

Global Warning

"Now is the time for all people to come to the aid of the Planet"¹

Introduction

At this point in human history our species faces not one, but three concurrent waves of change, namely: Climate Change; Footprint Overshoot; Psychodynamic Response. They are driven by the tectonic impact between our exponentially-growing and resource-consuming species and the constraining limits of our holding environment. Together the distinct but interactive factors constitute an historically unprecedented challenge. Whether, how and in what form humanity survives, depends on:

- Our global ability to face the reality of our predicament
- Our capacity to collaborate in common problem-solving on a global scale
- Our coordination of action within the limits of a critical time-frame.

The first wave: The impact of manufactured environmental change

The cumulative effects of the release into the environment of the by-products of human activity are now well documented and scientifically validated. The excretion of toxic output from the industrial process has a profound and increasingly destructive effect on the global commons and on the eco-systems which they support.

The accumulation of atmospheric carbon-dioxide and other greenhouse gases has precipitated a process of global warming which may already be irreversible. Among the consequences are:

- Increased energy in weather systems together with the re-distribution of patterns of rainfall and desertification.
- Rise in sea temperature increases the water-volume and contributes to rise in sea-level. It also decreases the oceanic capacity to absorb carbon-dioxide so triggering a positive feed-back loop in the global warming process.

¹ Editor's note: This paper was not designed as a scientific article, but as a stimulating input "for a web-cascade, reaching many, many thousands of people in the preparation for the G8 summit [in Scotland 2005]. Its purpose was to widen awareness beyond the boundaries of climate change to include the even more serious issue of the 'limits to growth'. Furthermore, it was designed to open the door for people who were environmentally aware, to start thinking about the unconscious processes that underlie both the drives that have led to the situation and also the defences that have paralysed the responsive decision-making." (from an author's comment to one of the editors). From this the specific character of the paper results.

- Accelerating melt of glaciers and land-born icecaps increases sea-levels, lowers oceanic salinity, and reduces the reflection of sunlight so setting off another positive feed-back loop in global warming.
- Thawing of tundra permafrost releases significant amounts of methane, a more powerful greenhouse gas than carbon-dioxide. This constitutes a third positive feed-back loop in global warming.
- The ability of oceanic plankton to absorb carbon-dioxide is reduced as water surface temperatures increase and inhibit rising nutrient-bearing currents, another feed-back loop.
- The scale of tropical deforestation is precipitating both local and global climate change, disrupting surface water systems, and lowering the ability of the bio-sphere to absorb carbon-dioxide and replace atmospheric oxygen.
- As well as reducing reflection of solar radiation and so accelerating global warming, melting of the Greenland icecap and the north polar ice-field is creating conditions for the imminent termination of the thermo-haline conveyor system which in turn drives the Gulf-stream. Consequent climate change in countries bordering both sides of the North Atlantic could be severe.
- As temperature and carbon-dioxide concentration levels pass a critical threshold, land-based bio-systems switch from being a net carbon-dioxide sink to a net source.
- Another major, threshold-triggered, feed-back loop comes into operation at the temperature at which frozen deposits of methane-hydrate begin to be released.

There is a critical point in the system at which the feed-back loops become dominant and render further increase in temperature independent of any reduction in human-generated greenhouse gases. *It is essential that this threshold should not be crossed.* As feed-back systems are activated even below the critical threshold, it becomes rapidly more difficult, and massively more costly, to bring the system back under control.

Time-lag between increased levels of atmospheric carbon-dioxide and the consequent stabilisation of appropriate global temperature, means that further global warming is already activated. *Rapid transition towards a low- or zero-carbon-emission culture is, therefore, now imperative.* That may not, however, be enough to halt the feed-back systems already triggered. It is doubtful if effective programmes of carbon-dioxide sequestration can be put in place and we may have to face the consequences of uncontrollable climate change.

The second wave: The consequence of footprint overshoot

Current international pre-occupation with climate change is driven, in part, by dynamics of denial which serve to mask the inexorable approach of the second massive wave. Even if the effects of climate change were totally mastered, the second wave would still constitute a fundamental threat to humankind and to the

biosphere of which we are a part. As it is, the effects of the first wave exacerbate the scale of the second and shorten the timeframe within which its impact will be felt.

When the population of any dependent organism increases beyond the bearing capacity of its host environment, there is a catastrophic breakdown in system behaviour. Famine conditions precipitate mega-death, dramatic life-style change, and/or mass migration. Where migration to more resourceful environmental conditions is impossible, residual population eventually settles down to a sustainable level, in which resource use is just balanced by the constraints of resource availability. In some conditions an oscillating cycle of boom and bust ensues, with periods of near extinction followed by resourceful plenty, exponential reproduction, resource depletion, famine, mega-death, near extinction, and a new cycle of plenty and rapid reproduction...

Since the start of the industrial revolution, the human organism has not only reproduced rapidly, but has also dramatically increased the resources used per person. The "ecological footprint" of the human population (i.e. the total resources of food, energy and raw materials, consumed by the species, together with the resources required to absorb the collateral pollution) has therefore been subject to hyper-exponential expansion. The fundamental unsustainability of the situation was recognised by the scientific community in the early 1970's, but denied and rejected by the political leadership in collusion with (and too often controlled by) the powerful vested interests of major institutions. Political leadership is driven by its need to sustain power and therefore seeks to avoid drawing attention to threatening realities or risking any strategic decision-making that would undermine its support base. In this critical situation the initiative rests with the population as a whole. Change must be driven by massive popular demand, enabling the political leadership to follow in the steps of people-power uninhibited by the influence of vested interests.

The unit chosen to measure sustainability is the "Planet-year", the total amount of life-sustaining resource generated by the sum of all global ecosystems during the course of one year. In 1987 the UN report "Our Common Future" recommended that the human species should not consume more than 88% of sustainable planetary resources per year, leaving some 12% for the rest of the global species. Current analysis now indicates that 1987 was the very year when human consumption reached 100% of global resource production. Today humanity is consuming some 120% of global resource production per year, and the rate is increasing.

Continued expansion of the global population, and the continuing increase in the rate of consumption of resources per person, have only been made possible by:

1. Mining of fossil energy-stores laid down over many millions of years
2. Cashing-in of capital accumulation in the current planetary biomass
3. Mortgaging of future assets to support current consumption.

This "footprint overshoot" leads to annual debt-accumulation in the interaction between the human enterprise and its supporting ecosystem. Current estimates indicate that the supporting capacity of the global environment will collapse when the accumulated debt reaches some 50 or 60 Planet-years. The most recent conservative forecasts from the UN predict that that point will be reached around the year 2050. In addition, the value of a Planet-year is degrading because of the effect

of environmental pollution, the over-grazing of the global commons and the impact of humanufactured climate change.

Current estimates of true biosphere sustainability indicate that the total resource usage of the human population should not exceed some 67% Planet-year per annum. The figure is equivalent to the rate of resource usage which the species engaged in the mid 1960's. It represents about half the current rate of consumption. We have a narrow remaining window to engage global strategic planning and mobilisation, followed by a maximum of fifty years to achieve the transition, to scale down resource usage, to terminate inequitable capital accumulation, and to stabilise and begin the long-term reduction of global population. Failure to do so in a controlled and managed way would lead to a catastrophic collapse of the carrying capacity of global systems with implications for ecosystem viability and the extinction of many species, including possibly our own. It could take many millions of years for the biosphere to recover.

The third wave: The psychodynamic response and the threat of global psychosis

Dysfunctional psychodynamics of (largely unconscious) human behaviour drive and sustain the system dynamics which generate the first two waves. They also block effective problem-solving, so maintaining the self-destructive trajectory of the species. In addition, positive feed-back loops within the psychodynamics have started to precipitate global social psychosis in response to the anxieties generated and re-stimulated by the conditions of our common future. Rising anxiety and a sense of impending catastrophe already permeate our global culture, giving rise to the social phenomenon of acute pre-traumatic-stress-syndrome and paralysing practical problem-solving. Information about environmental threat is denied, repressed and projected onto the human context. The paranoid process identifies a threatening enemy and goes to war, rather than identify a threatened environment and go to work. Equally psychotic is the debilitating "spiritual" response which animates the cosmos and seeks refuge in the passivity of a meditative trance state awaiting rescue by forces from the beyond. Further large-scale acting-out of social psychosis would consume vast quantities of scarce resources, precipitate the pollution and destruction of vital ecosystems, engage the most creative human energies in defensive activity, and divert all international attention from the critical underlying agenda.

Failure to understand, contain, reverse, and resolve these phenomena poses the most fundamental threat to our collective capacity to engage essential and effective rational problem-solving during the required transition to long-term sustainability. It constitutes the third wave of change threatening to engulf our world.

Call to Action

Based on the most accurate and up-to-date evidence available (see references), the *Global Warning* is issued to all global citizens. It is an urgent call to concerted, collaborative action, in which the contribution of each and every individual, each and every organisation and social institution, is of critical importance. We are all in this together. Our common future and that of our fragile environment, depend on our collective response. Our species has generated and is driving all three waves of change. Our species therefore has both the responsibility and the capacity to intervene in the crisis, to moderate the impact of the tsunami, and to transform the outcome of the impending catastrophe.

Each wave calls for its own specific response:

- The threat of *Climate Change* calls for *Environmental Stewardship*.
- The threat of *Footprint Overshoot* calls for *Footprint Reduction*.
- The threat of *Global Psychosis* calls for *Psychological Integration*.

Breakthrough in response to the third wave is vital if we are to engage effectively in response to the other two. The required transition in the values, dynamics and behaviour of our whole civilisation is unprecedented in scale. The window of opportunity to make a significant difference to threatened outcomes, is narrow. The time for action is NOW!

Responding to the "Call to Action"

Systemic Response

Grounded in our common humanity and united by our common predicament, the culture of response must be one of collaborative problem-solving and mutual support at every level of our world community. Sub-group behaviours driven by self-centred competitive survival would spell collective disaster.

Political response at global, international, regional and national levels, needs to be urgent, bold, far-sighted, realistic and effective. Sanctioned by the global population and resistant to the dysfunctional demands of vested interests, all leaders have responsibilities not only for the sub-systems which placed them in power, but also for those higher-order and environmental systems of which the sub-systems are a part and on which they depend. The same principles of trans-boundary responsibility, equity and justice, apply equally to the world of business, industry, economics and trade.

Detailed response to all three waves of change must be worked out and applied locally in the context of an emergent global framework. Convergence and coherence will evolve as consequences of the evolution of a world-wide learning community. If we are successful, our descendants will look back in thankful awe and say "This was humanity's finest hour!"

Systemic response on this massive scale demands the integration of approaches which are both "top-down" and "bottom-up". Leadership can only move with confidence when it knows it has the support of those it represents. Individuals, households, local groups, organisations and communities, can only take effective action in the context of supportive leadership at wider levels of the system. This quality of multi-level interdependence can impose a state of mutual paralysis. Alternatively it can be released to accelerate a movement of social transformation and mutual catalysis.

Personal Response

At an individual level, you may already be involved with one of the many agencies and organisations across the world which are working towards reducing the ecological footprint of the species, supporting global stewardship, and reversing climate change. If so, then please do all you can to maintain and increase your active commitment through your current membership.

In addition, the Meridian Programme seeks to bring psychological integration to the agenda at every level of our world. This response to the third wave of change is absolutely critical to the effective resolution of everything else. The Meridian Metanet provides its members with the opportunity to work together in response to all three waves of change in the same simple structure. The multiplying "Sustainability And Lifestyle Teams" (organised as "Support And Learning Triads") are linked together in a growing cellular network around the world. The replicating "SALT Cells" give every member the resources:

- To achieve life-style change
- To drive social transformation where it matters most
- To be part of a global learning community
- To attain the highest possible level of psychological integration, both personally and across every level of our species.

Add a little "SALT" to our civilisation, it improves the flavour and helps to preserve sustainable life on earth.

As a personal response to the "Call to Action", you are invited to register as an Associate of the Meridian Programme. To this basic and flexible level of programme support, you may later wish to add more active membership of the developing Meridian Metanet, to join (or start) one of the local Sustainability And Lifestyle Teams, and to play whatever role you can in support of the urgent task of global change.

Find out more about becoming an Associate of the Meridian Programme at:
http://www.meridian.org.uk/Network/Active_Membership/Active_Membership.htm.

If you cannot yet see your way to longer-term commitment as an Associate of Meridian, then please, at the very least, *consider making a contribution* to its funds, so empowering and resourcing others to tackle the agenda on your behalf. Find out how to contribute to the work of the Meridian Programme at:
<http://www.meridian.org.uk/Action/Support/support2.htm>.

Another important response to the Call to Action is to join others around the world in helping to *circulate the Global Warning* as widely as possible in the shortest possible time. Here are a few suggestions, you may be able to think of even more!

- Share the Global Warning with friends, family, neighbours, and colleagues
- E-mail all your contacts and tell them about the Global Warning
- Give them a hot link to it by including the full URL in your e-mail (http://www.meridian.org.uk/Resources/Global%20Dynamics/GlobalWarning/Global_Warning.htm)
- Send them the PDF version as an attached file
- Identify other active networks and ask them to carry the Global Warning
- Send it personally to all leaders and people with responsibility in our world community
- Circulate it to members of all organisations that it may concern
- Post the Global Warning (or a notice and active link) on any web-site to which you have access
- Print the document and give or post it to those without e-mail access.

"Global Warning" was published on 1st June 2005, by David Wasdell, Director of the Meridian Programme. It was launched on 4th June (the eve of the United Nations World Environment Day) during a Symposium on Climate Change held in University College London, sponsored by the Ecologist magazine and the Scientific and Medical Network. It was released for e-mail and web-based cascade circulation in preparation for the G8 Leaders Meeting to be held in July.

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Notes, Comments, References and Links

"Global Warning" is based on a massive literature field which spans over thirty-five years and is growing on a daily basis. Instead of offering an almost unending set of numbered references relating the text to precise points within that literature, this section opens a window onto some of the key articles, papers, books, reports, presentations and conferences which have made a significant contribution to our understanding. Many of them contain lengthy and detailed bibliographies, which, together with the possibilities of up-to-date web-search, will enable any reader to pursue specific topics to any required depth. Active web-links with full URLs have been provided wherever appropriate. All have been tested and are accurate at the time of publication, though it is inevitable that changes on the host web-sites may break some of the links as time passes.

Material is grouped into four sub-sections, namely: *General Background*; *Climate Change*; *Ecological Footprint*; and *Psychodynamic Analysis*.

1. General Background

With over two and a half thousand pages of text, the *United Nations Millennium Ecosystem Assessment* is the most comprehensive survey ever into the state of the planet. It concludes that current human activities threaten the Earth's ability to sustain future generations. While formally published in March 2005, some sections are still to be released. A comprehensive overview of the report can be accessed at: www.millenniumassessment.org/en/index.aspx, while synthesis reports on each of the major sections are available at:

<http://www.millenniumassessment.org/en/Products.Synthesis.aspx>.

Every couple of years the World Wildlife Fund produces an eminently readable and well illustrated overview of the current situation. The most recent edition is the *Living Planet Report 2004*. Summary of the report is carried at several locations supported by the International World Wildlife Fund (WWF) for instance:

http://www.panda.org/news_facts/publications/general/livingplanet/about_lpr.cfm,

or: http://www.panda.org/news_facts/publications/general/livingplanet/index.cfm

and: http://www.wwf.org.uk/filelibrary/pdf/living_planet_briefing.pdf.

The full text is available for download at:

<http://www.panda.org/downloads/general/lpr2004.pdf>,

and: <http://www.wwf.org.uk/filelibrary/pdf/lpr2004.pdf>.

The historic report of the Brundtland Commission to the United Nations, The "Brundtland Report", although lacking in strategies for effective change, set a benchmark in global systems analysis, see: *"Our Common Future", report of the World Commission on Environment and Development* (1987), Oxford University Press 1987. A critical dialogue with the report, entitled *Brundtland and Beyond, Towards a Global Process*, David Wasdell 1987, is available at:

<http://www.meridian.org.uk/Resources/Global%20Dynamics/Bruntland/index.htm>, with extracts and commentary at:

<http://www.meridian.org.uk/About/Origins/Pro-Origin-frameset.htm?p=4>.

Awareness of the critical issues came from both sides of the East-West divide. Before his appointment as Secretary to the Central Committee of the CPSU, Alexander Yakovlev had directed the Institute of World Economy and International Relations of the USSR Academy of Sciences. His revolutionary pamphlet of 1987 makes extraordinary reading, see: Alexander Yakovlev, *Modern Socialism Must First and Foremost Know Itself*, Novosti Press Agency Publishing House, 1987. On page 5 he wrote:

"The conception of a cohesive and interdependent world is closely connected with the ecological problem as well. In my opinion, we have not yet fully realized that, in terms of its global consequences, clinging to the present approaches to nature use is catastrophic. The development of technical civilization based on the thoughtless conquering of nature has considerably undermined the self-regenerating potential of natural complexes. It is precisely we, the Marxists, who are duty bound to develop a comprehensive strategy for saving mankind from an ecological catastrophe, which, if colossal efforts of the

entire world community are not forthcoming, could occur, according to forecasts, within the next few decades."

Further quotes and comments at: <http://www.meridian.org.uk/About/Origins/Pro-Origin-frameset.htm?p=3>.

A few years later a similar overview came from the other side of the Atlantic as Al Gore published *Earth in the Balance*, Penguin Books USA Inc, 1993.

The official report of the Club of Budapest by Ervin Laszlo, the club's founder and president, was published in 2001. It was entitled *Macrosift, navigating the transformation to a sustainable world*, Ervin Laszlo, Berrett-Koehler Publishers Inc, 2001. Analysis and critique of the report is offered as *Global Transformation?*, David Wasdell, 2003, available at: http://www.meridian.org.uk/Resources/Systems_Dynamics/Global%20Transformation/index.htm

2. Climate Change

In preparation for the July 2005 G8 meeting, the UK's Prime Minister convened a technical conference of international expertise in the field of Climate Change. It took place in early February at Exeter under the title: *Avoiding Dangerous Climate Change*, Met Office, Exeter UK 1-3 February 2005. The Overview Summary of proceedings (the Steering Committee Report) can be viewed and downloaded from: <http://www.stabilisation2005.com/outcomes.html>.

Programme details and links to download every abstract and presentation are at: <http://www.stabilisation2005.com/programme.html>.

The conference tends to be strong on methodology but somewhat weak on prediction. However one new feed-back loop emerged which I have not found documented elsewhere, namely the threshold of temperature and carbon-dioxide concentration at which the land-based bio-system moves from being a net sink of carbon to a net source, a shift which accelerates global warming once the threshold has been passed. See *Conditions for Positive feedbacks from the Land Carbon Cycle*, Peter Cox, <http://www.stabilisation2005.com/day1/COX.pdf>.

A somewhat more conservative contrast is provided by *Meeting the Climate Challenge, Recommendations of the International Climate Change Task Force*, available from: The Institute for Public Policy Research, UK (www.ippr.org), The Center for American Progress, USA (www.americanprogress.org), The Australia Institute, Australia (www.tai.org.au).

Another important overview of the field, albeit somewhat dated, is provided by *Inter-Governmental Panel on Climate Change (2001): Climate Change 2001*, Cambridge University Press, 2001

An extremely long-term historical perspective is provided by *How did Humans First Alter the Global Climate?*, William F. Ruddiman, Scientific American, March 2005, pp. 34-41. Ruddiman demonstrates the periodic pattern of climate change stemming from the "wobble" of the earth's axis and the precession of its orbit. He then shows the disruption caused to the pattern by early human agriculture, let alone the current major change triggered by the industrial revolution.

Sir David King, Chief Scientific Adviser to the UK Government, has delivered several major addresses on the current Climate Change scenario. One of the best

presentations is the *Greenpeace Business Lecture*, given on 12th October 2004. A copy of the presentation and its accompanying notes can be downloaded from http://www.ost.gov.uk/about_ost/csa.htm.

Late in 2003 the Pentagon issued a scenario assessment of the threats to US security which might be posed by abrupt climate change. Although it has been unscrupulously treated as a factual report on imminent change it must be stressed that it is a scenario document and NOT a research-based prediction. Suppressed by the White House for some months it is now in the public domain and makes interesting reading. "*An Abrupt Climate Change Scenario and Its Implications for United States National Security*", by Peter Schwartz and Doug Randall, October 2003 is available as a download from: http://www.ems.org/climate/pentagon_Climate_change.html.

During 2005, report after report has been published dealing with a wide variety of climate change issues. Again and again the practical findings have indicated that changes are occurring much more quickly than predicted by even the least conservative models. The next three examples indicate this pattern:

Scientists on AAAS Panel Warn That Ocean Warming is Having Dramatic Effect, American Association for the Advancement of Science, AAAS News Release at: <http://www.aaas.org/news/releases/2005/0217warmingwarming.shtml>.

NASA Report on the Greenland Ice cited in early May by BBC Television News, shows unexpected pace of glacial melt and ice-cap shrinkage. Similar information is coming from current monitoring of the South-Polar ice-cap. For a comprehensive set of studies of both situations see www.nasa.gov (search on Greenland Ice or South Polar Ice). Full melt of the Greenland ice-cap (an expected outcome of current climate change) would raise sea level by six meters with devastating consequences for low-lying countries like Bangladesh and Holland, as well as for major cities like London and New York.

Then came the presentation by Professor Peter Wadhams, Professor of Ocean Physics at Cambridge University, to the Annual Meeting of the European Geosciences Union in Vienna (April 2005). He reported on the slow-down in the Thermo-Haline circulation which in turn drives the Gulf-Stream. Summary article by The Times on 8th May 2005 can be found at: <http://www.timesonline.co.uk/printFriendly/0,,1-523-1602579,00.html>.

Finally in this section I have included the up-to-date overview presentation on the occasion of the Professor David Hall Lecture, delivered by George Monbiot on 4th May 2005 at the Law Society on behalf of the Environmental Law Foundation. It was entitled: *Climate Change: A Crisis of collective denial?* Apart from exploring the social attempt to ignore and repress threatening information, Monbiot also indicates that at the end of the Permian period, a surge in atmospheric carbon dioxide caused by massive volcanic activity led to rise in global temperature and acted as a trigger to a major feedback loop produced by release of methane hydrate from melting permafrost. The resulting shift in global temperature wiped out almost all life on earth. It took nearly 150 million years for bio-diversity to recover. He argues that current carbon-dioxide driven global warming is approaching a similar threshold and could trigger massive methane release, leading to catastrophic climate change. The full transcript is available from ELF and you can listen to the lecture at <http://www.elflaw.org>.

3. Ecological Footprint

The references already noted in the "General Background" section lay the foundation of our understanding of the exponential growth of the ecological footprint of the species within its limited holding environment. Further references given below trace the historic emergence of the information into the public domain. The later works also start to monitor the dysfunctional social reaction to threatening material.

World Dynamics, Jay W. Forrester, MIT Press, USA, 1973, is the classic breakthrough in the use of computer simulation to explore the dynamics of global systems. It was commissioned by the Club of Rome and formed the basis of the accompanying volume:

Limits to Growth, by Donella H. Meadows, Dennis L. Meadows, Jorgen Randers and William W. Behrens II, Universe Books, USA, 1972.

In vain, Randers and Forrester made presentations to the US Council of Churches, outlining the impending crisis and urging religious leaders and institutions to take a lead role as guardians of the long-term value systems of society. See *Churches at the Transition between Growth and World Equilibrium*, Jay W. Forrester, published in *Zygon, the Journal of Religion and Science*, Vol.7. No. 3, pp 145-167. The paper also appeared in *Toward Global Equilibrium: Collected Papers*, Ed. Dennis L. Meadows, Cambridge, Mass., Wright-Allen Press, 1972.²

Twenty years passed, and in spite of the publication of the Brundtland Report, no significant action had been taken. The best computer expertise had been mobilised in Cambridge UK in an attempt to discredit the work of Jay W. Forrester at MIT. It failed. Two decades of accelerating growth, pollution and resource usage had pushed the human enterprise beyond the available limits indicated by the earlier studies. In the belief that world political systems respond rationally and effectively to sound scientific evidence clearly communicated, the authors of *Limits to Growth* refined the computer modelling, updated the analysis of the current situation and published *Beyond The Limits*, by Donella H. Meadows, Dennis L. Meadows, and Jorgen Randers, Chelsea Green Publishing, USA 1992.

Three years later the Club of Rome commissioned a report reviewing the accuracy and development of the *Limits to Growth* analysis, and reviewing the dysfunctional international response to the critical information: *Taking Nature into Account: A report to the Club of Rome*, Wouter Van Dieren Editor, Springer-Verlag, available from <http://dieoff.org/page25.htm>.

By the mid-1990s William E. Rees of the University of British Columbia had devised and refined the *Ecological Footprint Analysis Tool* which provided much more sophisticated technical monitoring of the total resource use of the species measured against the resource availability of its environment. With continuous improvements, the Ecological Footprint Analysis instrument underlies all later studies. Rees, Wackernagel and others wrote up their work in: *Our Ecological Footprint*:

² Editor's note: A well-founded report on the ecological crisis, written in German, was von Dittfurth, Hoimar (1985): *So laßt uns denn ein Apfelbäumchen pflanzen. Es ist soweit.* (Taschenbuchausgabe Droemer-Knaur, München 1985; Erstausgabe bei Rasch und Röhring, Hamburg 1985).

Reducing Human Impact on Earth, Wackernagel, Mathis and William E. Rees, New Society Publishers, Gabriola Island BC and Philadelphia PA, 1996.

Historical anthropology began to throw light on the way other civilisations had encountered limits to growth and either succumbed or survived. One of the best-known studies is: *Collapse: How Societies Choose to Fail or Survive*, Jared Diamond, Allen Lane and Viking Penguin, 2005.

Three decades after their original work, the authors produced: *Limits to Growth: the 30-Year Update*, by Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, Earthscan, UK, 2005. It makes sombre reading. With climate change and ecological degrade visible for all to see, the human enterprise was now well passed its sustainable limits. The option of smooth slow-down in the approach to future ceilings was no longer available. We now faced the necessity of managed reduction in the ecological footprint or risk being plunged into the inevitable horrors of major collapse in global systems. Current strategies are driving us inexorably towards the collapse scenario.

As leading scientists in the field encountered the realities of massive resistance to change in social systems and their political institutions, the agenda began to shift. Conflict in deep-rooted value-systems and an exploration of the darker side of dysfunctional and largely unconscious processes in human social behaviour came into focus. Alongside works already noted, two further papers by William Rees point ahead to the dynamics of the third wave: *Globalization and Sustainability: Conflict or Convergence?*, William E. Rees, Bulletin of Science, Technology and Society, 22 (4): 249-268, August 2002; *Is Humanity Fatally Successful?*, William E. Rees, JBAPA, Vol. 30-31, 2002-03, p. 67-100.

4. Psychodynamic Analysis

Naïve assumptions about human rationality and political response to reality shaped the initial approach of the Club of Rome, the Brundtland Report, the Green movement, the authors of "Limits to Growth", et al. As the years passed the power of vested interests and the inertia (or even conservative dynamics) of social systems were recognised as providing critical constraints on the mobilising of appropriate responses. Today, over three decades after the crucial information on impending climate-change, environmental degradation and footprint overshoot first entered the public domain, deeper processes are being recognised. So George Monbiot speaks of "a crisis of collective denial". In "The 30-year Update" to the "Limits to Growth", the authors describe the resilience of social commitment to unlimited growth in terms of "addiction". While affirming that clear information is a necessary key to transformation, they recognise that information in itself it is not enough to overcome resistance to change in social systems. Innovation is "constrained... ignored, marginalized, ridiculed, denied,... or snuffed out". There is a concluding note of despair in their account: "In our own search for ways to encourage the peaceful restructuring of a system that naturally resists its own transformation, we have tried many tools.... Rational analysis, data gathering, systems thinking, computer modelling, and the clearest words we can find. Those tools... are not enough. We don't know what will be enough."

There is a growing recognition that "something more than science" is involved. William Rees sees the "crisis rooted in fundamental human nature", driven by "deeper and... darker unconscious urges". He asserts that "the common belief that techno-industrial society generally makes its major decisions based on scientific knowledge, fact and analysis, is simply wrong". Response to reality is governed by social belief systems deeply rooted in collective myths and giving rise to a capacity for "mass self delusion". He concludes that "Both theory and data reveal a serious disconnect between scientific knowledge and the global growth myth... The delusional power of the myth overwhelms all the contrary evidence to keep us on our present destructive path".

This is the point at which the contribution of the behavioural sciences is essential. It is urgent that trans-disciplinary capacity be established if the fields of systems' theory, psycho-social analysis, complexity science and environmental studies are to be integrated into a coherent whole and brought to bear on the predicament now facing humanity.

The final quarter of the twentieth century saw an unheralded breakthrough in the analysis of the unconscious roots of human behaviour. It grew out of a programme of consultancy-research exploring the dynamics of individuals, organisations and social systems facing the necessity for rapid change under conditions of high stress and limited resource, precisely the parameters facing contemporary global civilisation.

The emergent paradigm transcended the work of both Freud and Jung. With its roots in the continuum of learning at the boundary between the developing human organism and its holding environment, it integrated the fields of pre-natal, peri-natal and post-natal psychology.³ Analysis of the profound effects of our species-specific traumatisation in the process of birth exposed the causal roots of our dysfunctional response to change and the threat of resource depletion. It also opened up understanding of the connection between individual and common or collective defences against anxiety and their subsequent outworking in human behaviour and social history.⁴ It delineated the unconscious processes which drive our irrational commitment to the "growth myth" and underpin the dynamics of capitalism and our obsession with wealth, power and financial resources. It gave a new response to Einstein's unanswered question "Why war?" It enabled the recognition of religion as a construct of social psychosis.

Above all the new paradigm afforded insight into the irrational social responses to the issues of climate change and limits to growth which have castrated our capacity for collective action and pushed us as a species to the threshold of global catastrophe. It sounded due warning of the possibility that anxieties generated by the environmental crisis could be displaced and acted out in psychotic processes of mutual destruction far worse than those emanating from the environmental crisis alone. In this scenario information about environmental threat is denied, repressed

³ Editor's note: For a quick approach to the fields of prenatal and perinatal psychology, see <http://www.birthpsychology.com> and (in German) <http://www.isppm.de>.

⁴ Editor's note: The research agenda around these ideas is the subject of psychohistory; see <http://www.psychohistory.com> and (in German) <http://www.psychohistorie.de>.

and projected onto the human context. The paranoid process identifies a threatening enemy and goes to war, rather than identify a threatened environment and go to work. Equally psychotic is the debilitating "spiritual" response which animates the cosmos and seeks refuge in a meditative trance state awaiting rescue by forces from the beyond.

Analytic understanding is a necessary but not sufficient condition for social transformation. The new paradigm of psycho-social analysis also generates effective processes and protocols for personal integration and the consequent deconstruction of our collective psychotic mythology. It enables critical interventions in the dynamics of large social systems which can mobilise meta-change, transformation in the processes by which we manage change, so offering grounds for realistic hope in a situation which currently generates social despair.

Three and a half decades of research into the dynamics of organisations and social systems encountering limits to growth can now be brought to bear on the current crisis. The exploration of what happens, why it happens, and how it can happen differently, lies at the heart of the Meridian Programme and of the Unit For Research into Changing Institutions on which it was built. The references in this section are therefore primarily to presentations and publications of the Meridian Programme itself.

For a technical overview of the emergent paradigm-shift based on the insights of Pre and Perinatal Psychology, visit the presentation made at MIT to the Scientific Meeting of the A. K. Rice Institute, and entitled: *Roots of the Common Unconscious: Towards a New Paradigm of Psycho-Social Analysis*, David Wasdell, 2003, http://www.meridian.org.uk/Resources/PsychoSocial_Analysis/Boston/index.htm.

The start of application to the analysis of unconscious drivers in the world of economics is represented in the seminal notes made in preparation for The Other Economic Summit of 1986: *TOES 1986 Conference: Some Basic Notes*, David Wasdell, 1986, <http://www.meridian.org.uk/Resources/Global%20Dynamics/TOES.htm>.

Alleviation of poverty in a bifurcatory system driven by powerful processes of resource acquisition does not solve the problem. Exploration of the dynamics of systemic impoverishment in the South African context was published as: *Systems Analysis and the Roots of Poverty*, David Wasdell, 1990, <http://www.meridian.org.uk/Resources/Global%20Dynamics/Roots%20Poverty/index.htm>.

The powerful unconscious factors which shape the form and formulation of social values, often enshrined in religious constructs, are laid down in our earliest experiences. It is to this area that we must now look if we are to understand and transform our current dysfunctional reactions to the global predicament. The presentation to the inaugural conference of the European College for the Study of Consciousness is worth reading in full: *Religious Experience and Early Imprinting*, David Wasdell, 1992, at: http://www.meridian.org.uk/Resources/PsychoSocial_Analysis/Religious_Experience/index.htm.

One section in particular explored the roots of the "Growth Myth" that is driving our civilisation to the brink of collapse, see: http://www.meridian.org.uk/Resources/PsychoSocial_Analysis/Religious_Experience/frameset.htm?p=29.

That analysis was developed for a major presentation later in the same year, and delivered in Krakow under the title of: *The Pre and Perinatal Grounds of*

Capitalism and the Free Market Economy, David Wasdell, 1992, http://www.meridian.org.uk/Resources/PsychoSocial_Analysis/Capitalism/index.htm.⁵

The relationships between individual and collective, conscious and unconscious, war and religion, terrorism and capital accumulation, environmental relationships and global crisis, were presented in Manhattan in the aftermath of the destruction of the World Trade Towers: *Psychodynamics of War and Religion*, David Wasdell 2002/2003, http://www.meridian.org.uk/Resources/PsychoSocial_Analysis/WandR2/index.htm.

The final five pages of the Postscript to that presentation highlight the essential application of the psychodynamic analysis to our current predicament, see: http://www.meridian.org.uk/Resources/PsychoSocial_Analysis/WandR2/frameset.htm?p=49.

The Postscript ends with the words:

As our eyes clear and we see our situation for what it really is, our essential emotional response may well be that to which Al Gore referred when he said "The healing of the global environment depends initially upon our ability to grieve for the tragedy which our collision with the Earth's ecological system is causing".

We stand together at a most profound turning point in world history. It is the turning point of reversed dependency. We are moving out of an age in which humanity could depend for proliferation and survival upon the apparently infinite resource base of the global ecology. We are moving into an era in which that global ecology depends on the policies and actions of the parasite it has spawned. The transitional phase of that reversal is now upon us. The outcome depends upon our response. The future of our world is literally in our hands.

That is the context which defines the purpose of the Meridian Programme: <http://www.meridian.org.uk/About/Purpose/frameset.htm?p=1>.

The Meridian Programme exists: To serve the task of human integration at every level of the world system in order to ensure species survival and to optimise the quality of life within the sustainable limits of our holding environment. Now is the time for all people to come to the aid of the Planet.

⁵ Editor's note: A publication by the same author in German language is: Wasdell, David (1993): Die pränatalen und perinatalen Wurzeln von Religion und Krieg. (Centaurus Verlagsges., Pfaffenweiler 1993).