Hanna Newcombe
Essays on World Affairs: Book 2

Contents

Essays on World Affairs—Book Two articles are listed by title below.

PEACE AND HUMAN RIGHTS: IN WHAT ORDER?

International institutions have developed (are developing) in a way different from that envisioned by early World Federalists. We used to say that nation-states would (should) unite in a world government, which would look after security matters primarily—i.e. disarm the nations, provide a world police force and offer conflict resolution services (mediation, arbitration, adjudication by the World Court). Later (in the 1970s), matters of global environment and development were added to the world government agenda (though a World Development Authority was featured already in Clark and Sohn's book on U.N. Charter Revision in 1953). However, we always stressed that nation-states would maintain their sovereignty in internal matters, including human rights. We felt that insistence on world-wide standards of human-rights of observance would keep too many nations from signing on for world government. Regardless of the regrettable and widespread violations of human rights by many states, we felt that the preservation of world peace (especially the prevention of nuclear war) had to be uppermost, and that the world government security scheme demanded above all universality i.e. adherence of all states to its principles and institutions. World government would contain democracies and dictatorships (left and right) the saints and the sinners alike—a "come as you are" party of raw humanity.

Things did not develop that way. Now in 1992, we still do not have a world security regime. Bush's "New World Order", as demonstrated in the Gulf War, is not it—collective security kills too many innocent people. We are still groping to create something better—along the common security—war prevention—conflict resolution model. However, both in the U.N. and the CSCE, human rights have now been proclaimed to be the concern of all, no longer a merely domestic matter. It seems that we shall reach world unity first in the sphere which we thought would be last.

Functions of government can generally be divided into provision of security and provision of welfare. War prevention and (domestically) crime prevention falls in the security sphere, as does defence of national territory in the existing nation-state-based international system. Human rights (not only civil and political, but also economic, social and cultural) fall in the welfare sphere, as do the offerings of the welfare state, which overlap with the economic and social rights of the Universal Declaration of Human Rights.

Adherents of conservative political opinion (i.e. believers in democratic capitalism or even libertarianism) would limit a government's functions to the security sphere alone, excluding the welfare sphere except for safeguarding civil and political rights. Democratic socialists, on the other hand (if there are any left in this world of Reaganism-Thatcherism plus economic recession plus the demise of communism), believe in including the full sphere of welfare functions as well as the security functions within the purview of government.

At the world level, we had thought that the security sphere should come first, though we tended to include part of the welfare sphere in the guise of development and care of the environment. (The new fashion is simply to widen the definition of "security" to include economic and ecological security, but I doubt the value of wide definitions, since they sometimes obscure precise meanings, though they are politically useful for consciousness-raising.) However, with human rights now being promoted to a world concern (though still only at the declaratory level), we may be proceeding in the reverse order: welfare concerns realized before security concerns.

This is the same reversal already discussed in connection with the split in Western peace movements before 1989: should we make contact with the large official peace movements in the East, or the tiny unofficial peace movements? If we preferred the former, we put security first; if we chose the latter, we put human rights first. Rationally, prevention of nuclear war would seem to come first, but it did not turn out that way. By democratizing the East first, the nuclear war danger was diminished (though it still exists in changed form).

It is the old dilemma between peace and justice—tolerating oppression or rising up against it. We may be reenacting that drama on the world scene.

MAASTRICHT AND NAFTA.

Not all integrations of states into larger units—trading blocs or federations—are in harmony with World Federalist goals. World Federalist ideals aim at unified humanity living in peaceful cooperation encompassing the whole Planet Earth, with justice for all and equity for all parts and practicing a long-range sustainable economy and lifestyle. Not all conglomerations of states contribute to this ideal.

The size of the new unit created is not a criterion of success in itself, without introducing other considerations. "Bigger" is not necessarily more "beautiful". neither is it necessarily more "ugly"; nor is "small" always "beautiful"; it all depends on the particular situation and context.

This is most obvious in military alliances, where cooperation occurs among members of one part of humanity directed against another part in a situation which Kenneth Boulding called "the threat system". This is cooperation within a unit for the purpose of a more "effective" conflict between units. We tend to think of cooperation as "good", but if it is partial in this sense, it would be better called "collusion". It is an example of what Kenneth Boulding called "sub-optimization".

There are other less obvious examples of sub-optimization, namely tight trading blocs surrounded by high tariff walls. Again, internally the nations within the bloc cooperate, but they engage in fierce competition with outsiders, or even try to exclude them from trade altogether. This would now be occurring in K. Boulding's "exchange system", milder than the threat system, to be sure, but still not the ideal third type, the "integrative system".

Even internally in a trading bloc, if the cooperation being practiced is not cooperation among equals, and/or if it is partly or wholly coerced rather than being freely chosen by the people of all participating nations, it does not promote our highest ideals, or may even run counter to them. Integration among unequals is only another name for imperialism.

For the Northern belt of industrialized democratic countries, there are two possible futures. They can be unified on an equal basis under CSCE (Conference of Security and Cooperation in Europe), which includes all of Europe plus all of former Soviet Union plus all of North America, i.e. from Vancouver to Vladivostok, and under OECD (Organization for Economic Cooperation and Development), which includes Western Europe, North America, and Japan (the "Trilateral Commission" area). CSCE and OECD overlap geographically, but between them they would form a continuous belt of cooperation through the whole of the Northern latitudes.

The other possible future for this Northern belt is to be organized into three competing trading blocs: EC (European Community, or, after the Maastricht Treaty goes into effect, EU or European Union), NAFTA (North American Free Trade Area, i.e. U.S., Canada, and Mexico), and an East Asian bloc including Japan and some prosperous or rising Pacific Rim countries. This three-bloc grouping would leave out the former Soviet Bloc, either abandoning them to Third-

World level poverty, or accepting them as second-class citizens into EC and permanently marginalizing them. What result this would have on international tensions staggers the imagination, with tens of thousands of poorly controlled nuclear weapons floating around in the Soviet orbit. The exchange system and the threat system may have their overlaps.

While the first scheme for Northern future is intrinsically much more desirable than the second, they both have a common defect; they continue to neglect the South, as has been the case all along. (Except for Mexico in NAFTA.) This, too, is not healthy for the Planet's

future, as no partial scheme can be.

The trading blocs could even become military superpowers—Fortress Western Europe, Fortress North America, and Fortress East Asia. (Remember the three superpowers in Orwell's novel "1984"—Oceania, Eurasia, and Eastasia?) Two of them would be nuclear superpowers: Mitterand has already said that post-Maastricht European Union would have access to French nuclear weapons. (The British position is probably different.) And why is Japan buying quite so much plutonium, about to be shipped from Cherbourg, where Greenpeace is opposing this for safety reasons? The amount seems excessive if intended for power reactors alone, as is alleged.

Each of the three power blocs would have a dominant centre: united Germany in EC/EU, the U.S. in NAFTA, and Japan in East Asia. Two of them—Germany and Japan—are supposedly the losers of World War II, spectacularly arisen from the ashes, and believing that they can build up their originally intended empires by economic rather than military methods (the exchange rather than the threat system). The third one, the U.S., has intervened in many wars around the world since 1945. Entrusting world security to these three might be even worse than entrusting it to the "Perm Five" of the U.N. Security Council.

A tripolar world would seem to be no safer or more fair than the bipolar world of the Cold War which has mercifully departed from the scene. New "spheres of influence", some of them throw-backs to World War II times, like Japan's "Asian Co-prosperity Sphere" or Germany's expanded Third Reich, inspire fear rather than hope in most of us who remember. And the American "Manifest Destiny" mythology also signals notions of a chosen people or a master race of sorts. All three of the new tripoles have some marks of potential imperialism in their national character.

But there are revolts brewing. The Maastricht Treaty was rejected by referendum in Denmark, and accepted so narrowly in France (a "heartland" country for EC), that it almost counts as a rejection. NAFTA is becoming highly unpopular in all three member countries. Two-thirds oppose it in Canada, according to the Pro-Canada Coalition. There has been a joint demonstration against the NAFTA Treaty by participants from U.S., Canada and Mexico. The U.S. Congress may reject the Treaty, under this popular pressure.

World Federalists and other peace people must be "choosy" about giving their support to larger groupings of nations. It may be that CSCE should be supported and EU and NAFTA should be opposed. We must look analytically at each detailed situation.

The criteria should be: (1) Is the proposed grouping open or closed? I.e. is it directed against outsiders or can anyone join? (2) Is it a grouping among (approximately) equal states, as the original core of EC, France and West Germany, was, or are there signs of attempted domination by stronger powers over weaker states? (3) Is the new grouping being freely chosen by the people in all the participating nations, after receiving full and truthful information? There should be consent, defined as support by the majority plus acquiescence of the rest, i.e. not approval by a razor-sharp 51% majority with passionate opposition by 49%. Consent so defined is far less than consensus or unanimity, but it is more than a mere majority.

These three criteria amount to the old trio of "Liberty, Equality, Fraternity" (of all humankind). These are still good guidelines in our struggle for a solidly-based human universality in a good society.

WAR CAUSATION AND PREVENTION: THREE FACTORS OR FOUR?

Claudio Cioffi-Revilla, in his study of very long-range cross-cultural occurrences of war in human societies, has postulated a tri-causal theory of historical forces that produce war: Anarchy (the prevailing and relatively constant factor of a Hobbesian state of nature or absence of government above nations or groups), stability (formation of alliances, international law, various consensual regimes among nations or groups), and escalation (particular factors of economic, national, religious or political differences that cause friction between groups or nations).

Anarchy is a very long-range persisting condition pre-disposing toward war; stability is a middle-range factor that can fluctuate; it tends to mitigate the tendency toward war; and escalation is a short-range force that may precipitate war if the background factors permit. (The analysis could be continued, in a fractal manner, to even shorter time ranges: if the escalation forces of, say, nationalism are now considered as the background, fear of war or its consequences [deterrence] could be the restraining force, and particular precipitating incidents like the assassination of the heir to the Habsburg throne could be the immediate cause. Or referring to the previous essay "Conflict Stages and Appropriate Solutions", nationalism would correspond to the "long-range" [everything is relative!] grievances, followed by shorter-range disputes, followed by incidents precipitating a crisis. But we are not concerned with all that here.)

In Cioffi-Revilla's formulation of the three factors, the tendency toward war is determined by an equation in which, on the right-hand side, in an additive manner, the three terms are: anarchy as represented by a constant, stability represented by s/t where s is a constant and t is time (i.e. stability decreases the frequency of war), and escalation is represented by a constant times an exponential in t (war probability increases rapidly in the presence of strong escalating forces).

$$F(t) = a + s/t + r.e(exp\ t)$$

I wonder what would happen if this equation was modified to fit catastrophe theory with 3 independent variables, which would define a swallowtail catastrophe. (Cioffi-Revilla himself had previously employed catastrophy theory in modelling war, but he seems to have abandoned this approach.)

CURVA PELIGROSA.

I saw that sign "Curva Peligrosa" on a highway from Mexico City to Cuernavaca. The young woman who was driving never slowed down on that mountain road. With the same carefree abandon, humanity is now hurtling ahead on the road of historical and environmental change. The young woman and I made it around that curve; but who knows?

There are curves, geometric curves, used in modelling natural and social systems that depict both dangers and opportunities. Some are called by disaster-evocative names like Catastrophe, others by names of calming beauty like Swallowtail and Butterfly, still others by cold scientific names like Logistic. There are equations of Chaos and equations of Apocalypse. Is there any connecting thread between them that we can discover? Are there clues that would help us steer around that dangerous curve?

Many growth curves look like the logistic or "lazy S" curve: a lower plateau, followed by a steep rise followed by an upper plateau.

Figure 1. Figure 2. Figure 3.

This depicts the growth of bacterial colonies, for example, or of animal or human populations. The first (rising) part of the curve is an exponential function, because geometric growth is occurring in an environment with plentiful resources. Then, after the inflection (slope change) in mid-rise, a levelling-off takes place, as the resources become scarce, and a balance is achieved at the upper plateau. This latter part of the logistic is an inverse exponential, or a logarithmic curve, approaching the upper limit asymptotically. (See Figure 1.)

If it should happen that the population growth overshoots the point of balance, resources may become totally exhausted and the population may crash, either partially till some lower balance is restored, or totally to extinction (perhaps only local if we are dealing with local populations). If a crash occurs, the curve is no longer a logistic, but has the shape of a bell curve, like the curve of normal distribution (though the equation may be different). This is illustrated in Figure 2. Or rather, it may be a parabola, which better corresponds to the quadratic equation given below. Or, as Glieck suggests in his book "Chaos", any curve with a hump (a single maximum) would do.

The logistic curve is also observed in many chemical reactions, for instance an acid-base titration, in which the pH rises along such a curve when a base is added dropwise to an acid, until an indicator like litmus or phenolphthalein or bromothymol blue suddenly changes color near the inflection point.

In my articles "Pentagon of Peace" and "Pax Democratica", I posit similar logistic curves for the growth of peace, justice and democracy in the world, from primitive through transitional to modern societies. In some cases, as in the case of peace, the values START high in primitive societies, then dip during transition, and are expected to rise again at full maturity. (Such a "dip curve", an inverted parabola, is a negative derivative of the logistic. It looks like the "potential well" sometimes postulated in particle physics. It is shown in Figure 3.) A logistic progression was already shown to exist by Rostow in his "Stages of Economic Development", and another such pattern is well known for population growth in the so-called "demographic transition".

The pattern of plateaus interspersed with spurts of growth (like repeated logistics building on top of each other) is generalized in my essay "Rise and Run", which compares it to a staircase; by Rudolph Rummel in his "Conflict Helix"; by Jay Gould in his theory of punctuated equilibrium in biological evolution; by many theorists of child development; and

by Toynbee in his parable of the mountain climber (a metaphor for the succession of civilizations), to name only a few examples of this very general pattern.

The equation of the logistic curve as usually given is actually not in terms of exponential and logarithmic functions; according to Leo Starobin, it is as follows:

$$= X (a—bX) \quad (1)$$

where t is time, X is the essential variable such as population or wealth etc., and the parameters a and b are positive constants.

I was struck by the similarity of equation (1) to the Chaos Equation, also written up by Starobin on another occasion. The Chaos Equation looks as follows:

$$X = aX (1—X) \quad (2)$$

Here t+1 denotes the next time period or "generation" in an iteration procedure, in which the previously calculated value of X is substituted on the right hand side to give the next value of X on the left hand side, which is then in turn substituted in the next step, and so on. Initially we start with some arbitrary starting value of X.

As Starobin explains, when the value of a is between 1 and 3, X eventually (after many iterations) settles down to a steady value, which is (1—1/a), and then no longer changes with further iterations. This steady value is called the "attractor". But when a is between 3 and 3.43, there are two attractors, one on each side of (1—1/a), and the value of X, after many iterations, comes to oscillate between them as the iteration proceeds. (This is similar to the situation described in my essay "The Key", in which the solution of a first-degree differential equation can be either an exponential approaching a limit asymptotically, or a sine-wave oscillation which alternately overshoots that limit and comes back repeatedly like a pendulum or a vibrating string.)

This splitting of an attractor is called a "bifurcation", which is not quite the same use of the term as in Thom's Catastrophe Theory, both being somewhat different from its use in Prigogine's theory of dissipative structures—but the three bifurcation concepts resonate together in evocative ways, and perhaps there is a deep connection.

Then, when the parameter a in equation (2) increases above 3.43, there are 4 alternating attractors; then 8, then 16in progressively decreasing intervals of increases in a; i.e. the "higher harmonics" don't last as long as the "fundamental tone", to make an analogy to music. Finally, when a exceeds 3.57, there are an "infinite" number of attractors (whether it is merely very large or truly infinite is not clear), and the system enters a state called Chaos. Values of X now seem to vary randomly during successive iterations, though the system remains strictly deterministic, i.e. the successive values of X can be calculated from each previous value with complete certainty and accuracy.

After reading Starobin's account of the Chaos equation, I tried it on the computer, and found that at a = 4 (and perhaps at other values of a as well), X goes suddenly and abruptly from a high value of X = 1 right down to X = 0, indicating a total crash to extinction if X denotes a population. Thereafter, of course, repeated iterations would yield nothing but a string of zeros. Since the parameter a is defined as r + 1, where r is the rate of population increase, this means that at a high rate of population increase, high enough to be in the Chaos region, sudden extinction is possible even when the population levels are very high.

The Chaos system is characterized by an inherent instability in which anything is possible. This is because it is extremely sensitive to even very small external influences; a very slight

push can tip it over into a drastically different condition. With respect to the prediction of weather (which is a chaotic system), this has been called "the butterfly effect": when a butterfly flutters its wings in Bangkok, this can bring on a storm in Kansas.

The successive bifurcations in the 2,4,8,16 mode are also discussed in the book called "Chaos" by James Glieck. The generality of this pattern has been demonstrated by Mitchell Feigenbaum in Los Alamos (of all places). It seems that these transition limits occur in many different types of equations (e.g. one containing the trigonometric function sine), and they all converge with the SAME ratio, 4.6692 etc. (an irrational number). Something in all these very different equations is SCALING, in a way often observed in fractal geometry; but surprisingly, scaling with the SAME constant, an irrational number perhaps as fundamental as pi or e or the Golden Mean.

Chaos is a non-linear system; it occurs for example in the turbulent flow of a liquid, after its transition from laminar (ordered, regular) flow at the Reynolds limit. Laminar flow occurs at lower flow velocities, turbulent flow at higher flow velocities. We can visualize intuitively how forcing the rate of flow beyond the limit causes the molecular structure of the liquid to lose its ability to adapt or accommodate to the strong forces acting upon it, and falls apart into a sort of panic. Yet turbulent flow is a very common feature in nature; images of pastoral quiet and beauty like a "babbling brook" is really a system in Chaos; so are those lovely breakers on the beach, or the wake behind a moving boat, or the white-water rapids that have been compared to the crises of our rapidly changing world that we have to navigate. (Cf. "The Rapids of Change" by Theobald.)

It is said (but I have not seen it shown) that, if the Chaos system is pushed even harder (like the liquid flow being forced to very high rates), it can go beyond turbulence and emerge with a new regularity, but this time with a periodicity of 3 rather than 2; i.e. the first splitting (trifurcation?) goes to 3 attractors, followed by 9, then 27, etc. and on to a new Chaos. Thus the 3 exponential series replaces the 2 one. Is there New Order beyond Chaos? (A very pertinent question in the contemporary world.) However, at very high growth or flow rates, sudden extinction may intervene before the New Trinity Order is achieved. ("Trinity" was also the code name given to the first nuclear explosion in Alamagordo in 1945.) In any case, the trifurcation sequence, if indeed it is real at all, would probably occur only for a very fleeting interval before being swallowed up in the next Chaos.

However, I want to go back to the similarity between the equation of the logistic curve and the Chaos equation, both presumably describing population growth, among other growth phenomena, but in different ways. My aim is to explore what the formal similarity means, if anything.

The right-hand sides of equations (1) and (2) become identical if a = b, i.e. if the logistic equation uses only one parameter rather than two. It would seem that (2) is only a special case of (1), perhaps used by Starobin only to make the calculations simpler. Perhaps the more general logistic equation (1) would also bifurcate and then go to Chaos when subjected to iteration.

However, the left-hand sides of equations (1) and (2) are not identical, because (1) is not iterated while (2) is. Also, equation (1) is more like a differential equation and (2) like a finite-difference equation, i.e. growth is seen as continuous in (1) and as discontinuous (making distinct jumps at "generations" in (2).

Now in our philosophical interpretations, wild as they may be, the logistic equation (1) is regarded as beneficial, an approach to a Utopian state of Peace. Justice, Freedom, Democracy, Wealth, and a stable population level. (Cf. "Pax Democratica".), though Starobin warns that the logistic may become the bell curve and indicate a crash. But, if realized, the upper plateau of the logistic would represent the TRUE New World Order, which human

world society could reach if only we could also arrive at an equilibrium with Nature. On the other hand, equation (2) may lead us to Chaos from a previous state of Order (a kind of a Creation in reverse), and the stable population level reached may be zero. Is this a "super-bifurcation" of the future? Is this "double exposure" to be expected in a time of crisis, when we face either breakthrough or breakdown?

Another interpretation is possible. The equations as a whole are really quite dissimilar, from two entirely different worlds of mathematics. Equation (1) describes the graph whose slope is a quadratic function (i.e. a parabola with its hump vertically upward). Equation (2), on the other hand, does not describe a graph at all; it is a formula for iteration. Chaos comes only with iteration. There is no trace of Chaos in graphs. In equations (1) and (2), the similarity of the right-hand sides is less important than the dissimilarity of the left-hand sides, which define the operations to be performed—either graphing or iteration.

Now let us explore another aspect of our "dangerous curves". I am referring to another class of curves altogether, coming from Thom's Catastrophe Theory, as described in an article by Christopher Zeeman (Scientific American, April 1976). These come from yet another branch of mathematics, namely topology. Yet again, by rather far-fetched playing around with curve shapes, I want to look for relationships. Blending Chaos and Catastrophe appeals to my perverse nature.

Thom proved that there are only 7 "elementary catastrophes", and he discovered and described all of them. The technical definition of a "catastrophe" is a curve or a surface or a space or a higher-dimensional entity in which the dependent (behaviour) variable or variables show a discontinuity even though the several independent (control) variables are continuous. Why should the juicy word "catastrophe" be used for such an abstruse concept? Well, the curves, surfaces etc. show sudden jumps which model various abrupt changes in behaviour (like a dog turning from fearful withdrawal to raging attack) or in ideology (like a fascist suddenly flipping into a communist, or a Christian being converted into a Muslim) or in economics (from a bear market to a bull market) or in eating habits (from starving to gorging in an anorexic) or indeed in a physical phase change (from water into ice or into steam). As opposed to smooth gradual changes, such jumps can be seen as catastrophes, either positive (beneficial) or negative (disastrous).

The simplest Catastrophe is the Fold, which is a simple cubic curve with one maximum and one minimum (Fig. 4), but which can also be laid on its side as in Fig. 5). In Fig. 5), a point moving to the right along the upper branch will eventually jump to the lower branch at point A, because the folded-under part from A to B represents unstable states, while a point moving to the left along the lower branch will continue all the way to point B and then jump up to the upper branch. (Both jumps are indicated by dotted lines.)

Figure 4. Figure 5. Figure 6.

This type of behaviour is typical of a hysteresis curve, in which an approach from one side follows a different path than an approach from the other side: e.g. in magnetization, the transition from paramagnetic to ferromagnetic occurs at a different temperature than the reverse transition from ferromagnetic to paramagnetic. (The ice-water phase transition occurs normally at the same temperature, i.e. the freezing point is the same as the melting point, but it is possible to super-cool water below the freezing point, and with other compounds, such non-equilibrium behaviour is more common.)

Hysteresis means that the system behaves as if there was an inertia, a lag or delay that makes the system want to persist in its status quo longer than it "should", and than it would if all changes proceeded in a reversible manner. Then, when the system finally "realizes" that it's walking on thin air and has no business being in that state any more, it abruptly readjusts by jumping to the new state; like a dictatorship, long frozen by terror, undergoing a

sudden revolution, while if (in a democracy) slow and orderly change could happen without resistance, no revolution would be necessary. Note that energy is wasted (dissipated) in hysteresis loops because of irreversibility, which makes entropy increase faster.

Now compare the logistic curve (Fig. 1) to the Fold (inverted) (Fig. 6). We can see how the Fold can be generated from the logistic by a simple deformation—by pulling the point on the logistic at which the steep rise ends and the upper plateau begins, sharply to the left, so that the curve folds back on itself. (Deformations are permitted in topology, though not in graphs.)

The equation of the Fold is a cubic, as was already mentioned:

$$y = x^3 - ax \quad (3)$$

Comparing equations (1) and (3) (right-hand expressions only), we see that (1) is a quadratic (highest power term is x^2) while (3) is a cubic (highest power term is x^3); both also have a linear term (x), but no separate constant term, and (3) has no x^2 term.

Is this another way for our Utopian logistic to be converted to a catastrophe? (By a sharp pull to the LEFT?? But the picture is symmetrical; by drawing it the other way, it could be a sharp pull to the right. What matters, probably, is the sharp pull.) Perhaps, but remember that "catastrophe" only means discontinuity. Still, poetic license can be allowed some free range.

The next, somewhat more complex of Thom's catastrophes is the Cusp, which is the one usually discussed. It is a surface curved in 3 dimensions, and it also demonstrates hysteresis. But there are now two independent variables that vary continuously, while the third (dependent) variable shows discontinuities (jumps). The equation of a Cusp is a quartic, i.e. it has a x^4 term.

$$y = x^4 - ax^2 - bx \quad ..(4)$$

Its form is like adding the quartic term to the logistic—but this transforms it completely.

I will refrain from discussing the other catastrophes, which cannot be represented at all in 3-dimensional space. Suffice it to say that the Swallowtail has a x^5 term and the Butterfly has a x^6 term. (See my essay on The Swallowtail and the Butterfly for some interpretations.) The remaining 3 catastrophes contain both x and y power terms, but the power never exceeds 4 and for most terms is 3 or less.

The way we think and talk and express ourselves in both the arts and the sciences is profoundly affected by the spirit of the times. So we now have theories of Chaos and of Catastrophe (and even an Apocalypse equation which I did not discuss here), even though in normal times we would only call them theories of non-linearity and discontinuity.

But there is also hope in the midst of despair, as when spontaneous order emerges from chaos—even the striking beauty of the Mandelbrot set. And in the catastrophe series, while the ominous Cusp is followed by the sharpened conflict of the Swallowtail with its "splitting factor" (as we go from x^4 to x^5), still, if we persist in continuing on to x^6 in the Butterfly, we arrive at a configuration or Gestalt which, in its unimaginable 6 dimensions, contains a "pocket of stability"; this can be our refuge in adversity, the island of calm in the stormy sea.

CONFLICT STAGES AND APPROPRIATE SOLUTIONS.

The United Nations is in the process of enlarging its role in mitigating or preventing armed conflicts in the world. This applies not only to international conflicts, but to internal conflicts as well, as less attention is being paid to the principle of non-intervention in domestic affairs and more to the concern for protection of human rights. The U.N. Secretary-General Boutros Boutros-Ghali has published "An Agenda for Peace" in June 1992, which presents some innovative proposals.

Most of his proposals have merit, especially the possibility for the placing of peace-keeping forces on the territory of a state that feels threatened by an armed attack by another state, at the call of the threatened state only. Previous peace-keeping missions have traditionally been mounted at the request, or at least with the permission, of both belligerents. This proposal seems beneficial because it could be used preventively, before armed hostilities begin, while previous actions have always been sent after a war and after the agreement on an armistice or cease-fire, to supervise the implementation of the cease-fire.

Equally praiseworthy is the Secretary-General's proposal for instituting a permanent U.N. force, either under Article 43 of the Charter or by using earmarked national contingents standing permanently in readiness. This would obviously be much more efficient than the present ad hoc arrangements for each peace-keeping operation separately, and it is long overdue. However, obviously the U.N. financial position would have to be greatly improved. At least all members should pay up their dues; but also these dues should probably be raised, and other sources of funds for the U.N. should be sought. This is not the place to enlarge on that, but such proposals exist.

However, other proposals raise some doubts. The proposal to send a more heavily armed force to stop an ongoing war before an armistice is arranged could actually escalate or complicate the war, depending on the particular circumstances. The claim of humanitarian intervention, while often valid, would not necessarily excuse an increased toll of human lives. An old rule of the Just War theory is still valid: would the U.N. be causing more damage than it would be preventing? This is called the principle of proportionality, and it is a sort of a cost-benefit calculation. It is not easy to estimate before a risky enterprise such as a U.N. armed intervention is undertaken. I have no trouble with the legal principle of national sovereignty, as this is deserbvedly fading into the background; but the cost of human lives cannot be taken lightly.

In any case, such a more heavily armed U.N. action should not be called "peace-making". That term has traditionally been used for conflict mediation by the U.N. in an attempt to settle the underlying conflict issues. It is simply confusing to now transfer that terminology to a military action. For the sake of clarity alone, a different term should be used; possibly "humanitarian intervention", as humanitarian concerns should be the only reason for U.N. intervention ever taking place at all.

I would now like to take a wider look at the stages of an escalating international or internal conflict, and try to indicate what U.N. actions would be appropriate at each stage.

International relations scholars and peace researchers, e.g. J. David Singer and his colleagues in the Correlates of War Project at the University of Michigan, recognize several stages of conflict. In simplified form, we can consider 4 stages here:

Long-term underlying historical grievances and hostilities. Nations often harbour these for very long times, and forgiveness of past wrongs is seldom practiced. Nevertheless, these smouldering hatreds can be kept under control in the absence of particular precipitating events.

Political or legal disputes about a particular issue, such as location of a boundary, the treatment of each other's nationals, etc. There is no military involvement at this point, though threats may be made or implied.

Crises, or what the Singer group call "militarized inter-state disputes" (but the concept is transferable to internal crises as well). These events represent a sudden worsening of the conflict, in which military forces may be mobilizing or on the move, but there have not yet been any battles or armed clashes.

Full-scale wars, which Singer defines as involving regular armies on at least one side and causing at least 1000 battle deaths.

Not every historical grievance gives rise to a political dispute, not every dispute produces a crisis, and not every crisis produces a war; so that the number of these conflict occurrences in the international system decreases sharply as we proceed from stage 1 to 2 to 3 to 4.

The main role of the U.N. should be war prevention, i.e. stopping the conflict process preferably before stage 2 (or even earlier) and stopping it with great urgency at stage 3. If this fails, then measures can be applied to stop a war which has already begun and keeping it stopped. Obviously, different types of U.N. action are required at these different stages. What actions would be most appropriate at each stage?

Before a dispute crystallizes out of the matrix of general hostility prevailing in a region, measures of conflict prevention can be taken in 3 inter-related directions:

1.(a) Fostering cooperation, especially on large projects involving superordinate goals. This has been shown in psycho-social experiments (cf. Muzafer Sherif et al.) to deconstruct enemy images and foster friendly attitudes. Superordinate goals are goals which are very important to both sides (such as assuring adequate water supplies) and which cannot be achieved by either side alone, but are achievable if working together.

1.(b) Cultural exchanges, e.g. of students or of scientists and experts in various fields. These are not necessarily beneficial; by getting to know each other better, one may get to dislike each other more, if the mutual experiences are unpleasant or frustrating. Allport has recommended 4 preconditions for cultural exchanges that foster international or inter-group friendship: (i) equality of status (rather than an attitude that "we must teach them something"); (ii) interdependence: each has some resource or skill that the other requires or would benefit from; (iii) common goals in at least some respects; and (iv) official sanction that labels such contacts as legitimate and not "treasonous".

1.(c) Forgiveness: one should not harbour historical hostility feelings forever. Here too there are preconditions: (i) only the victim of past wrongs can offer forgiveness; (ii) the perpetrator must at least apologize, if not offer compensation. The role of the U.N. in this process would be one of mediation and facilitation. Since it is not always clear who was the victim and who was the perpetrator (this may be the very point in dispute), sometimes mutual apologies for different phases of past events may be in order. For example, Japan might apologize for Pearl Harbor and the U.S. might apologize for Hiroshima.

If a conflict has reached stage 2, that of a particular political dispute, the U.N. again has a choice of methods. All of these together should be called peace-making.

2.(a) Adjudication by the International Court of Justice, if the dispute is of a legal nature (such as a border dispute) and if both nations agree. It would be desirable if all nations recognized the jurisdiction of the ICJ as compulsory in general before any disputes arise, but that is now not yet the case. This method is not applicable to an internal dispute, since

the ICJ deals only with states.

2.(b) Mediation, conciliation, good offices, etc. by a specially appointed U.N. mediator. This person could be the U.N. Secretary-General himself, to give this role the greatest possible legitimacy; but an argument can also be made for using a person with the greatest skills in this difficult field. As soon as possible, the U.N. should evolve some permanent peace-making machinery for mediation, something like a permanent Mediation Board, to which disputing parties would be obliged to refer.

2.(c) Arbitration is a more formal method of third-party conflict intervention which the U.N. could carry out. Arbitration differs from mediation in that the arbitrator's decision is binding on the parties, whereas the mediator's decision is not. Arbitration is thus an intermediate stage between mediation and court adjudication. However, unlike the ICJ, it could be used for internal disputes and for non-legal disputes (i.e. disputes for which no international law yet exists). As soon as possible, the U.N. should set up an Arbitration Tribunal for this purpose.

2.(d) Where appropriate (e.g. in cases of regional demands for autonomy or independence), the U.N. should conduct or supervise plebiscites, referenda or elections to reach a decision on the dispute. This practical application of democratic methods should be generally acceptable, but the U.N. must scrupulously practice impartiality in supervising the campaigning and voting procedures.

In case of a crisis, the need to act quickly is generally uppermost. Measures of war prevention at this stage can take several forms, preferably carried on simultaneously.

3.(a) An arms embargo should be imposed at once, if arms imports have not been cut off previously as preventive measures.

3.(b) The U.N. Secretary-General or his representative should engage in intensive "shuttle diplomacy" in an attempt to head off threatening hostilities.

3.(c) U.N. peace-keeping forces should be dispatched to the area if either both sides or even only one side requests them. If the U.N. mission is sent on unilateral request, the peace-keepers would, of course, be stationed only on the territory of the requesting state. Such preventive peace-keeping might have been requested, for example, by Kuwait when there was a threat of an Iraqi invasion.

If a war is already in progress, the U.N. can take several measures of intervention in attempts to stop it.

4.(a) Help arrange an armistice or cease-fire and send a lightly-armed peace-keeping force to supervise its implementation and maintenance. This has been the traditional U.N. peace-keeping role. Quite often the cease-fire has held, but resolution of the underlying conflict has not followed, e.g. in Cyprus.

4.(b) Send a more heavily armed U.N. force to interpose between the warring states or groups and stop the fighting. This would involve the U.N. troops directly in the war. It might be difficult to remain impartial, U.N. casualties may be high, and the war may actually be escalated rather than stopped, depending on the circumstances. This action should not be generally recommended, though it may be appropriate in some special cases. Such forces, if used, should always be under U.N. command, not under the command of one nation.

4.(c) Humanitarian intervention, as in the Somalian civil war, could be carried out for purposes of alleviating famine, preventing human rights abuses, or caring for refugees (like

the Kurds in Iraq after the Gulf war). This may prove to be beneficial in Somalia, but may be counter-productive in the former Yugoslavia, as several military observers have said. This measure, too, should be used sparingly and with caution. The uppermost question is: would more lives be saved by intervening or by not intervening?

4.(d) Temporary humanitarian armistice, e.g. to vaccinate children or feed starving people. This measure has been used by non-governmental organizations such as "Six Days for Peace", but could be organized by U.N. agencies. It would not permanently stop the war, but would provide some relief. And it might induce the parties to prolong the armistice and possibly become aware of the benefits of not fighting.

There is another class of U.N. actions, variously labelled as enforcement or collective security, which are not impartial, but take the side of a victim against an aggressor. It is not always possible to identify the aggressor and the victim, and in those cases these methods are not applicable. When they are, as in the case of Iraq's invasion of Kuwait, the U.N. again has a choice of several measures:

5.(a) Economic sanctions, whose effectiveness depends crucially on the total cooperation of all member states. The effectiveness of economic sanctions has been disputed, but the study of past cases usually shows that they have not been applied universally, enough, strictly enough, or long enough. Caution should be exercised in protecting innocent civilians in the country under sanctions, by permitting imports of vitally needed food and medicines.

5.(b) U.N. military action, which, it should be realized, means a full-scale U.N. war. Examples were the Korean War and the 1991 Gulf War, though this was not strictly under U.N. command. The casualties, especially civilian ones, were quite high, and this should not be resorted to in the future.

5.(c) There will be objections: what if sanctions do not work (or do not work soon enough) and military action would be too costly? Do we still have alternatives to reverse the results of aggression?

The recommendation here is the speedy creation of an International Criminal Court, to which national leaders guilty of international aggression or of war crimes could be brought. This would avoid inflicting punishment on innocent civilians. There are serious problems in apprehending national leaders to stand trial, and this requires serious attention and study. Could such extra-legal methods as those used by Israeli Intelligence in apprehending Eichmann be used? Could the U.N. act extra-legally? Perhaps that is not immediately acceptable, but it is still far less costly than war.

As defined by the Charter, the main task of the U.N. is the preservation of international peace and security. There are multiple ways of accomplishing this task; the U.N. is at present equipped for only some of them. It should be the task of future U.N. reform to equip it to carry out all of them.

In doing this, we should keep it in mind that prevention is far better and less costly than cure, and also easier and more likely to be effective and successful. Therefore efforts for maintaining and assuring international peace and security should start as early as possible in the development of the conflict process.

MULTI-LEVEL WORLD STRUCTURE: FROM PERSON TO PLANET.

In a previous article on "subsidiarity" (in "Hopes and Fears: The Human Future", ed. by Hanna Newcombe, publ. by Science for Peace, Toronto, 1992), a multi-level structure for world governance is suggested, to observe both the principles of decentralization (to have government close to the people and maximize democracy) and centralization (to make possible the necessary global planning for environmental security and security from large-scale violence and war.). However, it remains to be specified which governmental functions would best be performed at which level.

There is no final recipe for this division of powers; jurisdictional disputes have always been a problem in any federation, and this will continue to be so. It is likely to be an even bigger problem when there are six levels rather than only two or three. The apportionment will certainly change from time to time, perhaps frequently.

Nevertheless, we present below a highly tentative and sketchy scheme as a beginning of discussion. It is presented only in point form, with possible enlargement later, and without detailed justifications, which would be premature.

The outline follows.

Global Issues.

- Maintenance of international peace and security.

- Subdivisions: Conflict resolution and dispute settlement.

- Peace-keeping (lightly armed).

- Interposition in a war to stop it.

- Humanitarian intervention.

- Disarmament verification.

- Environmental improvement and pollution prevention.

- Sustainable development, with proper regard for limits.

- Human rights.

- Economic equalization between regions and nations.

- Rules of conduct for transnational enterprises.

- Global Institutions.

- World Parliament.

- World Court.

- International Criminal Court.

- Disarmament Verification Agency.

- Mediation Board and Arbitration Tribunal.

- Military staff headquarters.

- Environmental Authority.

- Development Fund.

- Seabed Authority.

- Human Rights Commission.

Regional Issues.

- Regional peace-keeping for regional conflicts.

- Regional mediation and arbitration.

- Economic, trade, and monetary coordination.

- Major waterways and watershed management.

- State/National Issues.

- Internal police forces.

- Taxation.

- Health and Welfare Legislation.

- Labour Laws.

- Issuing currency.

- Provincial/State/Cantonal/Laender Issues.

- Education.

- Health and welfare administration.

- Transportation: roads, railways, mass transit.

- Management of local waterways.

Municipal Issues.

- Sewage disposal.

- Garbage collection and recycling.

- Local by-laws (traffic, noise abatement etc.).

- Public transit.

- Parks and recreation.

- Public works.

- Cultural events, festivals etc.

Neighbourhood issues.

- Children's play areas.

- Cooperative daycare facilities.

- Exchange of services: baby-sitting, shopping, dress-making, household repairs, hair-cutting, etc.

- Maintenance of properties and facilities.

- Local rules about access etc.

- Security against crime (neighbourhood watch).

- Individual Rights and Responsibilities.

- Right to vote along with responsibility to be informed.

- Professional oaths of ethical responsibility.

- Freedom of speech and duty to speak out if needed.

ETHNO-POLITICAL CONFLICTS.

Most ethnic movements seek political autonomy, not total national independence. Not every one of the 1000 or so ethnic entities can have a state of its own; the number of states in the international system is already too large, at 180.

However, if they are not aiming to separate from the states in which they live, most groups have certain demands. If they feel that their culture and beliefs are being suppressed, threatened, or devalued, they demand acceptance, recognition, or even protection from their state. If they feel economically disadvantaged or discriminated against, they want access similar to that of the dominant majority, either through a public subsidy or through protected opportunities to offset their initial disadvantage. If they feel that they are politically excluded, they want greater participation in political decision-making, from bottom to top. As a whole, they want equality of status and opportunity in all respects.

The ways in which governments deal with these demands can be classified under four headings: containment, assimilation, pluralism, and power-sharing. These four treatments form a scale from the most oppressive (barring outright genocide or ethnic cleansing) to the most enlightened, but each has certain drawbacks.

Containment means keeping minorities separate from the mainstream society—separate and unequal. This is the meaning of apartheid and Bantustans in South Africa until recently, of Indian reservations in North America, and of enforced ghettos for Jews in medieval Europe. It is often justified by religious doctrines (e.g. Bahais are persecuted as heretics in Iran, even though they actually have not made any demands for additional privileges), or by presumed racial superiority (i.e. in the white conquest of the Americas, or European colonialism in Africa and Asia), or by security interests (e.g. the Kurds and the Palestinians), or by "unfair" economic competition (the Chinese in Southeast Asia).

Sometimes containment is combined with benevolent paternalism, which makes it less harsh but still debilitating. An example is the treatment of religious minorities in the Ottoman empire, and the treatment of Australian aborigines.

In general, containment may mean any or all of the following: residential and social segregation, separate and unequal education, restricted access to higher education, restriction on religious practices, forced labour, restrictions on occupations and property and land ownership, prohibition of labour unions, and banning of political organizations.

Containment policies are no longer considered acceptable these days, though they are still practised in many places.

Assimilation gives minority individuals equal opportunities, but gives no special rights to groups. It is a highly individualistic approach along classical lines of liberalism. Ethnic groups are not supposed to continue as such, but are expected to merge into the "melting pot", to abandon their old identity, language and culture.

This was the preferred strategy in North America for treating new immigrants until the early 1960s. There may have been subtle differences between the United States and Canada, the latter being somewhat less oriented toward the "melting pot" idea; but new immigrants were still expected to learn English as fast as possible and to function publicly in that language. Their children were expected to be entirely assimilated by the time they grew up. New immigrants usually accepted this strategy as a way toward individual and family social and economic advancement. They had relatively little interest in the cultural survival of their group as a distinct entity; after all, they had left home for a reason, and wanted to start a brand-new life.

This approach did eliminate discrimination, but led to a cultural uniformity and homogenization. This may be good if the aim is "national" (i.e. state) unity and territorial patriotism, but one may regret the levelling down of diversity, akin to merging all the vivid colours of the colour wheel to a uniform grey.

Under the assimilation process, residential segregation becomes class-based rather than based on voluntary ethnic "ghettoes". As an immigrant family advances economically, usually through hard work, it moves in several stages to higher-class neighbourhoods. Sometimes this happens only with the second generation, but often much sooner.

In education, "remedial classes" are given to teach the dominant language. There are development funds, health and welfare programs, and job training for immigrants. Anti-discrimination laws protect the rights of individuals. Civil and political rights are guaranteed, but group rights are not recognized. There is selective recruitment (cooptation) of leaders into mainstream parties and public office. This unfortunately may deprive the ethnic groups of their natural leaders. Yet minority interest groups usually form, even if only for cultural rather than political purposes.

The next approach is pluralism, also called multiculturalism. This began to be practised in the 1960s and is the predominant approach today. More weight is now given to collective or group rights, though individual rights continue to exist. Different nationalities are now seen as "separate and equal". This is not apartheid, because of the equality feature. The ideal is to have separate coexisting entities. Instead of a melting pot, the new metaphor is a salad, a blending of ingredients in which the lettuce and the onions and the celery are still recognized as such.

Separate identities for the ethnic groups are now actually encouraged, being considered enriching. We sing the praises of cultural diversity as being ecologically sound, as in biology. We taste each other's foods, exchange recipes, hold festivals, enjoy dances and songs.

Under pluralism, cultural and religious diversity is protected and encouraged. Education and media are often in multiple languages, so that multilingualism accompanies multiculturalism. There are group social and economic entitlements, and group representation in public and private employment. Ethnic interest groups and political parties are organized, and gain representation in legislative assemblies and governing coalitions.

Pluralism benefits the ethnic groups and makes them flourish, but there are also drawbacks to the system. It may be divisive to state-national unity (e.g. in Canada it produces a lot of hyphenated Canadians with their ethnic name put first, at the expense of just plain Canadians). The special privileges, and especially the separatist tendencies that it may encourage, are apt to provoke a backlash by the dominant majority, and ethnic friction and tension may result.

The fourth and last approach is power-sharing. Here, state power is exercised jointly by two or more ethnic communities, each proportionally represented in government and each with veto power as well, at least on matters crucial to its own interests. If each ethnic group resides in separate territories, they may have a great deal of local autonomy. Even if this is not the case, there may be non-territorial arrangements for each to run its own show, e.g. as religious communities did in the Ottoman empire.

This whole arrangement has been called the consociational model, or consociational democracy (cf. Lijphart). It is the method of choice in states with a deep ethnic or religious cleavage. It is verging close to separation or at least mere confederation of the ethnic groups, but they do manage many affairs in common, more by consensus than by majority rule. But the initial constitutional arrangement may be quite difficult to negotiate.

This system is practised successfully in the Netherlands (between the main religious groups), in Belgium (between Flemish and Walloon language groups), and in Austria (again religious groups). It is being considered for the black and white inhabitants of South Africa, but that would probably be a mistake, as the system works best if there had been previous approximate equality between the constituent groups. It has been suggested that it would be inappropriate for Northern Ireland. It failed completely in Lebanon, where a long civil war developed between the communities, and likewise in Nigeria. One third-world country that has made it work—so far—is Malaysia. Zambia and Kenya are trying it too. In multicultural Switzerland, where there are 4 language groups, the solution was a federation, not consociationalism; this is certainly always an alternative.

Under power-sharing, there may be separate residential districts, separate schools and media, and separate universities and many other institutions. Economic activities and services may be organized communally. There may be group quotas in public and private employment. There are almost always separate political parties and interest groups. Participation in governing bodies is guaranteed constitutionally to each ethnic group. Along with communal veto power and territorial and functional autonomy, this means a guarantee of protection for the group rights of each ethnic community.

The choice of system must depend on the local situation at the time the choice is being made. No absolute preference scaling can be constructed. It is very much a matter of situational ethics. In particular, the preferences of each group must be respected. A problem may arise of course if different groups prefer different arrangements.

The above is a summary and interpretation of a paper presented at the International Peace Research Association Conference in Kyoto in Summer 1992.

I would like to append to this a scheme of "inter-cultural progression" in attitudes, described in Ecole et Paix, December 1992, p. 25.

1. Ethnocentrism. At this stage, a person is immersed in his or her own culture to the extent of not recognizing, or hardly noticing, other cultures.

2. Perception of differences. At this stage, the differences are noticed, but only with a sort of peripheral vision.

3. Understanding. After some inter-cultural contact and communication, one gets to understand what the other culture is all about and what makes it work for its participants.

4. Acceptance and respect. The value of the other culture is now acknowledged on a more or less equal basis as one's own.

5. Appreciation and valuation. The other culture is to be protected, promoted and celebrated as an enriching example of human cultural diversity.

6. Selective adoption. Certain features of the other culture are incorporated in one's own culture, in a mutual cross-fertilization.

7. This in turn may lead either to the assimilation of the two cultures to each other, i.e. a merger, either on an equal or an unequal basis; or to a less complete mutual adaptation and coexistence; or to biculturalism carried out in a parallel manner.

It is important to realize that there are multiple ways for resolving inter-ethnic conflict. At this time when large-scale inter-ethnic violence threatens in many places, and has already erupted in some, this knowledge of alternatives is of overriding importance.

THE NEW FUSE.

In previous publications, we described a chain of nations in tension, like a "fuse" along which war could spread in either direction. (Newcombe, A. and H., International Interactions, Vol. 7, No. 1, 1980, pp. 1-32; Bulletin of Peace Proposals, 2/1980, pp. 124-130.) The chain extends from the Southern tip of Africa, through East Africa and the Horn, to the Middle East, Iran, Afghanistan, Pakistan, India, China, and USSR, with branches to Southeast Asia and Korea. It encompasses almost all the world's crisis regions except Central America.

In the 1970s, all along this chain, neighbouring nations were hostile to each other, for various local reasons, while each nation's neighbours on both sides in the chain were allies; so that each nation could consider itself surrounded by enemies. This structure formed a series of linked cognitively balanced triangles (+—) according to Heider's theory; a pattern in which "the enemy of my enemy is my friend" and "the friend of my enemy is my enemy". Such patterns are cognitively balanced, i.e. feel comfortable in that everyone knows exactly who is a friend and who is an enemy; but are also tension-producing and war-prone. Nations along this chain were also over-armed (higher arms expenditures per GNP than the world average) and many were potential nuclear proliferators or actually possessed nuclear weapons (USSR, China, India, Israel). A large proportion of the post-1945 wars in the world actually occurred along this chain, although spreading was not observed.

The pattern was disrupted by the Iranian revolution in the early 1980. It is debatable whether this was good or bad for war prediction along the chain; it broke the deadly line-up of friends and enemies, but it also introduced confusion and uncertainty. It depends on whether you believe that wars are fostered by the certainties of polarization or the uncertainties of confusion. The Iran-Iraq war occurred more because of the uncertainty (Saddam Hussein's miscalculation).

Most parts of the fuse chain's pattern still exist in the greatly changed world of the 1990s, although the super-powers are not longer aligned on the opposing sides of the numerous local hostile dyads. This should help dampen down the volatility of the relationships; but there is now a new danger.

The new centre that is beginning to link to the old earthquake fault in the world's political landscape is in the Balkans, a traditional war-breeding area from the late 19th and early 20th century. The civil war in the former Yugoslavia may become linked to the Middle East crisis area, which is still inflamed, through the involvement of the Muslims in Bosnia. It can be expected that Muslim fundamentalists from the Arab world will want to help their beleaguered brethren in Bosnia. Will Israel than be constrained to line up with the Serbs? It might help that the Croats collaborated with the Germans in World War II

This is still speculation; but let us construct some possible cognitive-balance triangles that could reach across these two regions. One example is represented in the diagram at the end of this article. Israel's conflict with the Muslim fundamentalist organization (expulsions into Lebanon and the resulting impasse when Lebanon would not admit them) is an element in this; it seems that Israel's hostility is shifting from the PLO which has recognized Israel's right to exist, to Hasad which does not.

Our new world order may be just as war-prone as the old. This is not good news; but we cannot be sure of it yet.

MORE ON S-CURVES.

(Reactions to book review of "Predictions" by Theodore Moetis, in Science, Feb 26, 1993, p. 1349.)

When a "natural growth" S-curve approaches the upper plateau equilibrium, it can do one of three things:

(1) Approach an invariant asymptotically.

(2) Overshoot and start to oscillate, possibly in a damped oscillation if there is a "friction" factor, but possibly undamped. A damped oscillation would be like approaching a single attractor. Note that a sine-wave is another solution to a first-order differential equation, with an exponential (as in (1)) being the other alternative solution. (See my essay The Key.)

(3) Start oscillating after an overshoot as in (2), but then bifurcate repeatedly to give 2, 4, 8attractors instead of the original one attractor, and finally go chaotic. In this case, it may eventually go to zero even from an initially high value.

Which form will be taken by the human population increase as it hits the ceiling?

CHAOS DYNAMICS OF INTERNATIONAL CONFLICT.

Humans behave according to the rules of selfish myopic rationality, most of the time, in preference to the other possibilities, which do occur, but more rarely: (1) The instinctive-impulsive mode. (2) The random-uncoordinated mode. (3) The long-range supra-rational mode. (4) Maximizing "extended fitness" a la sociobiology (family loyalty). (5) The altruistic compassion-empathy mode. (6) The deliberately or unintentionally self-destructive mode.

Nations, to the extent to which they can be visualized as unitary actors (i.e. internally integrated by some kind of consensus or at least a tacit consent of important constituent parts) also act mainly as myopic selfish rational decision-makers. This includes decisions for peace or war. However, when two nations interact in a dyad, the results of the bilateral myopic rationality are sometimes far from what cost-benefit calculations would seem to indicate, because of the complex dynamics of the interaction. This is why we can speak of the "causes" of war rather than the "reasons" for war; thinking of the driving forces as a push from behind (in time), rather than a pull toward a future goal. That is, in Aristotle's terms, we think of "efficient causes" rather than of "final causes". Sure enough, living conscious agents are deciding, but they are at least partly driven by the dynamics of situations.

Murray Wolfson et al. ("Non-linear Dynamics of International Conflict", paper for Peace Science Society International, University of Michigan, Ann Arbor, 1991) found that war in a dyad of nations is at low values of occurrence frequency (local minima) when either a) parity in weapons or power exists between them, or b) when one of them has great preponderance of power. (There have been controversies among political scientists for a long time about which condition is more favourable for absence of war. It seems that both are right.) In the intermediate condition c), when the power ratio favours one side somewhat but not too much, the computer simulation yielded wave-like oscillations, perhaps due to the ambiguity of perception of the situation. At the stable states a) and b), there is a single attractor— (negative) peace. In the unstable region c), there is a bifurcation to two attractors—peace or war—with oscillation between them. Under certain conditions, further bifurcations can occur, leading to chaos. (One would think that there are only two alternatives in this model, war or peace, and we cannot easily imagine 4, 8etc. But all that is meant here is that there is no longer a regular (sine wave) oscillation, but alterations unpredictable enough to defy resolution by Fourier analysis.)

Other factors also contribute to the dynamics determining the state of the system. Computer simulations show tendencies to stability when economic considerations predominate (these are presumably more rational and "conservative" in the sense of risk-avoidance). However, when political considerations predominate (one would think of ethnic, religious or ideological factors here), there is divergence to either peace or war, or an oscillation; these factors are presumably more emotional, volatile-impusive, and risk-accepting. Chaotic dynamics tend to result when the oscillations are driven by high motivation for hegemony (i.e. power-seeking behaviours).

Wolfson's model is attractive because it synthesizes several theories current in peace research. Wars are frequently the result of dynamic processes of competition rather than purposive decisions based on cost-benefit calculations. Myopic rationality, especially if somewhat biased by risk-acceptance, often leads to results not expected or deliberately intended. (Even simple Prisoner's Dilemma games show this paradox.)

The road chosen at crossroads, though it appears smooth and well-lit at night, may soon lead to impenetrable thickets or treacherous marshes full of crocodiles. What we need is a map for long-range navigation, or maybe help from satellite technology.

What is the social-science analogue of this physical metaphor? A better understanding of

the long-range nonlinear dynamics would help; but it must also be supplemented by a reorientation of attitude and decision-making style, at least to long-range rationality if not altruistic universal empathy. More knowledge is necessary, but not sufficient, for wisdom; it must be supplemented by aiming at the long-range sustainability of our political (as well as our ecological) systems.

I append a quote from another Wolfson paper (Journal of Conflict Resolution, March 1992): "The apparent paradox and complexity of conflict trajectories arise as much from the nonlinear nature of the system as from a multiplicity of causes.

Convergent, explosive, oscillating, and chaotic regimes arise from the model, depending on the choice of parameters."

A NUCLEAR-WEAPON-FREE WORLD (NWFW): DESIRABLE? FEASIBLE?

Review of a book edited by Joseph Rotblat, Jack Steinberger and Bhalchandra Udgaonkar, published by Pugwash Conferences on Science and World Affairs, Westview Press, 1993, 221 pp.

This book review is written on the basis of a 16-page condensation of the book. I consider its contents so important that I don't want to wait until I have read the whole book.

The editors give a brief history of previous efforts at total nuclear disarmament, which essentially petered out after the McCloy-Zorin Agreement (really only a statement of intention) of 1962, to be replaced by a series of specific but less ambitious "arms control" treaties in the three succeeding decades. The idea of total nuclear disarmament was affirmed in the Final Document of the First U.N. Special Session on Disarmament in 1978, but that was still only words. The idea resurfaced in the Gorbachev proposals in the late 1980s, and it now seems feasible, with the disintegration of the Soviet Union, and with its successor states no longer being considered enemies of the West. So are their nuclear weapons still relevant, even those remaining after the START treaty reductions are completed by 2000 or 2010?

Nuclear weapons are not relevant, either, to deterring nuclear proliferation or conventional wars. North Korea and North Vietnam were not deterred by U.S. nuclear weapons, or Afghanistan by Soviet ones, or Argentina by British ones; and Iraq tried to engage in proliferation under the present nuclear regime, as did others. How exactly do proponents of retaining nuclear weapons visualize their use in "low intensity conflicts"?

The main rival idea to a NWFW is minimum deterrence, in which the main nuclear powers retain only a few hundred to 1000 weapons each. This would be way below present levels, but still way above Hiroshima levels if used. The argument for a minimum deterrence world is that it is more stable with respect to "cheating", i.e. one or more states hiding a few weapons and then blackmailing others. The counter-arguments are: (1) proliferation would probably ensue, (2) political changes in a NWFW would greatly increase mutual confidence and trust, so that cheating would not be considered productive in the new political culture, and (3) verification could be made stringent enough in a NWFW. This last point is the main argument developed in the book.

Verification would include 3 aspects: (1) Make sure that there is no diversion, either from the nuclear weapons stockpiles or from the fissile materials stored at both military and civilian reactor sites and production or separation plants. This would be done by procedures similar to the present IAEA safeguards conducted under the Non-Proliferation Treaty, but improved to close loopholes which became apparent in the Iraq case. It should be preceded by making an inventory of fissile materials so far produced (a giant task)—although there would be a considerable allowed margin of error here.

(2) Make sure that existing production facilities are dismantled and no new ones are built. This would require comprehensive ("anytime, anywhere") and intrusive (on-site) inspection. Also, existing stocks of fissile materials would have to be disposed of under international supervision, either by using them as feedstock in civilian power reactors (if these are wanted), or "denaturing" the U-235 with U-238 and "transmuting" the plutonium in particle accelerators, or permanent storage in rocks or salt mines, or shooting them by rockets into the sun.

(3) Make sure that no state has concealed any nuclear weapons or fissile materials. Here, on-site inspection and technological means of verification would be supplemented by "societal verification" (citizen reporting), the main innovation advocated in this book.

Under societal verification, the NWFW treaty would declare that it is the RIGHT AND THE DUTY of every citizen to report any suspected violation to the inspectors; and each state would enact NATIONAL LEGISLATION to put this into effect. The recent spread of democracy in the world makes this more feasible; but even in totalitarian Iraq there has been information from defectors. Physical scientists would play a major role here, because of their greater knowledge in nuclear matters. If necessary, there would be provisions of asylum for any whistleblowers under threat of retaliation.

The NWFW treaty, after receiving sufficient ratifications, would be binding on all states, even non-signers. There would be no provision for withdrawal from the treaty. The U.N. Security Council could order sanctions against violators who refuse to comply after receiving several levels of warning. The sanctions could be economic or military, but of course by conventional means only.

Further study and discussion is invited, but the book is quite comprehensive as it is. It should be carefully studied by all who now consider a nuclear-weapon-free world not only desirable, but also feasible. Even if you don't consider it feasible before reading this book, the book, with its rich details, will convince you.

BASIC NEEDS.

"Basic human needs—elemental needs—are intrinsically different from other material needs, because they can be satisfied. Other needs appear to be insatiable, as consumption pattern clearly demonstrate." (George Brown Jr., Representative, Dem. California, US Congress.)

This needs some amplification. The basic human needs are usually considered to be food, drink, clothing, and shelter. Not all kinds of these are elemental, i.e. necessary for survival in good health. Regarding food, specific amounts of nutrients (proteins, carbohydrates, fats, vitamins, and minerals) are needed, but the specific form in which they are supplied is not important; e.g. gourmet food is a luxury, not a necessity. (Note that the definition of "elemental" specifies not just bare survival, but also good health.) Similarly regarding drink, water is the only necessary ingredient; all other drinks (soft or alcoholic, coffee and tea) are luxury. (Milk is considered a food.) Regarding clothing, enough is needed to provide protection against heat or cold, rain and wind; esthetic qualities and pleasing appearance are a luxury. Regarding shelter, simple walls and roof with door and window would seem sufficient, with enough room for beds, table and chairs; larger houses and more furnishings are luxury.

It is not that luxuries are to be denied to people—they add to the enjoyment of life—but we are striving for clear definitions. Nevertheless, it is already evident how insatiable the desire for luxuries can be. There seems to be no definable limit to high quality in food and drink, elaborateness and high fashion in clothing, or spaciousness and decoration in living quarters.

In addition to these four types of luxuries, there are also luxuries of other types: automobiles and bicycles for transportation, radio and television for entertainment, telephone and fax for communication, books for education, musical instruments for artistic expression, and access to public amenities such as trains, planes, buses, schools, parking lots, libraries, museums, concert halls, lecture halls, churches, playgrounds, parks, sports facilities—sometimes for a fee, sometimes without a fee.

None of these are essential for survival and good health, and yet they do add not only to happiness, but often to mental and spiritual development. Yet again, the desire for them is insatiable, both as to quality (e.g. faster cars) and quantity (three cars per family, a radio in every room).

There are also labour-saving devices for the household, which count as luxuries: ovens, toasters, vacuum cleaners, washing machines, dryers, microwave ovens. Again, there seems to be no limit as to quality and quantity desired. New devices are appearing all the time.

It is not just that the desire for luxuries is insatiable; often it is artificially created by advertising. Good examples are cosmetics, perfumes, high fashion clothing, and jewelry.

There is one type of basic need that was traditionally not included, because it was taken for granted: clean air and water, and safe, crime-free streets. Because of increasing pollution and rising crime rates, the satisfaction of these basic needs is no longer automatically assured, and should be explicitly added to the list. This also applies to protection against ultraviolet rays from the sun, which used to be provided by the ozone layer before it suffered anthropogenic damage.

Now it seems that some of our luxuries are in conflict with these additional basic needs, especially the ecological ones. Our desire for pleasant living interferes with our need for health. This may get much worse with time, until our very survival is threatened. Examples are spray cans which cause ozone layer damage, rich foods which predispose us to colon

cancer and cardiovascular diseases, smoking which causes lung cancer, alcohol consumption which leads to cirrhosis of the liver, automobiles which produce urban smog and highway accidents, detergents which pollute rivers and streams, and many others.

Logic would certainly dictate that basic needs should be satisfied before luxuries, but that often does not haPpen, because the cause-and-effect connections are delayed, not immediately obvious, and sometimes unconsciously denied, because in the meantime we have become addicted to the luxuries.

Addiction is an apt metaphor for this condition. Sometimes it is literally an addiction, as with cigarettes and alcohol. We crave the luxuries (cars, whipped cream and other rich and fatty foods, coffee, expensive holidays, big houses); giving them up would cause withdrawal symptoms—yet continuing to indulge in them is wrecking our health. The addiction is partly due to the increased social status that goes with conspicuous consumption as perceived by others. These luxuries become a part of our self-definition, our social identity. They will be extremely difficult to give up.

However, if we are to live in good health (which includes a healthy environment), we would have to give up only the pernicious luxuries, not all luxuries, as here defined. The ones that contribute to spiritual and mental development (churches, schools, libraries, museums, concert halls) or to entertainment (sports, parks, playgrounds) usually do not damage the environment—though perhaps golf courses take up too much land and water, and travel entails some air pollution and consumes fossil fuel energy.

The problems may be social rather than environmental—the unequal distribution of goods and services. If the luxuries of the upper classes detract from the satisfaction of the basic needs of the poor (this means their health and survival!), then a social injustice has been committed and human rights have been violated, even if this happens structurally and systemically, rather than intentionally.

Let us then formulate some principles about basic needs and luxuries.

The first principle is that the basic needs of all humans must be satisfied before anyone gets to enjoy any luxuries. We are very far from observing this principle in the real world.

The second principle is that luxuries which damage health or the environment should be avoided. Not only should we not damage ourselves, but we must not harm others or the world as a whole.

The third principle would allow first the luxuries which contribute to mental and spiritual development, especially the simple ones, such as books, libraries, and elementary schools. (Education is almost as basic as health, but not quite.)

The fourth principle would give priority to simple machines over complex machines: bicycles over cars, treadle sewing machines over electric ones, wringer washing machines over automatic ones, brooms and mops over vacuum cleaners, cloth diapers over disposables, hanging out the wash over electric dryers. These are yesterday's technologies, but some of us still remember them fondly, and we did not feel hard done by when using them. They save on electric power and fossil fuels. The muscular effort is beneficial to health: why drive everywhere and then buy expensive exercise machines to prevent obesity? These technologies have been called "intermediate" or "appropriate". though the definitional lines of demarcation from "high" technology are sometimes vague.

By observing these guidelines, we might achieve a lifestyle that would be just and sustainable, as well as healthful and satisfying. Addiction to harmful luxuries can be cured, if

we could abolish the advertising that is equivalent to drug-pushing, and learn to derive our sense of identity from our real achievements rather than from conspicuous consumption.

SPRING FEVER: A CREEPING DESPAIR.

March 1993.

Something seems familiar about the transition from a Cold War sickness to an ethnic turmoil sickness in the world at large. I try to remember what it is that it reminds me of. Then I know: the time when I finally emerged from a bladder infection just to be immersed in an intense digestive disorder, probably caused by the antibiotic that cured the first complaint. The feeling is one of desperation at the chain propagation of adverse circumstances. What will curing the second disease produce? A third one?

Outside, the snow and ice of this long winter will not go away, though it is already late March. The Blizzard of 93 hit us last week, but even that was not this winter's last call. The blizzard was like the Gulf War, but now we still have Yugoslavia, Cambodia, Angola, Somalia, SudanAnd now an internal crisis in Russia. Will the Cold War return? The nuclear weapons are still in place and still targeted. It is like the bladder infection returning while the digestive distress is still raging. I could not stand more antibiotic. This is truly, truly desperate.

Yet I did pull out into the sunshine of full health. And spring will probably come, if the long past record of the seasonal cycle is any guide. But in world politics there are no precedents, only raw reality.

I feel small and helpless and vulnerable, but I will not give up. What else is there to do? It's not over till it's over.

June 1993.

The weather is gorgeous, but my despair continues. I am a political orphan. The NDP that I have always favoured with votes, membership, and money, has turned into another God that failed. Bob Rae in Ontario is going down the same Mulroney-Reagan-Bush-Thatcher path of neo-conservatism as all the world's politicians, even—especially—in Eastern Europe, even SwedenIf this is the end of history, it is the end of all aspirations to a just and sustainable society—yes, probably the end of human history on Earth, in the non-Hegelian sense. How can we louse up like that?

The Tory convention is over and Kim is our new woman Prime Minister, but she is a non-feminist woman and a helicopter-lover. I couldn't care less, it no longer concerns me. How can I possibly vote in the coming election? I am a motherless fatherless orphan wandering in the wasteland, singing my old sweet song that nobody listens to or even remembers.

The Canada that I have known and loved has been almost dismembered. My favorite night train to Ottawa is gone, the Post Office has become inefficient and expensive with new machines and will probably be privatized, many of my favorite CBC radio programs are gone, the baby bonus was abolished, there is increasing talk about charging user's fees in the medical plan (my own daughter-in-law Merrill is writing Ontario government briefs in favour of it), they may run out of money in the old-age security pension plan, they got rid of the Science Council, the Economic Advisory Council, the Institute for International Peace and Security. The policies are oriented toward debt repayment, export competitivness, privatization, fighting inflation—exactly like the "structural adjustment" of the IMF and World Bank plan for Jamaica, only we are doing it to ourselves. We are turning ourselves into a Third World country, under Tory leadership with Liberal and NDP connivance.

The United Nations which I have always supported has turned into an obedient tool of Pax Americana, and its peacekeepers are killing civilians in Somalia. They call it "Operation

Renewed Hope". George Orwell would enjoy that. Canadian peacekeepers in Somalia are shooting local people because they (the Canadians) are racists and neo-Nazis. (This is the responsibility of Kim Campbell's department.) Where, o where can I turn?

DIFFUSION AND ABOLITION OF WAR.

We maintain ourselves as a single species by maintaining gene flow continuously through space and time. That is, we remain capable of mutual inter-breeding (the definition of a species) by practising mutual inter-breeding. As usual, practice makes perfect, and its absence would lead to splintering and decay.

We could segregate into pure races and eventually varieties by in-breeding, and these could in time become separate species no longer capable of coalescing back together. One shudders to think what that would do to domination and oppression structures, slavery and warfare. Somehow, fortunately or by an invisible hand, we have been driven to avoid this catastrophe, by our wandering and philandering nature.

Anthropologists still argue whether modern humans (I dislike the modifier "sapiens", which is so prideful and presumptious, and probably misleading) originated in a single place (probably Africa, or even from a single woman) and diffused from there, or whether they originated in several places in parallel, almost simultaneously. The same question (single origination plus diffusion, versus multiple origination plus separate growth in place) can be asked about languages, about myths and fairy story themes, about religious ideas, and in fact about any cultural construct. As we have seen in the first paragraph, it applies to biological constructs as well.

One of these cultural constructs is war. It is obviously a cultural invention, not a natural condition, since animals do not have it. (There is aggression and violence among animals, though rather rarely against members of their own species; but it is never organized slaughter on a mass scale.) Was there a single original locus from which war spread to other parts of the world, or did war originate in several places at once by an independent development?

The latter would imply that war followed from certain social pre-conditions, such as the agricultural revolution which produced a surplus of food so that some people could specialize in other pursuits; and the introduction of metals, especially iron, from which more effective weapons could be made. Agriculture would give us possessions to defend or capture as well as a food surplus so that a class of professional warriors could arise. As William Eckhardt states ("Wars, Empires and Civilizations"), we had something to fight for and something to fight with (the new iron weapons).

In his long-range study of war, Claudio Cioffi-Revila concludes that war originated independently in three locations: Middle East, Far East, and Meso-America. These places were not in touch with each other in the remote past, but underwent similar cultural development in parallel. (This is somewhat similar to convergent evolution: different classes of animals developing similar adaptations to the same environments, even though their evolutionary origin differs.) Separate loci of origin do not necessarily contradict Eckhardt's theory on how war originated from socio-economic conditions, since agriculture and iron metallurgy existed in all three of these places. However, these conditions also existed in some other places which did not sprout war. In other words, agricultural surplus and iron weapons are necessary, but not sufficient to give rise to the phenomenon of war. However, once invented in these three places, the war habit diffused everywhere, until it became a universal human practice

Now we are faced with the task of abandoning this institution of war, because it has become too destructive by the invention of technologies way beyond iron metallurgy. Even hard-headed cost-benefit analysis indicates that defending or capturing possessions is not worth the price of total destruction. But unfortunately holy wars for religious or ideological reasons do not follow the rules of rational cost-benefit analysis. On the other hand, humanitarian and

moral considerations are not totally absent from human thinking either, and some of these flow from these same religious and ideological systems. It will be of vital importance to see which of the Janus-like streams of religious thought humanity will follow.

Will the abolition of war (if that is the shape of the future) come from a single place or crucial event (some say a super-serious crisis or a good scare), or will it arise spontaneously in parallel in several places, or even, by some kind of a "Hundredth Monkey" mechanism, all over at once like a super-contagion? At this time (1989-1993) of very rapid changes in world political conditions, anything seems suddenly possible.

Bruce Russett's and Kenneth Boulding's idea of zones of stable peace, as well as Karl Deutsch's concept of a security community (reminiscent of the Palme Report phrase "common security") points to several locations from which war abolition might diffuse: Western Europe, Scandinavia, North America, Australia-New Zealand; these are the industrialized countries of the "North", even though A. and NZ are hardly North geographically. By no means has the abolition of war spread all over, for we still have zones of stable war ("shatterbelts") along which war can spread and where war is endemic; along the continuous chain of contiguous nations (called "the Fuse" by A. and H. Newcombe) which runs like a giant political earthquake fault from Southern through Eastern Africa through the Middle East and South Asia to Southeast Asia. The end of the cold war in the North has not abolished war in the South, only somewhat re-arranged it.

It is impossible to predict or even perceive the direction of historical development while we are in the midst of it. The habit of nonviolent people power is certainly diffusing, from Gandhi's India to Norway and Denmark under Nazi rule to Black America and M.L King to Prague under Soviet occupation to Poland and Solidarity to Iran's overthrow of the Shah to the Philippines overthow of Marcos, then in rapid succession to the fall of the Berlin wall and the East European revolutions (most of them "velvet" except Romania) of November-December 1989 and the failed Soviet coup of 1991. Diffusion can be much more rapid now than ever, since we live in an age of almost instant global communication. The human species is united now by more than just gene flow; also by the "bit flow" of techno-communications and the "meme flow" of ideas.

In the world unification direction (the other major model of permanent peace besides principled nonviolence), the U.N. is growing stronger, but perhaps coming under U.S. domination and becoming more war-like in its peace-keeping. (We hear daily of Somalian civilians killed by U.N. peace-keepers, as well as vice versa.) While universal and regional supranational agencies grow in number and stature (quantitative growth), they are lagging in the benefits they confer on the world and the effectiveness of their performance (qualitative deficit). There is a "democratic deficit" as well—the world's people have no direct output through elections to a world body.

Also, there are trends in the opposite direction: (1) the splintering of previously unified national federations, such as the Soviet Union, Yugoslavia, Czechoslovakia, and perhaps soon Canada (the latter two, fortunately, being "velvet" or nonviolent); and (2) separatist movements in many other places: the Kurds, the Basques, the native peoples and aborigines in the Americas and Australia, the Siberian peoples of Russia.

It is not entirely clear if all the globalizing movements are good and all the splintering movements are bad. Trading blocs like Maastricht and NAFTA may be mixed blessings, and splintering of nations is part of the movement toward democracy (which is associated with peace) as well as of nationalism (which is associated with war). Pehaps both movements, up or down the size scale of socio-political units, are only steps in the gradual abolition of nation-states—a development that would certainly prove beneficial, since wars have been traditionally waged by states.

How can we, deliberately and consciously, and also rationally if possible, promote and speed up this historical development toward the abolition of war? There are several indications: (1) Eckhardt would say by eliminating oppression, domination, exploitation, inequality and imperialism, since the development of all these tendencies accompanied the origination of war in the dim distant past. (2) By widening the regions of stable peace and shrinking the areas of stable war; but that is more easily said than done, for these have developed by some kind of quasi-natural, probably semi-chaotic process whose dynamics are not yet understood. (3) By promoting the spread of nonviolent people-power and civil society—though these could sometimes be used counterproductively (like any power), e.g. for racist ends. (4) By improving the peaceful qualities and effectiveness of international organizations, while still adding a few more to the quantity, such as a U.N. People's Chamber, an International Criminal Court, and an environmental agency with real power. (5) Eventually these must be coordinated by some kind of a rationally organized world government, responsible to the world's people in a democratic way.

What sings in my head is the old church hymn that we sang while joining hands as we walked from the inter-faith service to the annual peace walk in Hamilton, Ontario: "Peace is flowing like a river, flowing through you and me, peace is flowing like a river, setting all the captives free."

GROSS VIOLATIONS OF HUMAN RIGHTS.

There are two kinds of human rights. I am not thinking now of the distinction between civil-political and economic-social-cultural rights as distinguished in the Universal Declaration of Human Rights; nor of the distinction between individual and group rights. These distinctions are valid in their context; but I wish to draw attention here to something quite different.

The distinction to be made is between gross human rights violations (GHRV) and milder kinds of violations; though, of course, all violations should be avoided. Perhaps the difference should be regarded as one between crimes and torts; though both are illegal acts, crimes are much more serious. Or, in religious ethics terms, it is like the difference between deadly sins and venial sins.

GHRV refers to acts such as genocide, torture, death squad murders, disappearances, abductions, slavery, mass rape, and ethnic cleansing. These are actions resulting in death, maiming, physical pain, bodily violation, total deprivation of freedom, and total deprivation of home and means of livelihood. Besieging of cities with the aim of mass starvation of the inhabitants should be included, as well as deliberate blockage of food or medical aid to stricken areas. Acts of war, such as the bombing of civilians in cities is of a similar nature, and is excluded by the rules of the just war and the Nuremberg war crimes trials, though this has been widely disregarded in 20th century practice by all sides.

I would argue that these acts of GHRV constitute crimes against humanity, in stark contrast with violations of such rights (enumerated in the Universal Declaration) as the right to freedom of speech and assembly, the right to a fair trial, the right to vote, the right to health and education, the right to employment and to vacations with pay. These can be seen as minor and peripheral, though still not to be condoned, in comparison to killing and maiming of victims. The milder violations prevent the fulfilment of the higher human needs, in Maslow's hierarchy of needs; while GHRV take away life itself and the basic preconditions of life.

Why is this distinction important? My interest in this is not purely academic. If a government engages in GHRV against its own citizens, the international community (probably the U.N.) should have the duty (not just the right) of humanitarian intervention to save the endangered population. If the minor rights are violated, national sovereignty should prevail and outside action should be limited to diplomacy and public censure—though this should be very explicit and always forthcoming, no matter whether the violations are by our allies or our enemies, by the weak or by the powerful. Impartiality and even-handedness is very important here.

So the distinction I am making should have legal and practical import and consequences; it is not meant to be a mere scholarly classification. The economic and social rights, especially, cannot always be fulfilled in very poor countries; it may be physically and economically impossible. In that case, they should still be stated and considered as a future aspiration; but their absence should not be too harshly censured by outsiders, unless they are offering concrete material help.

Humanitarian intervention in cases of proven GHRV should preferably take the form of economic sanctions (food and medicines excepted). If military sanctions are required as a last resort, the rules of the just war and of the Nuremberg war crimes trials must be strictly followed (far more strictly than is normally done), especially proportionality, exhaustion of all other options, and no harm to the innocent. These rules should not only be stated as general principles, but codified as binding international laws. The U.N. in its operations must be subject to law just like nations, individuals, corporations, and everyone else. In democratic states, the government is not above the law; and in the world, the U.N., as an embryo world

government, must not be above the law either.

U.N. peace-keepers are rightly present in Somalia, for example; but have not always behaved correctly. Their role in Yugoslavia, on the other hand, may be too minimal; but this is probably dictated by practical considerations: the U.N. is not strong enough to stop the abuses, and might actually escalate the killing if it tries to intervene. After all, another rule of the just war is that one must have a reasonable expectation of success.

In any case, new and clear rules are needed for future U.N. peace-keeping. One significant step in this rule-making process would be the definition and codification of gross human rights violations and the specification of steps for dealing with it by way of humanitarian intervention. This rule-making and codification process must begin soon, for the need is urgent.

ON VIOLENCE.

Society on the macro or micro scale has diseases, just as individuals do. A bodily disease is a disturbance of organismic function, such that some goals are no longer reached and smooth and harmonious performance is no longer maintained.

A society too has goals, a performance to be maintained, and values to be realized. Diseases of the social organism are denials of values—of truth, freedom, justice, peace, and love.

The greatest of these diseases of society is violence, which in the extreme case is a denial of life itself—the seedbed from which all other values grow. Violence, the supreme denial, grows often out of the denial of other values—by ourselves and by others, to ourselves and others. For example, false propaganda is a denial of truth, alienation is a denial of community, coercion is a denial of freedom, exploitation is a denial of justice, conflict is a denial of harmony, hate is a denial of love. Violence is often the result of these multiple denials.

Violence, whose extreme form is infliction of physical harm, even death, can be generalized as deliberate infliction of pain, including psychological or mental pain. This can be done for instrumental reasons (for person or group X to attain a goal incompatible with the goal of Y) or for expressive reasons, as an explosive emotional outburst.

Violence is not the same as conflict, but it can result from conflict. Conflict can be creative when it brings into the open hidden grievances or contradictions, so that they can be resolved or reconciled or accommodated. How could one reconcile what one does not know or acknowledge? Social conflict can, if it is creative, move society to higher justice or higher freedom or higher harmony or higher order. However, even creative conflict is painful, like teething or growing pains or labour pains—none of them a symptom of disease, but a manifestation of the life process. Conflict can be non-violent, with no intentional harm inflicted, though pain will still exist.

Unlike conflict, violence is always destructive. Some try to justify violence on various grounds: to attain or maintain other values (e.g. freedom or justice). The real reason, however, may actually be a deadly sin like pride, greed, envy or jealousy, though the justification or rationalization is made to sound high-minded. And we get to truly believe our justifications, and kill and maim for the sake of truth, freedom, justice, or even love.

As selfless fanatics for high-minded causes, we are far more dangerous than selfish grabbers of power or riches, because our conscience (which we personify as the voice of God) is then on our side, and no moral inhibitions hold us back from even the most horrendous atrocities. Right-wing fanatics will fight for law and order, for traditions, for God and country. Left-wing fanatics will fight for freedom and justice, equality and liberation, progress and social change. Each thinks that the infliction of pain is temporary, instrumental, lasting only until the goals are achieved, after which everyone will live happily ever after in a new Utopia. That is, everyone except the traitors and heretics and unbelievers—but these are not seen as fully human, which is what makes it possible to kill them.

But the perceived need for violence keeps returning, like the craving for an addictive drug, and the "happily ever after" recedes into the future, forever just beyond our reach, like the end of the rainbow.

The result of violence, beyond the immediate death and destruction, is the oppression and domination and exploitation which follows the surrender of one side. The losing side is at the victor's mercy and experiences the long-term "structural violence" which follows, in the form

of slavery or colonialism, marginalization and loss of land and livelihood. This has been the historical experience, and it continues to this day.

"Structural violence" means the shortening of the natural lifespan as a result of preventable illness or deprivation, quite often in the form of infant and child death because of malnutrition and disease. Structural violence also means a deterioration of the quality of life, e.g. by protein shortage during perinatal life causing permanent brain damage and mental retardation.

Direct (intentional) violence and structural violence are convertible into each other, like kinetic and potential energy during the swing of a pendulum. At the top of its swing, the pendulum has only potential and no kinetic energy; at the bottom, when the rod is vertical, there is only kinetic and no potential energy; at intermediate positions, there is some of each. Similarly, in periods of (negative) peace after a conquest, there is only structural violence and no direct violence; in a period of active warfare (for example a liberation struggle), there is mainly direct violence. Each side tries to achieve victory, i.e. end up as dominator instead of dominated, predator rather than prey; i.e. to avoid structural violence to itself while able to inflict it on the other.

Similarly, in establishing the "pecking order" among barnyard chickens, direct violence (pecking) is practised until it becomes clear who is the dominator over whom and who is dominated by whom. When the domination hierarchy has been established, there is no more need for direct violence, i.e. active pecking. There is hierarchical order, there is negative peace. But the underdog (under-chicken?) gets less food and suffers from chronic anxiety; it is less healthy and probably finds no mates to reproduce. The poor creature at the lowest rung of the social ladder suffers from "potential" violence, expecting to be pecked at any time; and this potential violence is like the potential energy in the pendulum metaphor.

Peace research, as part of human betterment research (K. Boulding's term), is like medical science, which tries to cure or prevent diseases. The disease which peace research tries to cure or prevent is violence at all levels, not only war between nations; though priority must be given to the prevention of all-out nuclear war which might be totally destructive. Other parts of human betterment research would be justice research, freedom research, etc.

The aims of peace research are: (1) To understand violence and conflict. (2) To predict their occurrence or their likelihood from preceding (usually multiple) causes. (3) To treat or cure or ameliorate the symptoms and after-effects of violence when it has occurred. (4) To prevent violence from occurring, on the basis of the understanding gained and the predictions made.

Thus the aim is to falsify one's own predictions, as happened to Jonah in Niniveh in the Bible story, when he warned the people of Niniveh that the Lord will destroy their city unless they repent. They did repent and reformed, and the city was spared. This made Jonah a false prophet in the sense of predicting the future, but a huge success as a social change agent. Peace researchers basically try to follow Jonah's example.

What are some of the causes or roots of violence? We can divide them into two broad classes: individual (psychological or biological) and social (political, economic, or ethical). Interpersonal or inter-group violence can be caused by any of these, or all of these, or any combination. Single causes are far less likely than multiple causes. Most "causes" are only contributing factors; hardly any are either sufficient or necessary, let alone both sufficient and necessary. Violence usually results from a confluence of contributing factors—pictured as a convergence of arrows from many sides. This can be modelled as mutual-reinforcement cascades of positive (amplifying) feedback; in other words, a (vicious) synergy.

However, wars are different in some respects from interpersonal and inter-group violence.

Although in a sense wars are a translation of generalized violence to the top societal level, new emergent qualities come to light in this elevation of levels, as is so often the case in general systems. Wars, whether civil or international or a mix, are defined as ORGANIZED MASS VIOLENCE, and those two modifiers make this type of violence into a new phenomenon.

Wars are much more likely to be due to social than to individual causes; in fact, one could almost rule out individual causes altogether, except for some rare cases of crazy leaders. The human aggressive instinct (if it indeed exists) or anger/rage resulting from frustration are singularly unconvincing as the causes of anything more than spontaneous individual outbreaks—neither "organized" nor "mass".

The soldier in the battlefield does not fight because he is angry (though he may get angry later when he sees his buddies killed or injured); he fights because he is ordered to fight by his superiors. Conformity or compliant aggression, as exemplified in the famous Milgram experiment (many subjects obey when instructed to give painful electric shocks to others with whom they have no quarrel), is a very convincing cause of war-like behaviour of soldiers under battlefield conditions. It is not so much the fear of punishment for disobeying orders, as the simple habit of blind obedience, inculcated by long periods of "basic training" and bayonet practice and the like, that is operating here. Obedience is also the main cause of that one-sided war called genocide.

However, the explanation of obedience or conformity does involve psychological mechanisms, though not of the "aggressive instinct" type. The whole complex of the authoritarian or compulsive personality is involved, as explained in detail by William Eckhardt in his book "Compassion".

Such a personality develops from a childhood upbringing which is too restrictive, punitive, unloving, neurotic, or inconsistent. This style (or styles) of upbringing leads to a lack of self-esteem in the child, which the child then projects unto others in the form of misanthropy and distrust. ("If I am no good, other people are no good as well.") Later, in the adult, this attitude is rationalized as a theory of human nature as depraved and basically evil, whether by "original sin" theories of fundamentalist Christians or "aggressive instinct" theories of the followers of Konrad Lorentz and Robert Ardrey.

From these theories then follows the belief that human behaviour must be strictly controlled, through threat of punishment or actual punishment—in other words, fear. We must all live under the threat system (cf. K. Boulding), not the exchange (reciprocity) system or integrative system, of which (we are convinced, if we are authoritarian personalities) we are incapable. While perfect love casts out fear (a part of the Bible which the fundamentalists do not seem to read), the perception of the need for fear casts out love—makes it an outcast. We fear God, rather than love God.

The resultant attitudinal complex contains authoritarianism, dogmatism, militarism, nationalism, conservatism, anti-hedonism, and conventional religiosity. Such a person will obey orders to hurt or kill others, especially if these "others" have been dehumanized by propaganda as either evil or sub-human. This tendency is reinforced if the situation is one of extreme stress (as in a crisis), but it can be manifested even in situations of calm. The tendency can also be accentuated if the issues in conflict are seen as highly salient or vital, i.e. if zeal and fanaticism is present; but again, this is not wholly necessary for such obedience to occur. This is, indeed, a picture of the converging arrows of contributing factors, neither of them quite sufficient or quite necessary, but together a witches' brew of a malevolent explosion.

Thus, without the benefit of brain tumours, extra Y chromosomes, aggressive instincts, testosterone overdose, or individual frustration, we can get such explosions of mass

violence as Belsen, My Lai, Hamburg, and Hiroshima, and whatever else the unmerciful future may bring.

The remedy? (We did say that peace research aims to prevent, not only predict, the ravages of disease.) First, the bringing up of children in a loving, caringly permissive, and consistent moral environment, in which adults set good examples rather than merely preaching about right conduct and character.

Secondly, avoiding propaganda attempts to dehumanize anyone, even if it at first sight some individual leaders seem to deserve it; and resisting mentally the influence of such propaganda if it is beamed at us. ("The truth shall set you free", says the Bible.)

Thirdly, never performing acts that we are ordered to do without first measuring them against the yardstick of our moral conscience, regardless of the exalted or superior social positions of the person ordering it. This may involve active civil disobedience at times, even at great personal danger; but we are obliged to do it under the higher law of the Nuremberg War Crimes Tribunal's precepts.

Fourthly, trying to prevent crises or stressful situations or mutual frustrations; this may involve international (United Nations) mechanisms of preventive diplomacy or preventive peace-keeping.

Fifthly, staying away from fanatical beliefs of any kind; never claiming absolute truth for which we must fight, perhaps even giving up on the Utopia of a future perfect world. Leonard Cohen ("The Future") warns us: "Forget your perfect offering	There is a crack in everything	that's how the light gets in."

U.N. HUMANITARIAN INTERVENTION AND JUST WAR RULES.

In recent times, the United Nations has been called upon to help deliver humanitarian supplies (food and medicines) to war-torn countries or besieged cities, most prominently in Bosnia and in Somalia. It has run into many difficulties and heavy criticism, some of it deserved, in fulfilling this task. Superficially considered. it has not done enough in Bosnia and has done too much in Somalia. What would be the right amount and appropriateness of humanitarian aid, the right timing and the correct means? This is a very new area of international involvement, and new rules must be formulated, which would be universally and impartially applicable, and yet could be flexibly adapted to the circumstances of each particular case.

Humanitarian intervention is undoubtedly a violation of the principle of national sovereignty and non-interference in a nation's domestic affairs. These have been principles of international law for the last 300 years at least, but they are no longer appropriate to our increasingly inter-dependent world. We should not shed any tears for the passing of the era of national sovereignty, if indeed that is what is occurring. That era and that principle has cost humanity dearly in both blood and treasure. It is high time to invent a better principle to rule the future. But we must be sure that it is indeed a BETTER principle, or we may slip from an imperfect world into a worse one, instead of rising to a better one. The New World Order must be not only new, but an improved version. Change is not always necessarily for the better.

What might some of the new rules for humanitarian U.N. intervention be? Some tentative suggestions are given below.

(1) Intervention should take place only if "gross violation of human rights" (defined as genocide, torture, death squads, mass rape, expulsions and ethnic cleansing) are occurring, or if the people are deprived of the basic necessities of life, such as food, clean water, housing, clothing, and basic health care, e.g. vaccination of children against preventable diseases and supply of rehydration packets to overcome cholera and similar problems.

Intervention should not occur in cases of milder violations of human rights, such as freedom of speech and assembly, freedom of the press, lack of democratic elections, the right to work or to a decent standard of living or education, i.e. the rights enumerated in the U.N.'s Universal Declaration of Human Rights in its 30 articles, and the Human Rights Covenants formulated on the basis of the Declaration. The reason for not requiring or permitting U.N. intervention in these milder cases of violation is not because they are not important—they are; but international intervention is a very serious step which may lead to armed hostilities and further suffering, and the rule of proportionality common in Just War theory must be observed.

(2) All the rules of the Just War Theory must be applied very strictly even in cases which satisfy the first criterion. These rules are: right authority, just cause, last resort, chance of success, proportionality, and no harm to civilians and neutrals.

Proportionality has already been mentioned: we must not cause more harm than we are trying to undo. Just cause here is only the prevention and mitigation of suffering; national goals such as assured access to oil or other resources are not a just cause; neither is favouring one ethnic or religious group over another. Last resort means that negotiations, diplomacy and mediation must come first, then economic sanctions (and even these under rules minimizing harm to innocent civilians, especially children), and extremely rarely military force, preferably only in a defensive or protective mode, e.g. accompanying food convoys. Chance of success would mean, concretely, avoiding intervention in Bosnia if it would actually aggravate the situation, resisting the moral pressure of public opinion and the

media "to DO SOMETHING". The two other rules require special separate comment.

(3) The principle of "Just Authority" in this case must mean only the United Nations, not delegating this responsibility to the U.S. or any other particular national government. Even the detailed conduct of operations should be under U.N. auspices and daily U.N. supervision, to prevent suspicions of anyone pursuing their own particular interests, favouring its own allies, making side deals, etc.

Even the present U.N. Security Council is not an ideal instrument, being under the thumb of its Five Permanent Members, who (being great powers) certainly have their own national interests at heart. To give the U.N. proper legitimacy as the Just Authority, it needs to be democratized. The particular reforms needed will not be described here (it would take us too far afield), but are obviously urgently necessary.

(4) The principle of causing no harm to civilians applies also to the use of economic sanctions, not only the use of armed force. Food and medicines for civilians must be allowed to pass through any blockades; and not only permitted to pass, but their safe passage must be assured by proper supervision. Otherwise, measures intended to serve the humanitarian needs of civilian populations in the long run may harm these same populations in the short run, and that is no gain. Airtight sanctions which do not let food and medicines pass are like the siege of cities, a condition we are trying to alleviate, not impose.

(5) Since we know now from peace research that democracies do not fight wars with other democracies, this might be an additional reason for strongly promoting the conversion to internal democratic regimes around the world. Note that this does not necessarily mean a market economy or capitalism; merely elections, multi-party systems, press freedom, and freedom of expression.

It was said above that we should not have international interventions in these cases of "milder" violations of human rights. This was meant to indicate that armed intervention would never be justified in such cases; but perhaps, when a democratically elected leader is ousted by a military coup, as happened recently in Haiti (or many years ago in Chile), the international community is obligated to impose economic sanctions. This in fact has been done in the case of Haiti, so far without effect. (In the case of Chile, the sanctions, by the U.S. and the IMF, were actually against democratically elected Allende, and were lifted after his forceful removal and his violent death; showing again how impartiality is not only lacking, but actually reversed at the behest of superpower national interests.)

The above recommendations are very tentative and preliminary. They are offered here merely as an illustration of the type of principles and general definitions needed for the proper and moral conduct of international humanitarian intervention. Much more thought must be devoted to refining such principles and adding to them in the light of practical experience. Not much time will be allowed to us for learning from our mistakes. The actions and operations conducted so far have been faulty on many accounts, although some credit should also be given for earnestly trying and occasionally succeeding. The main purpose of criticism should be to strive for a speedy improvement.