highest ground. We would still have “natural” borders, but of a different kind (the high places, not the low places) .

The dispute over the Nile is actually a bit different: not between states across the river from each other, but between downstream and upstream states. Such disputes are also quite common, since the upstream state is in an advantaged power position: it can cut off the water supply to its downstream neighbour, or threaten to do so. Not only can Ethiopia do this to Sudan, or Sudan to Egypt, but Turkey can do it to Iraq and Nepal to Bangladesh. This gives a new meaning to the expression of occupying the strategic “high ground”. Again, including the upper and lower river valley in the same region would help to moderate such conflicts.

Here then are some of the river valleys which would exist as single units in the proposed system (only the major ones are named):

- In North America: Mackenzie, Fraser, Columbia, Colorado, Rio Grande, Red river, Mississippi-Missouri, St. Lawrence.
- In South America: Orinoco, Amazon, Parana-La Plata.
- In Europe: Garonne-Dordogne, Loire, Seine, Rhone, Meuse-Moselle-Schelde, Rhine, Elbe, Oder, Vistula, Po, Arno, Tiber, Danube.
- In former Soviet Union: Dniester, Bug, Dnieper, Don, Volga, Amu-Darya (Oxus), Syr Darya, Irtysh-Ob, Yenisey, Lena.
- In the Middle East: Tigris-Euphrates, Jordan, Nile.

- In Africa: Niger, Volta, Congo (Zaire), Limpopo, Zambezi.
- In South and South-East Asia: Indus, Ganges-Brahmaputra, Irawadi, Mekong.
- In China: Yangtse, Yellow River.

This list of 48 rivers is a very incomplete list. In fact, the major watersheds do not cover the land surface very well. We left out the British Isles, the Iberian Peninsula, Scandinavia, most of the Balkans, Japan, Australia, New Zealand, the Philippines, Indonesia, and all the islands worldwide. Obviously we would need some scheme supplementary to the watershed scheme to get a good system of eco- districts. Perhaps the other part of the definition of a bioregion (distinctive flora and fauna) would have to be drawn on after all.

The whole scheme needs a lot of further study.

GENDER.

“Male and female He created them.”

Gender is not a simple concept. Sex is its biological counterpart, and even that has its ambiguities. We are pre-determined genetically from the moment of conception to be male or female, by virtue of possessing either an XY or an XX pair of chromosomes; but sometimes things get a bit mixed up morphologically during embryonic development and the anatomical parts do not develop according to plan. So our anatomical sex (possession of sexual organs) may not correspond to our genetic sex. And the hormones secreted by the sexual organs are another factor that may occasionally deviate, adding hormonal sex as an additional variant. In by far the most cases, genetic, anatomical, and hormonal sex coincide, but the above-mentioned abnormalities occasionally exist.

Psychologically, we are of course affected by hormones, and would expect some male-female differences because of this. Whether or not men and women differ in psychological and mental characteristics inherently or only as a result of differential education is a matter of dispute. Even feminists seem to come in two varieties: those who argue for no inherent differences, which to them strengthens the claim for equality of rights, and those who argue that women possess special virtues (such as nurturance) that men lack, and that men exhibit certain specific vices (such as aggressiveness) that women lack. We can label these two schools of thought the symmetrical feminists (A) and the asymmetrical feminists (B). The A type feminists are integrationist, assimilationist, and partnership-oriented; the B-type feminists are either romantic worshippers of the virtues of motherhood and adherents of the Goddess religion, or radical man-haters, or both. A-types tend to believe in purely environmental shaping of human characteristics, B-types tend to be genetic determinists; like adherents of patriarchy, they believe that “biology is destiny”.

Both A-types and B-types may have part of the story right; as in all aspects of human characteristics and behaviour, heredity and environment both play a part. High levels of testosterone in young males do seem to correlate with aggressiveness, and most violent offenders in our jails are young males. This also corresponds to what we know about young males among other animals, such as bulls who are prone to attack others, and stags who “lock horns”. In many species, males seem to engage in fights or at least competitive displays to gain mating rights with females. Humans do not follow the same mating customs, but some of the hormonal mechanisms may linger on. Female hormones may play a role in mothering instincts, but the picture is not very clear. Regarding the environmental influences on gender development in humans, we shall have much more to say later, since it is probably the main factor.

Carl Jung thought that each of us have some of the psychological characteristics of both sexes; mainly of our own sex, but also a slight admixture of the opposite sex. He called these aspects Anima (the female traits in the male psyche) and Animus (the male traits in the female psyche). Male and female are not in stark opposition to each other, according to this view; they are more like the classical Yin and Yang of Chinese philosophy, in which the two sinuous shapes in the circle have within them a drop of the opposite essence. Developmentally, too, the human embryo at certain stages has ambiguous sexual organs, and even human adults have vestiges of organs of the opposite sex: the clitoris is the female equivalent of the male penis, and the male prostate is a vestige of the female uterus.

Before we move on from biology to sociology, one more aspect should be noted: the extreme difference in the biological strategy of male and female gamete production. Sperm are produced in huge excess, but not very carefully; most of them die before they reach their goal. Ova, on the other hand, are produced at the rate of only one a month, are tremendously larger than sperm, and great care is lavished to make each of them perfect. These different strategies have been called (in a different situation) the R and the K strategies; they are alternative ways to ensure survival. Some creature (e.g. plants, fishes) produce a lot of offspring, but do not provide any parental care, so that only a few survive; that is an R strategy. It seems wasteful, but it works, because not much energy is expended in prolonged care. Other creatures (e.g. birds and mammals) produce only a few offspring at a time, but tend them very carefully for a long time. This too works and is successful. I have not heard anyone refer to the difference in sperm and egg production as R and K, but it seems obviously applicable. However, it would be too far-fetched to conclude that men tend to produce a lot of goods sloppily when they work at a trade, while women work more slowly but with less error. Biology does not translate so easily into work habits.

Among psychological differences that have been noted, though often disputed, are differences in cognitive reasoning, in emotional responses, and in moral judgment. Let us examine these in turn. Some of them sound like stereotypes and may not be true empirically. The best image is again the yin and yang with the opposite spot quite prominent in each half. In other words, the differences we are pointing out are interesting differences between two human types, but they may not coincide entirely with male and female. There may be a partial overlap (a tendency for each gender to behave in a

certain way, i.e. an observed correlation that is more than 0 but less than 1), or maybe in some cases no overlap at all, only a folk belief that the difference exists. Moreover, the question will still be open whether the differences, if any, are genetically or environmentally explainable.

Cognitive differences are usually ascribed to differences in lateralization, i.e. specialization of cognitive functions between the left and the right brain hemisphere. It is not that men tend to be left-brain thinkers and women right-brain thinkers, as is sometimes said; but rather that in men there is a larger difference between the two brain hemispheres and their different modes of thought than in women, whose brain hemispheres are more alike. It is a difference in degree, not in kind. As is well known, left-brain thought is supposed to be linear, logical, rational, and analytical, and connected with speech; while right-brain thought is described as holistic, intuitive, synthetic, and linked with imagery. It is somewhat like the difference between intelligence and creativity. Neither is superior or inferior, merely different; and of course they are meant to be complementary, like yin and yang, not in competition.

If it is true that men tend to think more logically and rationally than women, the explanation would be that, because of the greater asymmetry of function between the brain hemispheres, they tend to suppress the right hemisphere and use the left more, i.e. allow the left to become dominant. There is here a possible combination of heredity and environment: the greater lateralization of the brain in men may be innate (genetically determined), but the decision as to which hemisphere to favour and which to suppress may be brought about by conditioning and education. If so, it may be different in different cultures. Women, on the other hand, because of their lower tendency to lateralization, continue to think with their whole brain as children do before lateralization occurs. They would therefore be capable of both analytical and synthetic thinking, but neither with the acuity of a man. This is possible, but not proven.

Intuition, which is often ascribed to women, may be simply unarticulated reasoning, not expressed verbally (even in thought). Since the right brain hemisphere lacks speech, its mode of thinking might tend to be of this non-verbal kind, but it is full-fledged full-valued reasoning nevertheless, producing valid results confirmable in practical experience. The reasoning may even be unconscious, like solving problems in your sleep, but solving them nevertheless with validity.

In emotional development, men in our society are brought up not to express emotion, even to repress it; while women are allowed more freedom of expression. Because in a patriarchal society men are supposed to be in charge of the commanding posts in family and society, they must repress emotional reactions, it is said, because this might interfere with clear thinking. But repressing emotion is psychologically unhealthy, and this social requirement may be a factor in the higher incidence of heart disease in men and their shorter life span. It has been shown that hard-driving, highly ambitious people do tend to be at higher risk of heart attacks and strokes. The opposite extreme is a type of personality that internalizes all blame and guilt for failures instead of getting outwardly angry at others; and that type of person, perhaps typically a woman, is psychosomatically more prone to get cancer rather than heart disease.

In moral reasoning, L. Kohlberg established his scale of moral judgment largely with male subjects, and Carol Gilligan has criticized him for it, claiming that the scale of moral development for women is quite different. Kohlberg's scale begins, typically, with the young individual's drive to escape pain of punishment (stage 1) and to receive the pleasure of reward (stage 2). Becoming socialized, the boy-child then aims to please others by conforming (stage 3), and eventually in mature years tends to obey the law (stage 4), fulfill social role obligations (stage 5), and may even form his own system of moral rules (stage 6). The development, we note, is from concern with self with its pains and pleasures, gradually to a wider and wider social responsibility toward others.

Gilligan (in her book "With a Different Voice") claims that women in their moral development follow an almost opposite course. A small girl first feels herself to be part of her family or play group and wants to preserve friendly and cooperative relations there, even at the cost of some self-denial. Then, gradually maturing, (but Gilligan unfortunately does not establish the separate stages), the girl becomes aware that she has some personal rights of her own. Both man and woman arrive at the same final stage 6 of principled universal moral conscience, but each arrives there by a different route.

The two different routes to stage 6 are highly idealized types, and I do not believe that most real men and women follow either route exactly; probably they travel some middle road that partly overlaps for both sexes. But, as usual, it is useful to point out the extreme types in order to understand the real behaviour.

If Kohlberg's scheme was incomplete, as Gilligan claims, does this also apply to such developmental schemes as Erikson's (basic trust, autonomy, initiative, industry, identity, intimacy, generativity, integrity)? Does it likewise apply to Maslow's hierarchy of needs (physical needs, security, belonging to a loving group, a sense of self-worth,

self-actualization)? Are these schemes built up by male researchers as applying to male subjects? Would women respond “in a different voice”? I do not know the answer, for I don't think that the research has been done. But Erikson's and Maslow's schemes do share with Kohlberg's the basic paradigm of development from the individual self first to the social self later, which Gilligan labels as the male model of development.

Turning to the sociology of gender differences, we must note the different social roles ascribed to men and women. We speak here of traditional Western society as it existed, say, in the 1950s; the situation has changed now, may have been different in the distant past, and may also be different in different societies, but we cannot consider all these aspects in this short essay.

Traditionally, in our century in the West, the family and household roles, the workplace roles, and the political roles assigned to men and women by society have been as different as their biological roles and the form of clothing worn. Men worked outside the home to earn cash to feed, house and clothe their families, while women worked in the home to cook, wash, clean, shop, and look after the children. The division of labour was seen as complementary and functional, and in a healthy family would not be seen as oppressive. There was wife and child abuse in dysfunctional families, which was largely hushed up and suffered in silence, but the ideal in a good family seemed reasonable enough.

Yet, it seemed inherently unfair that marriage limited women to only one possible “career” of life-work, while for men marriage did not at all limit a choice of careers; there was much more freedom of choice for men. But perhaps that was significant only for the professional classes; for farmers, herdsmen, fishermen, and coal-miners a man's life-work was largely predetermined by his father's occupation and the job opportunities in the local community.

Political power in the larger community — the city, the province, the state — was almost entirely in the hands of men. Women did not even vote until early in this century; it was assumed that women would vote as their husbands did, that the family was such a tight unit that their political views would be identical; and in any case, men were more “rational” and understood “power”, while women were “emotional” and would break down under stress. Women were seen as needing protection, men as providing protection.

As for women being in actual leadership positions, this was very unusual, except for Queen Victoria, who inherited her right to rule the vast British Empire. In spite of such exceptions, men were normally seen as leaders and initiators, women as followers and imitators. This is symbolized by the custom of traditional Japanese women to walk always a few steps behind their husbands. These were ascribed social roles; what roles might have been achieved or acquired if there had been free choice from the same starting line in an even playing field, still remains to be shown in the future, for we do not have these fair and equal conditions even now.

But is there a biological reason for the differential social roles for men and women? Are not women necessarily preoccupied with child-bearing and child-rearing in what would otherwise be their most productive years in out-of-the-home careers? This was certainly the situation in primitive times, when a woman had to bear many children in order to have enough of them survive, i.e. when the child mortality rate was much higher than it is now. (These conditions still exist in some economically backward countries.) She had to practice a bit more of an R strategy than a pure K strategy. But we have almost an opposite situation now: the world is overpopulated, and the rate of population growth must start to level off or decrease soon; we no longer need to pursue pro-natalist policies. Some countries try to achieve zero population growth, a few even promote one-child families. This would actually leave a woman engaged purely in household tasks incredibly lonely, bored, and unfulfilled.

There is another reason for obliterating the difference in social gender roles, just as the difference in clothing styles and hair styles has been gradually disappearing. The fact that children have been largely reared by the mother rather than the father has had deep psychological effects on the next generation of boys and girls, and their own perceived gender roles. As traced by , this has resulted in a self-perpetuating cycle of gender roles reproduction in generation after generation.

This is how it works: As girls are brought up by mothers, they pick up their gender role from the role model of the mother, and simply grow and mature into it, without having to change. Boys, however, are also brought up by mothers, and at some point in their development to maturity, they have to experience a drastic change and adopt a male role model. In primitive societies, this change-over is effected by initiation-rites which adolescent boys (but not girls) undergo. This is a transition, for a 13-year-old, both to adulthood and to manhood. In the Jewish tradition, it is the Bar-Mitzwe; the recent practice of a Bat-Mitzwe for girls is a mistake due to misunderstanding, I believe.

The break-away of the boy from his mother is portrayed in myths such as the story of the Wild Man, now taught widely in men's groups. In that story, the young prince was playing with his golden ball when it fell into the cage where the wild man was kept confined. The wild man would not return the golden ball unless the prince released him from the cage; but the key to the cage was kept under the mother's pillow where she slept. The prince had to fetch the key, which was forbidden. He released the wild man by opening the cage, but then was afraid of being punished for stealing the key, and let the wild man carry him off to the woods. Thus the boy was dramatically parted from his mother to enter the all-male world of primitive passions ("wild") of aggressiveness and sexuality.

There are physical changes in both girls and boys at puberty, but again for boys the change is away from the mother, the primary care-giver. The boy's voice changes, while the girl's does not, remaining both as in childhood and like her mother's in pitch. The growth of facial hair is another sign of a break-away. And so the boy also breaks away from the kitchen and household duties performed by his mother and sister, and seeks his fortunes elsewhere. Leaving the home for an adventure trip or as a journeyman learning a craft to become a master is a tradition in folk-tales as it was in medieval social reality. It was never done by girls. We are reminded of the social habits in prides of lions, where young females stay with their native group while young males leave to try to take over another group from an aging ruling male.

This pattern leads directly to a simple prescription if we want to change traditional gender roles: abolish the mother's monopoly on child rearing. After all, the fact that she bears the children does not automatically mean that she has to bring them up single-handed. If father and mother share child-rearing duties more or less equally, the children's break-away at maturation can be an equal experience for both boys and girls, since they would have had their role models present at all times from the beginning, and there would be no traumatic Wild Man experience for the boys to make them into aggressive macho men. Thus we can initiate a virtuous cycle toward partnership to replace the vicious cycle toward domination which now operates.

What is being referred to in the last sentence is Riane Eisler's classification of societies into partnership societies (in pre-agricultural and early agricultural times) and dominator (patriarchal) societies (in later and present times). This is done in her book "The Chalice and the Blade".

I will now engage in a bit of archeological fiction; I don't know that the following is true, but I have read hints here and there that it might be. It concerns the ancient division of labour between men and women, and who invented what. I like to imagine (and this is probably not fanciful) that men did the hunting and women did the berry-picking in hunter-gatherer societies. Then, at the next stage in time, men learned to herd and domesticate animals instead of hunting them, while women learned to cultivate plants rather than just picking wild ones. This was the double invention of animal husbandry and agriculture. Both inventions were a natural follow-up of the previous activity of each gender, and it means that men specialized in dealing with animals in both steps while women specialized in dealing with plants.

In our times, men specialize in industry while women specialize in services, two of the main sectors of a modern economy. It is not entirely true as a sharp division, of course, but there is a bias toward it. This would correspond well with the stereotype of women being more interested in human relationships, men being more interested in things and in ideas.

And perhaps, in ancient times according to Riane Eisler, settled agricultural partnership societies in which women played a large role were raided and attacked by animal-herding nomads (Toynbee talks about this in "A Study of History") who were basically patriarchal. The nomads won and partnership societies became transformed into dominator societies. Goddess religions gave way to monotheism with a male dominator god. Perhaps in the Old Testament the Hebrews were such nomads and the Canaanites were the settled farmers. It puts a whole different slant on the so-called Western religions.

Genetically, men and women are over 99% the same (in terms of DNA base pairs), but the small difference shows up significantly. ("Vive la difference!" said the Frenchman in a joke.)