

# The Critters of CONTACT

*an informal history of  
CONTACT bioforms*



John Bray and G. David Nordley  
LonCon 3 2014

## What is CONTACT?

**CONTACT** is a unique interdisciplinary conference which brings together some of the foremost international social and space scientists, science fiction writers and artists to exchange ideas, stimulate new perspectives and encourage serious, creative speculation about humanity's future ... onworld and offworld.

CONTACT conferences promote the integration of human factors into space age research and policy, emphasize the interaction of the Arts and Sciences and their technologies, and develop ethical approaches in cross-cultural contact, whenever and wherever it occurs.

--[www.contact-conference.org](http://www.contact-conference.org)





# CONTACT

CULTURES OF THE IMAGINATION

## CONTACT 2016

Will be held  
01-03 April 2016

Please watch this  
space for information  
on venues and  
speakers.

For a sample of our  
programming, View our  
[2014 Program Abstracts](#)  
here.

Watch this space for updates, changes  
and additional information.



With giant Saturn hanging in the blackness and sheltering Cassini from the Sun's blinding glare, the spacecraft viewed the rings as never before, revealing previously unknown faint rings and even glimpsing its home world - Courtesy NASA.

CONTACT welcomes all professionals, students and enthusiasts. Come and be part of our next gathering in an informal and synergistic atmosphere with plenty of opportunities for interaction.



Cultures of the Imagination

"COTI"

The COTI Process:

Epona Example

# Epona: The COTI Mundi World

Created by Martyn Fogg and the COTI Mundi Team\*

COTI Mundi was born after CONTACT's annual gathering in 1992. Suggested by COTI coordinator Dirk van der Elst, the new project was motivated by the desire of many of us to expand COTI -- our intensive but exhausting 3-day world-building, alien-designing, culture-constructing contact simulation -- into a longer term project that could broaden participation, give increased attention to detail, and allow for more thoughtful and rigorous scientific speculation. An international team, headed by Martyn Fogg and Greg Barr, embarked upon a three-year project and has produced for us this wondrously rich and exotic world, Epona. Supported by hundreds of pages of documentation garnered from countless hours spend at the conference, on the internet, and in the study, Epona is quite likely the most thoroughly researched imaginary world ever created. It has its own web page here:

[http://www.eponaproject.com/Epona\\_Home.html](http://www.eponaproject.com/Epona_Home.html)

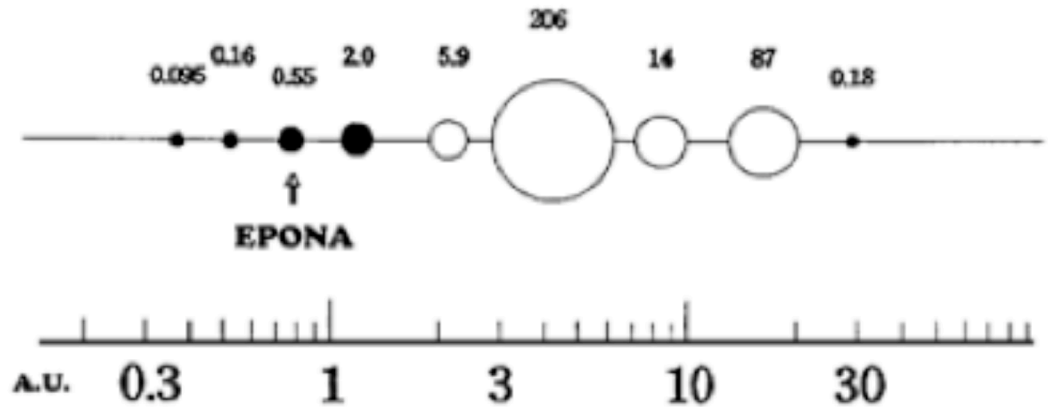


# EPONA - THIRD STONE FROM TARANIS

## Planetary System of Taranis (82 Eridani)

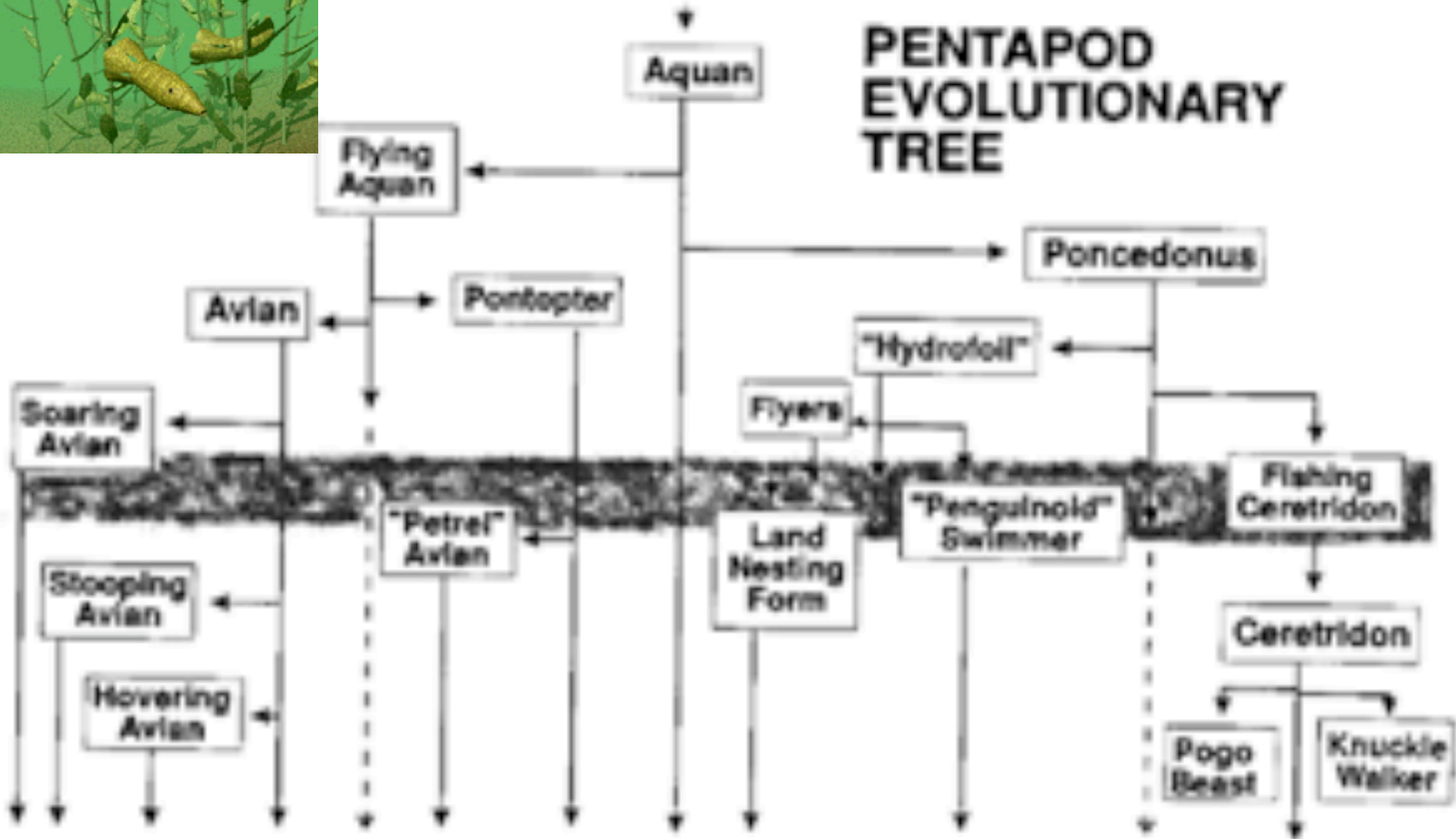
Planetary Masses/Earth Units

● = terrestrial planet  
○ = gaseous planet





# PENTAPOD EVOLUTIONARY TREE



# Epona

*Larry Niven, keynote speaker at CONTACT XII,  
enthused on Epona's final presentation  
at the conference in 1995:  
"Half the secret of Epona is 20 years of practice [at CONTACT].  
The other half was in realizing that a week wasn't long enough.  
Epona was three years in the making...  
... I've never seen a playground this size!"*



Contact!



Sunset Hillscape



Tower Cluster





## In the Beginning: Origins of COTI Critter Creation



Sculpted in low-fire clay and fired, this and other skulls and skeletons have been part of art exhibitions on the paleontology of other worlds.



"Erret" description="Another part of the paleontology of other worlds. This is a creature from the Thrax Project, a precursor to the COTI Worldbuilding projects at CONTACT (see Smithsonian, 3/82)."



"Aqua Critter 1" description="Made as a workshop example of assembling natural and fabricated parts to strive for a realistic look to an alien life form. A tree pod, lobster parts, baked Sculpy and extruded plastic."



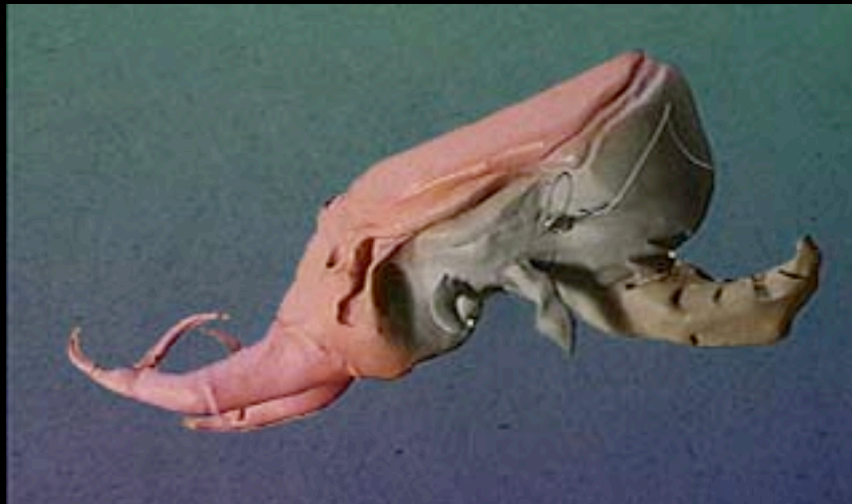
Aqua Critter 2" description="Another example of assembling natural and fabricated parts to strive for a realistic look to an alien life form. A pod from a tree is combined with lobster parts, baked Sculpy and extruded plastic. Airbrushing finishes the model.

# CONTACT I - 1981

From *"The Evolution of COTI: A*

*Personal Memoir"*

by Jim Funaro © 1994



The Bateson Project was made up of two teams of writers, anthropologists and artists: The aliens, C. J. Cherryh, Reed Riner, Pamela Lee, Joel Hagen and Jim Funaro; the humans, Paul Bohannan, Mischa Adams, Bob Tyzzer, Michael Bishop, Paul Preuss and Darrel Anderson. Since a primary rule of the game was no communication between the teams, Larry Niven (who can do it all himself, anyway) was the spy and Jerry Pournelle was the troubleshooter; they acted as consultants to both groups.

## 1983 CONTACT II: The Squich



The Squich looks like a cross between a squid and an ostrich. This model was the catalyst for a now legendary exchange at a COTI session referenced in Michael Crichton's novel, *Sphere*.



One hot topic was the Squich's nervous system. The bipedal alien had long, triple-jointed hind legs, which, when extended, scissored out to more than twice the length of the body pod. Jerry Pournelle argued that locating the brain in the body would place it too far away to allow effectively fast nervous transmission to the hooves, which were critical not only for locomotion but also for communication (they drummed their feet and danced messages). One of [Funaro's] students, no youngster, a gentle man who had been a computer programmer since the days of Univac, disagreed. After the decibel level of the voices rose to three figures, he brought his foot down on Pournelle's instep. As Jerry leaped up, the student said reasonably, "See. It doesn't take that long." Pournelle, never at a loss, grabbed a chair, held it out in front of him like a lion trainer, turned to me and yelled, "Funaro, call off your dog!"



## 1984 CONTACT III COTI III: The Mossback



By CONTACT's third year, we had had a chance to evaluate some of the problems which had emerged in the previous sessions. One was that there was just not enough time in three days to create two complete worlds from scratch; God took seven for only one...

So we prepared a pre-conference **package**. Poul Anderson gave us a planet, Ophelia, with its primary and solar system. (Over the years we have been presented with several worlds by science fiction writers; we learned to accept such divine gifts graciously and eventually even with some aplomb.) We then sent the planetary specifications to C. J. Cherryh, who suggested the Mossback and provided us with its basic design. Next, Larry Niven elaborated on this alien, contributed other species for the ecology and explained the conditions that the human team would face on this world. Finally, Joel Hagen produced some sketches of the critters. This "homework" was then distributed to all the guests several weeks before the conference.

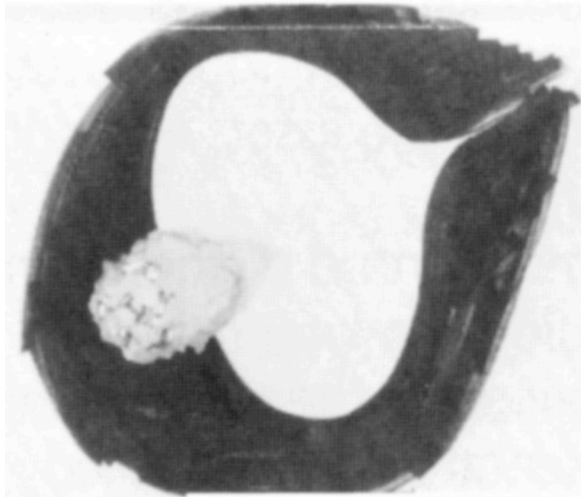
Mossback  
village  
Sculpted by  
C. J. Cherryh





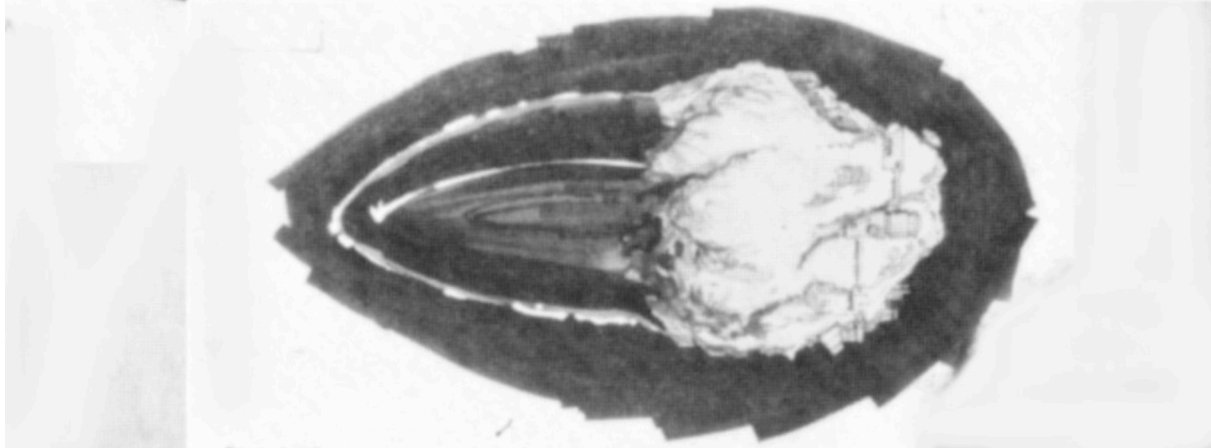
"Skitter" A life form model inspired by Larry Niven for COTI III. Another example of assembling natural and fabricated parts to strive for a realistic look to an alien life form."

# 1990 WE MEET THE ALIENS AND THEY ARE US!



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*Contact conferees present  
two "alien" spacecraft from  
cultures descended from lost  
human space colonies  
10,000 years in the future.*



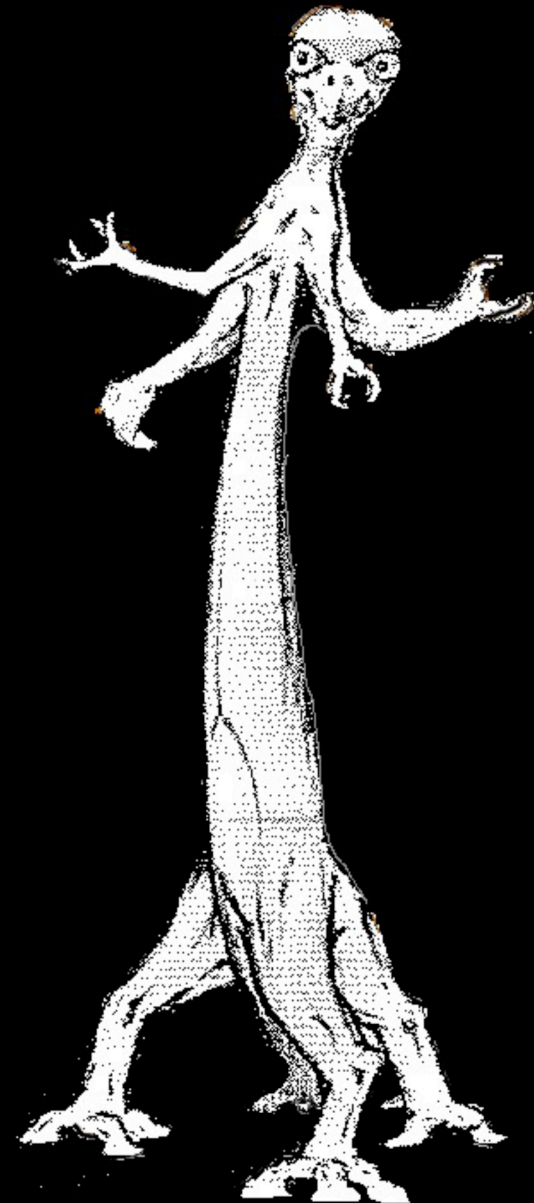
# Sim SETI 1991-1993

In 1991, in preparation for CONTACT IV in 1992, an "Alien Team" and a "Human Team" began a simulation of the aftermath of a positive result from SETI, called SimSETI. The Alien Team was led by science fiction writers and then CONTACT board members Poul and Karen Anderson and included artist Joel Hagen.

A planetary system was imagined for Alpha Centauri, a life-bearing world was built, and an intelligent species was "evolved" for the purpose. The creature at the right is an early version of these inhabitants of Alpha Centauri A III

A graphic language was evolved in the process of the exchange of messages. A sample of that is shown below.

AH	E4	EE	CH	OOH	HAU	YAH	HYAH	AI	HAI		
AHS	AHT	AHK	AHS4	AHTH	AHK4	AHZ	AHD	AHC	AHZH	AHCH	AHZH
AAN	AANG	AAR	AARR	AHL	AHL4	YALAT	ELAT	IRRINALIS			



# COTI IV - The Centaurians



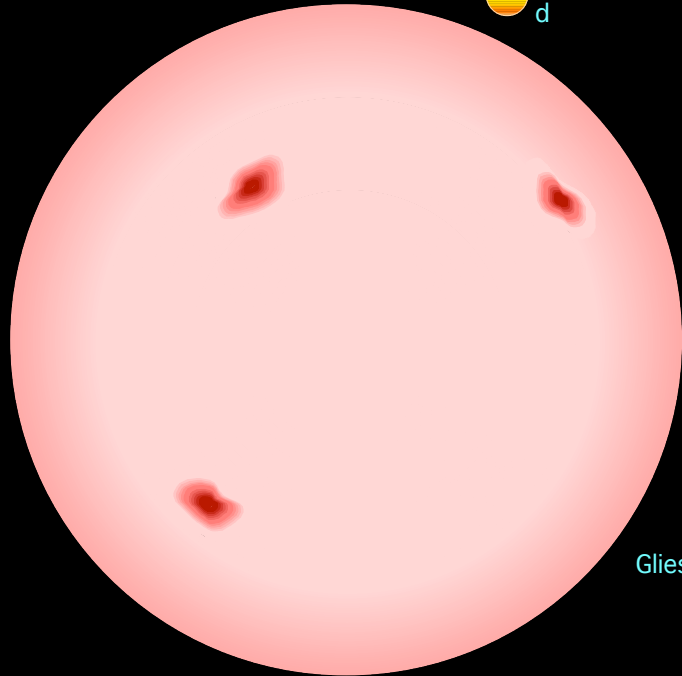
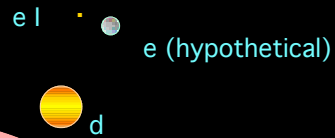
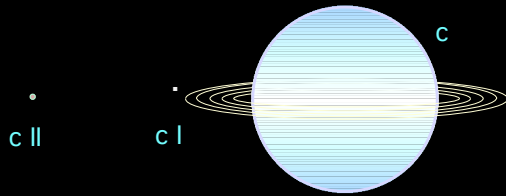
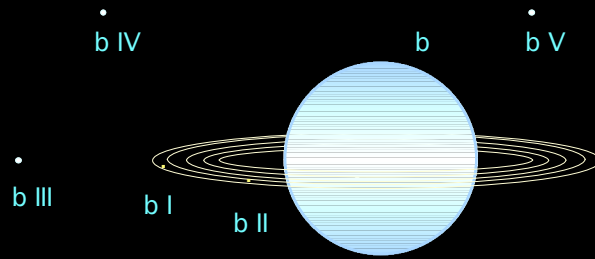
**Synopsis:** An unmanned probe has reported evidence of intelligent life on a planet of Alpha Centauri B. A two-ship scientific expedition is mounted to gather data, initiate contact and explore economic potential. The starships are based on a projected but not unrealistic technology: Fusion power, advanced computer and robotic assistance, adequate shielding, etc. No near-light speeds, extended lifespans or suspended animation. Since the journey will take about 25 years and a return trip presents considerable difficulties, it will be a one-way ticket for most, and perhaps all, of the personnel; consequently, the expedition is effectively an offworld colony, in its design, operation and development. The target system is (only) 4.3 light years distant and so a speed of about  $.2c$  is appropriate, which allows interesting ship to ship exchanges of people and culture en route. This slow speed -- coupled with a long period (perhaps generations) of orbiting the planet during which the ships become an O'Neill-type colony -- will permit sufficient time depth for the evolution of a "natural" human community in isolation from the continuous cultural influence of its home planet.

Upon reaching Achilles, the expedition team encountered **the native sentient species, which the humans named Centaurians (punning on their planetary system and their decapod stance)**. They massed more than humans and had 10 legs -- like most of the large animals on the high-gravity planet -- with six for support and fast locomotion and four with prehensile extremities, making them good tool users. They had two large eyes and three huge dangerous-looking mandibles used for eating and scent gathering and perhaps other unknown purposes.



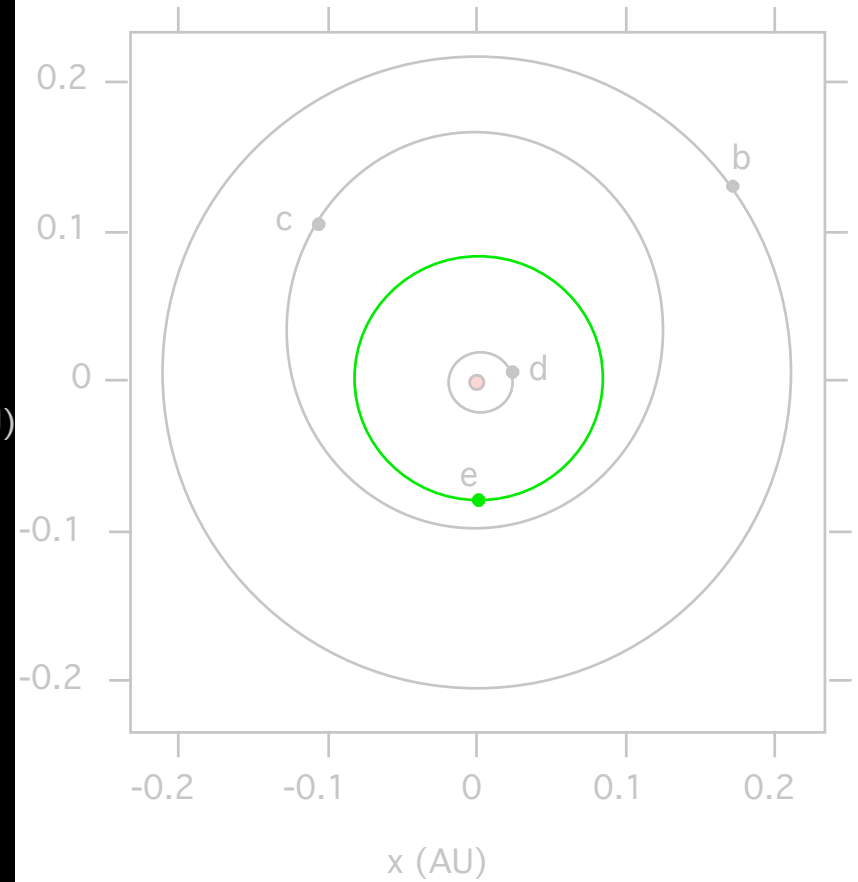
After numerous, sometimes amusing, attempts at establishing communication, the team leader was kidnapped by one of the local political factions to enhance its bargaining power with rivals, a native strategy often encountered in anthropological fieldwork. (She was eventually returned unharmed.) Contact was judged to have been achieved, but with a new and – considering the history of contact among humans on earth -- quite plausible twist.

# Gliese 876 and its planets and moons



Gliese 876

# EXTRASOLAR PLANETS NEW WORLDS FOR COTI





## Contact 2010 pictures BY PAUL CARLSON

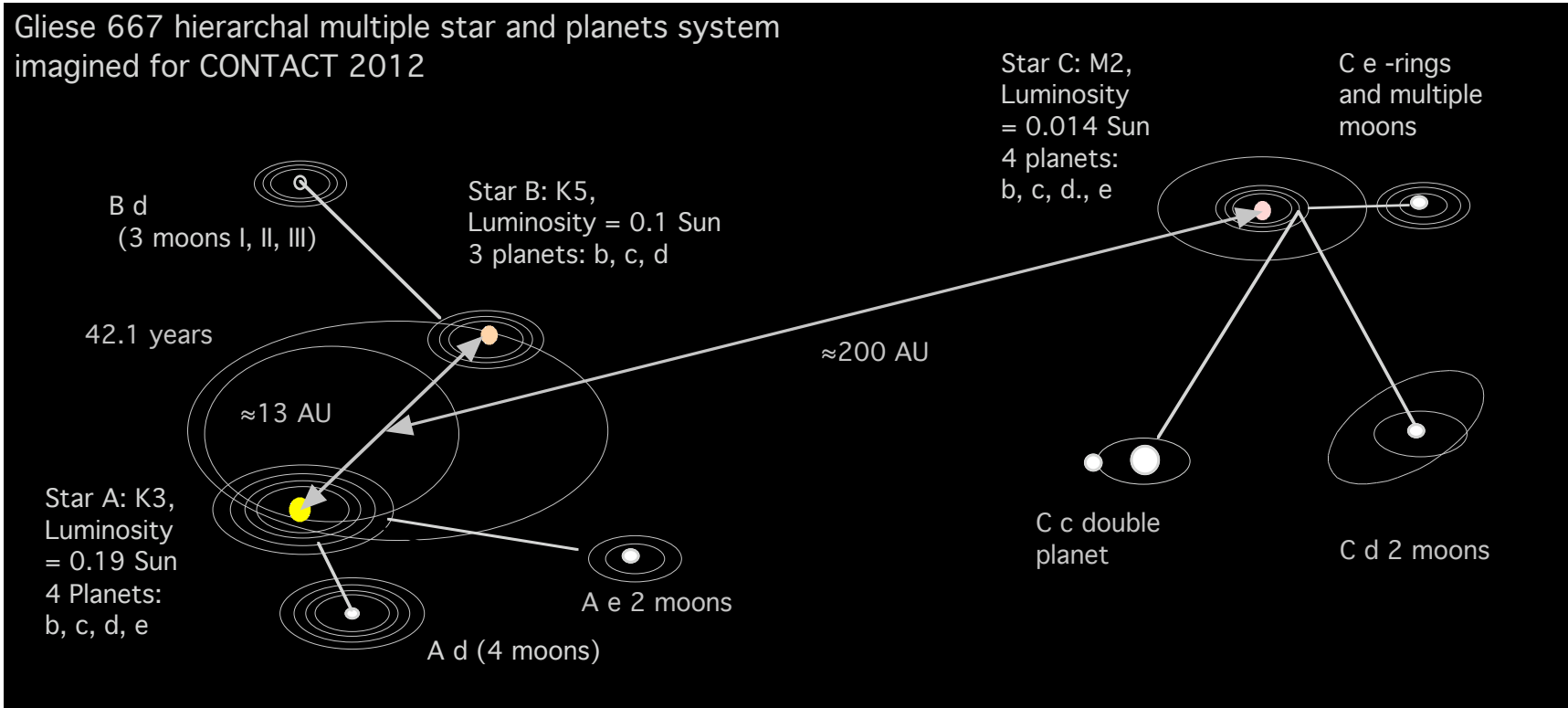
Behind the scenes, the two-person Alien Team has been hard at work. (The Gliese 876 system and its crab-like inhabitants are modeled in great and rigorous detail.)



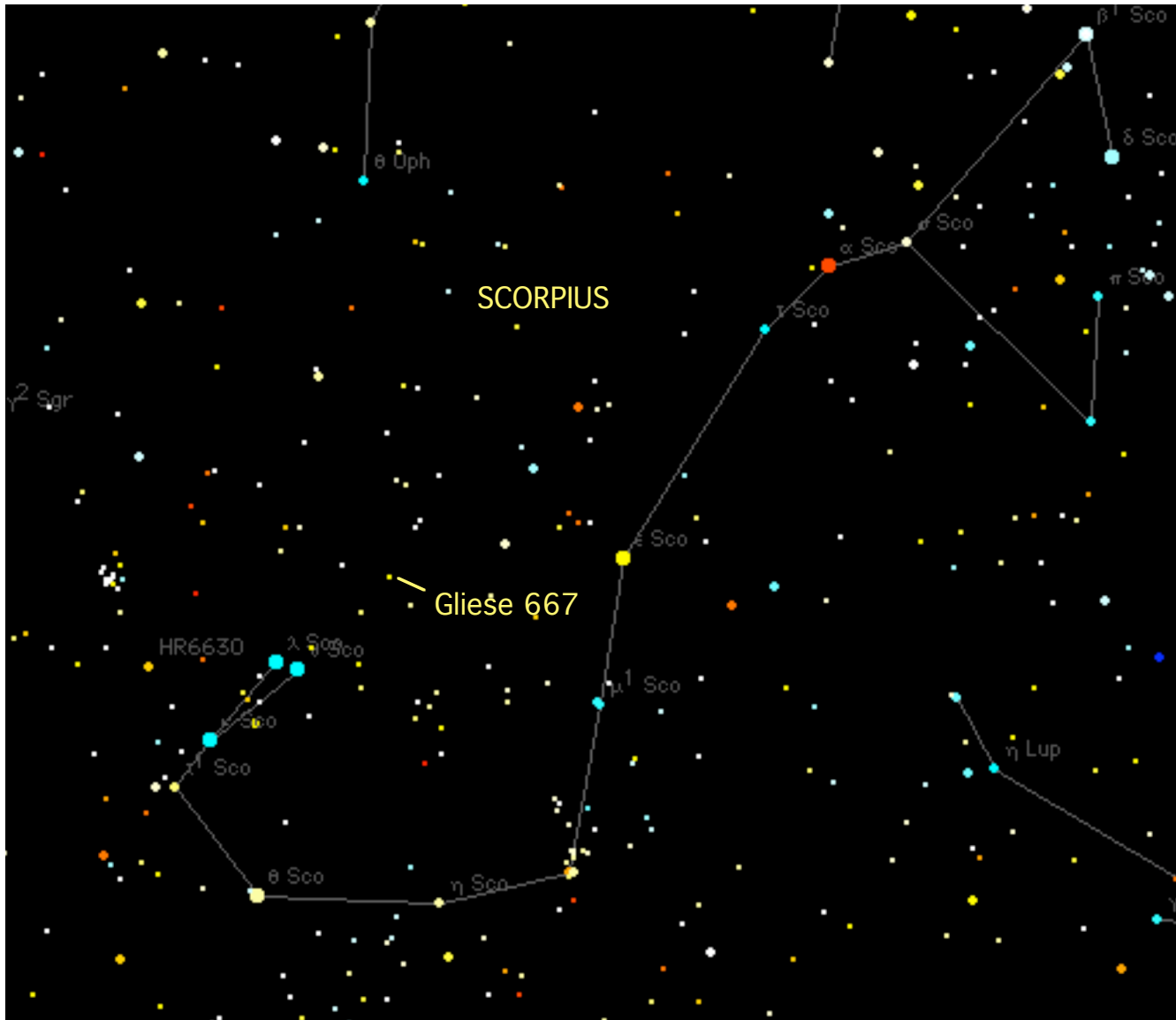
Both COTI teams discuss the encounter. (Michelle Merrill goes into detail about the alien traders, and their biology and motives.)

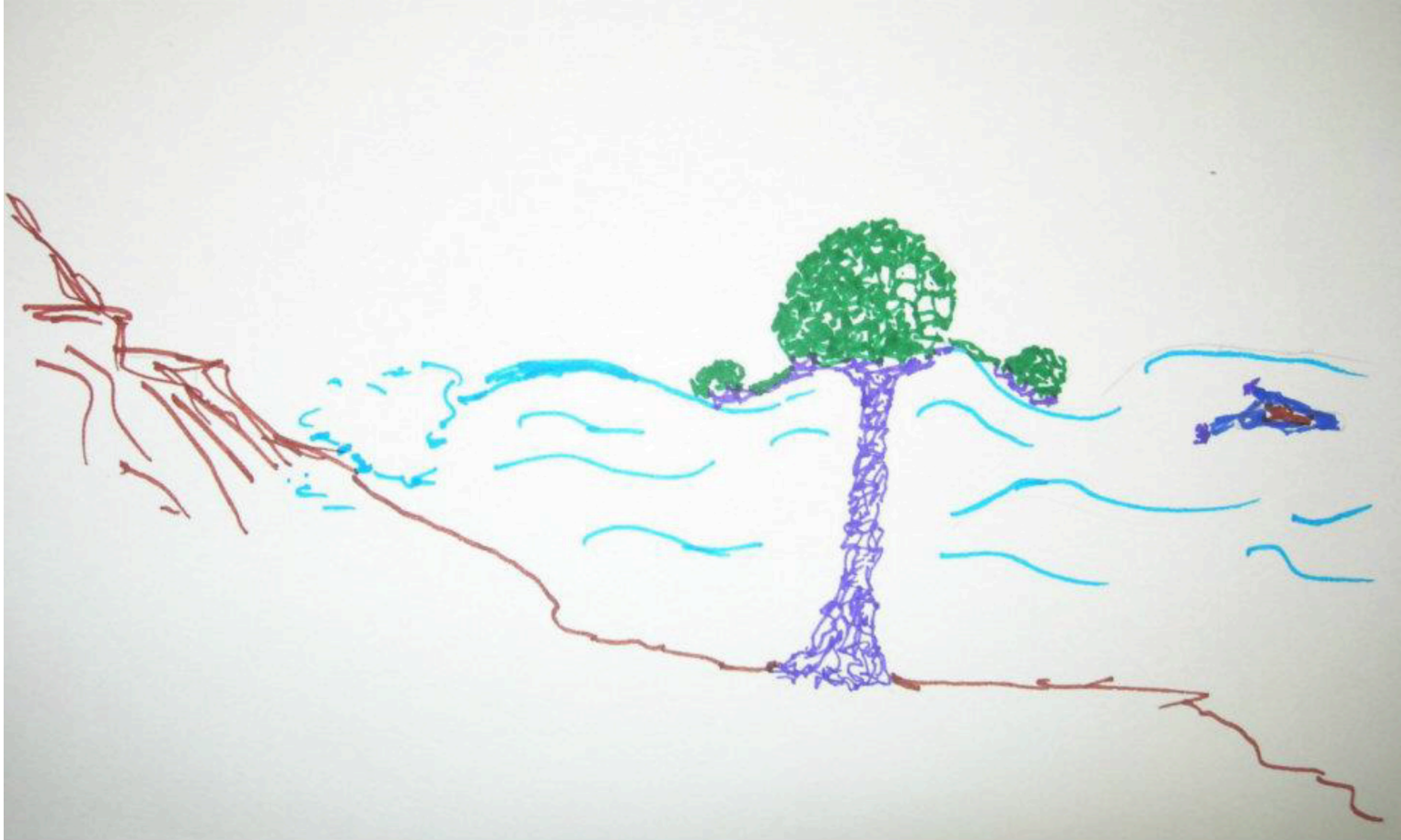


# Gliese 667 hierarchal multiple star and planets system imagined for CONTACT 2012

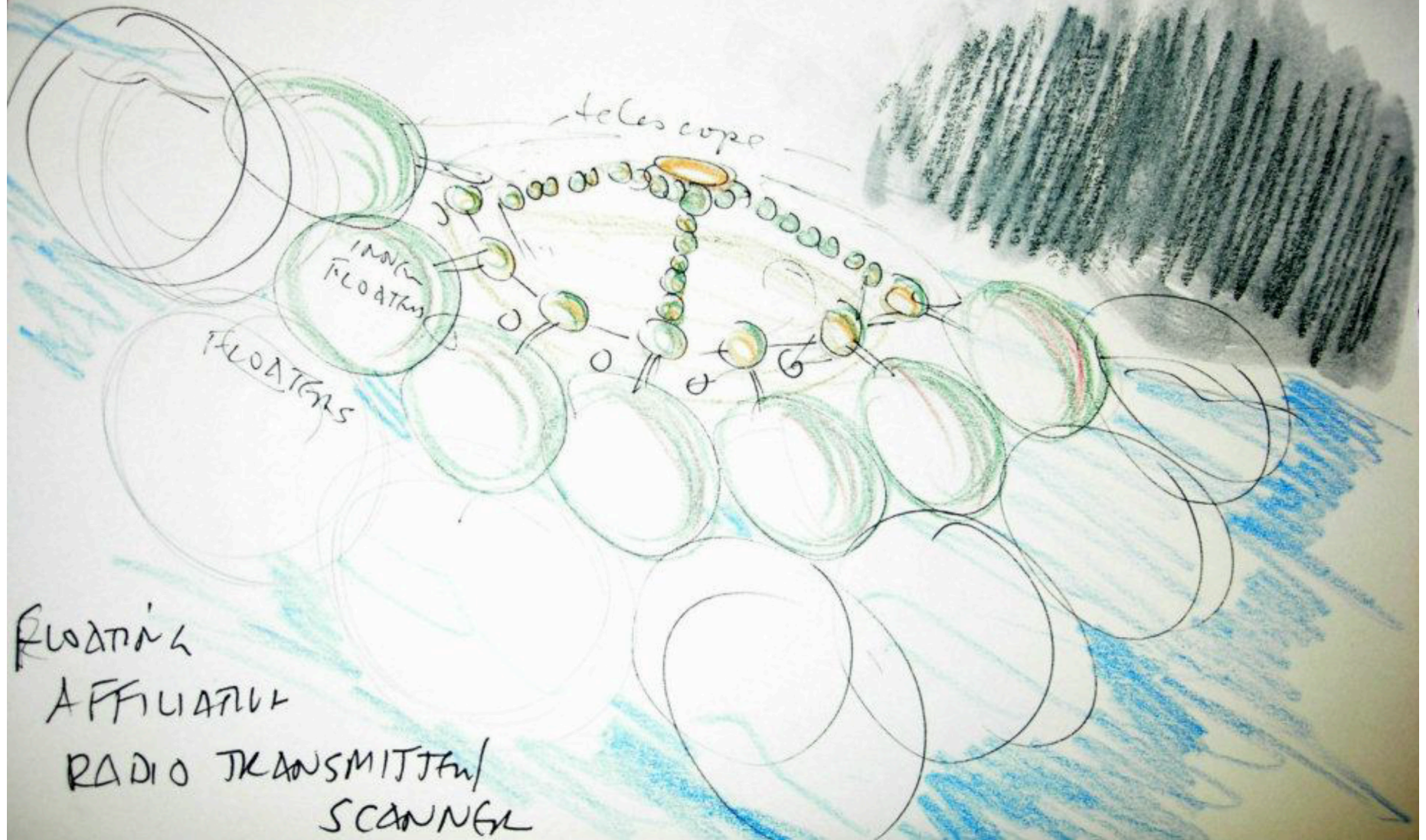


# GLIESE 667 CONTACT 2012 and 2014



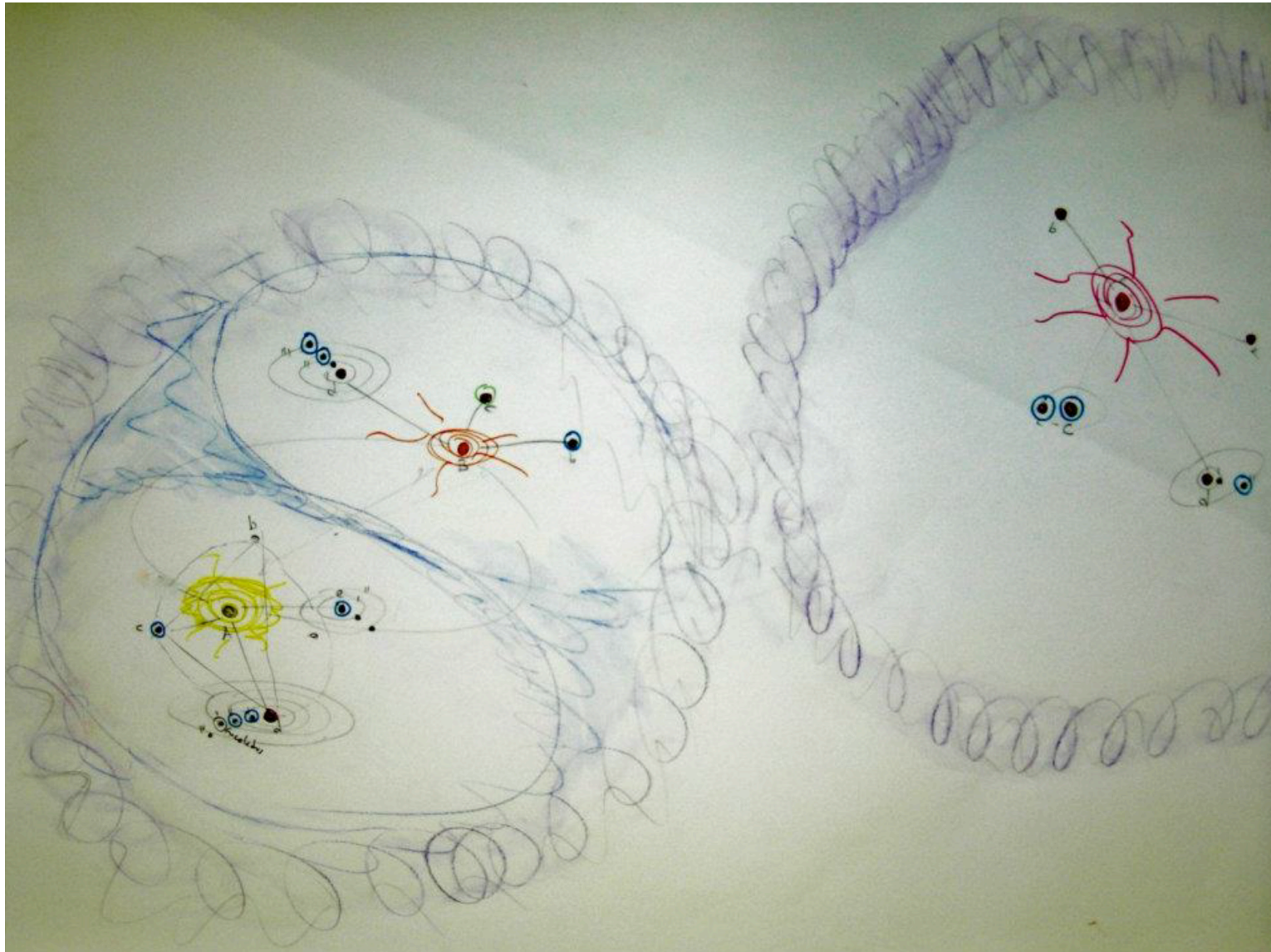


INVENTED HALF ~~BU~~ BUCKY BALLS

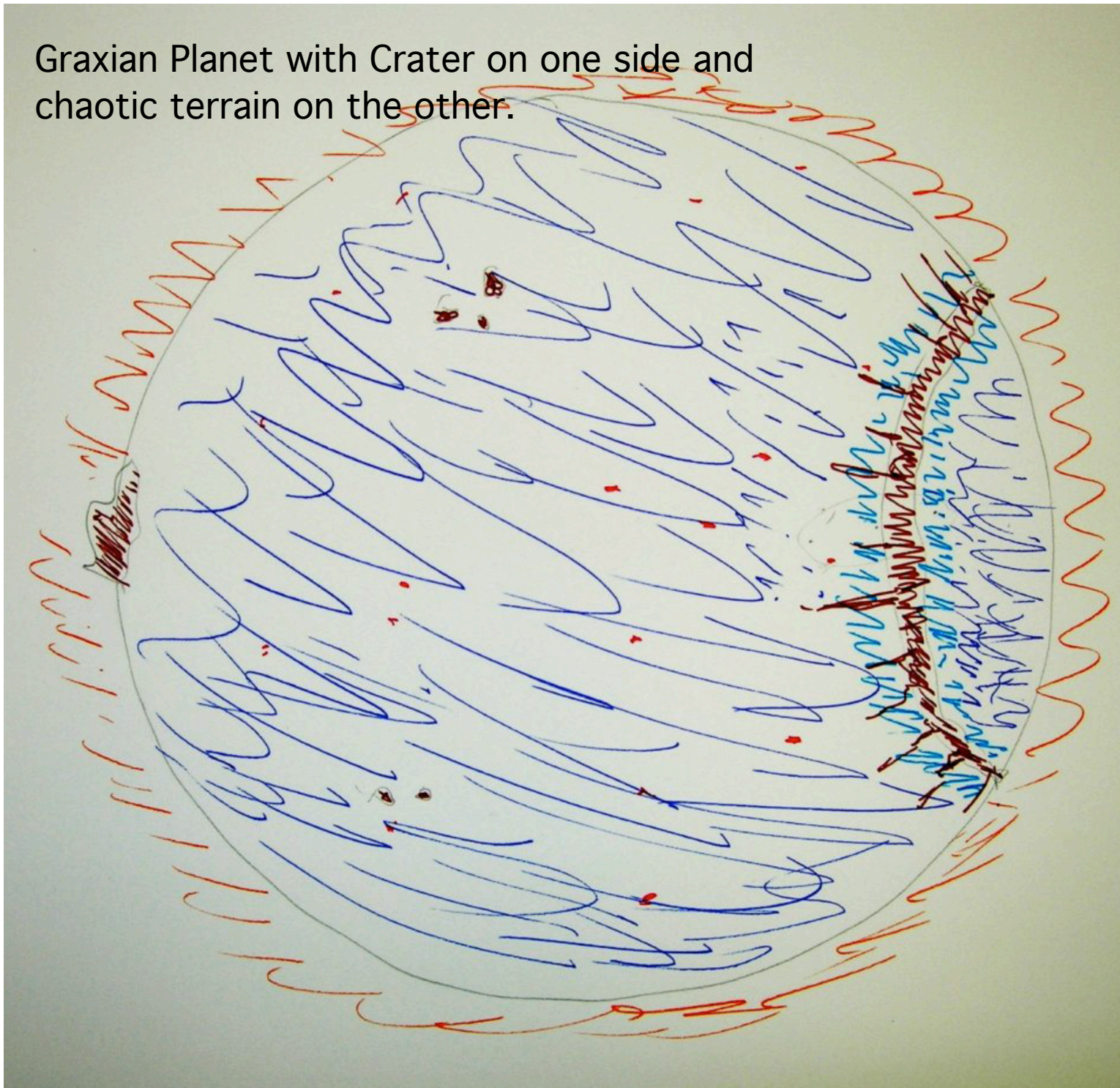


FLOATING  
AFFILIATE  
RADIO TRANSMITTER/  
SCANNER

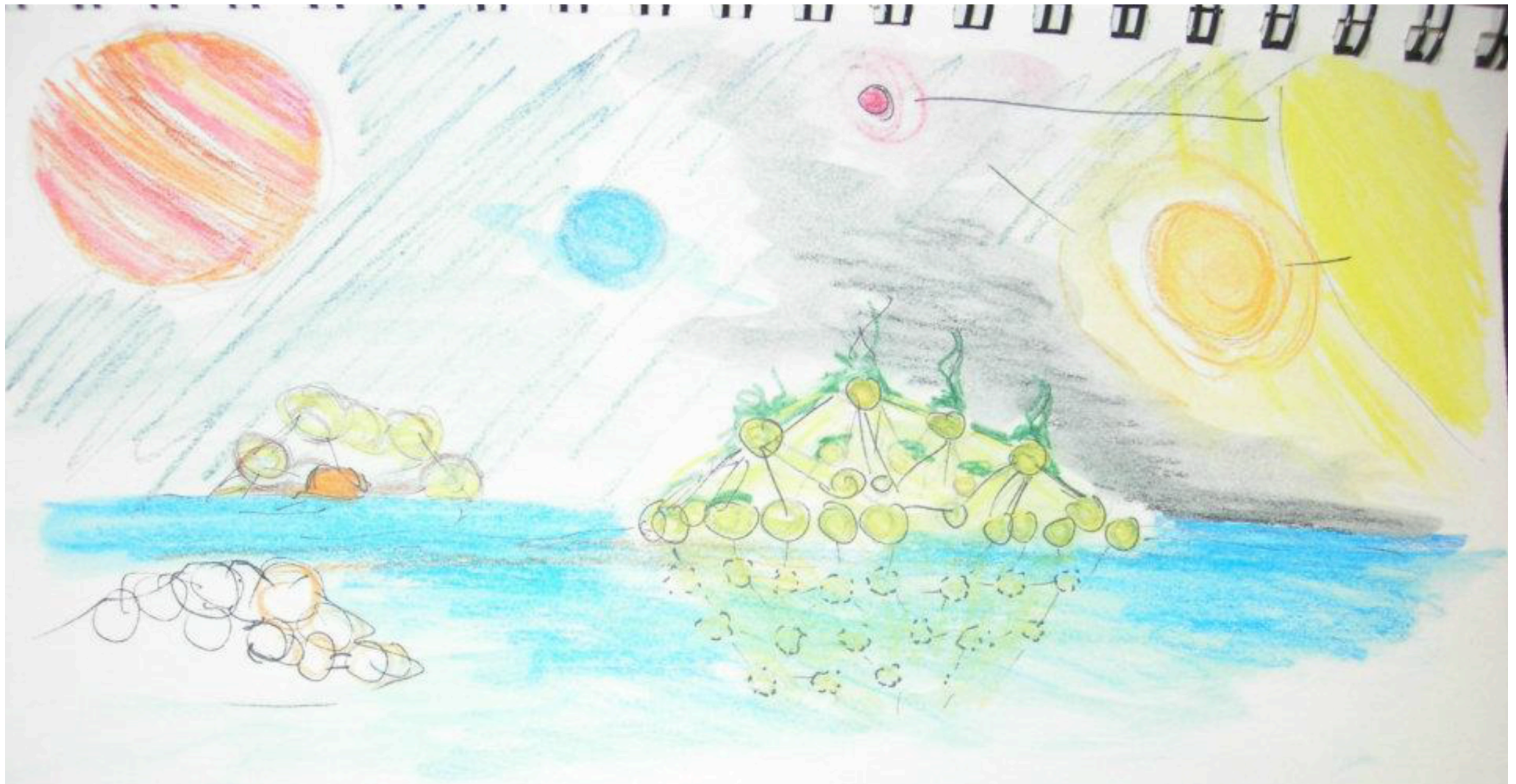
# GRAXIAN SHAPESHIFTERS PLANETARY SYSTEM



Graxian Planet with Crater on one side and chaotic terrain on the other.



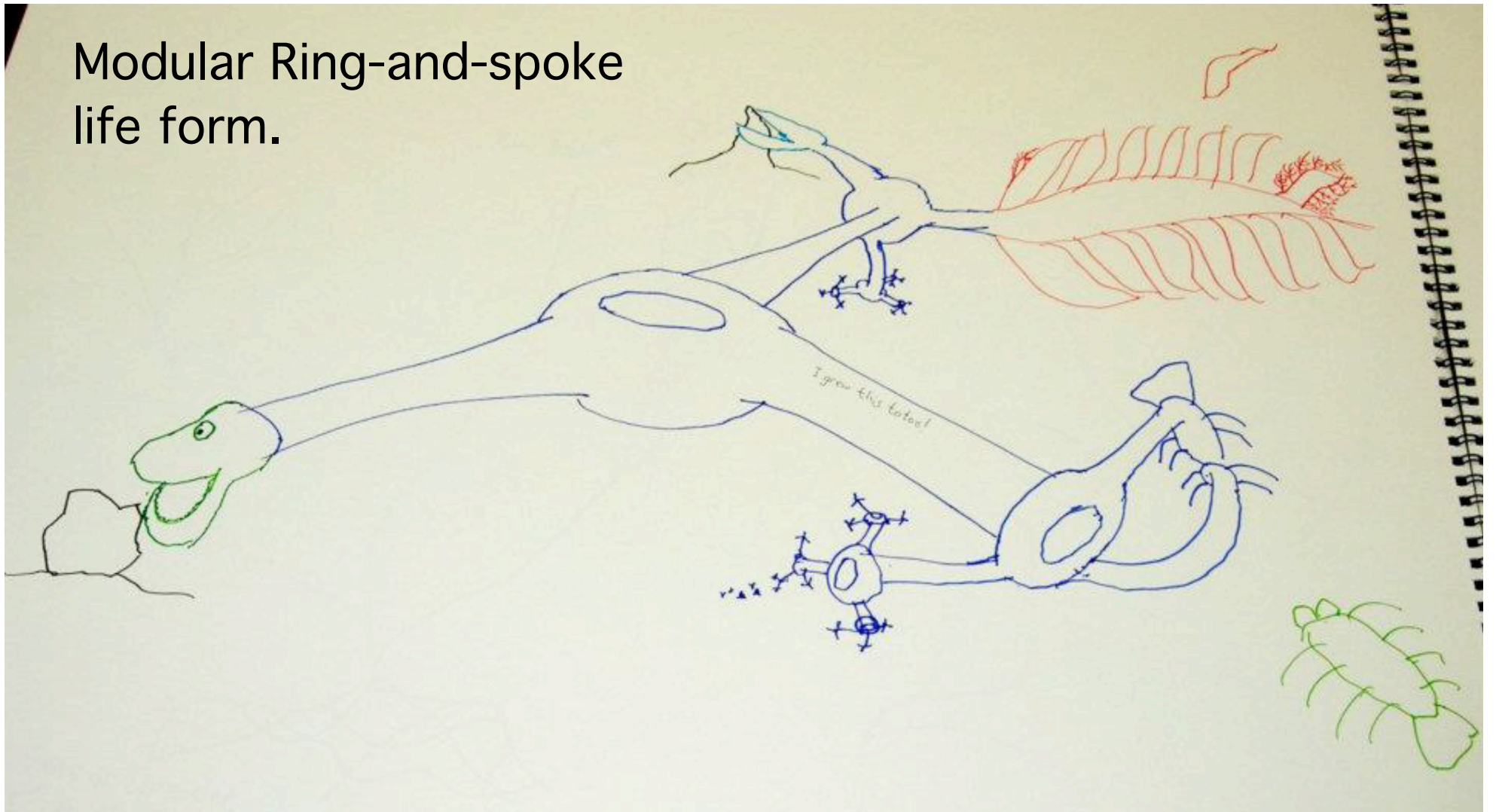




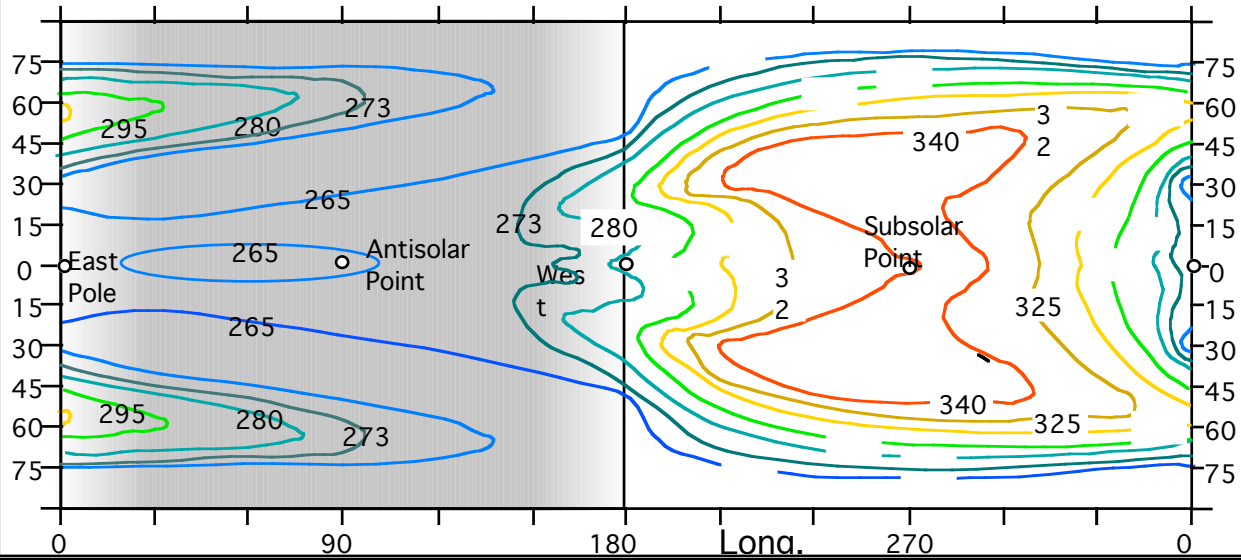
"KIRUPOTKIN" description="Another example of a realistic alien life form. A pod from a planet with an atmosphere of hydrogen and extruded plastic. The pod is made of fabricated parts to strive for a realistic alien life form. A pod from a planet with an atmosphere of hydrogen and extruded plastic. The pod is made of fabricated parts, baked Sculpy and extruded plastic. The pod is made of fabricated parts, baked Sculpy and extruded plastic."/>

"KIRUPOTKIN"

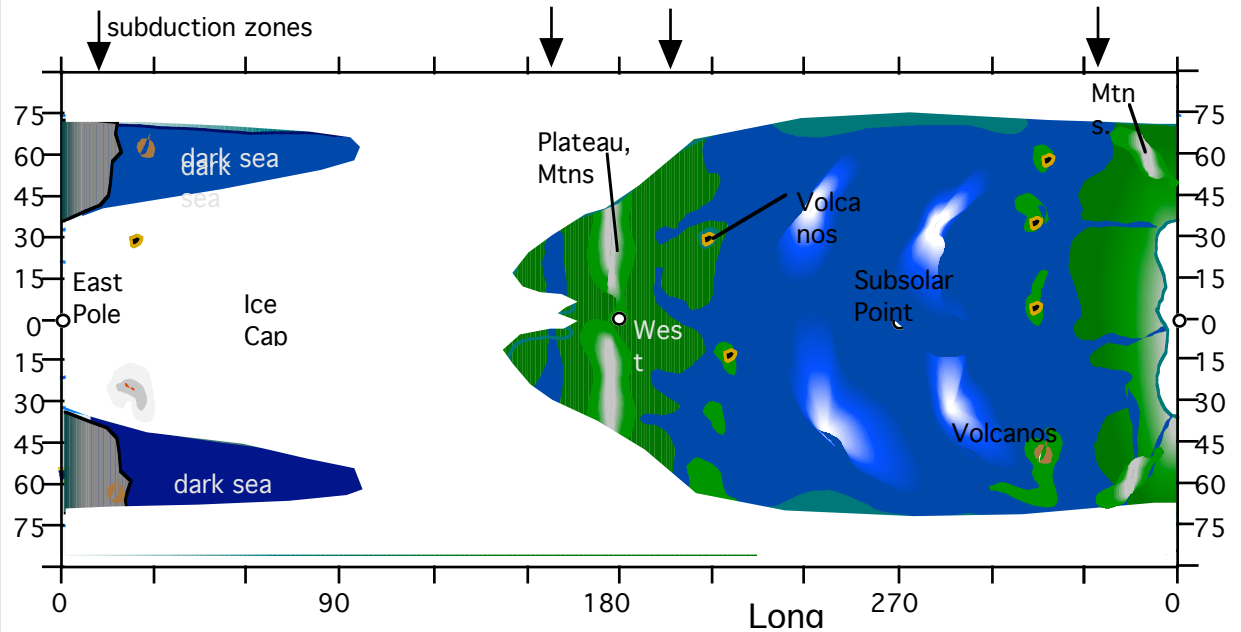
Modular Ring-and-spoke  
life form.



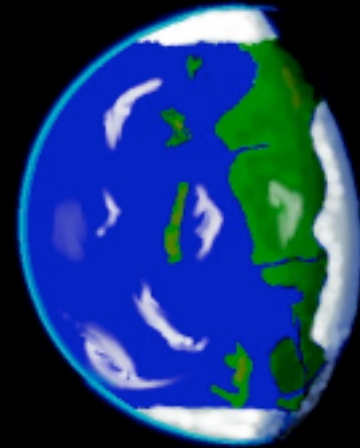
Troposphere temperature map

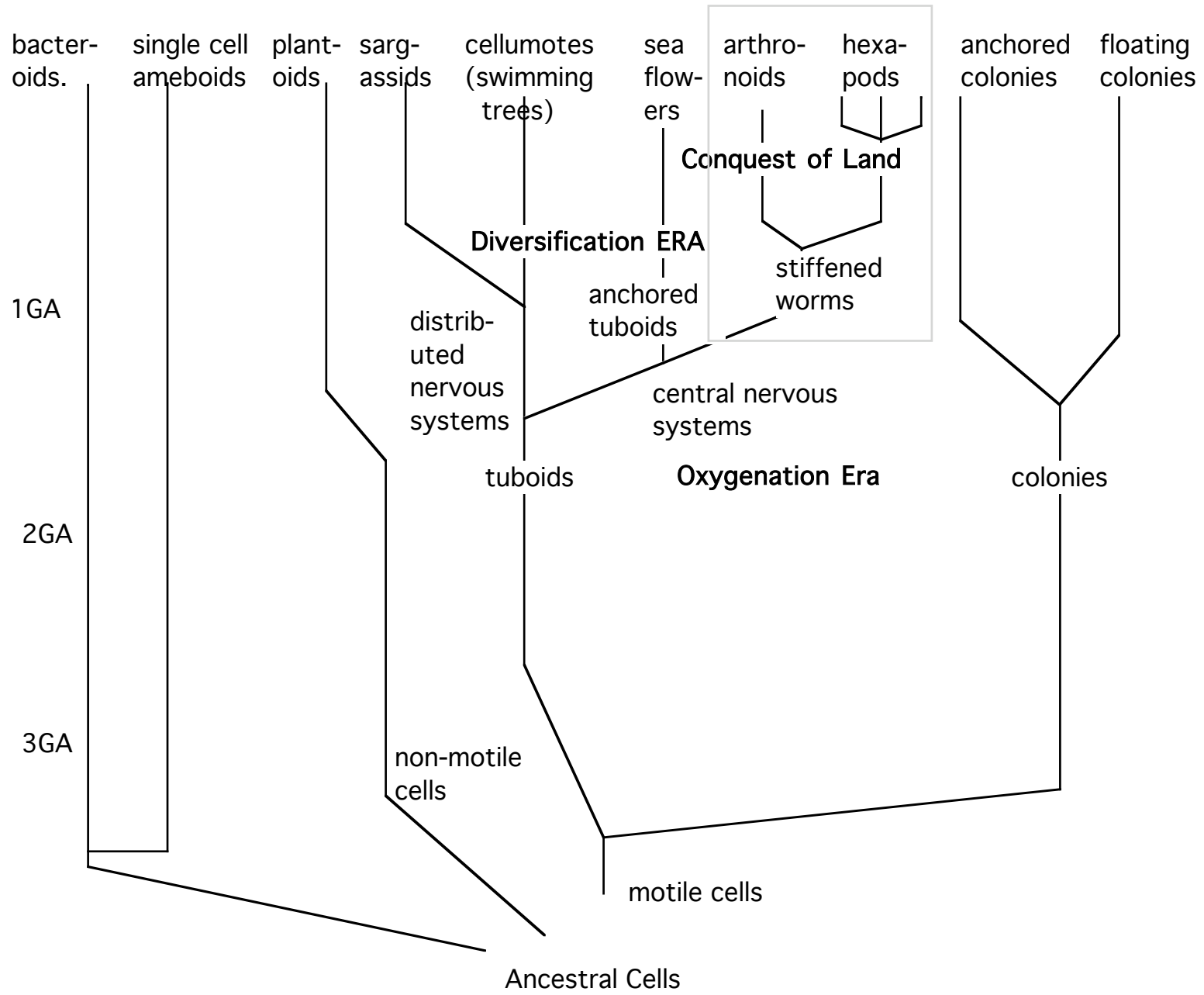


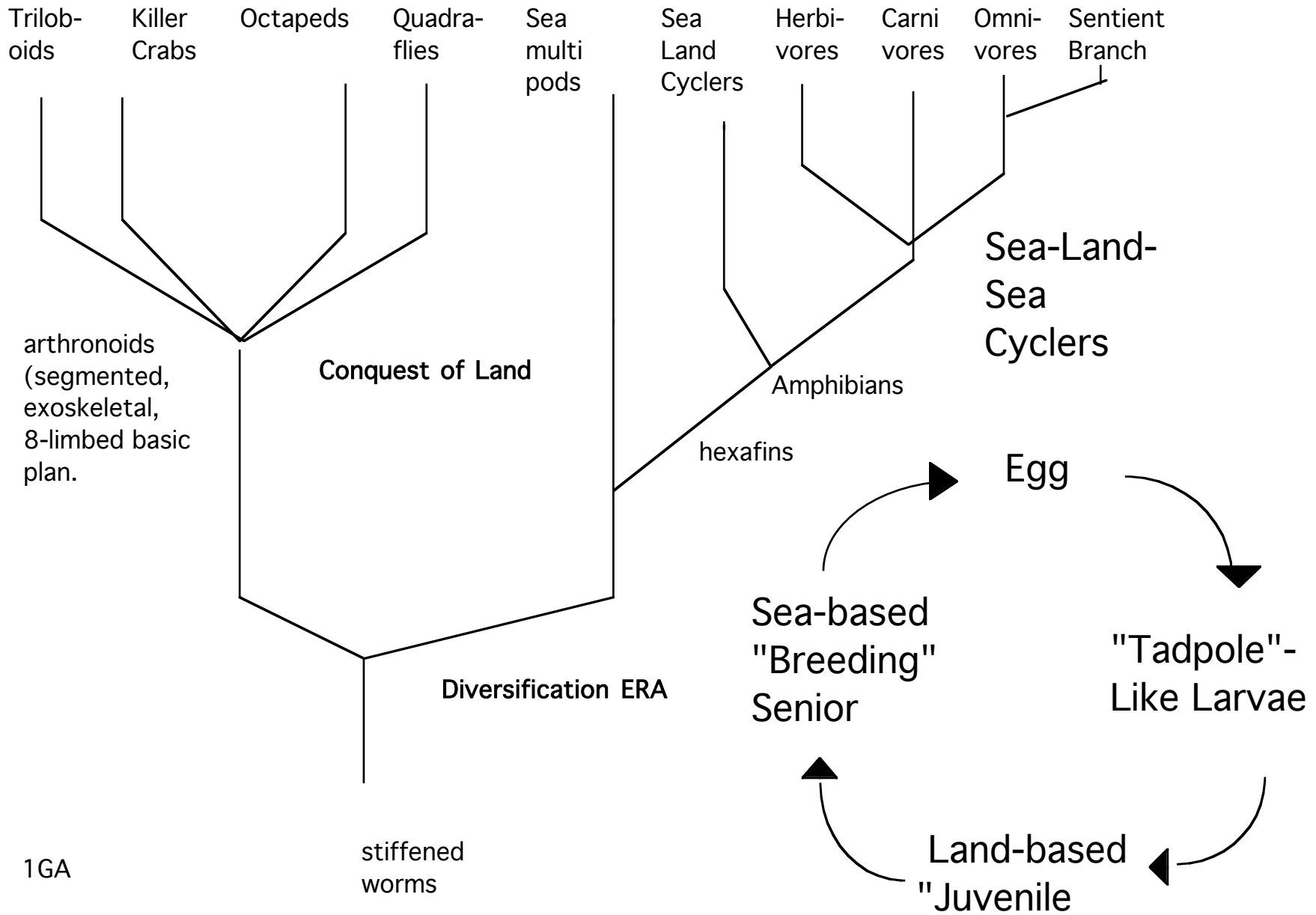
Surface concept



TIDE LOCKED  
HABITABLE  
PLANET







# Outline of History

Time scale Orbital period 28.14 days

12 orbital periods = .2 years = 1 Cheir, - = Cheirs before SAE  
(Pronounced "Kires")

Aquaculture -400,000 Cheirs

Alliances-communications between "tribes" -300,000 Cheirs

Hunting with weapons -200,000 Cheirs

Use of Fire, Agriculture -100,000 Cheirs

Domestication of aquatic species -50,000 Cheirs

Stone/Obsidian tools -50,000 Ch.

Empirical chemistry (black powder) etc. -8,000 Cheirs

Island-wide "kingdoms" -7,000 Cheirs

Empirical electrostatic technology -3,000 Cheirs.



Beginnings of efforts to understand natural phenomena in abstract. -2000

Island chain "empires" -1000 Cheirs

"Strong Arms Empire" Established Cheir, 0

Explorations of Dark Side, Subsolar Continent +500 Cheirs

Electromagnetic investigations +500 Cheirs

Beginnings of Steam Technology +500

Discovery of Radioactive elements +1500 Cheirs

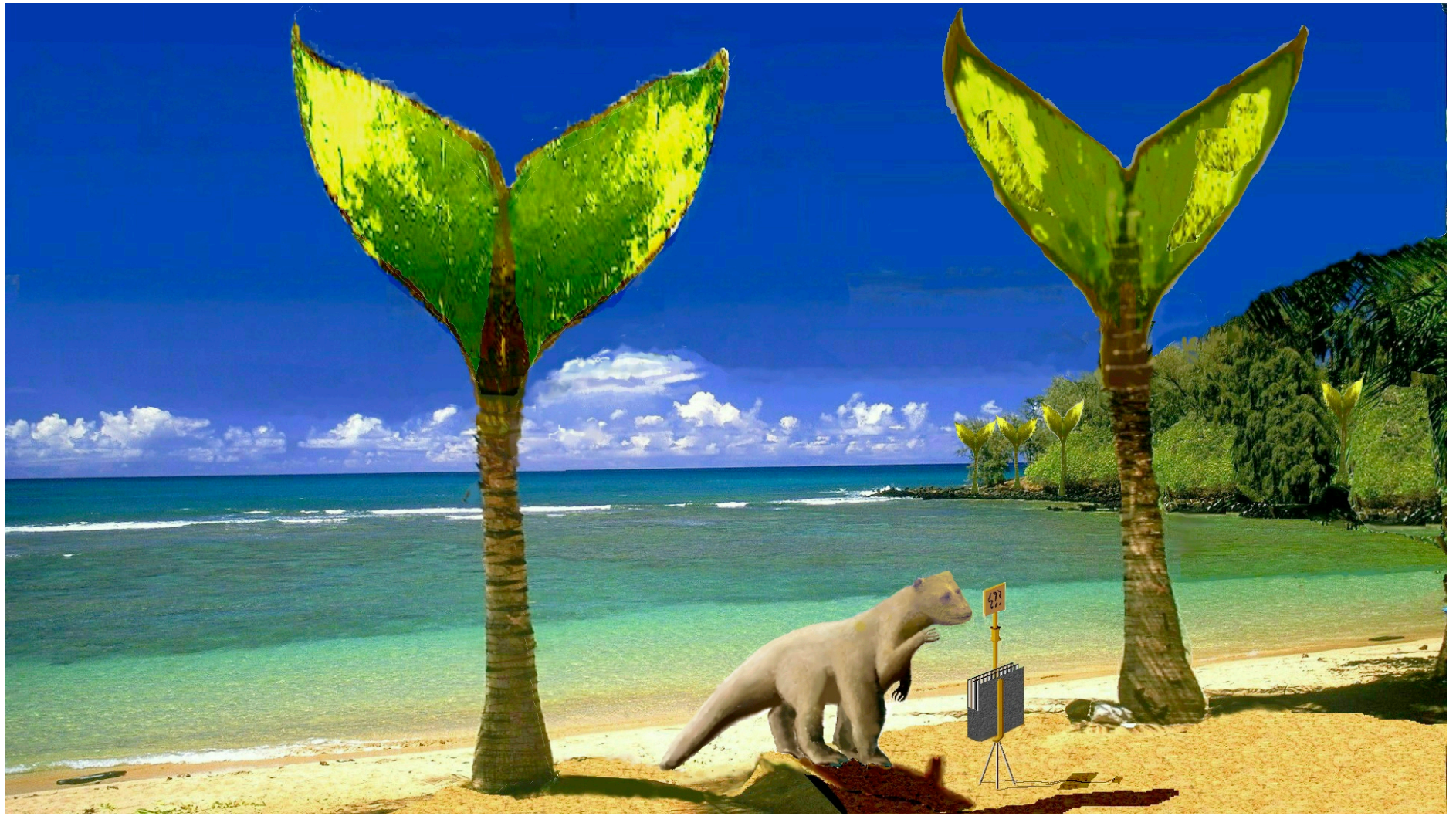
Permanent "air conditioned" cities, universities, along the shores of the subsolar continent +2000 Cheirs

Nuclear rocketry +2200 Cheirs

Landing on planet's moon, +2500 Cheirs

Detection of radar signals GJ 667 B d II (second moon of GJ 776 B d)  
See, I told you that atmospheric oxygen was of biological origin!

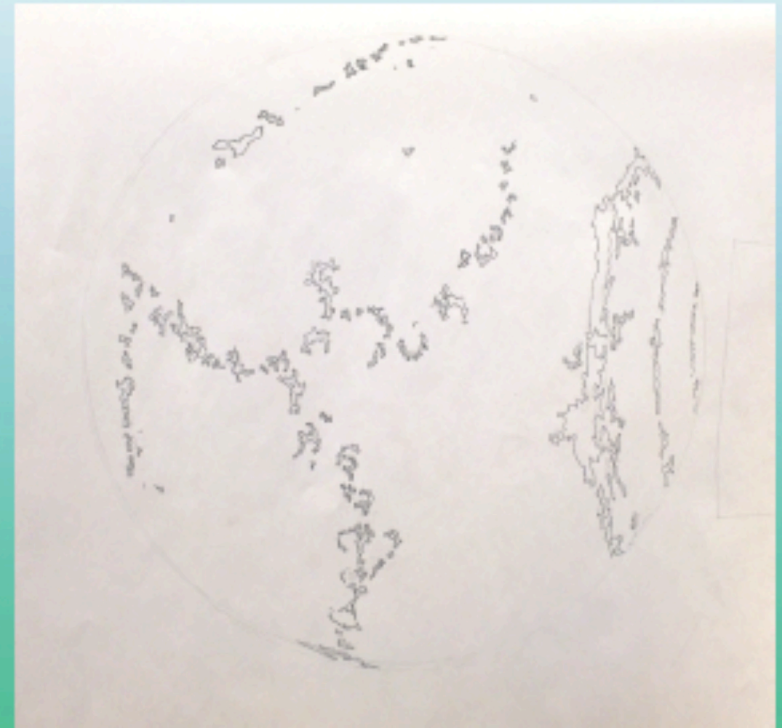
Attempting to communicate, sending  $\pi$ , song (frequency modulation)



## Team Alpha – Moon Aquavolcan, World of the Decapod Symbionts

### Planet & Geology Basics

- ✧ “Soggy Io”
- ✧ Orbitally induced variabilities
  - Tidal resonances
  - 42 Earth yr AB star periodicities
- ✧ Geothermal gradient, tectonics
- ✧ Sedimentary deposition onto volcanics
- ✧ Biotic and abiotic carbonates, etc.
  
- ✧ Large impactor-induced “pseudocontinent”
- ✧ Event (~ 10 MYA) may have triggered ancestral decapod transition to land
  - production of heat/aqueous processes of mineral enrichment

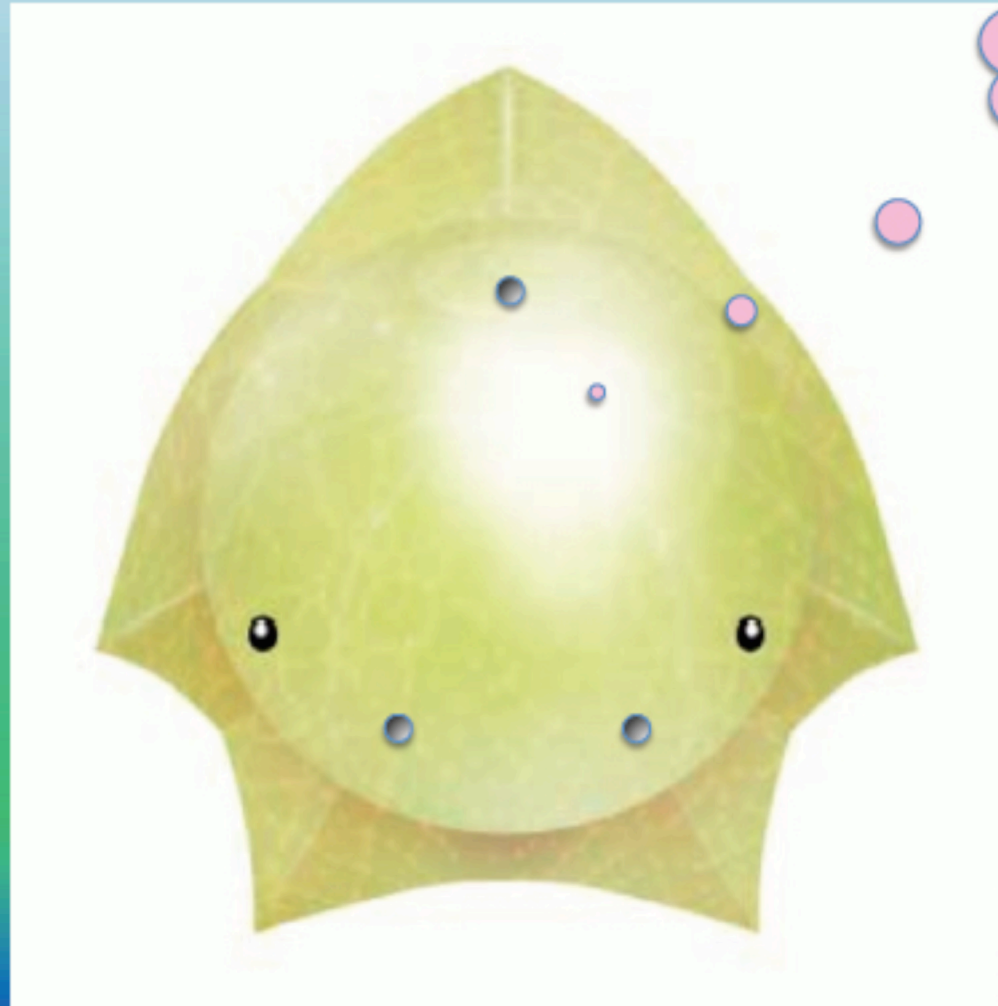




## Biology and Evolutionary Basics

- ✧ Marine decapod common ancestor
- ✧ **TWO intelligent species descend from this ancestor**
  
- ✧ Ancestor properties:
  - Capable of enduring short exposures on land
  - Extruded fiber to make bubbles, which they filled with gas, as egg/larval nurseries
  - Used bubbles for other purposes, e.g. food caches
  - Skin color changing via chromatophores (analogous to Earth octopods)  
*(for camouflage, communication to potential mates & rivals)*
  - Derivative endoskeleton formed by secondary rigidification of soft tissues
  - Intrinsic hard parts, e.g. beak, claws on 1 pair of appendages
  
- ✧ Intelligent heir properties:
  - Common environment, lavatube caves formed on land, extending to ocean.
  - Thus, air/water interface brings species into physical proximity
  - Larvae of both species are pentamerous, which becomes decamerous at adulthood
  
- ✧ Nutritionally-based Symbioses of the Two Heir Species
  - Both species share a major prey species that uses the lavatubes
  - Marine heirs husband the aquatic larval phase and eat eggs and some larvae
  - Land heirs raise and consume the terrestrial adult life phase
  - Many materials transfer pathways also critical

## Infant Marine Heir Larva



*Larva wants a cookie!*

## Technological Pre-adaptations

- ◇ Reproductive behavior
  - Multiple individual linkage (sexnet configuration) providing genetic exchange
  - Byproduct is direct neurological connection during the process
  - Communal egg laying and protection of eggs/young
  
- ◇ Sexnet communication used for other purposes
  - Cooperative prey capture, like a fishnet, individuals link up, spin silk as a mesh
  
- ◇ Spinnaret silk
  - First objects made from this, egg cases, but then vessels for land heirs, etc
  - Provides an intrinsic first step to fabricating tools, the concept is innate for them
  
- ◇ Exquisite fine motor control of tentacles
  - Multi-channel integration of sensory input
  - Used singly or in multiple tentacle functional units
  - 1 set clawed, in the marine heir 1 set is bioluminescent, etc.
  
- ◇ Folding in intricate shapes a major early technology
  - Using own silk
  - Using own sexnet multi individual configuration
  - Using environmental materials, fronds, leaves, rubbery microbial mats, etc.

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## Early Technologies

### ◇ Communication

- Skin changing colors provides the basis for a symbology
- Touch communication of direct neurological and chemical messages
- Sound also used to convey concepts
- "Tapestries" of silk textiles could be first written language

### ◇ Making fishnet configurations

- Supplants the sexnet configuration, sparing them potential injury

### ◇ Early mathematical awareness

- Knots for counting on their own silk
- Mesh 3D abacus

### ◇ Social adaptations

- Silk "heraldry" to communicate status, tribal identity, social organization
- Adult land decapods travel over water, first accidentally, then with help from marines
- 1 set clawed, in the marine heir 1 set is bioluminescent, etc.

### ◇ Mining of salts, metals, other minerals on pseudocontinent

### ◇ Technology drivers

- Communication
- Timekeeping for tidal, agricultural/aquacultural purposes
- Altering non-optimum lavatube habitats, e.g. stone masonry
- Astronomy for navigation

Adult Marine Decapod – Preliminary Concept



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*an informal history of  
CONTACT bioforms*



John Bray and  
G. David Nordley  
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