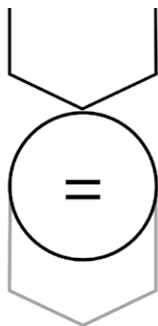
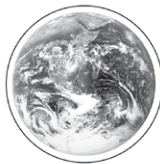
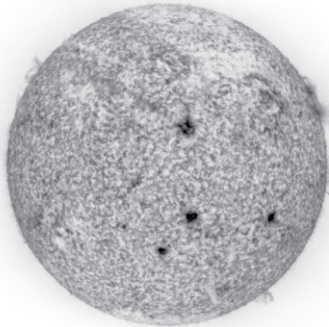


JULIAN PRIEST

***The Future Network\****

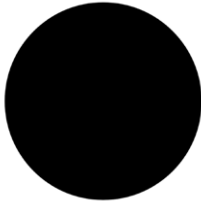


THE FUTURE NETWORK  
will stretch from the Sun  
where hydrogen fuses  
destroying mass in a pure blast of energy,  
that escapes the solar corona and radiates  
across 150 million kilometers  
of frozen vacuum  
to insolate the earth,  
our fragile third planet  
cloaked in biosphere,  
a delicate shawl  
of gas and liquid and life  
cast over the blue marble.

The energy falls as visible light.  
Some is reflected  
by the changing albedo  
of the Earth's surface,  
with its pale reflective  
growing sands and shrinking ice caps.  
Some is re-radiated  
as lower frequency infra-red.  
The energy balance is maintained - more or less.  
Visible light input energy  
is equal to  
Infra-red heat output energy.

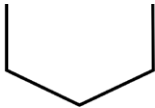
The earth's temperature stays within life-giving bounds,  
at an average of 14.3 degrees centigrade,  
allowing water to be liquid;  
a remarkable balancing act of temperature between  
the minus 270 degree average  
of the frozen interstellar vacuum  
and the 13.6 million degree heat  
of the seething solar core.

The gap in frequency between  
incoming light and outgoing heat  
exposes The Earth  
as a net entropy exporter,  
a net information destroyer.  
Year on year we run  
a global information deficit  
that allows us to create  
the structure of life,  
the structure of civilisation,  
the structure of technology and culture  
of our one small ape class.



The electromagnetic frequency gap  
pushes life up the entropic slope  
in a temporary reversal  
of universal thermodynamic fortune  
that seemingly refutes  
physic's gold-plated  
second law of thermodynamics that:

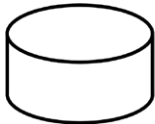
Entropy tends to increase.  
Energy tends to disperse.  
Information tends to be lost.



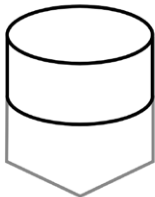
Life structures earth,  
creates forests, fish shoals, libraries of information,  
and exports entropy into the galactic gloaming.



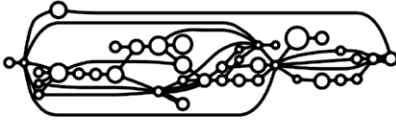
A green leaf sways in the wind,  
absorbs CO<sub>2</sub>, sucks up water  
and basks in sunlight,  
creating regenerating structures,  
information locked in cellulose capillaries  
or starchy wheat kernels.  
We harvest them  
and grind them down  
to make flour and cake.  
We eat.



We say that we use energy,  
as if we could use up energy,  
but energy is that which is conserved.  
We only transform,  
transform the starches structured in cake,  
break them down,  
to become simpler sugars  
and our internal fuel ATP,  
that powers muscles to create  
motion and eventually heat.  
The cake's energy is not destroyed,  
only transformed, converted  
from dense energy forms  
to more dispersed ones.

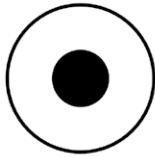


Entropy increases.  
Energy disperses.  
Information is lost.



We live in the interconnected networks of these myriad energy pathways, these myriad information pathways, and we choose.

The OLD NETWORK stretches back in time to punga and protozoans that structured themselves from the carboniferous sun, and died and sank into sediment and were compressed into dense information sources that lay black under the sea bed as oil and coal, and were drilled and mined in industrial times, and were dug up by our ape class and traded and revelled in and fought over and turned into Chevrolets and washing machines and birthday cards that sang tinny versions of Greensleeves and ten thousand other useful things.



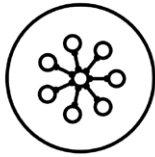
Dense information that drove structure.



The burning, the burning, the burning fuel exploded in fantastic informational forms all over the blue marble, and tilted the atmosphere into insulation, trapping a tiny fraction more of the vast solar insolation than it needed. The burning threatens to move the point of thermal equilibrium of the blue marble out of its improbable and incredibly delicate water-liquefying balance.

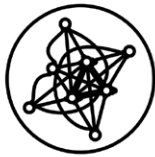


THE OLD NETWORK is breaking. THE FUTURE NETWORK is not yet here. How can we move on?



We can look back at  
The Telecoms Revolution™  
of the closing decades  
of the twentieth century,  
the most recent global infrastructural change,  
and see the shift from  
centralised distribution  
to distributed production;  
from the PLAIN OLD TELEPHONE SERVICE  
to the Internet.

The shift was enabled by the  
development of  
new technologies;  
first the digital switch,  
second the fibre-optic cable,  
third the personal computer,  
and fourth the Internet protocol stack,  
which made every information consumer a producer;  
which made every node on the network equivalent;  
protocols which allowed for  
end-to-end communication of peers;  
that created a topology  
that could support  
the information web,  
the social network,  
the collaborative text,  
and the instant message.



We can look back to the  
PLAIN OLD TELEPHONE SERVICE  
and see it transformed,  
from state-owned monopoly  
to privatised oligopoly,  
to lightly regulated, unbundled, structurally separated, semi-  
competitive market place,  
and the scale-free mesh of  
The Net.

We can see parallels with today's  
PLAIN OLD ENERGY SERVICE  
of vertically integrated suppliers,  
centralised provider networks  
and limited information exchange.



Looking back at the broadband roll-out  
we can see ADSL built on  
a legacy of installed copper,  
a hack that eked another few years' revenue



from a failing infrastructure.

We can see that infrastructures change incrementally, that they evolve from one form to another, until THE OLD NETWORK is subsumed or retired.

We can guess that our future energy network

will develop from the existing grid, will combine with the current information network to become more fine-grained.

We can see signs of the shift to THE FUTURE NETWORK at the points where information and energy meet, in the smart grid,

in the emergence of protocols like IEEE 1901, G.hn and Homeplug Command and Control.

We can see fine-grained sub-metering information about energy

transmitted around the home, to spill data to the meter

and upstream to electricity providers;

information about consumption, production and storage shared between devices, between households,

between peers.



Digital information about physical information.

We can see political consequences

as energy politics shifts into information politics,

when the Dutch parliament debates

privacy issues in energy sub-metering.

We see the same technologies that enable demand-side management also allow

real-time marketing of locally generated electricity.

We can see the per-kilo price of

polysilicon fall through the floor

from five hundred dollars at its 2008 peak

to fifty bucks in its post-crash 2010 trough,

until the cost per photovoltaic peak watt

is just four dollars landed in New Zealand.

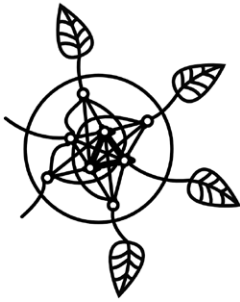
We can see the rapid development

of new photovoltaic forms;

nano-technicians edging towards efficiencies of 30%

and labs dropping price-performance ratios with

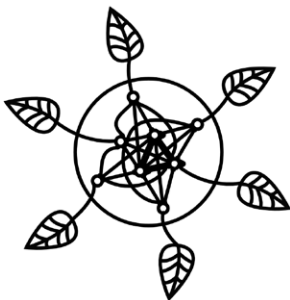


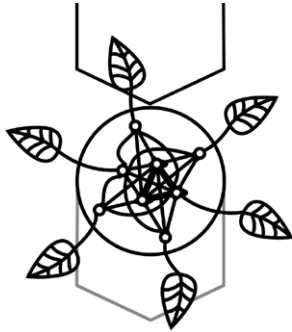


iron pyrite solutions,  
novel optical dyes,  
cadmium telluride,  
or the thin-film printing presses  
that crashed the cost of computing  
year on year for decades since.  
We can calculate the average insolation on the roof of  
a one-hundred-and-twenty-metre squared  
New Zealand suburban house  
as 174,000 KWH per year  
and that with a typical annual load of  
8000 KWH for a house and  
10000 KWH for an electric vehicle,  
the energy needs of a typical family could be met  
with a roof of 11% efficient photovoltaic panels.  
We can project that long-run PV roofing tin at \$150 a sheet  
would generate surplus cash in just 5 years.  
We can see car-makers beginning to ship  
the first plug-in electric vehicles,  
note their fine capabilities as night-time  
battery banks and remember that New Zealand  
is unique in being able to meet 60% of its  
base-load electricity needs through  
existing hydro-electric capacity.  
We can model THE FUTURE NETWORK of energy peers.



Now as oil peaks into warfare  
and black deepwater horizons  
we seek THE FUTURE NETWORK,  
and see our energy pathways  
and information pathways  
as ethical pathways.  
We see our forest structures  
as valuable information  
instead of valueless entropic ash and tailings.  
We will recognise that  
information comes from the sun  
and that the fusion process  
is best kept at arm's length  
of an astronomical unit or so  
instead of being unleashed into the air  
from the Castle Bravo H bomb  
on Bikini Atoll in 1954,  
and we will recognise  
that carbon is in the ground  
for the good reason of  
planetary atmospheric balance





and we will remember  
that technologies exist  
that allow us  
to harvest energy  
indirectly through turbines  
from the wind and the rain  
or directly from sunlight.

In THE OLD the problem,  
In THE FUTURE the solution,  
In THE PRESENT the choice to make  
THE FUTURE NETWORK PRESENT

\* *The Future Network* was first performed as part of *Now Futures, Dialogues with Tomorrow*, Downstage Theatre, Wellington, New Zealand, 3 June 2010, <http://www.nowfuture.org.nz/dialogues/future-networks>.

The canonical URL for the piece is <http://greenbench.org/project/thefuturenetwork>

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All other images author's own.

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