LYSENKOISM AND GLOBAL WARMING

by

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LYSENKOISM AND GLOBAL WARMING

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ABSTRACT
A classic instance of the baleful effect of political interference in science is provided by the Lysenko Affair. There are, unfortunately, close parallels between that example and the modern politics of Global Warming. Significantly, Trofim Lysenko introduced his ideas first through politics. Some think his ideas had Marxist backing because biology could be then modified in the way that Soviet communists wanted – in order to control people’s behaviour. Furthermore, Lysenko demonised conventional genetics, which again suited his masters - who believed this to be the basis behind Fascist eugenics.

1. INTRODUCTION.
Trofim Lysenko was an insignificant agriculturalist, who thought he had a new way of developing crops that would vastly increase food production in the starving Russia of Stalin. It was called vernalisation, and included treating seeds before cultivation to affect their behaviour.

The Soviet government was anxious to increase food production, and quell disturbances amongst the growers; and Lysenko was an adept propagandist, and became a cult leader who impressed the peasants. Ultimately, he became the head of the Soviet Lenin All Union Institute of Agricultural Sciences, and ran the nation’s research in this field. He promised to triple or to quadruple crop yields.
2. NO OPPOSITION TOLERATED

Opposition to Lysenko was not tolerated, and was labelled ‘bourgeois’ or ‘fascist’. Lysenko used his position to denounce Mendelian geneticists as "fly-lovers and people haters", which had serious consequences. From 1934 to 1940, with Stalin’s blessing, numerous geneticists were shot and others exiled to Siberia. Nikolai Vavilov, for example, a truly great geneticist and biogeographer, was sent to Siberia where he died of starvation in 1943, while Lysenko, in person, took over his role of Director of the Lenin Academy of Agricultural Sciences. Any survivor of the purge had to keep quiet. In 1948 genetics was officially labelled a ‘bourgeois pseudoscience’ and genetic research came to a halt. Krushchev also supported Lysenko, but after his departure in 1964 the Academy of Sciences investigated the records, and a devastating critique of Lysenko was made public. The ban on genetics was lifted in 1965.
Opposition to Global Warming is often likened to denial of the Holocaust. We are repeatedly told that the "science is settled" and there is no debate – hardly a scientific approach. The influence of the IPCC spread throughout the world of administration, and it became increasingly difficult to get research funding without being a believer in Global Warming.

3. A NEW RELIGION
Why would governments be persuaded to follow this idea before it is scientifically evaluated? One reason may be that there was a rising tide of what some have likened to a new religion – Environmentalism. Of course no politician wants to be seen as "anti-environment", nor lose the votes of the Greens. The Greens, for their part, are happy to follow the Global Warming line because it gives them enormous political power. As a minor party or influence they often hold the balance of power, and the major parties dare not offend them.

The propaganda machine of the IPCC is magnificent, with its greatest tool being the Al Gore film *An Inconvenient Truth*. It still has enormous impact, although the High Court in Britain did decide it could not be shown in schools without comment because it contained major errors. I suspect this film was the reason the Nobel Peace Prize was given to Al Gore and the IPCC. Another propaganda hit was the "Hockey Stick Graph", purporting to show that temperature was rising at an ever-increasing rate. This has been totally discredited, but it still seems to be branded on the collective mind of politicians and the public. Much government propaganda has been lent to support Global Warming and major media outlets, such as the BBC in Britain, have chosen to join the debate on the Global Warming side.

4. GROWTH OF THE GLOBAL WARMING MACHINE
"Global Warming", like Lysenkoism, is much easier to understand than the complexities of real science. This appeals to the public, and also to politicians and other influential people, who can talk as if they understand it. If questioned about details they refer back to the IPCC reports.

So-called "independent reports" on climate change have been produced by Nicholas Stern in Britain and Ross Garnaut in Australia. Both Stern and Garnaut make it plain they are not scientists but economists, and have based their conclusions on the IPCC reports. Yet both continue to make public statements warning about the increasing dangers of climate change - as if they were experts. This merely keeps their reports in the public eye, and echoes the flawed science of IPCC Global Warming. It has been claimed that Sir Nicholas - now The Lord Stern of Brentford - is currently also in the business of carbon trading.

At a lower level, without the need for evidence, everything can be blamed on Global Warming – droughts, floods, malaria, hurricanes and even cooling! The IPCC rhetoric continues; although its predictions have as yet failed to come true, just as Lysenkoism continued when the promised crop increases never arrived. The IPCC forecast ever-increasing temperatures, but global temperatures have become lower since 1998. They have now put off Global Warming for 15 years because some other factor has intervened. The models did not predict this event, but such detail does not affect the faithful.
Some scientists sided with Global Warming in the early days, and are so committed they cannot get off the bandwagon. Others worked for the IPCC, but resigned when they realised how their work was being twisted, or that real science did not support the claims that were being made. Luckily we do not have the equivalent of Siberia to deal with them.

The Global Warming affair has already lasted twenty years, and many bureaucracies and scientific research centres have sprung up – most of the latter being computer-simulators. Computer simulation has a part to play in science, but it should not replace observation, and hypothesis testing and falsification. The name of the game has changed from ‘Global Warming’ to ‘Climate Change’, to broaden the range of effects that can be blamed on warming. There are now government Departments of Climate Change, for which read "Departments of Global Warming Blamed on Anthropogenic Carbon Dioxide".

5. A LESSON FROM HISTORY: PARALLELS WITH LYSENKOISM
We should not forget the basic fact, that the one villain in the piece - and the one that is costing billions of dollars - is anthropogenic carbon dioxide. This is the equivalent of ‘vernalisation’ in the Lysenko era.

In summary, the comparisons between Lysenkoism and Global Warming are:
1. Work first through political organisations.
2. Claim that the science is settled. There is nothing to debate.
3. Disregard or deny all the accumulating evidence that the predictions are wrong.
4. Demonise the opposition (Mendelian geneticists; Global Warming ‘deniers’)
5. Victimise the opposition (execution or exile; loss of jobs or research funds)
6. Relate to a current ideology (Stalinism; Environmentalism)
7. Support a vast propaganda machine.
8. Create a huge bureaucracy where many people have careers dependent upon ‘the ruling concept’.

6. CONCLUSIONS
The parallel between the Lysenkoism of the Soviet Era, and the Global Warming of today, is expressed nicely in the words of Helena Sheehan (1993), who wrote of Lysenkoism:

“What went wrong was that the proper procedures for coming to terms with such complex issues were short-circuited by grasping for easy slogans and simplistic solutions and imposing them by administrative fiat.”

Lysenkoism was eventually replaced by real science. The same will happen to Global Warming eventually, because real science will not go away.

REFERENCES
Glaciers — science

Cliff Ollier* takes issue with some common misconceptions about how ice-sheets move, and doubts many pronouncements about the “collapse” of the planet’s ice sheets.

In these days of warnings about climate change, the ice sheets of Greenland and Antarctica play an important role. Alan Carlin wrote “Hansen et al. believe that the most likely and most critical of these dangerous effects is the possibility of substantial sea level rise due to the breakup of parts or all of the ice sheets covering Greenland and West Antarctica.” (my emphasis).

Alarm started with ‘global warming’ but the most graphic scare is still of rising sea levels, and many articles continue to appear, describing sea level rise of many metres caused by the melting of the icesheets.

Like the original warming scares, the melting scares are based on models, and poor models at that. The commonest one is the notion that glaciers slide downhill, lubricated by meltwater, and that this can pass a threshold and lead to melting of all the ice sheets and a runaway rise in sea level. The sliding hypothesis was the best available to De Saussure (1779), but we have learned a lot since then — but it has been forgotten again in many modern models.

The mechanism of glacier flow was long controversial, as observers tried to reconcile the solidness of ice with its ability to flow as a non-rigid body. Early experimenters placed lines of sticks across glaciers and found the middle moved faster than the edges — there was plasticity in the ice. Fierce controversies raged and brought in occasional new aspects of physics (such as regelation), but it was not until the crystallography of ice could be studied that real progress was made. The crystals in a glacier take on a preferred orientation as they travel down glacier. The crystals of ice at the glacier terminus may be a thousand times bigger than those at the source. How can this be? Scientist in the 1940s such as Max Perutz (a Nobel Prize winner in Physics, not Peace!) explained glaciers as being like a metamorphic rock consisting of one mineral, which flowed by a process called creep (and incidentally developed petrofabric properties not explained in other models).

It is also worth noting the geometry and age of the great icecaps. The Greenland, East Antarctica and West Antarctica ice sheets occupy

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kilometre-deep basins, and the ice cannot possibly slide downhill – it has to flow uphill. In simple numbers the Greenland icecap has existed for three million years and the Antarctic Ice sheets 30 million. Why such contrast between the two hemispheres? The idea that both simply respond to average temperatures of today is oversimplified.

Glacier budget
Glaciers grow, flow and melt continuously, with a budget of gains and losses. Snow falls on high ground. It compacts with time, air is extruded, and it turns into solid ice. More precipitation of snow forms another layer on the top, which goes through the same process, so the ice grows thicker by the addition of new layers at the surface. This stratified ice preserves data on temperature and carbon dioxide over hundreds of thousands of years. When the ice is thick enough it starts to flow under the force of gravity, and when it reaches a lower altitude or latitude where temperature is higher it starts to melt and evaporate (ablate).

If growth and melting balance, the glacier appears to be ‘stationary’. If precipitation exceeds melting the glacier advances: if melting exceeds precipitation the glacier recedes, but there will be a time lag between cause and effect.

In ice sheets it may take many thousands of years for ice to flow from the accumulation area to the melting area. The balance between movement and melting therefore does not relate to today’s climate, but to the climate thousands of years ago.

How glaciers move
Glacier flow is by a process called creep, essentially the movement of molecules from one crystal to another. Ice crystals are in the hexagonal system with glide planes parallel to the base. In lake ice, the c-axes are vertical and the glide planes all parallel to the lake surface, so a push parallel to the glide planes deforms the ice readily. Greater stress is needed to deform ice perpendicularly to these glide planes (Figure 1). In the absence of any stress, an individual grain of
ice will lose as many molecules as it gains, and so remain unchanged. A stressed crystal will lose more molecules than it gains and so shrink, while a nearby unstressed grain will gain more than it loses, and grow. In this way glacier ice acquires a preferred petrofabric orientation. The ice crystals at a glacier snout have a volume about a thousand times greater than that of the first-formed ice crystals at the source of the glacier. These observations cannot be explained by mechanisms that ignore the creep mechanism of glacier flow.

**Creep - proportional to temperature**

The closer the temperature comes to melting point, the greater the creep rate. In experiments at a fixed stress it was found that the creep rate at -1°C is 1000 times greater than at -20°C. In valley glaciers the ice is almost everywhere at the prevailing melting point of ice, because the latent heat of ice is very much greater than its specific heat. Very little heat is required to raise the temperature of an ice block from -1°C to 0°C - it takes 80 times as much heat to turn the same ice block at 0°C into water at 0°C. Because the temperature does not vary in valley glaciers, they are unaffected by this first law of creep.

Ice caps are very different. They are cooled at the surface to temperatures far below freezing point, which removes their capacity to flow. Ice caps can be kilometres thick, and their warmest part is actually the base, where the ice is warmed by geothermal heat, and where flow is concentrated. It is because only the lower part of ice sheets can flow that the great thicknesses of stratified ice found in ice cores can accumulate in the upper part.

At Vostok, Antarctica, during the month of July 1987 the surface temperature never rose above -72.2°C. At these temperatures ice cannot flow under the pressures that prevail near surface. Warming has no effect at such low temperatures because ice will not flow any faster at -60°C than at -70°C.

**Creep - proportional to stress**

Stress in this context is proportional to the weight of overlying ice. The greater the weight, the faster the flow. This explains why the stratified ice revealed in ice cores can only persist to a certain depth. When the weight of the overlying pile reaches a threshold, the ice starts to flow and the stratification is destroyed. In the Vostok cores the undisturbed ice continued to a depth of 3310m when yield stress was reached and the ice flowed.

The threshold boundary between non-flowing ice and flowing ice marks the yield stress level. The brittle upper ice in an alpine glacier is a solid being carried along on plastic ice beneath. A valley glacier flows faster in the middle than at the edges, and the solid, brittle ice is broken up by a series of cracks called crevasses. The base of crevasses marks the position of the yield stress and the transition from brittle to plastic ice. In Antarctic and Greenland ice sheets crevasses occur where the ice is flowing towards the edge, but not in the areas of accumulation.

Meltwater can only penetrate through the ice if crevasses reach the base. If the yield stress level is reached before bedrock, meltwater cannot reach the base. All those theories based on ice sliding on a lubricated base have very limited application.

**There is no surface melting of icecaps**

The stratified ice is of great age. In Greenland, several ice-cores have more than 3km of undisturbed ice which go back in time for over 105,000 years - far less than the Antarctic equivalent. The Vostok cores in Antarctica provide data for the past 414,000 years before the ice starts to deform by flow. Dome F core reached 3035m and Dome C core 3309m, both dating back to 720,000 years. The EPICA core in Antarctica goes back to 760,000 years, and retains complete records of deposition, although temperatures at times during that period have been higher than today. They do not fit a model of surface melting, either now or in the past. After three quarters of a million years of documented continuous accumulation, how can we believe that right now the world’s ice sheets are “collapsing”?  

**Glacial surges**

Climate alarmists note some glaciers that have increased in speed, and attribute this directly to climate warming. It is much better explained, however, by known laws of creep. The speed of valley glaciers is rather variable. Sometimes a valley glacier will flow several times faster than it did earlier. Suppose we had a long period of heavy precipitation. This would cause a thickening of the ice, and more rapid glacial flow. The pulse of more rapid flow would eventually pass down the valley. The increase in flow rate is not related to present day air temperature, but to increased precipitation long ago. Hubbard Glacier surged in 1986, at the height of the global warming that took place between 1975 and 1998.

**Pulling glaciers to the sea**

A number of papers give the impression that melting of glacial ice at the sea somehow causes the glacier to flow faster. Hubbard Glacier is the largest tidewater glacier on the North American continent. Since it was first mapped in 1895 it has been thickening and advancing (at a rate of 25m per year), even though smaller glaciers in the vicinity have been retreating. Why?

One ‘explanation’ (USGS 2007) says: “This atypical behaviour is an important example of a calving glacier cycle in which glacier advance and retreat is controlled more by the mechanics of terminus calving than by climate fluctuations.” But glaciers are pushed by the weight of the glacier, not sucked by the calving at the ice front, and destruction at the ice front does not depend on present day climate. And why should calving cause an advance?

The cause of the advance is most likely that the glacier has been thickening since 1895, a feature described since the first observations were made.
Fig. 1. (a) Ice crystallises in the hexagonal system, with glide planes parallel to the base. In lake ice the c-axes of the crystals are vertical and the glide planes parallel to the water surface. (b) Crystal deformed plastically by shear stress parallel to the glide planes. (c) Elastic deformation of a crystal by strain normal to the glide planes.

Fig. 2. Diagrammatic long section of a glacier showing the effect of yield stress. The lower part of the glacier consists of ice stressed beyond yield stress, so its flow will be plastic. The upper part consists of ice with stress below yield stress, so it is brittle and cracks to form crevasses as it is carried down-glacier.
Related false notions
The breakup of ice sheets

Wherever ice sheets or glaciers reach the sea, the ice floats and eventually breaks off to form icebergs. It is part of the glacial budget: the glaciers never flowed on to the equator. Icebergs have always been with us, and Captain Cook saw icebergs on his search for the great south land.

Yet we are shown many movies of ice sheets collapsing, and are told it is a sign of global warming. In fact although the break-up of ice sheets is simply part of the glacier budget, observers seem surprised by the size and suddenness of what they see. In 2007, when a piece of the Greenland ice shelf broke away, interviewed scientists said they were surprised at how suddenly it happened. How else but suddenly would a piece of ice shelf break off? The actual break is inevitably a sudden event – but one that can easily be built into a global warming horror scenario. The point to remember is that the release of icebergs at the edge of an ice cap does not in any way reflect present-day temperature.

The Hubbard Glacier in Alaska has long been a favourite place for tourists to witness the collapse of an ice front 10km long and 27m high, sometimes producing icebergs the size of ten-storey buildings. One tourist wrote “Hubbard Glacier is very active and we didn’t have long to wait for it to calve.” Yet remember the Hubbard Glacier is advancing at 25 metres per year!

It is easy to raise alarms over a large break. In 2009 Peter Garrett [Australian Minister for the Environment] claimed the break-up of the Wilkins ice shelf in West Antarctica “indicated sea level rises of six metres were possible by the end of the century, and that ice was melting across the continent”. Actually, when floating ice melts there is no change in sea level (by Archimedes’ Principle).

Ice sheet “collapse”
Claims that ice sheets ‘collapse’ are based on false concepts. Glaciers do not slide on their bellies, lubricated by meltwater. Ice sheets do not melt from the surface down – they melt only at the edges. Once the edges are lost, further loss depends on the rate of flow of the ice. The rate of flow of ice does not depend on the present climate, but on the amount of ice already accumulated, and the ice sheet will keep flowing for a very long time. The ice cores show that the stratified ice has accumulated over half a million years and has not been deformed, remelted or ‘collapsed’. Variations in melting around the edges of ice sheets are no indication that they are collapsing, but reflect past rates of snow and ice accumulation in their interior. Indeed ‘collapse’ is impossible.

The modern scene
All this suggests that the present climate has limited effect on melting ice and rising sea levels, but since the alarmists keep up their horror stories it is good to know that even the present times are not all bad. A recent paper is entitled “A doubling in snow accumulation in the western Antarctic Peninsula since 1850 (Thomas et al. 2008). Another reports that “The East Antarctic ice-sheet north of 81.6oS increased in mass by 45 ± 7 billion metric tons per year from 1992 to 2003 … enough to slow sea-level rise by 0.12 ±0.002 millimetres per year” Davis et al. 2005. Wingham et al. (2006) wrote: “We show that 72% of the Antarctic ice sheet is gaining 27 ± 29 Gt yr⁻¹, a sink of ocean mass sufficient to lower global sea levels by 0.08 mm yr⁻¹.”
Christoffersen and Hambrey (2006) published a typical alarmist paper on the Greenland ice sheet, and their predictions are based on the concept of an ice sheet sliding down an inclined plane, on a base lubricated by meltwater, which is itself increasing because of global warming. The same misconception is present in textbooks such as Wilson et al. (2000), popular magazines like National Geographic (2007) and scientific articles such as Bamber et al. (2007), which is a typical modelling contribution. Alley et al. (2008) wrote a paper optimistically entitled Understanding Glacier Flow in Changing Times which is all about the role of meltwater reaching the base of the Greenland Glacier and speed up ice flow, and also delivering heat to the glacier bed. If you can find it, the early article by Perutz is brilliant. Alley, R.B., Fahnestock, M. and Joughin, I. 2008. Understanding Glacier Flow in Changing Times. Science, 322, 1061-1062.


REFERENCES AND FURTHER READING


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Photosynthesis

(CO2 and H2O and Light)

Words by Cliff Ollier
Music by Chris Cunningham
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PHOTOSYNTHESIS
Cliff Ollier

CHORUS
CO2 and H2O and sunlight,
Are the reasons we can eat our daily bread.
CO2 and H2O and sunlight,
Without that CO2 we’d all be dead.

VERSEs 1 and 2
For plants store energy by making sugars,
And other foods that bring us great delight.
It’s the basis of all life upon the planet,
CO2 and H2O and light.

Photosynthesis is what they call it,
Photo puts the emphasis on light.
Synthesis means putting it together,
CO2 and H2O and light.

Chorus

VERSEs 3 and 4
The lion has an antelope for breakfast,
And the antelope before his futile flight,
Ate grass, which like all other vegetation,
Fixed CO2 and H2O and light.

The mighty whale eats krill to keep his weight up,
And the krill eat tiny plants, near out of sight,
And the tiny plants create the basic food store,
From CO2 and H2O and light.

Chorus

VERSEs 5 and 6
The food chain can be very complicated,
With formulae that students can’t get right,
But the basis of the chain is very simple –
It’s CO2 and H2O and light.

But some say CO2 is a pollutant,
A poison we must always try to fight.
But remember if you want to go on living,
You need CO2 and H2O and light.

Chorus ad libitum.
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VERSE 1

PLEADS ONE E-E-E-O Y BY WAVING LIG-H-TS —
AND GIN-TOBRETTING THE SUN A-BE DE-
LIGHT

LIGHTLY PP

VERSE 2

DAG-15 DE ALL THE UP-W THE IN-HET
C O 2 AND H 2 O LIGHT

LIGHTLY PP

SYNTREK WORKS IT ALL TO-GO-E-E-
C O 2 AND H 2 O LIGHT

(TO CHORDS)
VERSE A

MIGHT-Y WHALE EATS WILL TO KEEP HIS "WEIGHT UP"
AND THE

KILL EAT TIN-Y PLANTS NEAR OOT OF SIGHT
AND THE

VERY DELICATELY

TIN-Y PLANTS EAT THE BAC-I-I FEED STORE FROM

H 2 O AND CO 2 AND LIGHT TO CHORDS

BACK TO CHORDS