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Introduction

The past five standard years have proven fruitful. We can point to successes such as the processing of native animal and plant materials for food, medicine, and materials as evidence of our mastery of this new world. Gaining control of these resources has required unlocking the secrets of the cell. This effort has been hindered by the alien nature of the biology of the world, requiring an altogether new discipline within biology concerned with chemicals, proteins, and biological processes not found in Earth creatures. And yet, the discoveries have been aided by the startling parallels between life on Eos and life on Earth. These parallels may have a deeper meaning than coincidence or some supposed fitness of life.

Zoological Life on Eos

Without delving too deeply into the specifics, let us consider two specimens: the siren megalodon, and the murcow.

The siren megalodon is an excellent example of convergent evolution. Just as the Terran shark resembles the dolphin, not because of ancestry, but because they share the same environment, this creature has evolved to live in an Earth-like marine environment. Thus, while departing in some respects from the shark which it most resembles, in its membranous sail, its barbs, and minor differences in skeletal structure, to the greater extent it shares a shark's mode of locomotion, buoyancy, and basic metabolic needs. I point out the inobvious but basic fact that there is no universal law that suggests a marine predator need have a mouth at one end or orbital vision. Imagine, for a moment, how different a creature would evolve from a creature more similar to the Terran horseshoe crab, with its dorsal mouthparts and multiple simple eyes.

Thus, we observe that the siren megalodon shares not just form and function with the shark, but also destiny. Looking below the superficial, we find substantial differences in their physiology and chemistry. Just as a shark differs from a dolphin, a marsupial from a cat, or a piece of wax fruit from an authentic pectar, the siren megalodon is essentially different from any Earth creature. The membranes of its cells have different proteins and different chemical protocols. Any biologist looking at its cells under a microscope, or its vital functions under a resonance imager, can tell you instantly this is no creature of Earth.

And yet.

Its DNA is essentially similar to an Earth creature's. Its RNA, its proteins, its method of DNA replication and editing, none of them are unfamiliar to the Terran biologist. Despite overt differences, the yeast and the chicken share that much. But moreso, the siren's basic structures are not merely similar to the shark's, and not merely analogous, they appear to be related. While there are differences (and they are significant; I do not minimize that), the siren's DNA and cellular structure are more comparable to a shark's than it is to, say, a walrus or a tulip. It is as if life on Eos had repeated Earth's experiments, and gotten different but equivalent end results.

Imagine for a moment, not that the siren and the shark are relatives, but they are related in form. Sharks are descended from early chordates, which are descended in turn from earlier multicellular life. The life of the Cambrian came in an incredible variety. Before, there were only a few known forms.

A summary of findings concerning the biological heredity of the life forms of Eos and possible implications for terraforming and research. This report is classified.

But during the Cambrian, virtually every modern life form can be traced to a likely ancestor in the fossil record. Insects and mammals likely come from different experiments of nature, but they share some ancestry, somewhere, with all multicellular animal life. Imagine those experiments being repeated here, and something analogous to the early fishes arising here from something analogous to our chordates. Given time and convergent needs, the lifeforms come to resemble much what we recognize. Just as life on Earth produced both sharks and dolphins, one cold-blooded, gilled, and covered in sandpaper-rough skin, the other warm-blooded, air-breathing, and mammalian, the Universe has given us two kinds of shark. There is the Terran shark, with the characteristics we recognize. Then there is the siren, with its wedge-shaped bone structure, layered skin, and classically Eotian pigmentation. Apart from the superficial details, one could call it a fish as easily as a shark, because it is neither. The siren's similarity to the shark is deeply superficial, if you will excuse the oxymoron.

But from what common ancestor do the shark and the siren originate? That whole thought experiment presupposes a common ancestor, if not in the form prototypical to the sharks and fishes, then in the prototypical forms of animal life. No doubt you have heard suggested the possibility that Eotian life was brought here by tentaari colonists or scientists. But consider the opposite conclusion. What if life on Earth originates with the alien civilization? It is easily possible to imagine that alien life was introduced to Earth during the Cambrian explosion, when the multitude of common forms came into existence. However, we can imagine further that the Cambrian explosion represents the vigorous expansion of colonists into Earth's ecosystem. Perhaps many of the new forms arising so suddenly did not evolve, but simply arrived. Alien life forms? Genetic modification to Earth forms? Indeed, it would not be strictly necessary to introduce zoological forms. Simply the introduction of viruses, viroids, proteins, bacteria, and protists would change the contents of the great toolbox from which Earth's life was assembled. Consider the possibility of deliberate seeding. Imagine, for a moment, taking the human DNA, dividing it into hundreds or thousands of parts, and inserting it into retroviruses. These viruses would continually mutate, and further, mutate their hosts, perhaps from time to time leaving a genetic memory in their hosts. It is unlikely this experiment would yield a human being, not in a million or a billion years. But if repeated enough times, this experiment might very well yield something much like a human. Just as the dolphin and shark converged on an ideal form for locomotion, so too might a creature use the basic building blocks it had been given, and in its inventiveness, rediscover the traits that made humans successful. Consider, for instance, the velin, although they are a special case in other respects.

Let me turn your attention now to the murcow. If the siren presents the possibility that Earth life came from Eos, the murcow presents the puzzling possibility of the opposite. The murcow is genetically very similar to Earth mammals. Indeed, some of its sequences can be found in cows, antelope, and so forth. It is certainly possible this is a case of convergence or coincidence, such as what I suggested above with the possibility of "jigsaw" colonization. However, the murcow is so similar in some respects, and so different in others, that it suggests a provocative possibility.

Most differences in the murcow from a Terran mammal can be traced to the



production of different hormones, chemicals, and chemical equilibria. It is as if, and I say this with great caution, someone took an early ancestor of the cow, combined it with DNA from a pig or horse, then deliberately engineered it with inserted DNA that would adapt it to a new environment. Just as we commonly engineer bacteria to produce human hormones and other useful substances, someone might insert DNA and structures into a cow-like creature that would allow it to survive in an alien environment and metabolize its chemicals. This possibility has actually been discussed, with some contention, on the matter of adapting the human digestive system to the task of eating native foodstuffs. The current thinking is that this is a possible, but not yet practical task. However, it may be within the capability of a technologically advanced race such as the Tentaari, with their incredible computers and their vast experience, to do so quite casually. Whether this, or complete terraforming, is the answer to "murcow sickness," cell pathologies, and similar problems, remains to be decided.

The Velin

Everything I have said so far has been well documented and studied by the Southland team. What follows are my own speculations.

Everything that can be said about the megalodon siren and the murcow can be said about the velin more forcefully. They do not merely resemble human beings. They look like human beings. A casual inspection suggests they are nothing more nor less. A more than casual inspection reveals some substantial differences, but nonetheless when you look into a velin face, you see a human face.

However, we know from our science they differ in important respects. The great durability of their bodies suggests not merely genetic tampering, but deliberate engineering through nanotechnology. Despite their primitive lives, apart from the ruins of the original Eosians, they are the clearest sign of a technological past of anything on the planet.

While some resonance scans have shown results that are quite normal, some, especially of the velin that were first encountered, suggest their bodies and minds were built rather than grown. For instance, their arteries, while similar to other Eotian forms, and eerily so to humans, contain elastic tissues and deposits more akin to all-weather building materials than to other life forms found on this planet. If they are a natural species, they are not native to Eos. Echoing what I said about the murcow, it is as if someone took a human genetic template, then begin modifying it to adapt the creature completely to a new biological environment with a characteristic chemical signature, availability of proteins, exposure to toxins, and so forth. However, the creators did not stop there. The velin were clearly engineered toward other purposes which would be difficult to fathom. Further, let me add that unlike the murcow, they share very little remaining DNA with Terran mammals. I will offer the metaphor of a ground transport modified for racing. Its mechanical components have been almost entirely replaced, but the basic form remains.

My belief, without question, is that the velin were made to be either our friends or our replacements, but who made them, and when and why, is a curious question. Although I do not have hard evidence for saying so, I do not believe it was the Tentaari, at least, not our Tentaari. I have seen no

indication of cooperation between the two races, as you would expect if they were part of a larger Tentaari plan involving humanity.

In fact, I am increasingly convinced the Tentaari are hiding something about the origin of the Eos system. I will raise the possibility that they themselves do not understand all that has transpired here. Clearly, many civilizations have had a hand in creating the history of this world. What role the Tentaari may have had is in question.

While it may be troubling, we may wish to consider the possibility that most of the history of life on Earth may have been related to a plan by the Tentaari or their allies. Clearly, any such project has been long abandoned, unless the Tentaari themselves have decided to contradict their original mandate and use events for their own mysterious ends.

Recommendations for Action

It is a priority we gain more information from the Tentaari. Although they are reluctant to reveal much, I think we can examine several lines. First, although Rodgers believes otherwise, I am inclined to agree with the assays that suggest the Tentaari in this system are in tremendous need of our material, energy, and technology resource. Despite their advanced technology, it appears to me that they are biding time because their options in the current situation are limited. What does that mean? Is it possible they are controlling the gateway because of possible external threats? What are their plans for the system?

Thus, I suggest a program of exchange, with the specific aim of gaining access to technology that characterizes Tentaari capabilities. Nanotechnology of all types tops this list, but large-scale energy storage, cloning, and astronavigation are three areas where we can offer our resources and perhaps learn something by assisting them. If, indeed, the Tentaari have the capability to build worlds, create species and entire ecosystems, and communicate with a vast, populated galaxy, we need to know this now. And if so, we need to be formulating an understanding of what their plans are. If it seems the Tentaari are limited in their capabilities, we should consider the possibility that we are being used, and the major technological powerhouse in the galaxy are not the Tentaari.

Second, we need to know more about the velin. They seem to be the clearest link to Eos's ancient past and its recent chaos. By offering medical assistance and conducting simple social services, we may be able to gather more information about their unique physiology and psychology, possibly lending a clue to their origins and intended purpose.

Third, I suggest stepping up the training and deployment of the Special Intelligence Force. Clearly, we are not dealing with simply questions of security, but the future of the human race itself. While we cannot hope to achieve technological parity, we need to produce a credible means of challenging the Tentaari and others. Without this capability, we may face a brickwall trying to extract information from the Tentaari.

Fourth, we need to escalate energy production, increasing capacity by at least 100% every year for the next five years. With or without the assistance of the Tentaari, we need orbital security and long range sensor capabilities. We need equipment capable of facing security operations against Tentaari-type technology, on a personal, vehicular, and planetary scale. With adequate

planetary defenses, we may be able to make more persuasive demands of the Tentaari.

Fifth, we need to strongly consider the dangers of biological warfare. We have already seen hostile nanotech in action. Considering what I have detailed in my report, there is the distinct possibility the Tentaari know more about our biology that we do and are capable of tailoring an array of effective agents. I also bring to the President's attention the need for an aggressive information-management program, something my project lacks the expertise, manpower, and authorization for. We are unaware of any private citizens in possession of the data referenced in this report. However, it is only a matter of time before civilians with some knowledge began to extrapolate along similar lines to our own research. Indeed, these conclusions may not even require scientific underpinnings to form. I note with some caution the recent philosophical treatise, written by Prof. Joshua Goldstein and published by DSU Press, entitled "On the Possibility of a Universal Progenitor". The conclusions we have drawn do not require extensive research to formulate—only to test.

It may be possible to bring many scientists, physicians, and technicians into the fold, but this cannot be accomplished with scientists based out of the faction camps. I need hardly say that if a faction camp ascertains the nature of the relationship of the Tentaari to the biological colonization project, and its purpose, before we are able to, this would pose a very significant security risk to the Republic and humanity.

In order to continue our current lines of research and proceed as I describe, my team will require greater expenditures for the coming year. (I anticipate a necessary budget increase of not less than 45% and commensurate personnel.) We also request a formal liaison be established between the Southland team and the Special Intelligence Force. Apart from the quicker exchange of information, this would streamline security concerns by taking the flow of information out of the upper levels of the Department of the Interior.

END REPORT