

STRANGE SOUNDS OVERHEAD

THERMAL ENERGY AND TEMPERATURE
HOT-WIRED IN CLIMATE ACTION

CASE FOR AN AIR DETECTIVE-INSPECTOR

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NEW ZEALAND

In November 2019 we put a civil case before the High Court in Wellington. It became the proceedings CIV-2019-485-707, R Z Christensen v Attorney-General.

Since then the government have declared a climate change emergency, indicating quite clearly that they acknowledge a threat to the public safety. It is not hard to see the threat. However as we indicated in our previous publication entitled *Climate Change Exposé - Time for a Cup of Tea* (March 2021)¹ the world is waiting for a turning, something like a comedic climax.

In the meantime, we are being pressed upon to improve the clarity and conciseness of the case to be stated against the tidal turbines. Possibly only the ultimate in this regard can defeat a tendency to write them off as too small an affair to have caused the global warming.

Here then is a six-page essay by Russell Zelany Christensen.

Comments are invited from anyone who reads this essay before a year is out. Please send any comments by email to knusel@skybicycle.co.nz

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Strange Sounds Overhead

A thermodynamic system has the principal extensive properties: entropy, volume and mass plus such others as we may require to complete an understanding of its energy. Temperature is not one of these but in the background of the following relation it is generally greater than zero degrees and every addition or subtraction of thermal energy is thus accompanied by a corresponding addition or subtraction of some entropy S . (A large system can have different temperatures at different places.)²

$$T(^{\circ}K) = \frac{dE_{thermal}}{dS}$$

For a system that is completely gaseous, thermal energy $E_{thermal}$ is divided into three partitions: the translational, rotational and vibrational partitions. Included in the translational partition is the latent heat of evaporation³.

When seeking to apply thermodynamics to the Earth and its atmosphere at large, we will be interested to connect the translational partition of the atmosphere's thermal energy (tp.heat) with an expression for molecular kinetic energy involving a reference to air molecule velocity. Because the unit of energy is defined with reference to a motion and because the work-energy theorem of fundamental mechanics will apply to each molecule in turn, we will be interested to establish a frame of reference.

See the memorandum entitled *Occlusions of Fundamental Concept* that is part of the plaintiff's affidavit of 22 June, 2020 as presented to the High Court of New Zealand in CIV-2019-485-707, R Z Christensen v Attorney-General⁴. The correct frame of reference is barycentric.

Leveraging the well-known formula for kinetic energy and focussing on any problem for which it is important to count the lower atmospheric heat, we obtain that the following should hold in the requisite barycentric frame.

$$tp.heat + wind.energy = \sum \frac{1}{2}mv^2$$

tp.heat = translational partition heat (includes latent heat)
wind.energy = kinetic energy in air parcel inertia
the summation being over all the atmospheric molecules
to be included in the barycentric counting

As a consequence, any negative gravitational work on an air parcel to be included will reduce the parcel's contribution to the translational partition heat. We therefore cannot include the molecules in the stratosphere because the reduction that is quite evident in the troposphere, appearing with any rising parcel of air, is not at all evident in the stratosphere. As a result our subject matter - the Earth and atmosphere at large - is presented as a plurality of nested thermodynamic systems. The principal division is an onion-layer type division.

Here then is a conversation we may imagine, between two fourteen-year old children. In the background to the conversation, we may hear a question put: "Does a higher concentration of greenhouse gases cause an epoch to be warmer than another one?" But respiration is a chemical reaction mostly unassisted by any body-temperature regulation. The production of carbon dioxide from such reaction may significantly increase in line with a just indicator of the global temperature. Earth has been cloaked with life for some considerable time. Therefore ice-core studies are weightless that correlate atmospheric greenhouse gas concentration loosely with epochal warmth. They do not establish a causal link.

Brian: "You simply must come along to our rally on Thursday. The adults need to see that we have solidarity. They must stop pumping the atmosphere full of carbon."

Harriet: “No, Brian. The mauri is leaving Earth and it is actually very easy to please the mauri. This has nothing to do with carbon.”

Brian: “You’re joking, Harriet! You mean mauri, the life force, but there is no way the life force is going and leaving us behind. Can’t you stop your quackery and be serious about the problem?”

Harriet: “Tell me how energy looks on the electricity bill. It’s about kilowatt-hours, isn’t it? Now tell me how energy looks for justice⁵. It’s about raising or lowering, kilograms through metres, roughly. You can see the newtons if you want to be more precise, but now, can you connect these appearances up for me, the raising and lowering with the kilowatt-hours of the bill?”

Brian: “Haw! How much have you read in the proceedings of physics?”

Harriet: “Calm down, Brian. The definitions of the main physical units and quite a lot connecting them up with life should already be plain to us. Think a Hogwarts takeover. We have been getting only the very well declawed message.”

Brian: “We are many already and you are fighting a tide. You’re right, I should not press hotly on you, so, tell me what the mauri desires.”

Harriet: “Well then, let us discern the layers. There is the core of the Earth, the sub-surface layer above it, the surface layer, the tropospheric atmosphere, the stratospheric atmosphere above that and so on. A parcel of rising air cools off in the tropospheric atmosphere but does the opposite in the stratospheric layer. So the mauri has an interest in where the border lies.”

Brian: “Let me get this: to please the mauri we should not interfere in the making of a border between two atmospheres?”

Harriet: “Right, we just turn off certain infernal machines, a very small class.”

Brian: “Then the mauri will not depart?”

Harriet: “Well, there are the odds. It is hard for me to know. It is partly that a thing infernal in its effect should not be allowed to operate in the first place. I mean, we should be expecting the mauri to pack a sad.”

At this point in the conversation, Harriet can invite Brian to sit down at her personal computer and help her browse over to some evidence of where the extra heat has been making land in the world. Both N.A.S.A. and *National Geographic* have published evidence showing that the land temperature is rising above normal in a relatively more pronounced way in the Northern Hemisphere⁶.

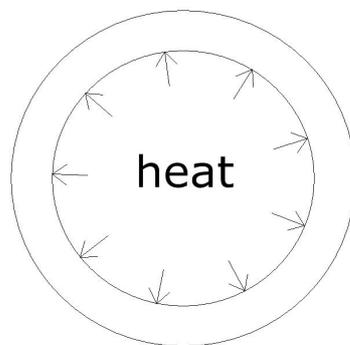
Harriet: “A theory that accounts for this must posit a mechanism capable of producing different effects depending on where you are in the world.

Greenhouse gases are quite even in the atmosphere, don't you think?"

Brian: "OK, I hear you saying the extra heat landing effect must be evident around where the so-called infernal machines have been operating. But. How do you link them up to such effect?"

Harriet: "I was lucky one day to be able to ask an uncle about this. He told me that scientists are not all on the same page in their thermodynamics. Some talk of a system plus surroundings whereas others talk of a system plus environment. When I pressed him to say where his opinion lay on the matter, he refused to tell me. He told me how the argument goes and then asked me to think for myself."

Now Harriet can get out pen and paper and draw an annulus to represent the tropospheric atmosphere.



Harriet: "If this is just an ordinary shell of a space and we heat it gently from the inside then what do we expect of the temperature gradient going from the inside to the outside?"

Brian: "There will not be much difference. Only a little bit?"

Harriet: "Right, heat will quickly spread from the inside to the outside, if there is enough of a gas in the space. There will be certainly much less of a temperature gradient than we find in the real tropospheric atmosphere! Well those who talk of the system plus its environment, as opposed to the other lot, will say that gravity is what makes the difference. There is a large gravitational source accommodated by the shell of the real atmosphere and so hot air rising must work against the gravitational field. As the system's thermal energy can only be lost to the system's environment, we must include the gravitational potential energy in a system's environment. Therefore a system and its environment will exist partly in the same space."

Brian: "Thus making the term 'surroundings' a little misleading. Well, I can understand so far but still ..."

Harriet: "We can just connect up the environment of the surface system with the environment of the system of the tropospheric atmosphere! It is surely quite

likely that the gravitational potential energy is a shared thing. The infernal machines take energy from the environment of the surface system and a lack is relayed to the environment of the system above. If it could be further relayed on out to infinity, there would not be a problem. Problem arises because the system of the stratosphere has a different kind of environment. As the environmental lacks cannot be relayed any further, so the border between atmospheres is made into a place of mayhem and sadness.”

Brian: “I am wondering about the rivers. Do these so-called infernal machines take energy out of the rivers then?”

Harriet: “One could call all turbines infernal, I suppose. One could be an off-the-grid, longing kind of person, trying to go back to sticks. But. To create any real hassle for the mauri, I think a machine must take gravitational energy without there being any payback into the environment. Hydroelectric generators in rivers and streams are covered, in this regard. They can be passed, because the water cycle gives them a payback.”

Brian: “Is there any class of turbine for which there is no payback given then?”

Harriet: “That’s the problem! There is just such a class! They come on board at the right time in our history! They are the so-called tidal generators and, so far, all of their industry has appeared in the Northern Hemisphere!”

Brian: “And the mauri is fleeing from them, eh? No quid-pro-quo, no payback, no balancing entry for the mauri’s cohort in the planet’s gravitational energy?”

Harriet: “And we can’t climb some Gazprom tower about it, can we?”

Brian: “Well, I don’t know. Today we march, tomorrow we tangi. If you’re right, the scientists will come round soon and then we can have a book-burning. However in the meantime it is best to turn up the volume knob. Eh, we should be making a noise of some kind!”

Harriet: “Noo. There’s too much foolery in this. You go. Thanks for lending me an ear and letting me off.”

One thing worrying Harriet slightly is that it makes no sense to talk of heat being trapped in the tropospheric atmosphere. The scientists Brian refers to have their views thrown in with this horse-sense wherever she looks on the internet. Eh, trap the heat? Then on to more suspicious-looking dogma.

Captain W E Johns wrote a story for Harriet and Brian’s age-group called *The Case of the Lost Souls*.⁷ A chap called Stokes from Sussex turns up at the office of Air Detective-Inspector Bigglesworth with the story that he’s being hearing strange sounds overhead. It turns out continental dogs have been hot-air ballooned into Sussex under cover of darkness in order to avoid the English quarantine regime set up to stop the spread of rabies. Biggles solves the case as

per usual. Read 'dogma' for 'dog' and 'British Education' for 'Sussex'. Then to what may have been meant by "a lost soul" in the author's title for the story.

Quite possibly the theory of the greenhouse effect is merely a work of fate like an infested dog that just happened to turn up on campus, with the infection favoured by some exigent circumstances. Whatever. It should not be allowed to trash the age-old pillar of justice expressed in 'audi alteram partem'. Ultimately both sides must be heard.

There is a critical debate about the cause of our anthropogenic global warming awaiting. This debate was shut out of CIV-2019-485-707 initially as the Crown protested it could not fathom the plaintiff's claims. After a little frowning from the Court, this protest changed and the plaintiff's lack of standing was advanced as a cause for the proceedings to be struck out.

I believe that past judicial decisions were construed too narrowly in the striking out of these proceedings. Moreover in a writ, the issues about standing are theoretically less complicated. Going forward it seems the Court could still decide to hear the debate in one way or another.

At issue is the model that is used by the International Governmental Panel on Climate Change (IPCC) to allocate to atmospheric back-radiation a role in warming the planet. This does not follow the thermodynamic concept of absolute temperature but embodies a completely different idea of temperature. So if thermodynamics can take the Earth and its atmosphere as a subject-matter whence to point a finger at the tidal turbines then all the evidence pertaining to the existence of the climate problem and the ruling-out of natural causes for it can still be admitted. Settling the issue of the cause may boil down to some elementary applied mathematics. For who has the correct understanding of a temperature?

In the view according to thermodynamics, thermal energy has a compartment in latency. This is a thermal energy not expressed anywhere as temperature. Moreover this is a complication adding to what already is quite complicated by fluxes of thermal energy into and out of just about any zone one would like to take the temperature of.

Latency will be a critical complication in the case of the surface system of any sun-drenched planet like Earth where there are significant areas of the surface in sea. This marks the IPCC analysis down as rudimentary and alien to life. Its energy budget - the ingoings and outgoings supposedly in balance at equilibrium - is good only for a false equilibrium⁸.

What the IPCC analysis has on its side is a rough match between the scale of the effect of climate change and the scale of the evil so-called in mankind's use of fossil fuels. That is too wooden to determine how we are to handle the problem of climate change.

The idea behind 'audi alteram partem' is partly that our leaders should provide something less than wooden to settle any critical debates. A tower of trumpeted officialdom like the IPCC can be the epitome of the wooden-headed rather than a font of good advice. Perhaps the nations forgot to provide for a suitable United Nations Air-Detective Inspector but that should not prevent any nation on its own initiative from anointing such a Biggles.

R Z Christensen, June 2021

Notes

1. Available on request as PDF 353 kB.
2. The treatment follows section 4-29, *Introduction to Thermodynamic Systems* in ***Chemical Engineers' Handbook, Fourth Edition, John H. Perry, Editor-in-Chief, International Student Edition***, Copyright 1963 by McGraw-Hill, Inc, Library of Congress Catalog Card Number: 61-13168
3. ***Physical Chemistry by P.W. Atkins***, Oxford University Press ISBN 0 19 850 101 3 (Sixth Edition 1998, copyright P W Atkins)
4. Download from hyperlink middle of page at <https://www.skybicycle.biz>
5. See the schedule to the New Zealand National Standards Regulations, 1976, especially part 3.
6. See National Geographic's Climate Change Issue of November 2015. See also NASA's Global Climate Change Surface Temperature Facts published at the following URL: <https://climate.nasa.gov/vital-signs/global-temperature/> See the interactive time series below graph at right. Move the control through the years up to the present.
7. Story number three in *Biggles of the Special Air Police* as published by Dean & Son Ltd, London
8. See Chapter One, Introduction, *Climate Change 2013 The Physical Science Basis*. On p. 126 there are two clangers indicating that false premises are being relied upon. In the text itself, an author opines as follows, getting wrong the relation between thermal energy and temperature: "As the Earth's temperature has been relatively constant over many centuries, the incoming solar energy must be nearly in balance with outgoing radiation". Further underneath the text there is a diagram and a comment containing the following nonsense about the long-wave infrared radiation from the Earth (LWR): "Anthropogenic changes in GHGs (e.g., CO₂, CH₄, N₂O, O₃, CFCs) and large aerosols (>2.5 μm in size) modify the amount of outgoing LWR by absorbing outgoing LWR and re-emitting less energy at a lower temperature". Standard convection and the resulting energy feeds to gravitational potential have to be taken off the slate to allow this account of some heat-trapping greenhouse gas species to pass muster. Absorbing molecules in Earth's atmosphere will be just very temporarily hot. This is given by the science of photo-acoustic spectroscopy.