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A Hymn to Life in the Universe

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In the heart of the desert, where sand and rock and bare dirt might seem to be all that Earth can aspire to become, there yet stands a small tower of life. Its firm stalk rises out of the broken ground, supporting a structure of living cells whose intricate order contrasts sharply with the crudeness of the desert around it. Among the stones whose rugged shapes contain—as though they were the planet's memory—the imprint of a billion years, the plant's cleanness of form makes it seem an alien

presence.

Strange things are happening here, things the desert could never understand. The leaves receive the same light that bakes the scattered stones, but instead of throwing its heat away each night the plant keeps the sun for itself. Rain pounds the indifferent dirt and seeps away, but roots grasp for all the water they can hold. Wind easily swirls clouds of sand from the desert floor, but the leaves remain bound to the plant and only flap in the wind-the green flags of the nation of life.

Though the plant might not seem to belong here, the desert was yet the womb from which it was born. Life was as much an expression of the desert as was sand or stone. If life defies chaos, it is yet created from it. This is the paradox of all life, not only in the desert, but in the whole universe as well, for what was the universe but a wilderness whose forces surged back and forth with a massive crudeness, tossing stars around as if they were grains of sand upon the wind, recklessly grinding out planets, and everywhere pouring energy into a void that will only swallow it forever. Yet from out of this barbaric prodigality arise worlds on which infinitely delicate forms will grow.

The plant in the desert was not as alone as it might seem, for nearly the whole planet from which it grew was covered with life; the desert was a small remnant of wilderness that life had been unable to fill. Yet though the planet was swarming with life it was still as small and fragile amid the raw intensity of the stars as the plant was amid its own desert of sand and stone.

The plant holds out its leaves to meet the streaming sunlight, absorbing into its millions of cellular sponges an infinitesimal amount of the massive energy the sun disgorges into space. The leaves open their doors to the swarming photons, yet in filling itself with the chaos of the universe the plant does not become chaos, but through the strange alchemy of life transforms it into order. The plant turns the light into itself, funneling it into the swirling patterns of the cells, where all the molecules and organelles of life float upon the strength of its flow, moving in their intricate currents and crosscurrents as long as the river of light flows through them. The plant was a handful of Earth dancing about on a whirlwind of captured light, moving in patterns that captured more light and kept the dance intact.

Life absorbed and transmuted chaos from the land as well as from the sky. The

plant contains the desert, though you wouldn't recognize the desert within the plant. It had merged with the flow of life and begun working with an artistry it had never known before.

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The plant was compacted from the molecules scattered across the ground and flying loose in the wind, formless and wild, moving with that massive ocean of desert sands whose waves required a thousand years to swell and crest and disappear. From out of this slowly undulating land, moving with its ponderous and ancient pulse, a swifter metabolism arose and drew the formless desert into itself, setting it flowing in graceful and elaborate forms, letting matter that had once been stone dance among the rocks, like a beautiful song coming from the otherwise rough and inarticulate desert.

The plant has also drawn the desert's water into life. For millions of years thunderstorms savagely battered the ground, carving into the rock until gullies and canyons swirled across the desert floor. The frost of a million winters penetrated the rocks and cracked and shattered them, leaving the stones with twisted faces or standing in precarious arches. Yet the water that inflicted this crude surgery on the land now joined the most delicate structure on the planet, a form that grew and changed shape from within, directed by its own inner craftsmanship.

Wind too had yielded its fury to the needs of life. The air had roamed wildly over the land, madly stirring the dust and scattering the clouds, yet now some of its molecules left that world for one that contained its own landscape of winds, a self-contained whirlwind that sucked in matter and twirled it into greater and greater order, up the winding staircase of DNA, up the interwoven patterns of cells, up to the superstructure of leaves and roots. The molecules that could only riot across the land began a fine weaving and interweaving with other molecules that had come out of the same chaos, together producing the matchless fabric of life.



This is the power and the paradox of life, to arise from chaos and contain chaos without becoming chaos, to draw the rest of the world into its dance, converting a small patch of the wilderness of the universe into a skilled and majestic flow. This power lay hidden within matter for billions of years as stars formed their furious circles, yet in an isolated spot the storm calmed and allowed life to arise, containing the chaos that had contained it for billions of years, taming the storm that would not let it free, taking the raw energies of the universe and making from them something beautiful and alive, turning the electricity surging in every atom into consciousness, and the air flying wild above the naked earth into song.



"The radio telescope in the desert had arisen out of the wilderness of the Earth to probe the wilderness of the cosmos."

In the distance beyond the desert plant stood another structure whose form revealed it to be a work of life. It too was a leaf, pointing towards the sky to absorb the energies of the stars. Yet this leaf was vastly larger than those of the plant, and was composed not of the whirling molecules of cells, but of firm steel. The plant captured energy in chloroplasts, while the metal leaf used a more massive form of electronics. The plant only wanted to fill itself with the sun, but the larger leaf wanted to absorb the energies of the farthest galaxies, many of them so old that they had died a billion years before, leaving only their electromagnetic ghosts to haunt the universe.

The leaves made of cells and the leaf of metal tapped the same wilderness of energy, yet for different purposes. The plant wanted the energy for itself, while the metal was only meant to funnel it onward into something else. The leaves fed the plant's hunger to maintain its form and grow, but the metal fed a kind of hunger the plant could never feel within itself, a hunger not of body but of mind, not the elemental drive of plants to fill out their structure and rise into the potential form contained within their seed, but the conscious need of a mind to fill its own empty spaces. Both plant and mind sought to fill themselves with the universe, yet one wanted to subdue the light while the other wished to be illuminated by it. Plants sought the light to power the dance within their cells, but the energy falling into the human brain set off activity far out of proportion to its faint quanta, for man sought it not to add kinetic fire to his cells, but to energize his mind with a far different kind of power. For man the energy contained a new dimension, one that plants could not perceive, but one as necessary to build the order of the human mind as light was to feed the expanding architecture of plants. Man sought to catch the rain of cosmic energy for what it revealed of the universe, to feed his hunger for understanding.

This hunger was born out of the same primeval dance occurring in every cell of the plant, and though the human mind had vastly transcended the simple weaving together of molecules, it still carried on life's work of making order out of the chaos around it. Man emerged into a world swarming with bewildering events and tried to find patterns in them. He watched the rising moon and noticed how it matched the rising tides; he watched the changing seasons and noticed how they matched the changing sky. He held a fossil in his hand and glimpsed the history of his planet. He watched the animals around him and saw that they shared many of the same emotions he felt within himself. He studied a falling object and guessed the nature of the force guiding the planets in their flight. He saw a seed become a tree and a baby become an adult, marveled at the force at work within wood and flesh, and looked into the blackness of the universe and wondered if this force was also at work among the stars.

To help him order the world in his mind man has had to order the world with his hands, lifting tons of metal out of the ground where it lay for millions of years and shaping it into sensitive machines. The radio telescope in the desert had arisen out of the wilderness of Earth to probe the wilderness of the cosmos.

From the desert of his own planet man studies the desert of space, absorbing into his giant leaf the raw energies wafting through the cosmos. He sees the turmoil in every star and the massive violence in every galaxy. He witnesses the birth pangs and the death throes of stars, the fertile clouds of condensing gas from which stars are born and the novae that mark their passing. He listens to the heartbeats of pulsars and plots the wild dance of binary stars. He sees the universe in all its contrasts, from the savage profusion of quasars to the unquenchable hunger of black holes, from the swarming crowds of stars in the center of galaxies to the empty void between them. He watches the massive storms raging all across the universe and feels the winds of radiation pouring from them into space.

And yet, from out of this chaos man still hoped to detect an energy whose pulse could not be born in any star. At night humans would look upon the universe and feel sure that it was there, somewhere in the darkness and racing towards them, blindly searching out the stars, passing unheard over planets of naked desert and planets of ice, passing comets that couldn't recognize its meaning, sweeping through the sea of futile energy disgorged by the stars, mingling with the energies of a billion stars yet not being lost, spreading across the galaxy like ripples in a

lake, like the first light of a brave new star.

Someday this wave would find Earth and man. It would ring in his radio telescopes with an order so clear and delicate that man could be sure it had arisen not from the heart of any star, not from the wild blasts of novae or pulsars, not from the fury of quasars or black holes, but from the same force throbbing in his own cells and every cell on Earth, the only force in the universe able to create such order.

Then man would know beyond any doubt that somewhere else in the universe the dance of life had started and triumphed, drawing the chaos around it into its flow and giving it form, crafting energy out of its rawness until it glowed with wisdom and called across the void between the stars for someone to share its wonder.

A biographical sketch of Don Lago appeared in the March 1979 (vol. 1, no. 2) issue of **COSMIC SEARCH** in connection with his article, "Circles of Stone and Circles of Steel", which was the first winner of a **COSMIC SEARCH AWARD**.

[HOME](#)

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Designed by Jerry Ehman.

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