



# Inequality, global change and the sustainability of civilisation

*The increasingly global capacity of civilisation to manipulate natural and human capital has fuelled faith in the economic conceit that humankind can be freed from its dependence on nature. In addition, enormous wealth, enjoyed by a small proportion of the world's richest people, in large part derived from exploitation of its poor and least empowered populations, is justified by doctrines of 'wealth and health for all,' in the face of mounting contrary evidence.*

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**G**lobal inequality contributes substantially to environmental brinkmanship. The powerful exhibit contempt - for the poor, for nature, and for the future - of breathtaking scale. In this paper, humanity is compared to the travellers on the Titanic. Most live in steerage, unable to sense the iceberg's proximity or to escape. Above deck, the privileged enjoy entrancing conversation and entertainment. If, as in 1912, the unthinkable should happen, they know they have disproportionate access to the lifeboats.

Those who escaped the Titanic reached the safety of New York. But if human demands on natural capital exceed the "environmental Plimsoll Line" then we risk not only the failure of civilisation, but its collapse. Even New York may be an inadequate haven for those sufficiently privileged to access the lifeboats; the hegemony of the currently wealthy may not guarantee future security.

Safer, alternative pathways to the future do exist. The world must attempt to foster a benign, rather than malignant ecological and environmental revolution. An essential, but as yet under-recognised component of such a benign transition will be the reduction, rather than exacerbation of global inequality.

## The rise and fall of global democracy

Alex Carey wrote that the 20<sup>th</sup> century was marked by the rise of democracy, of corporations, and of the ability of corporations to distort, undermine and control democracy.<sup>[1]</sup> Carey particularly referred to democracy in western capitalist, industrialised countries (the North, or First World) but his analysis can also be applied globally.

First published in 1940, Colin Clark's groundbreaking book "The Conditions of Economic Progress"<sup>[2]</sup> drew attention to the previously little-recognised existence of the "Third World". An early reviewer of this book commented "one conclusion (is) beyond doubt: the world is a wretchedly poor place."<sup>[3]</sup>

In the decades following 1945, the wealthy countries appeared ready to learn from the barbarity and suffering of the preceding wars and intervening depression. Technological breakthroughs, many war-stimulated, were accompanied by an unprecedented awakening of concern for the oppressed, including in what came to be called the South or Third World, leading to hopes of genuine global democracy. The founding of global institutions, including the United Nations and the World Health Organisation, and the Universal Declaration of Human Rights embodied these hopes in forms intended to ensure that practice would supplant rhetoric. The will of the colonial powers to maintain their overseas possessions weakened; some colonies were freed without war.

The post war spirit saw not only the Marshall Plan, but new efforts to help the "developing countries." In 1949, U.S. President Truman's inaugural address declared:

*"More than half the people of the world are living in conditions approaching misery. Their food is inadequate. They are victims of disease. Their economic life is primitive and stagnant. Their poverty is a handicap and a threat both to them and to more prosperous areas... I believe that we should make available to peace-loving peoples the benefits of our store of technical knowledge in order to help them realize their aspirations for a better life... Our aim should be to help the free peoples of the world, through their own efforts, to produce more food, more clothing, more materials for housing, and more mechanical power to lighten their burdens. ...Only by helping the least fortunate of its members to help themselves can the human family achieve the decent, satisfying life that is the right of all people."*<sup>[4]</sup>

Twelve years later, John Kennedy declared, in the corresponding presidential inaugural address:

*"To those people in the huts and villages of half the globe, ... we pledge our best efforts to help them help themselves, for whatever period is required, not because the Communists may be doing it, not because we seek their votes, but because it is right. If a free society cannot help the many who are poor, it cannot save the few who are rich."*<sup>[5]</sup>

However, sceptics question both the sincerity and institutional support for this presidential rhetoric. In 1948, while working for the U.S. state department, George Kennan wrote: "We have 50% of the world's wealth, but only 6.3% of its population... In this situation, we cannot fail to be the object of envy and resentment. Our real task is to devise a pattern of relationships which will permit us to maintain this position of disparity without positive detriment to our national security..."<sup>[6]</sup>

Irrespective of any such conspiracies, in the early post war period the presidential rhetoric was bolstered by the rapid pace of scientific and medical discoveries, particularly of anti-microbial therapies and vaccines. These promised the cure and prevention of many epidemic diseases, including smallpox, polio and tuberculosis. The wars had also stimulated increased technological and organisational capacity, while the chemical industry led to better fertilisers and methods of pest control, including of DDT, which made the global eradication of malaria also appear plausible. New ideas and technology diffused widely, through television, radio and air transport. By the 1960s satellites were commonplace, as were, by 2000, personal computers and the internet.

In recent decades the ancient human experience of seasonal food scarcity and systematic state-sponsored violence has also seemed potentially amenable. Famines in Asia and Africa, though serious, fell far short of the scale predicted by writers such as Ehrlich<sup>[7]</sup> and Lester Brown, both of whom failed to anticipate the success of the Green Revolution. The most serious post-war famine, in China, though scarcely reported at the time, has since been widely recognised as a failure of organisational, rather than agricultural capacity.<sup>[8]</sup>

The U.S. pledge to help poor nations was mirrored by the U.S.S.R. Communism also gave hope and promised help to the masses in developing countries, and numerous doctors and other agents of development were trained in the Soviet Union, before returning to the Third World. Yet the ideological struggle between two systems, each pledging to reduce poverty, may inadvertently have sabotaged global success. The "decade of development" began with the C.I.A. sponsored assassination of Prime Minister Lumumba, in the newly decolonised Congo,<sup>[9]</sup> followed by U.S. attempts to overthrow Cuban President Castro. The U.S. then became embroiled in a politically costly war in Vietnam, fought to stop the supposed "domino effect" of Communism sweeping throughout South East Asia. In Indonesia, the West supported the anti-communist strongman General Suharto, turning a blind eye to his role in the deaths of hundreds of thousands of suspected pro-Communist Indonesians.<sup>[10]</sup> Powerful interests in the North supported numerous other corrupt regimes in the South, including Presidents Markos and Mobuto, while the Soviet and Chinese communists also supported dictators who appeared to have either little interest or ability in furthering their people's genuine development, including Mengistu in Ethiopia and the regime in North Korea.

### Globalisation and Neo-liberalism

A widespread acceptance of a greater role for government in the North paralleled the early phase of decolonisation and the rise of global institutional concern for the South. In the North, Keynesian economic policies legitimised interventions to counter business cycle fluctuations, reduced the risk of recessions and speculative booms and checking the perceived excesses of unrestrained capital-

ism. Nationalised health care and improved social security systems were widely introduced.

Keynes also helped to establish the World Bank and International Monetary Fund, though, before his death, he became concerned that these bodies would not have the independence he had envisaged.<sup>[11]</sup> For more than five decades, the World Bank, mirroring Presidents Truman and Kennedy, has repeatedly proclaimed its intention to lift the South from poverty, yet numerous critics contend that, instead, it has contributed to the globalisation of poverty and crippling Southern indebtedness.<sup>[12-15]</sup>

Following the stagflation crisis of the early 1970s, in part triggered by rising oil prices enabled by the increased concentration of oil production by the Third World-based Organisation of Petroleum Exporting Countries (OPEC), global economic policy shifted to the right, particularly in the English-speaking economies of the North. Aid to the South took a lower priority, with concern for social justice increasingly substituted by doctrines of “user pays” and victim blaming. Development, rather than through intervention, would instead occur osmotically, by a process of “trickle down,” thanks to the intrinsic wisdom of the market. This shift in global economic policy has been given many names, including “neo-liberalism”, “monetarism,” “marketism” and “economic rationalism.”<sup>[16]</sup> “Globalisation” is a multi-purpose term; many commentators combine, and at times confuse, the ancient trends of cultural convergence, increased trade and better communication with the much more recent, but not necessarily related, phenomenon of neo-liberalism.

Despite the geopolitical policy shift towards the market and away from state intervention, many global humanitarian organisations, including UNICEF and the World Health Organisation (WHO), appeared to continue to believe in the benign vision promised by Truman. WHO optimism culminated, in 1978, in the Alma Ata conference, attended by the health ministers of more than 100 countries. Primary Health Care (PHC) as proclaimed at Alma Ata, had strong sociopolitical implications. It explicitly stated the need for a comprehensive health strategy to address the “underlying social, economic and political causes of poor health.” The conference declaration called for “the attainment by all peoples of the world, by the year 2000, of a level of health that will permit them to lead socially and economically productive life. PHC

is the key to attaining this target as part of development in the spirit of social justice.”<sup>[17]</sup>

Now, barely two decades later, the Alma Ata declaration, also known as “Health for All by the Year 2000” is seen as hopelessly, almost embarrassingly, naïve. Analysis of the retreat from this and similar promises of global justice is scanty.<sup>[17,18]</sup>

### Global inequality

As early as the mid 1960s, public health workers in the South were criticising the widening gap between the rhetoric of the rich world assisting Third World development and its practice.<sup>[19]</sup> The 1960s ended with the Pearson report claiming that “the widening gap between developed and developing countries” was the central issue of the time.<sup>[20]</sup> Three decades later, the gap between rich and poor has widened much further. The United Nations Development Program (UNDP) calculated that, in U.S. dollars, the ratio of income of people living in the richest quintile of nations, compared to that in the poorest quintile, rose from 30:1 in 1960 to 74:1 by 1997.<sup>[21]</sup> In fact, these figures are conservative, because they incorrectly assume that national incomes are distributed equally. A more realistic, though still conservative estimate of the ratio between the wealthiest and poorest global quintile would partially account for national income distribution.<sup>[22]</sup> Between 1964 to 1999 (partly adjusting for national inequality) the global Gini coefficient, a measure of inequality which, unlike the quintile ratio, uses information for the whole income distribution, rose from 70% to almost 80%, far higher than the Gini co-efficient of any single country, including the most unequal, Brazil, which has a Gini coefficient of about 60%.<sup>[23,24]</sup> Over the same period the ratio between the wealthiest and poorest quintiles increased from 50:1 to 138:1, before falling to 112:1. (See figures 1,2.)

However, a substantial school of social scientists, using a measure of income adjusted for “purchasing power parity” (PPP) argue that global inequality has consistently fallen over recent decades.<sup>[20,25-27]</sup> PPP adjusted income seeks to better reflect the comparatively high domestic purchasing power of third world currencies. The exchange-adjusted income is multiplied by the Kravis co-efficient to estimate the equivalent PPP income. There is an inverse relationship between the value of this coefficient and national exchange adjusted income. That is, in gen-

eral, the co-efficient is highest in the poorest countries. This helps to explain, for example, how the poorest decile of Sierra Leonians, estimated to earn US\$12 per annum, can survive; in PPP terms, their income is about \$50 “international dollars.”

Neither measure is ideal. However, claims that PPP adjusted measures are superior for all purposes are disingenuous. Firstly, although it is well known that the cost of a typical basket of goods and services in the South is lower than in the North, the quality of the cheaper goods and services is also inferior. It is unclear to what extent PPP incomes adjust for these differences.<sup>[25,28]</sup>

Secondly, there are hidden differences in the costs of producing goods or services, even of identical quality. For example, a car made in Detroit by a well-paid, tax-paying labour force protected by high standards of occupational safety and social security is far more expensive to produce than one made by a labour force which is poorly paid, untaxed, disunited, unprotected and uncompensated for injury. The market forces that reduce the price-competitiveness of the produce of well-compensated workforces do so because the hardships experienced by the comparatively enslaved labour forces in developing countries are hidden, ignored and uncoded. In turn, Third World labour forces subsist by consuming a cheaper basket of goods and services, produced by fellow workers, enduring similar, or even lower, work, health and safety standards.<sup>[29,30]</sup>

Thirdly, advocates for using PPP income to compare international living standards artificially restrict their analysis. Firebaugh, for example, argues the world marketplace is *“a largely hypothetical concept in the workaday world of the vast majority of the world’s population. For the vast majority of the world’s population, foreign-exchange-rate income is largely moot, since most of what is produced is not traded internationally. People face local prices, not international prices”*<sup>[26]</sup>.

This assertion overlooks the existence of a vital world marketplace: that which determines global economic, environmental, ethical and human rights policy. Although exchange adjusted income is an imperfect measure of what may be called “international purchasing power” of these goods it is far better than PPP income. For example, the UNDP points out that more than a dozen of the world’s poorest nations are unrepresented in the main negotiations of the World Trade Organisation (WTO),

because they are unable to maintain a mission in Geneva, where the main negotiations take place; “the cost of hotels (used by the WTO negotiators) must be paid in Swiss francs, not in PPP dollars.”<sup>[31]</sup> Also contradicting PPP advocates is the composition of the G-7, which excludes China and India, each of which have far larger economies, measured using PPP dollars, than most G-7 members.

Finally, the resources available for collecting PPP data are inadequate, with PPP income data for most countries extrapolated using regression, rather than being repeatedly measured.<sup>[28,32]</sup> Time series estimates of inequality trends, using PPP income data are thus unreliable.

### The global “claste” system

“Caste” is a neologism, a combination of class and caste. Like the Hindu caste system, there are four main castes. These are the super-rich, “system analysts,” or highly skilled workers, lesser-skilled workers, and a reserve army of undernourished, mostly illiterate, human beings.

Caste membership is not determined by nationality, race or residence. Members of the first caste are found in both North and South, forming loose alliances in order to maintain a suitable international order. First caste members include entrepreneurs and speculators such as Bill Gates and Warren Buffet; inheritors of wealth and power such as the British and Brunei monarchies, kleptocrats based in the South, such as Presidents Mobuto, Marcos and Suharto, and media moguls, including Rupert Murdoch and Robert Maxwell. Some sports stars and entertainers, such as the basketball player Michael Jordan, who was reportedly paid more annually by Nike for advertising than Nike’s 30,000 Indonesian workers also belong in this caste.<sup>[33]</sup> Some first caste members, most notably George Soros<sup>[34]</sup> and Ted Turner, even though benefiting from the caste system, appear to espouse values and strategies which might undermine it. They are rare exceptions.

The upper ranks of the second caste include executives, bureaucrats, politicians, academics, professionals and elite entertainers and sports stars. The poorer ranks of the second caste include many blue-collar workers in developed countries, protected by strong trade unions. Thus, the second caste unites many members of the middle and working classes in developed countries.

Most of the third and fourth castes live in the South; they make up most of the global population. This caste includes peasant farmers, slum and shanty town dwellers, crews on many merchant ships, most factory workers in developing countries and the rank and file of many of the world's armed forces. The fourth caste include, at its base, the world's estimated population of at least 27 million slaves and workers held in inherited debt bondage<sup>[35]</sup> as well as the landless, the homeless, those who are chronically malnourished, and many refugee populations.<sup>[36,37]</sup>

Caste boundaries are fuzzy, and substantial gradations exist within each division. Caste membership may be impermanent. The Shah of Iran and Presidents Markos, Mobuto, Suharto all, to a greater or lesser extent, lost the support of other first caste members when their internal power bases were eroded; survival of the overall system is far more important than of any individual. Unlike the caste system, castes are defined by wealth and power, rather than birth. Unlike the caste and class system, the caste system is global. The network of increasing communication, financial and cultural links of globalisation has facilitated the emergence of castes; at the same time neo-liberalism has sharpened their definition.

There is downward pressure on wages for the lesser skilled second caste members, who, increasingly, compete with third caste workers in developing countries. Technological improvements allow increasing returns on lower human investment, for example, elaborately transformed goods, such as computers and cars, are increasingly reliably produced by comparatively unskilled, though disciplined, workers; many in developing countries.<sup>[38]</sup> Reduced tariffs permit wealthy countries to import goods and services produced using lower-cost offshore labour, often in countries with increasing populations, and therefore an oversupply of cheap labour. Consumption by the first and second castes is also encouraged by an economic system which under-values natural capital, especially fossil fuel, forest products and water-intensive crops.

The removal of tariff barriers has enabled more effective exploitation of unskilled labour than that traditionally available to upper and middle classes. At the same time, by forcing competition between unionised workers and the third caste, trade liberalisation has led to increased inequality and higher

unemployment in many countries of the North. This has contributed substantially to historically low inflation rates in wealthy countries, though this is not admitted by the second caste economists and politicians in the countries which most benefit. Third caste populations in the rarely-democratic South can also do little to complain, in part because most live in societies dominated by corrupt bureaucracies, judicial systems and governments, sprinkled with individuals, who, understandably, aspire to join the second caste.

The freedom of capital to migrate contrasts sharply with restricted human migration. The caste system depends on substantial, though not total, segregation of the upper castes in the North. Low-paid, sometimes illegal, "guest workers" are imported to many wealthy countries, including in the Middle East, to undertake menial jobs. They are joined by many skilled workers, particularly trained in medicine and science in developing countries, who migrate legally; such workers join the second caste and represent another form of subsidy of the wealthy by the poor.<sup>[39,40]</sup>

The offshoring of production from wealthy to poor countries facilitates the discounting of economic "externalities", such as social agitation and environmental pollution. For example, the industrial accident in Bhopal,<sup>[41,42]</sup> though still a public relations and financial disaster, was much easier and cheaper for Union Carbide to manage in India than a similar, hypothetical, incident in Louisiana. At the same time, India's lower safety standards increased the risk of the accident and enabled higher profits to be made.

#### The caste system and economic laws

Rather than being defended, the chain of exploitation of the caste system is claimed by most western economic commentators to be of mutual benefit for rich and poor. "Globalisation" (frequently code for neo-liberalism) with its implicit exploitation of the poorest and most vulnerable, is touted as inevitable and unstoppable. Principles of classical economics, particularly the doctrine of comparative advantage, are falsely elevated to the status of inviolate natural law and alleged to avoid zero sum game limitations. However, even - unrealistically - assuming negligible trade costs, comparative advantage results in mutual gain only if both parties agree to play fair, an unlikely scenario.<sup>[43]</sup> For example, under the theory





of comparative advantage, both Uganda and the US will benefit if each concentrates on the production of coffee and software, leading to a greater total output. But comparative advantage theory falsely assumes static production factors and discounts the possibility of gradual improvement in productivity. That is, the comparative advantage doctrine assumes that if one population has a disadvantage at the start it will never lose it; if acted upon, this policy will thus stifle innovation.

Comparative advantage theory implies that if producing countries agree to set prices that reflected genuine input costs (including fair labour costs) then the material wealth of both parties will increase; inequality is also likely to fall. But this is fantasy, because such “fair” agreement is only conceivable if both parties are equally matched at the time of negotiation. The price of goods is not set by mutual agreement between fair-minded negotiators in each producing country, but by the global market. A global oversupply of raw materials will reduce their price; countries specialising in the production of goods such as coffee will thus be disadvantaged.

Prices paid by wealthy consumers for primary products from the South are comparatively low, while those of elaborately transformed goods from wealthy countries are comparatively expensive. Prices, in theory set by supply and demand, are frequently manipulated by the more powerful market players, for example by encouraging over-supply of production, or monopolising sale. The viability of Third World farmers has also been harmed by the dumping of excess produce, at times masquerading as “aid.”<sup>[44]</sup> Capital-intensive industry in the South is usually controlled by individuals and investment funds based in the North, managed by a local elite (second caste) with little interest or incentive for genuine local development. Indeed, any substantial “trickle down” to unskilled workforces is likely to result in attempts to further improve workers’ conditions, thus reducing the profitability of that location, and resulting in threats by the factory owner to move shop. The ability for transnational companies to realistically make such threats is facilitated by the increasing concentrations of capital, as corporations relentlessly merge and expand.<sup>[45]</sup> The doctrine of market forces is used, seemingly without embarrassment, to justify both higher wages for the global elite and lower wages for the deregulated masses.

Dissident views which describe or attack aspects of the caste system exist, but are usually confined to obscure journals or books, sometimes uncritically and disparagingly rejected by neo-liberal commentators as “leftist” or “do it yourself economics.”<sup>[46]</sup> These views are rarely reproduced in the mass media, especially in recent decades, since genuine attempts at Third World development became unfashionable.<sup>[1]</sup> Navarro argues also that the discussion of power relationships is ignored in documents produced by many international agencies, including those charged with reducing poverty.<sup>[47]</sup> Economic history, one of the few opportunities for economists in training to encounter dissident economic views, has become a rare discipline in many universities, endangered because it allegedly lacks utility.

#### Relative Poverty

But total wage and power equality are impossible in any functioning economy. Incentives are essential, as the 19<sup>th</sup> century polymath, John Ruskin, pointed out; if wages are identical, no work would be done – who would be the employee?<sup>[48]</sup> However, excessive poverty engenders disproportionately poor education, poor health, and poor social organisation in a reinforcing cycle, whereas excessive wealth engenders the reverse, thus re-inforcing inequality. In contrast to the assertion of Simon Kuznets, who postulated that increasing inequality is a temporary phenomenon experienced by populations with an increasing average income<sup>[49]</sup> relative poverty is likely to increase, indefinitely, until the trend is reversed by social breakdown or deliberate intervention.<sup>[50]</sup>

Like the caste system of ancient India, and discounting moral arguments, the freeing of trade between nations appears a wonderfully efficient system for those near the top of the consumption pyramid. Proponents of neo-liberalism rarely invoke Ruskin’s argument as a defence for the extent and trend of rising exchange-adjusted inequality. Instead; supporters argue that the removal of trade barriers will benefit all, by reducing the cost of goods and services, and enabling higher global levels of consumption. Rising global inequality, if conceded to even exist, is dismissed as irrelevant because, it is argued, absolute poverty of the poorest is falling. Supporters of neo-liberalism argue that only the creation of a larger cake can solve poverty.

This is incorrect. The number of undernourished people, of at least 800 million<sup>[51]</sup> approximates half of the total global population at the turn of the 20<sup>th</sup> century; yet average global income is now far higher than in 1900.<sup>[52]</sup> Even if the number of malnourished, both in absolute and percentage terms is now falling, which is uncertain, enlarging the cake is, by itself, an unsatisfactory solution to such poverty. Populations which are chronically malnourished suffer significant absolute as well as relative poverty; and, without extra help, lack sufficient calories to fulfil their physical and intellectual potential,<sup>[53]</sup> even if low-skilled jobs are made available. They are trapped. Redistribution of some of the wealth and food from the powerful and obese to this population is needed if global poverty is to be significantly improved. This is rarely admitted; in contrast, the usual response is to assert that more of the previous policies are the solution, although there is evidence of a recent debate along these lines in the World Bank.<sup>[54]</sup>

The caste system can be interpreted as evidence of a form of conspiracy, or even contempt, by the powerful against the less powerful; however, a more benign interpretation is that the vulnerability of the lower castes derives simply because they are more easily overlooked by the comparatively powerful. The poor exert less "effective" demand; they are less "entitled."<sup>[55]</sup>

Ignorance of the existence of the lower castes is also more likely if, as is in fact largely the case, they are quarantined in poor countries, far from the centre of media concern, mainly in Africa and the villages and slums of China, India and Indonesia. The lives, languages and cultures of the lowest castes remain largely unreported, uninteresting, tedious, and ultimately unrecognisable by the first two castes. They are not good material for soap operas.

However, undoubtedly, even without invoking conspiracy theories, a major reason for the comparative dismissal of the fate of the poorest castes is that the wealth of the first and second castes depends, to a greater or lesser extent, on their exploitation; this is a disconcerting thought, which is much easier, psychologically, for the upper castes to deny than explore.

### The risk of excessive inequality

Nationally, extreme inequality fosters civil war, separatist movements, peasant revolts and revolution, while at the same time undermining economic cohesion and productivity. Indonesia, until recently governed by a tiny elite that resulted in conspicuous inequality, illustrates many of these problems.

Internationally, extreme inequality risks war, including by the use of the weapons of mass destruction, which may, in future, be biological<sup>[56]</sup> or chemical, as well as nuclear. The comparative international disregard of the world's second most populous nation, India, probably contributed to the development of that nation's nuclear capacity: nuclear weapons are a partial substitute for the influence which high exchange adjusted income purchases.<sup>[57]</sup> At the same time, extremely large international inequality can forestall the risk of short-term conflict, by making the consequences of war too horrific to contemplate. However, such a policy is likely to make conflict more likely when and if the weaker nation passes a threshold of military and economic power, while still harbouring resentment, as occurred in Nazi Germany. These strategic considerations appear to have been better understood in the period soon after WW II, implicitly recognised, for example, by both Truman and Pearson. The recent increase in global inequality may therefore have immense and extremely serious negative consequences for global military security, independent of environmental factors.

The extent of recent inequality may have another, more subtle consequence. The dominant global economic engine encourages endless economic growth and, especially through the media, relentlessly fuels the aspiration for increasing consumerism, including, increasingly, to the far more numerous third caste. The result is accelerating global environmental destruction.

Rees and Wackernagel have calculated that at least three planet Earths would be required to support a global population with a living standard of North America.<sup>[58,59]</sup> Clearly, a substantial increase in the material living standard of the third caste will place an intolerable load upon the planet, unless spectacularly rapid and successful technological leapfrogging occurs.<sup>[60]</sup> Despite the optimism of some,<sup>[61,62]</sup> this prospect currently appears unlikely.

A more equal world - especially one which gave less weight to consumerism - might dampen the

Lorenz curve - used to calculate Gini coefficient

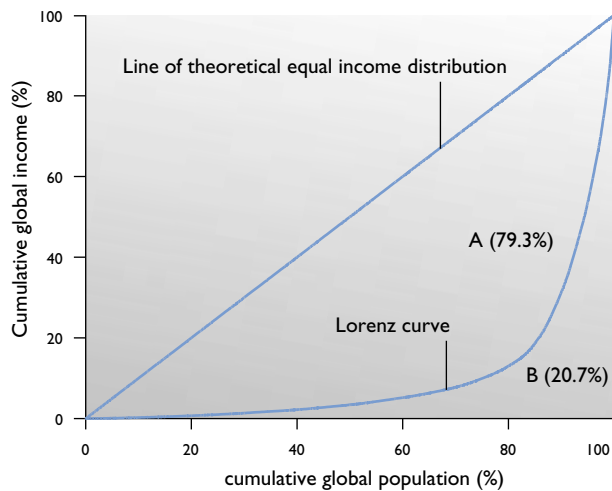


Figure 1 The Lorenz curve plots cumulative income against cumulative population. If income is distributed equally the curve will follow the diagonal line. The Gini coefficient is the ratio of the area between the straight line and the Lorenz curve to the total area under the straight line  $[a/(a+b)]$ . It can vary between 0 (perfectly equal distribution) and 100% (all income received by a single person). The Gini coefficient for 1997 is 79.3%. The Lorenz curve can also be used to calculate the ratio between the wealthiest and poorest quintiles. In 1997 the wealthiest quintile received 87% of the total income, while the poorest quintile received 0.7%, giving a ratio of 123.5:1.

drive for this ever-increasing consumption, which is substantially driven by envy and the desire for status. Instead, in such a world, status might also be achieved through social or cultural prowess and modesty in material consumption. In such a world, public relations companies might be rewarded for propagating fashionable images of genuine ecologically friendly behaviour. Although this seems fantasy, any trend in this direction would be welcome.

#### A recent decline in global inequality?

Figure 2 suggests that the increase in global inequality which has occurred since 1964 may have peaked in 1995 (no data are available for 1996), though the trend in the Gini coefficient may again have increased in 1999. This reversal of trend is probably genuine, even though the quality of the income data are uncertain, and there is also likely to be failure to properly account for recent deterioration in the income distribution of many countries. For example, a recent World Bank report claims

that inequality within many East European and central Asian countries has substantially worsened recently.<sup>[63]</sup>

There are several factors which explain the reversal of this trend. First is the comparatively large increase in exchange-adjusted incomes of several of the most populous countries, including China, India and Bangladesh. Also, until 1998 the average per capita income of Indonesia, the world's fourth most populous country, increased at a greater rate than the global average. It is uncertain if these trends will continue - for example, Indonesian income fell substantially in 1998. According to the World Bank, China's per capita income also decreased between 1997 and 1998,<sup>[64,65]</sup> from US\$860 to US\$750 per capita; in fact the 1997 figure may have been exaggerated. Previous declines in global inequality in the 1980s (which were also associated with comparative gains by China and India) were not sustained.

In addition, the rate of population increase in the South is falling rapidly. Much of the increase in global inequality in recent decades is because of the changing global demographic composition. Simply, a greater proportion of the global population live in poor countries than was the case four decades ago. As population growth declines, so too will the trend to increased inequality, other things being equal.

The recent reduction in global inequality appears to support proponents of trade liberalisation, who have argued that freer trade and investment will lift the Third World from poverty. However, it must be recalled that, until 1997, global inequality increased substantially over several decades, it remains far higher than in the 1960s and 1970s; considerable further reduction in inequality will be required if the health and security of the fourth claste is to be assured.

#### Protesting globalisation

The recent reduction in global exchange-adjusted income inequality has been accompanied by global protests opposed not only to "globalisation" but also to indebtedness and Third World poverty. This movement can be analysed as a coalition between two poles of the second claste, in fact, between the traditional middle and working classes of wealthy countries. At the blue-collar pole, workers in wealthy countries whose livelihoods are threatened appeal for increased tariffs, to protect



their incomes and job security. Joining with them are organisations like Jubilee 2000, who have campaigned with some success for the forgiveness of much Third World debt.<sup>[66]</sup> Although the motivation for many such protestors is undoubtedly genuine, I argue that most such protests emanate from the middle second claste, people who feel sufficiently comfortable, thoughtful and secure to think and act altruistically, and, at the same time are unlikely to experience a significant decline to their income because of debt relief.

The writing off of much third world debt may assist the third and fourth clastes, particularly if the authorities and bankers in developing countries use the windfall to promote genuine development, and also if the moral momentum of the campaign can

be maintained, to thwart profiteers from the North. However, the re-introduction of trade barriers, proposed by many anti-globalisation protestors is likely, if implemented, to reverse, or at least impede the emergence of the poorer clastes. This point is rarely acknowledged; indeed the incoherence of practical policies proposed by the anti-globalisation movement is ridiculed by supporters of organisations such as the WTO. Similarly, proponents of bans on goods made by child labour rarely propose coherent policies to deal with the child-labourer unemployment which successful implementation of their policies would cause.

Addressing the problems of globalisation and maldistribution of resources and influence is far from simple, and further analysis of mechanisms

Global exchange adjusted income distribution: 1964-1999

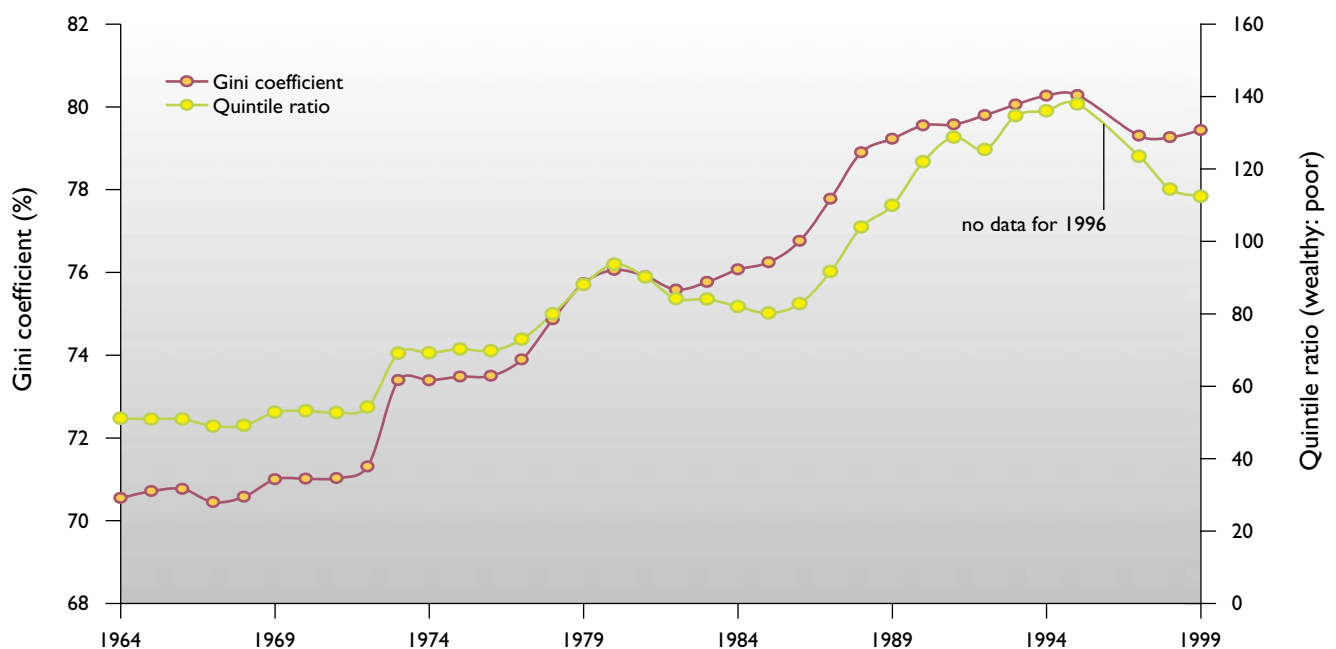


Figure 2 shows a time series for the period 1964-1999 for two measurements of global inequality, the Gini coefficient and the ratio of the wealthiest to the poorest quintile. No data were available for 1996. Both measures are adjusted for national income distribution and measured in exchange-adjusted income in US dollars. National population, income and income distribution data were obtained from the World Bank. Data were available in each year for more than 99% of the global population, although, especially in the earlier period, data were estimated for a number of countries. Average per capita incomes were calculated for each of seven quantiles for each country, thus the global population for every year was divided into more than 1000 units. These were then ranked in order of ascending per capita income and used to calculate both the global Gini coefficient and the global wealthy to poor income quintile ratio. The Gini coefficient utilises data for the whole of the income distribution, while the quintile ratio relies on only two points of the Lorenz curve. Although the two summary figures are correlated, differences in their trend can occur, as is the case in 1983-85, 1992 and 1999. The global Gini coefficient declined between 1981 and 1982 and again between 1995 and 1998. Both series show an increase in global income inequality between 1972 and the early 1990s, peaking in 1995. Inequality for the world as a whole is far more extreme than for any nation, including Brazil, which has the most unequal income distribution for any nation.

which might promote this is beyond the scope of this article. There is, however, a profound problem with the “bake a bigger cake” approach to solving global poverty; that is that the “cake” may, in fact be a balloon, already close to bursting.

#### Environmental Brinkmanship

The intensifying Cold War led to the development of the policy of “mutually assured destruction” (MAD).<sup>[67]</sup> This policy, essentially, arrogated the fate of human civilisation to a tiny percentage of elite American and Soviet policy makers. It is less well-recognised that human civilisation is now hostage to an eerily similar environmental brinkmanship. This risk is intensified by the degree of inequality; the third, and especially the fourth classes, are at the highest risk, and at the same time have the least ability to lobby for global policies that would promote security. But inequality only partially explains the indifference of the first and second classes towards the global changes that now threaten the sustainability of civilisation. Perhaps only a generation conditioned by the shadow of nuclear war could calmly pursue policies which inexorably move the hands of environmental risk towards midnight.

Individually, most environmental dangers are well recognised. But synergisms between increasing environmental stress, (see Box, figure 3) the increasing human population and the increased availability of weapons of mass destruction are less well understood. A prolonged famine or drought in the past threatened a high death rate, mass migration or confined civil war. In future, such events, if affecting militarily powerful nations, could precipitate not only local but global war.

Almost half a century ago, atmospheric scientists warned: “human beings are now carrying out a large scale geophysical experiment of a kind which could not have happened in the past nor be reproduced in the future. Within a few hundred years we are returning to the air and oceans the concentrated organic carbon stored over hundreds of millions of years.”<sup>[68]</sup> The 1997 Kyoto Protocol, even if eventually ratified and honoured, is hopelessly inadequate to stabilise atmospheric greenhouse gas concentrations.<sup>[69]</sup> Carbon dioxide, because of its long atmospheric half-life, is likely to rise well above 500 parts per million (ppm) before stabilising. Stability of the Western Antarctic Ice Shelf, though

likely in the current century, may be failing in the lifetime of tomorrow’s children, leading to disastrous sea level rise.<sup>[70]</sup> The Arctic ice is thinning,<sup>[71,72]</sup> spring is occurring earlier,<sup>[73]</sup> and the melting of the Greenland Ice Cap is already contributing appreciably to global sea level rise.<sup>[74]</sup> There are also concerns that global warming could disrupt the Atlantic Ocean currents, leading to paradoxical cooling of Europe<sup>[75]</sup> with catastrophic consequences<sup>[76]</sup>

In concert with rising sea levels, extreme weather events appear to be increasing.<sup>[77-79]</sup> Vector-borne disease, allergies and heat wave related deaths are also predicted to increase in distribution and severity in a warmer world<sup>[80,81]</sup> although this has been questioned.<sup>[82]</sup> There are also concerns that feedback effects from climate change may damage the “carbon sink.” Possible mechanisms include the deliberate clearing and accidental burning of both tropical forests<sup>[83,84]</sup> and the high latitude conifers of the taiga.<sup>[85]</sup> Computer simulations suggest that uptake of carbon in the Southern Ocean may be compromised by global warming.<sup>[86]</sup> Although geo-engineering, such as deliberate iron fertilisation of the ocean may increase carbon uptake<sup>[87]</sup> it is unlikely that this will be possible on a sufficient scale to reverse global warming. In addition, this modification may have undesirable effects.<sup>[88]</sup> Global warming may also interact with and further deplete environmental and ecosystem services, including by aggravating stratospheric ozone depletion (see Box)<sup>[89]</sup> and reducing fisheries productivity.<sup>[90]</sup>

Numerous other risks face humanity, from contamination of the food chain by radiation,<sup>[91]</sup> persistent organic pollutants, particularly at high latitudes and altitudes<sup>[92,93]</sup> and prions, to those of genetically modified organisms and falling biodiversity.<sup>[94]</sup> Aquaculture, as currently practised, is probably unsustainable.<sup>[95]</sup>

Global warming is likely to produce a world with agricultural losers as well as winners; future food security is likely to require a willingness to transship food on an increasing scale. Nuclear-armed South Asia may be an agricultural loser;<sup>[96]</sup> political instability as a result of famine in South Asia is likely to have more severe global consequences than famine in Africa. At the worst, these problems and their consequences could lead to “civilisation failure”<sup>[97]</sup> or even “barbarianisation.”<sup>[98]</sup>

### Box Global Environmental Change Indices

Figure 3 shows an index of global environmental change between 1964 and 1997. This has three main components or subindices: showing changes in the atmosphere, stratospheric ozone column and biodiversity. In each case, 100% represents the level that existed before any significant human impact occurred; while 0% represents a level which, though arbitrary, is clearly undesirable. For example, the atmospheric index was 100% when carbon dioxide ( $\text{CO}_2$ ) was 280 p.p.m., and methane ( $\text{CH}_4$ ) was 695 parts per billion (p.p.b.); it will reach 0% if the concentration of  $\text{CO}_2$  doubles and that of  $\text{CH}_4$  trebles.

The biodiversity index is composed of measures of the average trophic level of the global marine and fresh water harvests and of tropical forest cover. Zeros rep-

resent declines in the trophic level to 2 (from 4) and in tropical forest cover to 500million ha, from a peak of 2900 million ha in 1800.

The ozone depletion index is composed of measures of global annual ozone depletion, (figure 4), and of hemispheric (25-90 degrees) ozone depletion for five summer months (figures 5-6). All three indices were weighted for surface area. Assumptions were made for the period of missing satellite data (December 1994-July 1996). This index is assumed to be 100% until November, 1978, when satellite data based first became available. Zero represents a decline to 80% of the original ozone column thickness. Declines in the global average may mask far larger declines in smaller areas, such as the "hole" in the ozone which regularly

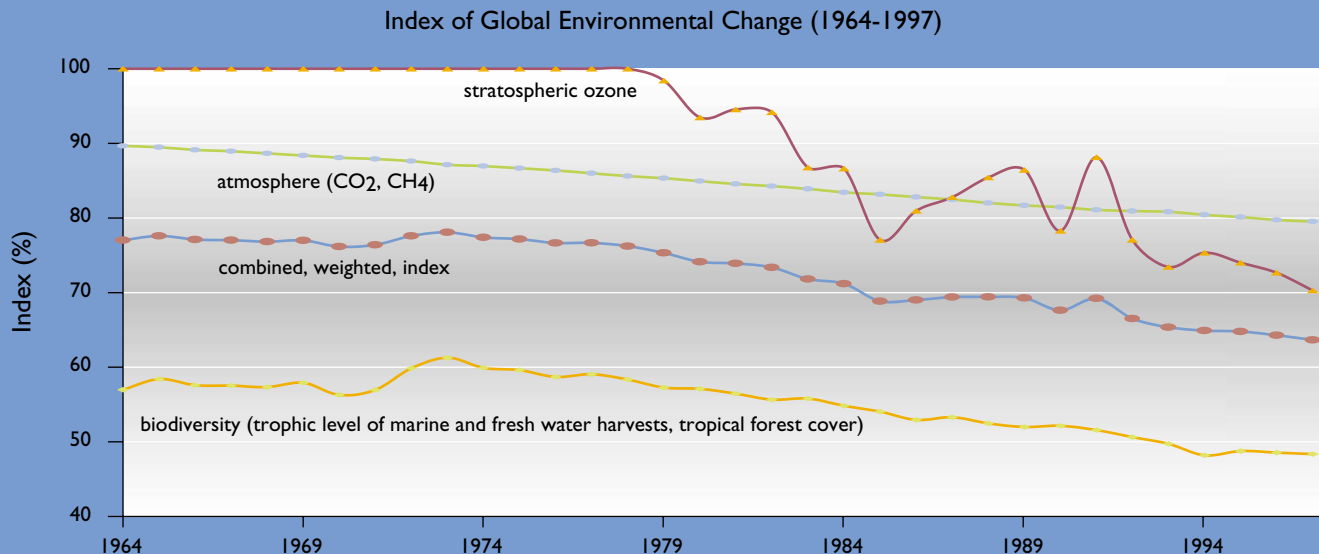


Figure 3 An index of global environmental change between 1964 and 1997.

### Inequality and sustainability

There are many "proximal" causal factors<sup>[99]</sup> for environmental brinkmanship. These include the pressures placed on global carrying capacity by population and consumption patterns and the hegemony of an economic system that treats the global environment as an interchangeable factor of production.<sup>[100]</sup> In fact, the human economy is a subset of the global environment.<sup>[50,101]</sup> More upstream causes of environmental brinkmanship include the management of public opinion,<sup>[1,102]</sup> including concerning the environment,<sup>[103-105]</sup> the still rising pop-

ulation in the South, and the slowness of technological transition.

Public concern for approaching ecological and environmental limits is managed, particularly in developed countries, by the manipulation of information, the recruitment of the public relations industry and the suppression of protest.<sup>[79,103-106]</sup> Additional constraints thwart the emergence of environmental concerns in developing countries, especially China, where, according to Hertsgaard, the problem is barely recognised by the masses.<sup>[107]</sup> Third World governments argue their countries suffer from under-pollution, cogently pointing out

appears over most of Antarctica in the austral spring. The declining trend of the combined index is resilient, irrespective of the weighting given to its components.

Figure 4 shows the global distribution of stratospheric ozone, measured in Dobson units. Data for mean ozone column thickness for each month, for each five degree band of latitude were obtained from the N.A.S.A. website. Assumptions were made where no data were avail-

able during the polar nights, when the satellites are unable to measure ozone thickness. Global monthly average ozone column thicknesses, adjusted for surface area, were calculated by multiplying each latitudinal band average by the corresponding surface area, as a proportion of total global surface area, and summing the products. No estimates were made for the period December 1994-July 1996, when no satellite was operational.

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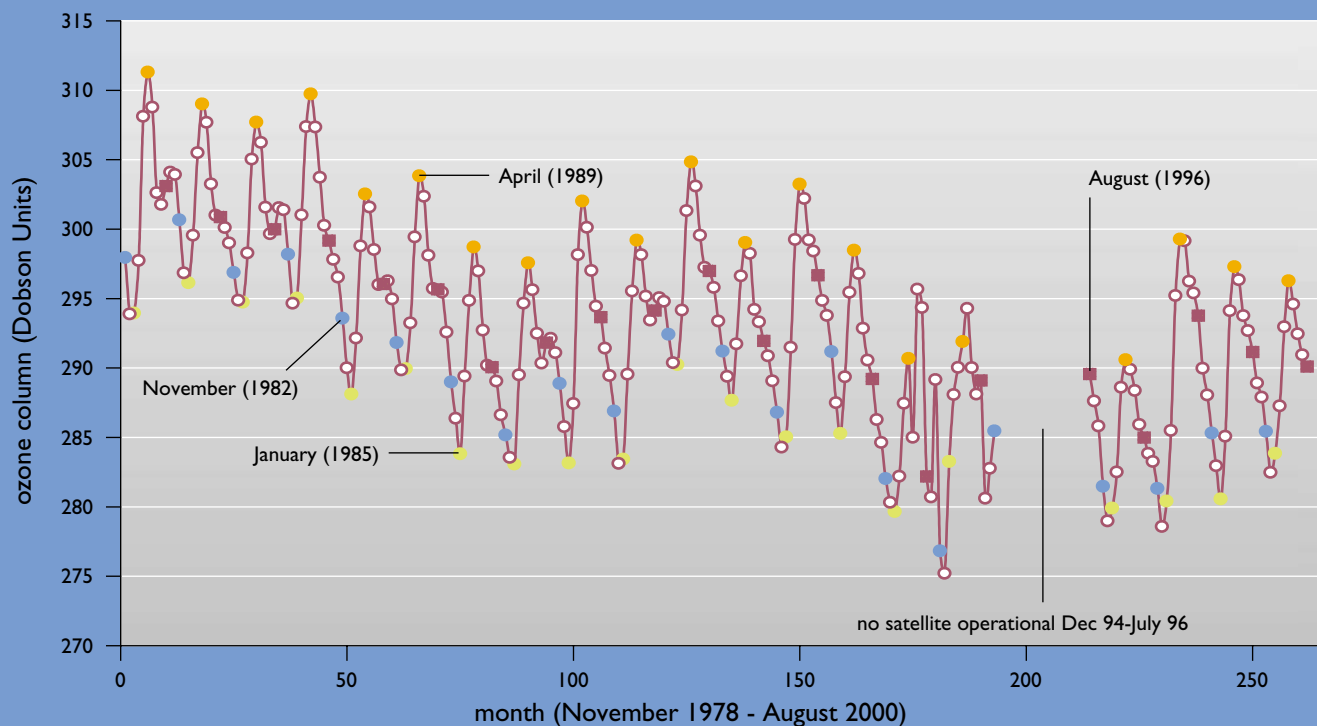


Figure 4 Stratospheric ozone column (global average, weighted for surface area).

that Western development was fuelled by smokestacks and forest clearing and that, therefore, the Third World must also be free to pollute to develop. The drive for development, often fostered by western capital, has stimulated a frenzy of dam building, coal mining, forest clearing and factory erecting in the Third World. Agricultural insecurity and the lure of higher cash incomes with which to purchase advertised, high-status goods drives increasing urbanisation, even in impoverished shanty towns and slums. Urbanisation, in turn, helps fuel illusions of human independence from nature.

Often, the best escape from individual Third World rural poverty is by accelerating the mining of local natural capital, even if this results in future hardship - the perpetrator can always hope (if he or she reflects upon this) that the future victim will be someone else, an example of the tragedy of the commons.<sup>[108,109]</sup> Governments in the South, rarely democratic, provide few short-term incentives to protect national natural capital, where to do so may challenge existing power structures. Such governments have even fewer incentives to be concerned for global environmental problems, such as global warming. Southern countries, especially on a time

Figures 5-6 show the distribution of non-tropical hemispheric ozone, measured in Dobson units for five summer months, again adjusted for surface area. Figure 5 shows data for the Southern hemisphere (latitudes 25-90 degrees S) for October-February. Figure 6 is for

the Northern hemisphere (latitudes 25-90 N) for April-August. These time series do not necessitate assumptions for missing data, because at the start of each time series the polar regions are in sunlight. The global monthly average ozone column thicknesses were cal-

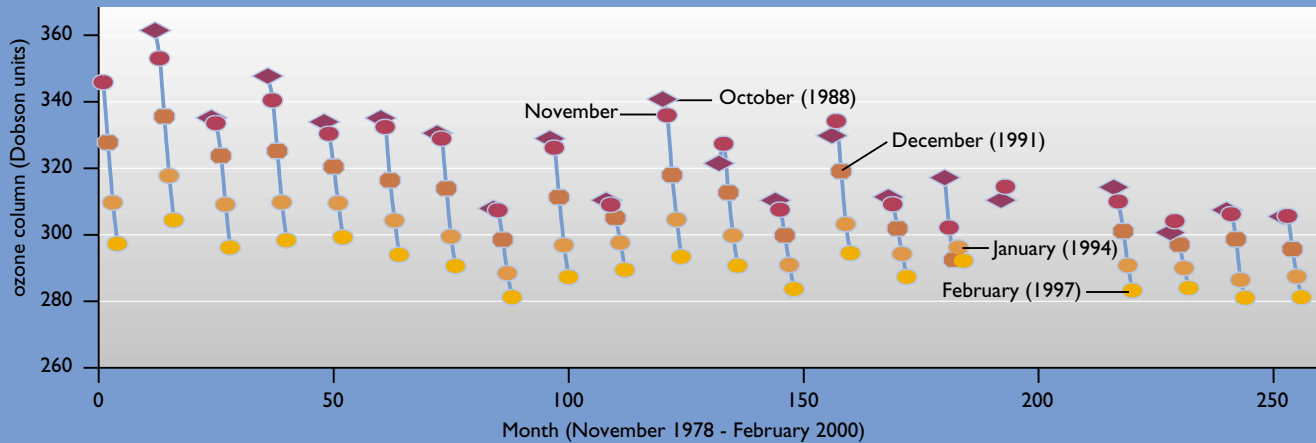


Figure 5 Stratospheric Ozone Column (adjusted for surface area): Southern Hemisphere summer (October-February)

series per-capita basis, have contributed very little to the build up of greenhouse gases, and argue that they should be exempted from greenhouse gas targets on moral grounds. Less explicitly, these governments perceive, probably correctly, that their best national defence against any future climatic or other environmental instability is from increased technological sophistication and industrial capacity, even this is achieved by increasing the rate of adverse global environmental change.

Rather than providing assistance to the South to enable “technological leapfrogging”<sup>[60]</sup> over a carbon-based energy system, most Northern global policy makers appear curiously indifferent to the global environmental impact of development in the South. Although market forces and clean technology, left alone, may eventually lead to a transformation in environmental impact<sup>[61,62]</sup> the lag effects of continuing population growth, rising expectations and climatic inertia require far more urgent policies to hasten the global sustainability transition than is currently occurring.

#### Treating the third and fourth castes as a safety net

Despite rhetoric to the contrary, policies implemented by wealthy countries towards the poor countries have, in recent decades, resulted in the

net transfer of billions of dollars to the North, indirectly contributing, among other matters, to the runaway epidemic of HIV/AIDS in sub-Saharan Africa.<sup>[110]</sup> The population of the first two castes, in both North and South, have been the primary beneficiaries of this transfer of resources. Although taboo in public discussion, the comparative dismissal of the suffering in the South<sup>[111]</sup> lends credibility to a willingness by the North to “write off” the lives of millions more human beings, should “ecological entrapment”<sup>[97,112]</sup> become reality.

If climate or other anthropogenic global change occurs in the future on a scale sufficient to cause widespread social disruption the poor will inevitably be exposed to the greatest suffering. The recent floods in China, Venezuela, Hurricane Mitch in Central America<sup>[113]</sup> and the Mekong Valley have been exacerbated by deforestation. In these cases, the poor are disproportionately affected; damage to infrastructure further entraps them in poverty. In contrast, extreme weather events in wealthy countries cause far fewer deaths and less social disruption; most property damage is insured, although this too has adverse economic consequences, by threatening the profitability and hence existence of the reinsurance industry.<sup>[114]</sup>



culated by multiplying each latitudinal band average by its corresponding surface area, as a proportion of total global surface area, and summing the products.

Ozone depletion has greater biological significance in the summer months, when the angle of the sun is

higher; this is because surface ultraviolet radiation is determined more by the solar angle than the ozone column.

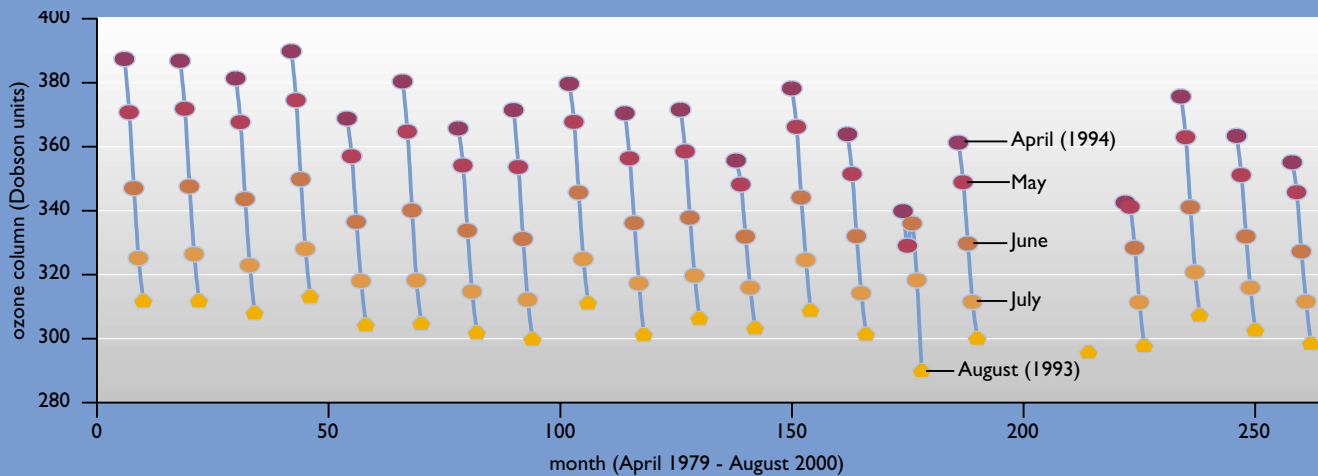


Figure 6 Stratospheric Ozone Column (adjusted for surface area): Northern Hemisphere summer (April-August)

Sea level rise is likely to have a far greater adverse effect in Bangladesh than in Florida, because of the resources available to defend coastal regions and populations from storms, or even by the construction of dykes. Flooding, exacerbated by climate change in deforested, malaria-prone Venezuela or Mozambique will harm far more people than similar rainfall in the U.S.A.

Northern unwillingness to genuinely assist the South also greatly impedes demographic transition, though it is plausible that the rapid rise in population growth in developing countries has been accelerated by intervention from the North, especially in the immediate post-war decades, through the introduction of cheap antibiotics, vaccines and simple technologies such as water purification, fertilisers and oral rehydration solution. Had the scale of this intervention been continued demographic transition may, by now, be almost complete.

The third, and especially the fourth, clastes, in comparison to the size of their population, exert negligible leverage upon world policy. If their relative wealth declines, their influence will decline even further: thus, their future security is likely to become even less certain, even if their absolute wealth improves.

Thus, though possibly unconsciously, the extent of global inequality has functioned to lull the first and second clastes into a sense of security. Like frogs in slowly warming water,<sup>[115]</sup> the relatively wealthy are curiously indifferent to the irreversible global environmental processes which are now so well documented.

#### Reasons for Hope

Although a substantial risk of nuclear war remains, in recent years the risk of global nuclear war between the superpowers has probably receded, in part because of the success of the global anti-nuclear movement. The power of the peace movement stemmed from the realisation of millions of people, particularly in the liberal democracies (especially in the second claste), that the proliferation of nuclear weapons, far from increasing their security, actually undermined it. Similarly, the second claste need to awaken to the security risks of environmental brinkmanship. Voluntary demographic transition needs to be hastened in the South, especially by improving literacy and health care. The rhetoric of Presidents Kennedy and Truman need to be converted to reality.

Increased education in the South, accompanied by technological leapfrogging that enables transi-

tion from cattle and carts to a solar-based economy,<sup>[60]</sup> may liberate the energy of billions of the third claste to also work for a sustainable future, rather than to squabble over pieces of an inexorably declining biosphere in which an increasingly isolated and vulnerable elite barricade themselves. Of course, such a path is risky, difficult and expensive. The alternatives are not only morally repugnant but likely to be even riskier.

The internet offers the potential to provide mass education at a lower cost.<sup>[116]</sup> Solar, wind and fuel cell-based technologies raise hope that the age of fossil fuel domination will soon be history. Fuel cells can provide greenhouse gas neutral propulsion if they are manufactured using renewable energy, such as solar or geothermal.<sup>[117]</sup> Stratospheric ozone depletion is unlikely to get significantly worse, though the interaction with climate change will probably delay recovery by several decades.<sup>[89]</sup> Market forces, sensing that corporate profits and credibility will increasingly depend on environmental friendliness, are likely to drive a green technology stock rush that makes the recent "new technology" boom look modest. Indeed, many existing new technologies are comparatively environmentally friendly.

The increase in global exchange-adjusted inequality appears to have peaked, and the anti-globalisation movement has forced a more general questioning of the merits of neo-liberalism.

Nevertheless, the world is likely to walk a tight-rope if it is to achieve the sustainability transition in time. We will need luck - particularly the avoidance of runaway climate change - to avoid ecological entrapment. There is not a moment to lose.

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