

# \*The Fermi Paradox

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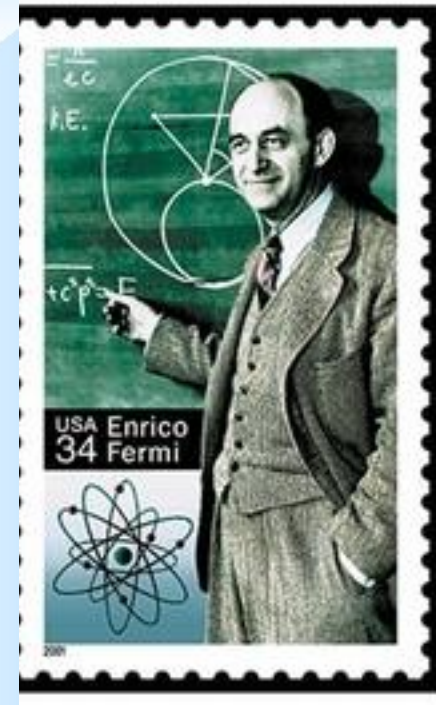
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**\*You are what you Do**

# Who was Fermi?

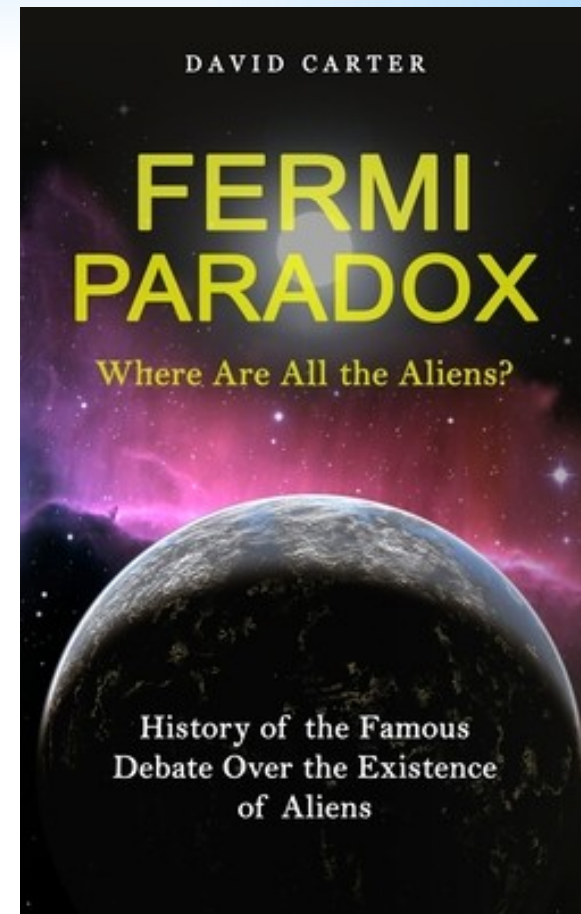
- Won the Nobel prize for physics in 1938
- The Fermi paradox is the discrepancy between the lack of conclusive evidence of advanced extraterrestrial life compared to the high likelihood of its existence
- Source: Stephen Webb: If the Universe is Teeming with Aliens... Where is Everyone?



## Why was he so Paradoxical?

# Internal Frame of Reference

- Let's explore several scenarios.
- This will be an open panel discussion.
- Scenarios will fall under three categories:
  - 1) They are or were already here
  - 2) They exist, but we have yet to see or hear from them
  - 3) They don't exist
- We will stick to science-based concepts
- This means no inter-dimensional aliens who live in the sun
- That's for another panel



**That's what we will talk about today!**

# They are or were already here

- Did intelligent Dinosaurs rule the earth?
- After 50 million years how would you tell?
- Where would you look?
- Current urbanization is less than 3% of the earth's surface
- After a few million years most physical traces would have vanished
  - Stainless steel lasts for 1200 years
  - Concrete decomposes in 50 to 100 years
  - Plastic decomposes in 20 to 500 years

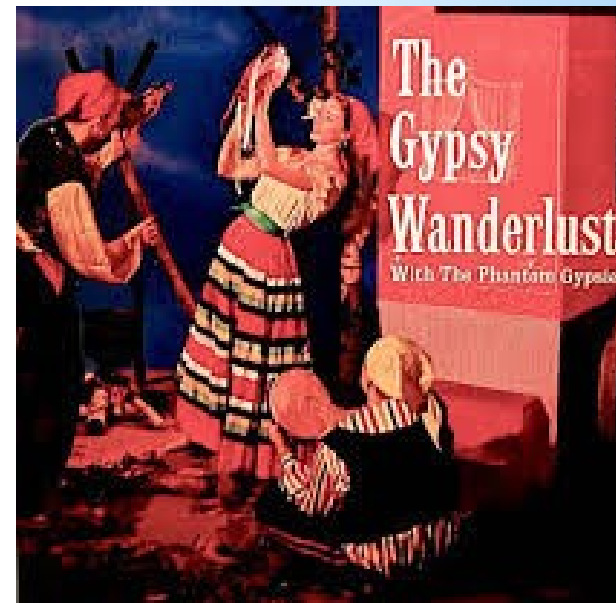


Doctor Who & the  
Silurians

**Do you mean dinosaurs -  
Maybe!**

# They are or were already here

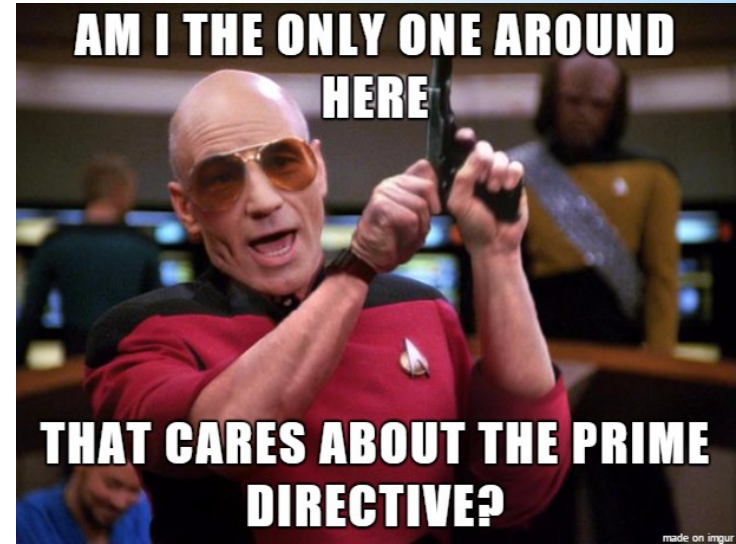
- Phil Morrison at Los Alamos in 1945 jokingly said that Martians invade earth and are Hungarians
- Require three traits:
  - Wonderlust – Hungarian gypsies conduct long-term reconnaissance
  - Language – Hungarian is unrelated to any Indo- European language
  - Superior Intellect – The Hungarians were a part of The Theoretical Division at Los Alamos



## They call themselves Hungarians

# They are or were already here

- Various Space faring races have established “The Prime Directive”
- Earth is in a wilderness area set aside as a Galactic National Park for us
- They have an embargo on official contact
- They have the technology not to be found
- They are observing us

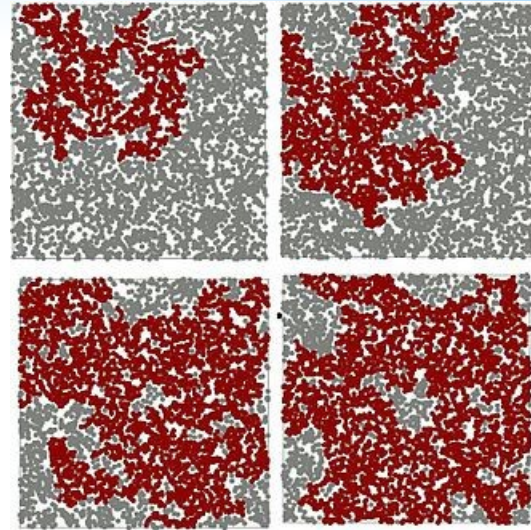


## The Zoo Scenario



# We have yet to hear from them

- Geoffrey Landis proposed a colonization model for the Fermi Paradox
- Percolation is a way of filling a large array of empty spaces with objects
- Used to simulate the flow of ETCs in the Galaxy
- Assumes Interstellar travel is possible but difficult
- Parents exert weak or nonexistent control over colonies
- Can't establish a colony on an existing colony



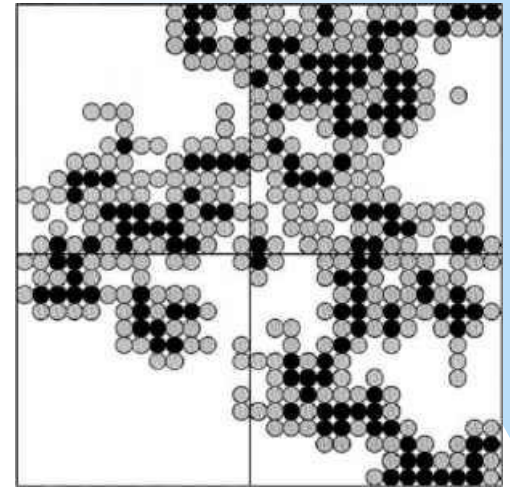
## The Percolation Approach



# We have yet to hear from them

Model Predicts colonizing ETs have not contacted Earth because:

- 1) Growth will occur in clusters
- 2) Any colonization that has taken place has not reached us yet, or
- 3) The Earth is in a large volume of uncolonized space, or
- 4) The Earth is in one of the many small voids



## The Percolation Approach

# We have yet to hear from them

- We like G2 stars with earthlike conditions
- What do they like:
  - Maybe they bypass the planets and build O'Neill colonies
  - Maybe they seek high energy stars and build Dyson Spheres



## We are Solar Chauvinists

# We have yet to hear from them

- ETCs generate virtual realities
- Stay at home because their virtual world is more interesting than reality
- Decide their science is complete
- Engineering can build a virtual world, that is not easily broken

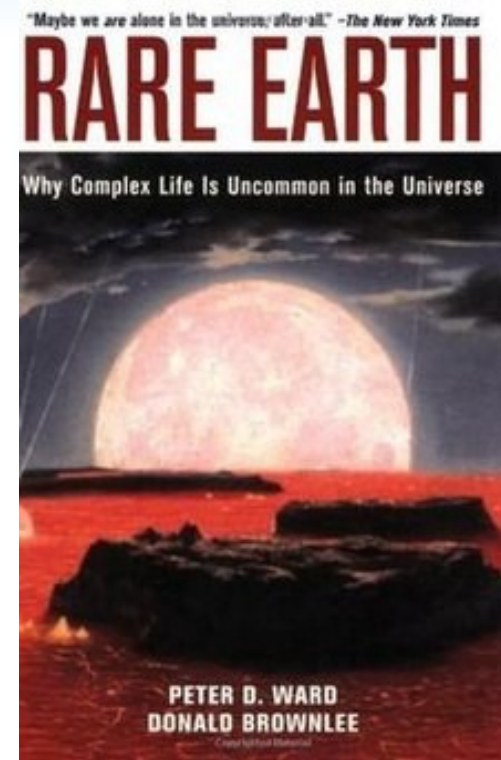


**Because they surf the net**

# They Don't Exist

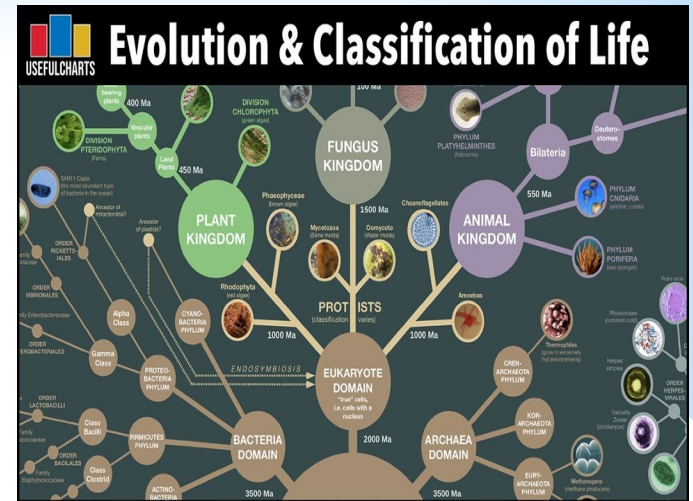
- Solar System exists in the galaxy's Goldilocks zone
- Galaxy's core is bathed in sterilizing radiation
- Our sun is a second-generation star
- Contains sufficient heavy elements for planetary formation
- Sun doesn't give off excessive ultraviolet radiation
- Gas giants soak up debris from the inner solar system

**Earth like planets are rare**



# They Don't Exist

- Earth may be an early adaptor
- Conditions allow complex life
- Large moon provides tides
- Planetary tilt provides seasons
- Plate Tectonics provides a continuous change in the climate and the environment
- The trigger for evolution change
- Brings metals and minerals to the surface



**The Rare Earth Scenario – Advance  
Life forms are rare**