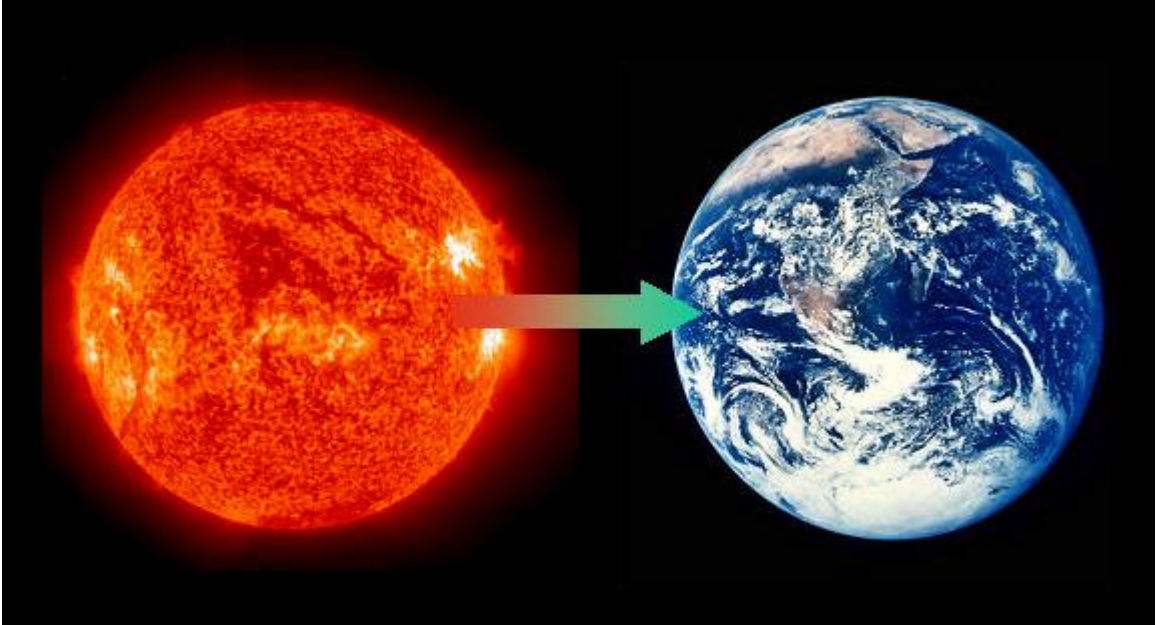


The
APOLLO-GAIA
Project



Hosted by the Meridian Programme

Directed By

David Wasdell



By way of Introduction

The Critical Context

“There now exists a state of Global Emergency”

Leading edge analysis of the dynamics of the whole earth system (Gaia) indicates the existence of a “hot earth” scenario beyond anything experienced in the stable containment of the current glacial/inter-glacial period.

The best historical example is provided by the Paleocene-Eocene Thermal Maximum, the fifth major extinction event which occurred some 55 million years ago.

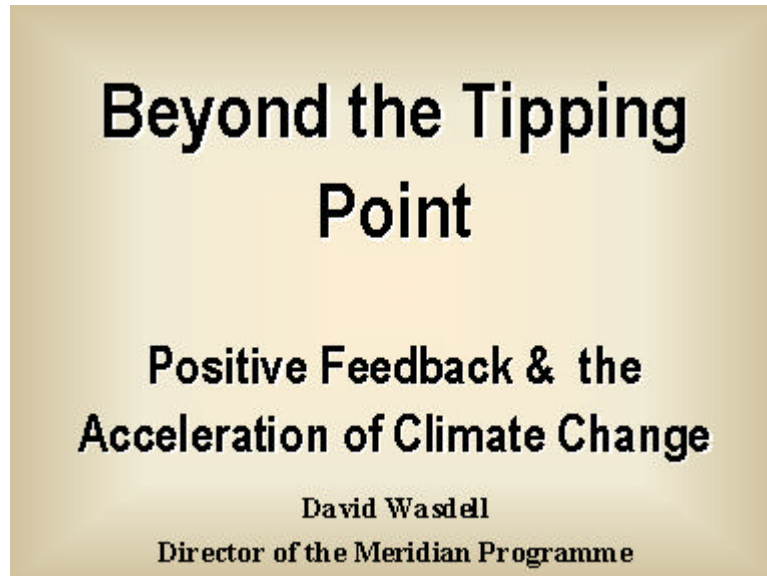
The anthropogenic disturbance of the whole earth system is of the same order as that which triggered the PETM

In addition:

1. The greenhouse gas spike of the PETM levelled off at about 440 parts per million. In contrast we are approaching that level on a hyper-exponential trajectory.
2. The rate at which the crisis is being provoked is some 30 times faster than that of the PETM, placing all adaptive systems under significantly greater stress.
3. The resilience of the whole earth system has been massively compromised and is being increasingly downgraded by human activity.

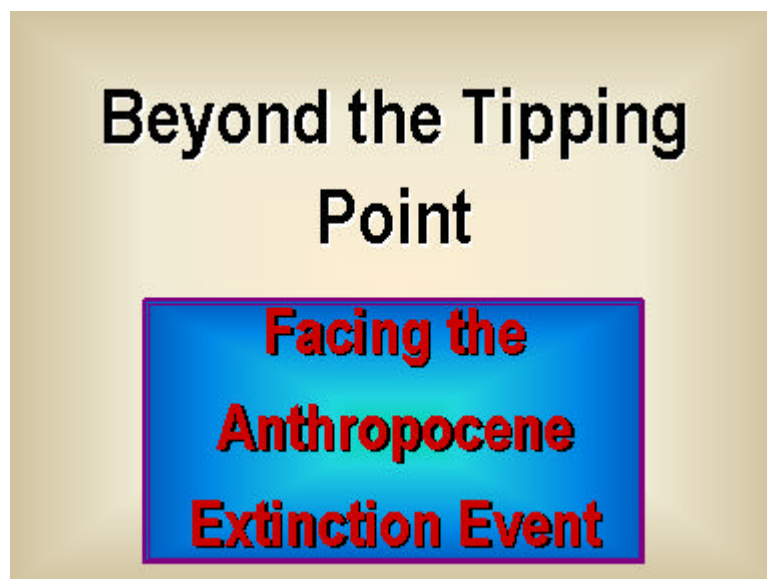
The potential Anthropocene Extinction Event therefore has the capacity to be significantly more severe than that associated with the PETM which wiped out some 85% of all life on earth.

The ground for that analysis is presented in:



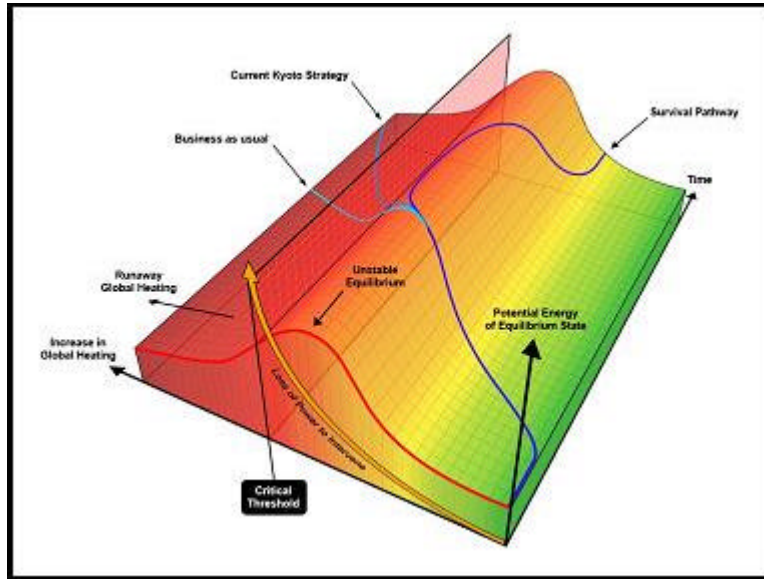
See: www.meridian.org.uk

Which can be accessed from the home page of the Meridian web-site



It is subtitled: “Facing the Anthropocene Extinction Event”, and unless we can achieve the goal of Climate Stabilization, that is exactly where we are headed.

Here is a very brief summary of the analysis, starting with the equilibrium landscape model of the feedback-dominated, unstable equilibrium of the whole earth system:



The tipping point, or watershed, is represented by the ridge stretching from left to right. Near to the front face is the green valley area of historically stable equilibrium during the glacial/interglacial period. The surface rises from the valley through the inflection line, where the positive feedback loops begin to influence the system. It then climbs on up to the unstable equilibrium at the summit of the ridge where the positive and negative feedback processes just cancel each other out. Over the hill, where we now are, the positive feedback loops are dominant and accelerate runaway global heating and the resultant climate change.

The wall marking the critical threshold rises through the down-slope, beyond the peak of the unstable equilibrium. The window of opportunity within which human intervention (by reduction in GHG emissions, increased cloud albedo, etc.) is able to contain the process of global heating and return the system to equilibrium, lies uphill from the critical threshold. It is not yet clear how close to that threshold we are in reality, or whether in fact it has already been passed. Loss of power to intervene in the system becomes absolute as the wall is approached. **The closer we come to the critical threshold, the more massive and costly the required intervention becomes.**

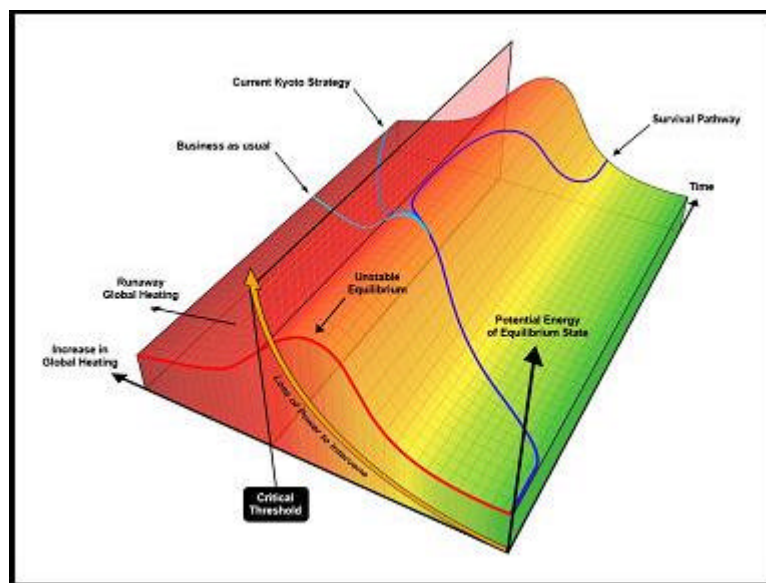
Inactivity is not neutral. Every passing year reduces even further the window of opportunity within which it is still possible to avoid the chain-reaction of uncontrollable runaway climate change.

We are now in the early stages of runaway Climate Change.

There does not appear to be any naturally occurring negative feedback process in place to contain its effects.

To achieve climate stabilization we have to generate a negative feedback intervention of sufficient power to overcome the now active positive feedback process.

**Then maintain its effectiveness
during the period while
temperature-driven feedback
continues to be active.**



There is convergent agreement that the situation now demands the establishment of what was initially described as a “Manhattan Project” of Climate Change.

It would involve the following four elements:

1. Research

To establish at the highest possible level of competence and as a matter of utmost urgency, a global analysis and modelling capacity in order:

- To test the accuracy of the Anthropocene Extinction Event Hypothesis

- To map and quantify the complex feedback system driving the dynamics
- To ascertain the time-frame of the event and its cumulative impact

2. Planning

To develop an effective intervention strategy to prevent the occurrence of the AEE and to minimise potential damage to the whole earth system

3. Action

To mobilise global action to implement the strategy as quickly and effectively as possible

4. Reflexive Learning

To monitor the emergent situation, to evolve continuously improving task performance, and to ensure optimum goal achievement

“The possibility of a tipping point in the earth system as a whole which prevents the recovery of stable equilibrium and leads to a process of runaway climate change, is now the critical research agenda, requiring the concentration of global resources in a “Manhattan Project” style engagement.”

So, for example, Professor John Schellnhuber of PIK Potsdam made this critical point at a recent EU Commission Workshop on Complexity Science:

“All other work on impact assessment, mitigation and adaptation depends on the outcome of this overarching issue.”

John Schellnhuber: PIK Potsdam.
Quoted from EU Commission Report
On Complexity Science Workshop

**Towards a
“Manhattan Project”
of
Climate Science
?**

So what did John Schellnhuber and the others have in mind when they used the “Manhattan Project” icon? Certainly not the imprisoning of all the top climate scientists in a concentration camp in the desert under the command of a reincarnation of Oppenheimer as their dictatorial and abusive commander in chief! The proposal was more to do with mobilising best possible research into the new dynamics of climate systems, developing virtual team-work around the world, with adequate resources to move beyond theory to effective application. The envisaged outcome is the successful damping of the chain-reaction of runaway climate change before it goes completely out of control. It represents a refusal to give away power to political and economic vested interests or to leave decision-making solely in the hands of those whose power and wealth depend on the denial of the scientific realities of our predicament, and the prevention any effective action to deal with it. It is nothing short of a revolution in the scientific community on the grounds that those have greatest access to knowledge have the greatest responsibility for its application.



But “Manhattan” is a bad name with wrong associations.



And since 9.11 those associations just got a whole lot worse. There is no way that a project identified with the original production of weapons of mass destruction, or one that is linked to the site of national tragedy, the matrix of the war on terror, or the seat of the “great satan’s” icon of world economic and military dominance, is going to be acceptable as flag to rally world-wide collaboration in the pursuit of global survival, particularly when the implications for the oil-producing nations are so profound.

Over the last few months there has been a groundswell of change away from the “Manhattan” icon, to the symbol of an “Apollo” project. So for instance, Martin Rees, President of the British Royal Society, has called for a “Manhattan/Apollo Project... a crash programme to move to a low carbon energy economy”. In the USA, the “Apollo Alliance” has been formed with similar objectives.

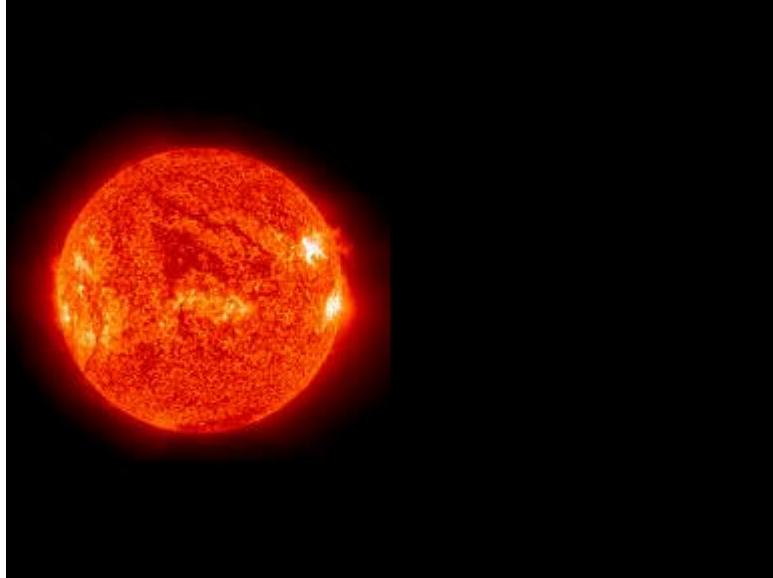
The Apollo Project was launched by President J. F. Kennedy with the goal of placing a man on the moon. Today's Apollo Project has the goal of enabling the survival of humanity on the Earth. It's target is the stabilisation of the climate of "Gaia", the whole-earth-system. Let me therefore introduce



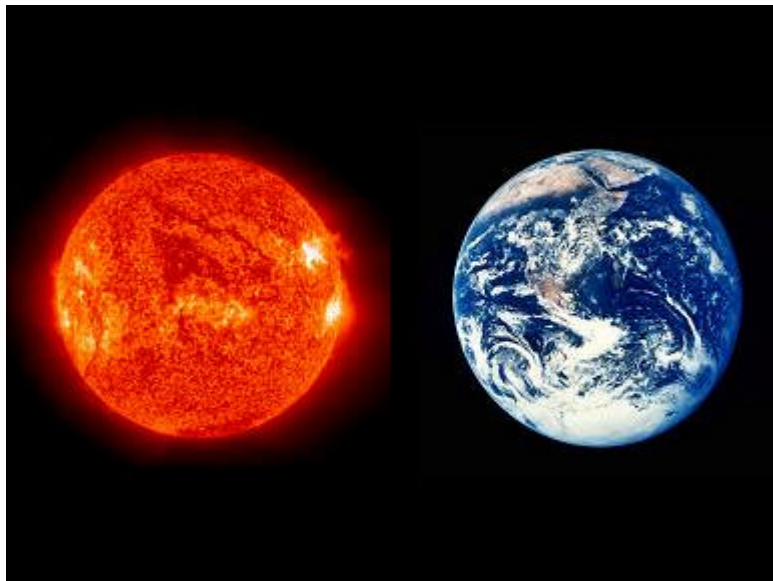
The Apollo-Gaia Project. Two classical deities linked by a hyphen, symbolising:



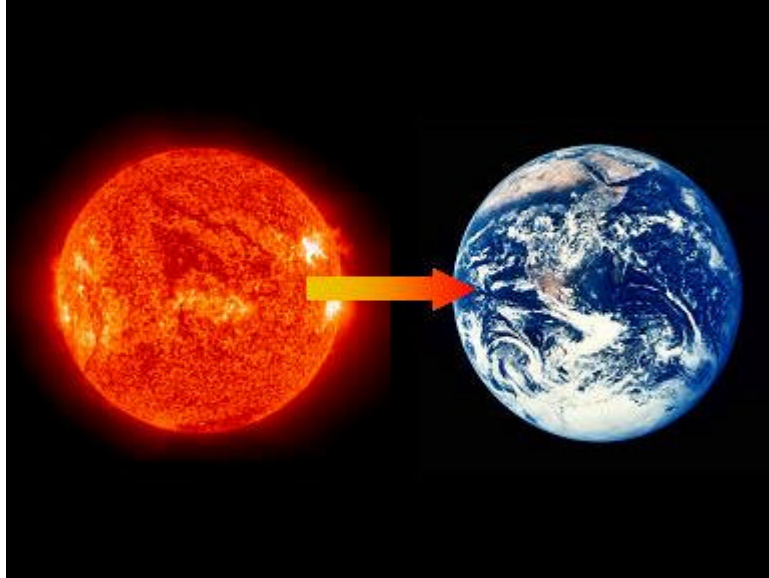
The sun and the earth and the energy transaction between them.



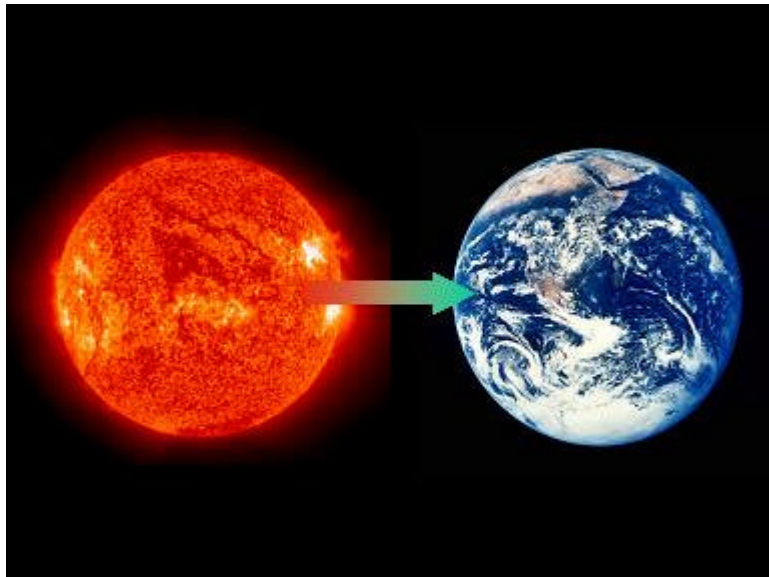
Apollo on his own is a giant energy source powered by nuclear-fusion, whose plasma is contained by massive gravitational and magnetic forces.



Gaia, on the other hand, without his heat would be an icy, arid, barren and lifeless orb.



It is their relationship that brings the earth to life and life to the earth. However, since the start of the Industrial Revolution, humanity has mined Gaia's stores of historically sequestered carbon, leached from the atmosphere during times of Planetary overheating. With acceleratingly retentive atmosphere, Gaia is therefore overheating, threatening its life-systems, and precipitating another major extinction event. The goal of the Apollo-Gaia Project is no less than



The transformation of the relationship between the Sun and the Earth, to prevent further overheating, to stabilise the climate, to restore the viability of the life-support systems, to abort the threatened extinction event before it is too late.

That change in the arrow from life-threatening red to life saving green is the task of Apollo-Gaia in one symbolic movement.



Let me introduce to you, two heroes of our time: Commander Jim Lovell and Professor Jim Lovelock. Jim Lovell, astronaut extraordinaire, commander of the epic flight of Apollo 13. Jim Lovelock, independent scientist, inventor extraordinaire, systems thinker and originator of the “Gaia Hypothesis” which opened the way for our modern understanding of the interdependence and co-evolution of living systems within the whole-earth environment.

Standing side by side, these two men spoke movingly at the launch of the boat symbolically carrying the hopes of humanity across the Atlantic to Rio de Janeiro for the great Earth Summit in 1992. The event was described at the time, as the one last moment of hope for a humanity facing increasingly dangerous climate change. Tragically, the powerful vested interests of economic, military and political institutions saw the effective response to climate change as a greater threat to their wealth and power, than climate change itself was to the life-support systems of our global environment. The rest is history.

Today that tide is turning. No longer do we yield power to those who hold the world to ransom for the sake of short-term selfish gain. Now, and most urgently, is the time to realise the frustrated hopes represented by these two men, who each from his own perspective, saw the earth as whole. Perhaps in that unlikely juxtaposition, that moment of meeting, the seeds were sown which today begin to bear fruit



As we launch the Apollo-Gaia Project. The name bears some association with **apologia**, and even with **apology**! Perhaps some apology is indeed due from the scientific community for our lack of robust assertiveness, our fearful abdication from responsibility, our collusion retreat into “pure” science, and our abandonment of the realm of application and policy formulation. Certainly an apologia is overdue, a clear, forceful vindication of the sure-enough findings of climate science, quarried from our painstaking engagement with a potentially threatening reality.

The meaning of Apollo requires one further refinement of focus, from association with the multi-launch program as a whole, to the very specific identification with the momentous mission



Of Apollo 13. That triumphant failure stands as an awesome parable for our time. As the epic drama unfolded it changed from an attempt to reach for the Moon, into a struggle for survival and the regaining of the Earth.



To start with there was nothing out of the ordinary, except that everything about the Apollo project was extraordinary! As the giant Saturn rocket was readied for launch, there was no inkling of the fateful turn of events that would befall on the journey ahead.



Lift-off was fault-free, done by the book, though, as always, spectacular. Destination: lunar landing. Apollo 13 was on its way.



Back in Houston the control centre was quiet. The meticulous and oft-repeated rehearsals, and the detailed documentation of every aspect and eventuality of the mission were paying off. Fly-by-manual was the order of the day. Everything was under control. Right up to the moment of the explosion



And Jim Lovell's laconic message: "Houston, we have a problem." That changed everything. The moon-landing was aborted. Survival took total priority. Maintenance of the basic life-support system and the achievement of a successful re-entry became the over-riding objectives. Please note that no-one called in a Swedish economist to carry out a cost-benefit analysis of activity designed to save the lives of just three men!



The dynamic transformation of the control centre was extraordinary. The moment of shock and disbelief as people crowded round screens, gave way to deep concern as the gravity of the situation began to dawn. There was no manual for this! Astronauts and ground staff went into problem-solving mode. Energy systems were closed down to conserve power. Carbon-dioxide concentrations started to rise to dangerous levels and had to be brought back under control. Resource-use was minimised in order to extend survival-time to the point of re-entry. There was physical and emotional support for fellow human beings facing extreme stress and possible death. Management of anxiety, panic, paralysis and despair was crucial if effective work and innovative solutions were to be generated and sustained.



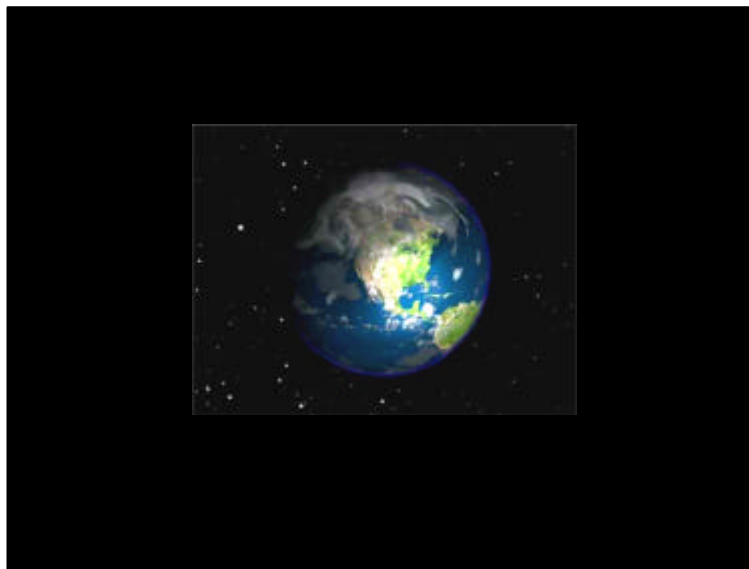
The control-centre re-structured around a dynamic primary work group of about a dozen, with interchangeable membership and orbital specialist sub-teams. The task was to maximise creativity in real time under conditions of high stress and complexity.

“Failure is not an option”

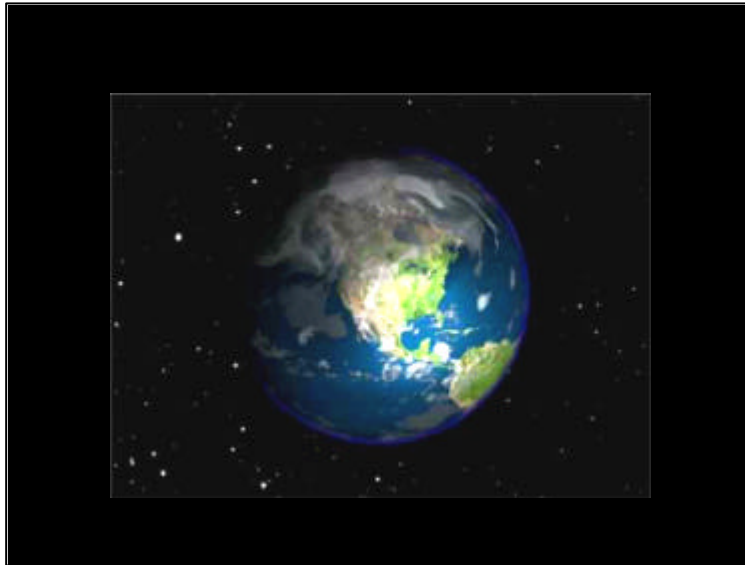
Gene Kranz

Apollo 13: Mission Controller

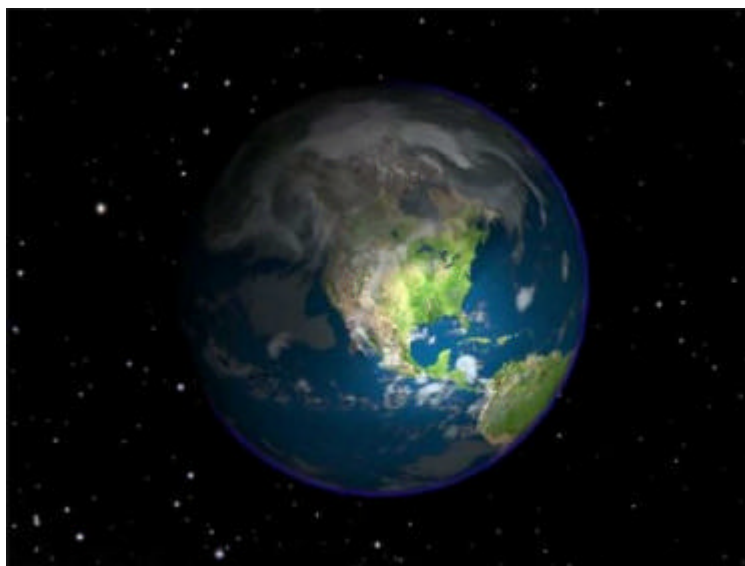
Under conditions of near-traumatic stress, and faced with a rapidly shifting set of near-insuperable technical problems, Gene Kranz, the Apollo 13 Mission Controller suppressed panic, over-rode despair and sustained solution-oriented motivation with his repeated assertion: “Failure is not an option!”



Meanwhile, out in space, three men, one of them ill, huddled for warmth in the freezing capsule. They had to fight off tiredness and despair, maintaining collaborative problem-solving and active communication with Houston control.



And the earth got nearer



And nearer.

They faced two fundamental crises. The first was time-based. Would the life-support system fail before re-entry was achieved? Environmental conditions were non-sustainable. There was only a limited time left before they crossed the threshold of system collapse and faced inevitable death.

The second crisis concerned spatial orientation. Could they achieve that narrow window of the re-entry trajectory between bounce and burn? As they touched the outer layers of the atmosphere not knowing whether the vital heat shield had been fatally damaged in the initial explosion.



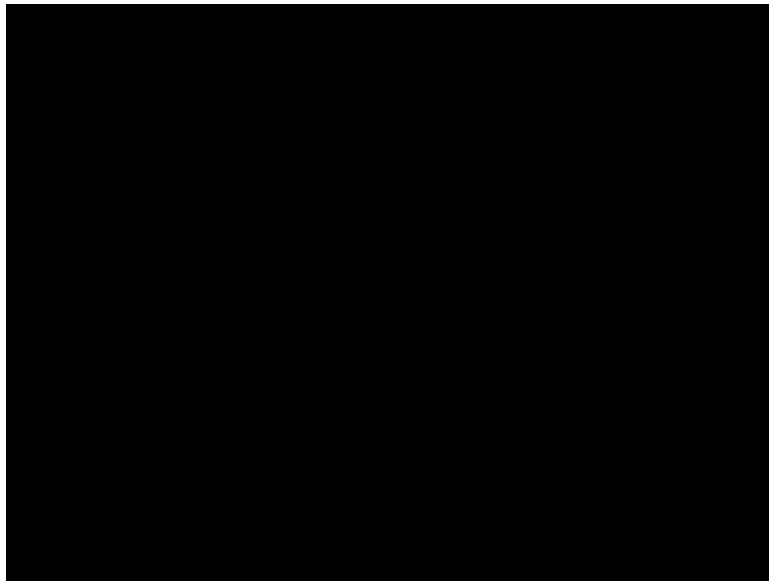
They went into radio black-out. No-one knew for sure what the outcome would be. Those moments of uncertainty and suspense felt like an eternity,



cut short only when the descent chutes were spotted from a high-flying aircraft, and radio contact was re-established. The moment of emotional release, of triumph and relief, was almost unbearably intense.



Three men had survived and returned to a sustainable environment. That was the triumph of Apollo 13



Apollo 13 provides a parable for our global predicament. It was a micro-cosmic event, happening at high speed. It reflected in a matter of days, dynamics which our global environment will take decades to complete. Today the whole world faces a “Houston moment”

Planet Earth

We Have a Problem

“Planet Earth, we have a problem”. The future of our world is in our hands.



The space capsule has been replaced by our global home. Its life-support system is breaking down in slow motion. Houston has expanded to embrace the whole of global civilisation. Every single one of us, individually and collectively is engaged in a battle for survival. The complex web of life that inhabits the surface of this fragile orb is at risk. We must therefore:

- Recognise that there now exists a state of global emergency.
- Declare CO₂ to be an eco-toxin, continued emission of which constitutes a crime against humanity.
- Minimise energy use during the transition to a zero-carbon economy.
- Reduce atmospheric concentration of carbon-dioxide to pre-industrial levels.
- Transform our technology, our life-style and value-systems.
- Hold each other through the dark times of fear and uncertainty.
- Work together creatively when it would be so much easier to go to war, or collapse in dissociative paralysis and despair.
- Resist the attempts of the rich and powerful to protect their own enclaves while the rest of Rome burns.
- Constrain the activity of the vandals and looters and those out to make a fast buck, to exploit the crisis for their own ends, whatever the consequences.

All this we will have to do in the narrow window of time remaining before the fate of our life-support system is irrevocably sealed. There will only be a narrow path of strategically

effective activity between the Cylla and Charibdis, of bounce and burn, between the unmanageable collapse of our social civilisation and the unsustainable collapse of the ecosystem on which we depend.

Few if any of us alive today will live to see the outcome of our endeavours. It will be many decades before we will be certain that we have succeeded in establishing a stable, sustainable and viable global environment. Then our children, and grandchildren and their descendents will look up and see the chutes in the sky, and hold each other with weeping and relief, with pride and joy, and say “We made it through the dark times. Gaia still has a future in which we can make our home. That was humanity’s finest hour!”



That is the real meaning of the Apollo-Gaia Project.

There now exists a state of global emergency. The future of our world is in our hands