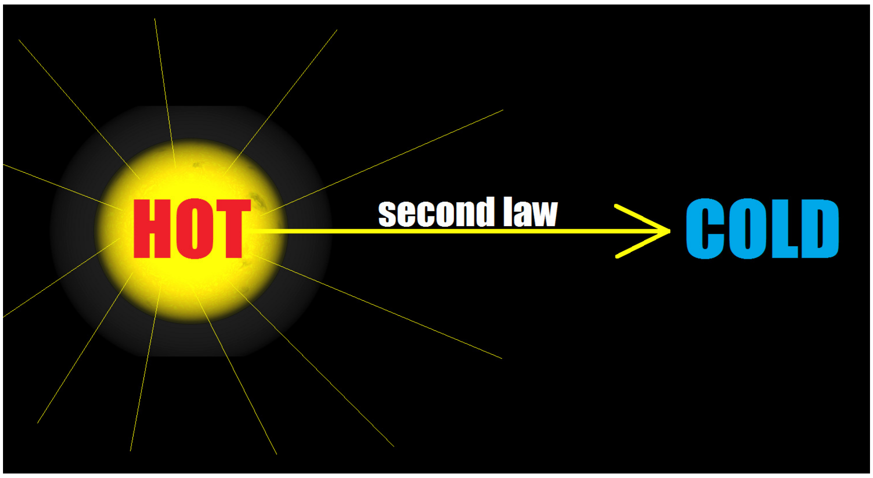
Stellar Metamorphosis and the second law of thermodynamics

Daniel Archer I
D_Archer@live.nl
danielarcher369.wordpress.com
4 February, 2022
Amersfoort, NL

Abstract: Stellar Metamorphosis[1] obeys the second law of thermodynamics, this paper shows how and explores further consequences and makes some predictions.



In the picture above you can see a visual representation of the second law of thermodynamics and a tenet of Stellar Metamorphosis. In physics the second law is stated thusly:

"the total entropy of an isolated system can never decrease over time, and is constant if and only if all processes are reversible. Isolated systems spontaneously evolve towards thermodynamic equilibrium, the state with maximum entropy"

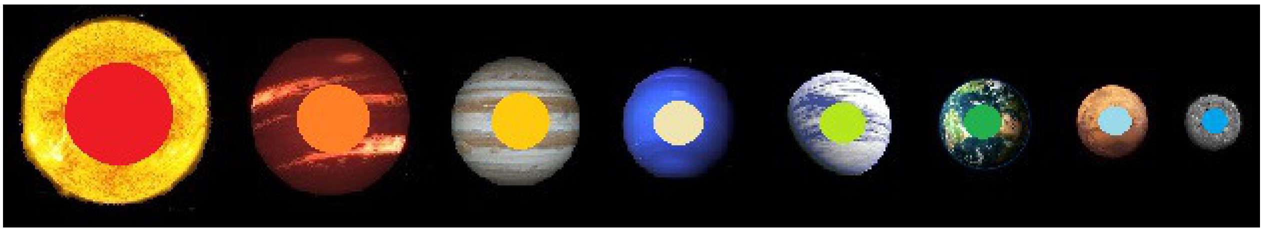
Rather diffcult to understand, this video[2] (see reference 2) by Pierre-Marie Robitaille explains the second law in more detail, a simple explanation is that a hot object must lose heat if its surroundings are colder.

Thus the second law of thermodynamics states that if an object is hotter than its surroundings it must lose heat over time, it can not keep the heat. In time an equilibrium is reached where the hot object becomes the same temperature as its surroundings.

In the above picture the yellow sphere represents a star surrounded by space. Stars are objects that are hotter than their surroundings, space can be said to be colder than the star, thus stars must lose heat over time. In Stellar Metamorphosis stars lose heat over time, they cool as they age, thus Stellar Metamorphosis obeys the second law of thermodynamics.

In Stellar Metamorphosis as stars lose heat they evolve and become the planets; planets by extension must also lose heat over time as their cores are still hotter than space. The time it takes for an astron[3] (star/planet) to fully cool is very long, trillions of years. This is because the inner core heat is trapped, first by thick atmospheres, oceans and later by a crust. If the core heat would be lost very rapidly an astron would not have enough time to evolve life or have enough time and energy for chemical processes that must occur to produce life. The dissipative nature of astrons[4] over long periods of time ensures that these vital processes can occur.

The picture above shows a selection of a few different types of astrons, from star to brown dwarf, gas giant, gas dwarf, ocean world, life host, post life and core[5]. Below i have drawn in the core temperature with a color coding:



The core in a star is hottest. In standard astronomy it is said the core of our sun is about 27 million Fahrenheit. This is based on the standard solar model (SSM) or fusion model, more on that later*.

For brown dwarfs it is around 5 million Fahrenheit

For Jupiter (a gas giant) 36000 Fharenheit. The core temperature of Saturn is said to be at least 15000 Fahrenheit.

For Neptune (a gas dwarf) 9300 Fahrenheit is given. The core temperature of Uranus is said to be up to 9000 Fahrenheit.

Next is an ocean world but we have no estimation on the core temperature (?) in standard astronomy . The closest ocean world in our stellar neighbourhood[6] is (was*) Kapteyn c at almost 13 light years away. *Recently in 2021 its disvovery status was changed to unconfirmed. The next closest is Wolf 1061 d, i quote wiki:

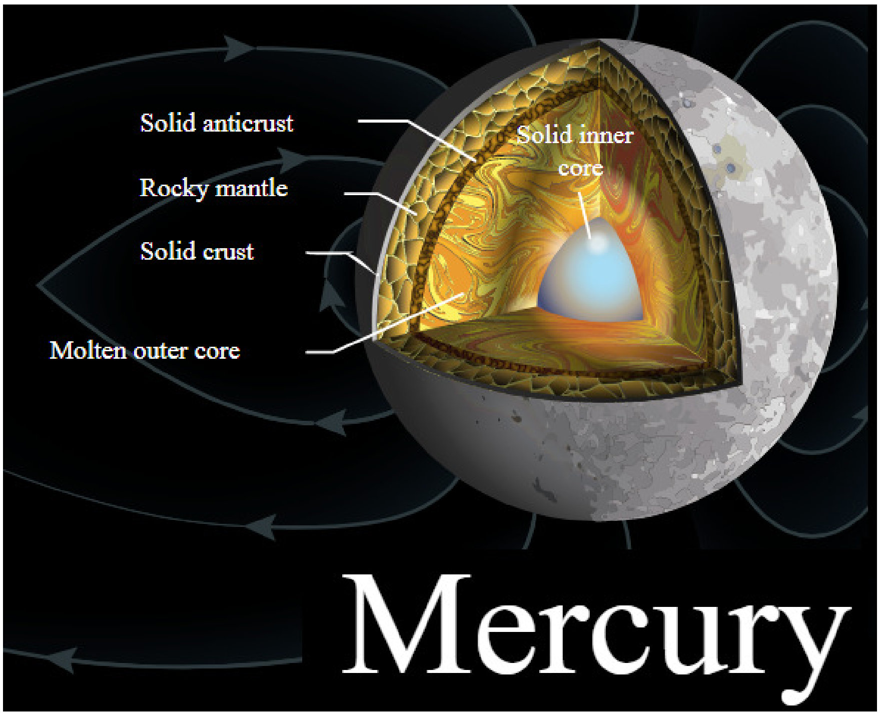
"Wolf 1061d is known as a Super-Earth, with a mass significantly greater than that of Earth, but less than the ice giants Uranus and Neptune"

Super Earths are said not to exist[7]; they are more likely ocean worlds. A size just below Neptune/Uranus (gas dwarfs) can not be called a super-earth because it would not resemble just a larger version of Earth. It would be a different type of world it would be an ocean world with a massive atmosphere and a lot of water (and water layers) below.

Then we have Earth (life host) which is said to have a core temperature of 9392 Fahrenheit and at the hottest parts even over 10000 Fahrenheit[8]. This is in in the same range as a gas dwarf, which is odd. I would say the temperature for Earth is likely more accurate and the temperature for Neptune/Uranus is too low. What you do see is that the core temperature goes down relatively slower as the astron ages. This is because an ocean would insulate the core and a crust insulates the core even more. Heat gets trapped and is released more slowly over time. This is also because the core gets closer and closer to the ambient temperature of space. This is the second law of thermdynamics at work.

For Mars (post life) the core temperature is said to be over 2240 Fahrenheit, some other sources say it could be 5000 Fahrenheit too, at least some of the core is still molten. The core temperature of Venus is said to be over 8000 Fahrenheit, so between Earth and Mars

Last in the picture we have Mercury, the temperature of the core is not known but is said to be less than 4000 Fahrenheit. With astrons obeying the second law of thermodynamics it should indeed be less than 4000 Fahrenheit. Our moon is said to have a core temperature of 2500 Fahrenheit, so mercury should have a hotter core than the moon so it should be between 3000 and 4000 Fahrenheit.



"Mercury's interior has cooled more rapidly than our planet's. Mercury may help us predict how Earth's magnetic field will change as the core cools."[9]

The first part of the quote is not correct; only in the standard planetary model has Mercury cooled rapidly, this is because they have Mercury and the Earth as the same age and same starting temperature, since the core of the Earth is hotter than that of Mecury they have to say it cooled more rapidly. In Stellar Metamorphosis there is no issue; Mercury is much older and has been cooling for a longer period of time than Earth. The second part is correct; as the Earth cools the magnetic field will disappear, the Earth will keep evolving into a core world like Mercury.

The core temperature of Mercury is still hot enough to have a molten outer core (see picture above this page) and the same goes for the moon. In time the cores of these very old worlds will solidify completely until an equilibrium is reached with the temperature of space; adhering to the second law of thermodynamics.

To recap i made this table to show the core temperatures (in Fahrenheit) and i make some predictions:

	Astron type	Temperature	Prediction	Iron phase
	Stars	27000000*		plasma
	Brown Dwarf	5000000		plasma
				90000
	Gas Giant	40000		gas
	Grey Dwarf	?	30000	gas
	Gas Dwarf	9000	22000	gas
	Ocean World	?	17000	gas
	Pre-Earth	?	13000	gas
	Earth	9392		gas
				5182
	Post Life	5000		liquid
	Core	3500		liquid
				2800
	Debris			solid

Predictions
The first prediction is for grey dwarfs; the core should be around 30000 Fahrenheit.

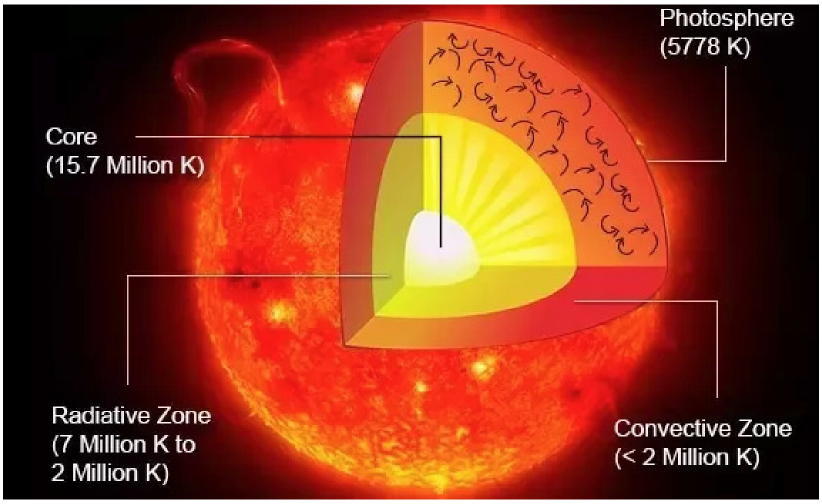
I think mainstream astronomy is making a mistake with the core temperature of gas dwarfs that is why 9000 is in red letters. It should be higher than that of Earth if we follow the supposition that all astrons (stars/planets) obey the second law of thermodynamics. My prediction for gas dwarfs is that it is around 22000 Fahrenheit.

Prediction for the core temperature of an ocean worlds is around 17000 Fahrenheit and for pre-earths around 13000 Fahrenheit.

I made the core temperature predictions by decreasing the slowing rate as the astron ages, averaging it out between 40000 for a gas giant and 5128 degrees for the turning point where iron turns from gas to liquid.

I take the mainstream data about Earth and for other objects at face value and use those. Depending on how accurate those are determines how accurate the table is. I put in the phases of iron as that determines what the temperature is in mainstream astronomy, based on experimental evidence. The iron 'phase-change' temperatures are at 90000, 5182 and 2800 Fahrenheit, giving us certain limits and starting/end points for what the core temperatures can be.

*__About the core temperature of stars:__



The core temperature of our sun is said to be 27 million degrees Fahrenheit. This temperature is based on the fusion model of stars, i do not think it is correct, that is also why i put in the iron 'phase-change' temperatures; above 90000 Fahrenheit iron turns into plasma, the fourth state of matter. The plasma state is the starting state of astrons when they are born, so saying stars have a core temperature above 90000 Fahrenheit is good enough for Stellar Metamorphosis. If a core of a star is millions of degrees or not does not matter in Stellar Metamorphosis. This really high temperature is needed in the fusion model of stars. In Stellar Metamorphosis there is no fusion in the core; the inner core is where iron and nickel end up by gas vapor deposition[10]. See reference 10, Jeffrey Wolynski details the vapor deposition process in the youtube video.

The age of astrons
The core temperature of astrons could be used to determine the age of astrons (stars/planets). To do this we would need a complete model of the structure, composition, real starting temperature of a newly born star, a map of the changes in the inner and outer core and surface. We would need a lot of data points. I think it is possible to get there but it is beyond the scope of this paper. I hope people that know about modeling can help with this. Maybe make simulations of stars and apply the second law and see what happens over time.

The core of the Earth can help to get data points and work backwards. The rate of heat loss slows over time and as said before; at ocean world stages and when the curst forms the inner heat of astrons gets more and more insulated, a model should also account for this.

Concluding
By applying the second law of thermodynamics to the evolution of astrons i hope it is clear that Stellar Metamorphosis obeys this law completely. Showing that an astron (star/planet) of any type will follow this law and cool down with age, the table i made makes this even more apparent. Any model/theory/paradigm about stars and planets that does not include heat loss over time is according to this author: falsified.

quod est calidum et refrigescant in tempore

References:

1) J. Wolynski, 2012, An Alternative for the Star Sciences: http://vixra.org/pdf/1205.0107v9.pdf

2) Pierre-Marie Robitaille, 2017, What is the 2nd Law of Thermodynamics? The Second Law Explained! Youtube link: https://www.youtube.com/watch?v=akn-9Vr6jkc

3) M. Zajaczkowski, 2015, Star and Planet: Stages of Astron Evolution: http://vixra.org/pdf/1510.0381v1.pdf

4) J. Wolynski (2017), Stars are Dissipative Systems in the General Theory: http://vixra.org/pdf/1710.0305v1.pdf

5) D. Archer, 2017, Astron Classification Table: http://vixra.org/pdf/1712.0460v1.pdf

6) D. Archer, 2019, Classification of astrons within 20 light years: https://vixra.org/pdf/1902.0049v1.pdf

7) Li Zeng et al, 2019, Growth model interpretation of planet size distribution: https://www.pnas.org/content/pnas/116/20/9723.full.pdf

8) ESRF, 2013, The Earth's Centre is 1000 Degrees Hotter than Previously Thought: https://www.esrf.fr/news/general/Earth-Center-Hotter

9) Antonio Genova et al, 2019, Geodetic Evidence That Mercury Has A Solid Inner Core: https://agupubs.onlinelibrary.wiley.com/doi/epdf/10.1029/2018GL081135 / The quote is from Antonio Genova in this nasa article about this publication: https://news.agu.org/press-release/scientists-find-evidence-mercury-has-a-solid-inner-core/

10) J. Wolynski, 2012, Stellar Core Synthesis: Youtube link: https://www.youtube.com/watch?v=fI2TvVQRLhw / paper: https://vixra.org/pdf/1211.0009v1.pdf