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Preface:

- 1) The Big Bang created a Universe of energy;
- 2) Each thing that exists in the Universe is composed of energy;
- 3) Ideas exist in the Universe, and are composed of energy;
- 4) Energy can be viewed as matter;
- 5) Ideas can be viewed as matter;
- 6) Ideas are defined in terms of other ideas;
- 7) Geometry describes the relationships among material objects;
- 8) A Geometry of Ideas follows.

From "The_Geometry of Ideas" by Keter Atum.

THE GNOMON

by Tony Giovia

"Remove the blindfold."

The order was sudden, but I pride myself on my awareness and quick reflexes. As though the words were my own thought I instantly acted. The sensors inside the eye sockets of my blindfold set off alarms when freed from the pressure of my eyes.

I saw a searing white disc and was blinded again. There was a sharp reduction in the speed of the sonicopter, and for the briefest of moments I feared that the Puter pilot had malfunctioned. The alarms were silenced just as my eyes adjusted to the light.

My first glimpse of Living Spaces was skewed by the low approach angle of the copter. I saw, or thought I saw, an immense elliptical ring composed of discrete abutting buildings; the variety of architectural styles was rendered partly delirious by the rising heat of the desert. There appeared to be a complex of roads reaching within the ellipse, and I also caught a sharp glare off what may have been a small lake near its center.

I was neither surprised nor impressed by this egg-shaped anomaly crouching in the sand in the middle of nowhere. Frankly, I was ready for anything; after all, this was the asylum - read "laboratory" - of another head case who had developed another Theory of Everything. I had been chosen for this assignment

because I myself had once developed such a theory, and I was familiar with the "psychological types" that dreamed them up.

This particular psychological type claimed to have discovered a scientific method for the study of consciousness.

"Can you believe it?" My companion, a red-skinned (ahem, excuse me: I mean Native American) and inexperienced research assistant, was shouting over the slicing roar of the engines. She had been assigned to me against my will by my editor at Physical Mechanics Journal, and I resented the intrusion on my independence and judgment. I pretended not to hear her.

She insolently began pulling at my sleeve and pointing. I looked heavily at her wide eyes, sending a message, and nodded.

The sonicopter's mechanical voice spoke again: "Landing. Disengage within thirty seconds."

The Puter set us down fifty meters in front of the ellipse, mercifully kicking up no sand. My companion jumped down next to me and pushed me forward. The copter lifted away, leaving us with an explosion as it accelerated through the sound barrier. The heat was intense.

Before me stood a huge space helmet. My companion yelped, pulled out her piCrystallizer and began snapping vivipicts. The "space helmet" was the facade of a spherical building. A tinted visor-like window curved around the top three-fourths of the structure, and along the sides thick black tubes (air-conditioning, I remember hoping) fed into the interior. Various knobs and gadgets sprouted about the helmet, and there was a small tunnel door at ground level.

I wanted to escape the heat and go right in, but my companion prevailed on me for more pict of the exterior. Going through life I have learned a thing or two; therefore I relented, knowing she would otherwise report my refusal to my editor. While she scampered around, I slumped my shoulders and crossed my arms to indicate my current displeasure. I also examined the abutting structures from my stationary point of view.

To the left (my left) of the space helmet, and adjoining it, was a gleaming steel square perhaps fifty meters high; it was tall enough that the curvature of the helmet entered cleanly, cut off and disappearing within; apparently the visor served as a community window from that side. There was a single row of alternating large and small windows running vertically down the center of the facade; no two windows appeared to be of the same size. To the left of the steel edifice stood a columned temple topped off by a golden dome and spire. From my angle I could not see how or if it joined with the steel building.

To the right of the space helmet was a stone pyramid (I can think of no other way to describe it); one side was excavated to allow the visor to exist unimpeded, with the glass buttressing part of the pyramids structure. Other than the visor, there were no other windows I could see. To the right of the pyramid was a leaning trapezoid, low and long with a bright red finish. That it shared a wall with the pyramid was apparent but not visible from where I stood.

The other buildings forming the ellipse were difficult to see without my standing further back. Images of thatched roofs, serrated walls (a castle was nearby), hooded arches, skyscraper towers, stained glass and minarets stretched far into the distance on either side of me.

Eventually my companion returned, bubbling with enthusiasm. She decided to immortalize me by picting me with the space helmet at my back.

"Is this the most incredible thing you've ever seen? The building goes on forever! Why do they keep this location a secret?"

As she well knew, "they" did whatever they liked whenever they liked, with or without a reason. She knew "they" controlled all the transportation and communications technologies; and she knew the only thing "they" couldn't control were visionaries such as myself.

What she didn't know was the real reason we were here.

"We have a schedule," I said authoritatively. "Professionals realize the importance of proper time utilization."

My companion's face changed perceptibly as she absorbed this valuable lesson. She nodded her head and escorted me to the tunnel in the maw of the helmet.

Much to my relief cool air greeted us as we entered the tunnel. Our way was illuminated by florescent aureoles. Outside the tunnel, which was deceptively long, we were met by a short, stocky maid. She was wearing a crimson South Seas dress which contrasted unfavorably with her brown skin.

"We welcome you," the maid said with a smile too large for her small face. "I am MakeMake." She looked from me to my companion. She suffered from some sort of nervous condition, evidenced by her hands which jittered without rest.

"Very pleased to meet you, I am sure," I replied. "We are expected. I am Professor Frost, and this is my companion, Spirit-To-Change. She is a Native American."

While the maid and my companion shook hands and chattered, I inspected the inside of the helmet-building. The visor occupied the front of the structure and half of the ceiling, casting blue-tinged sunlight into the interior; but the rear of the room (despite its height, there was just the one floor) was framed by a white ceramic of incredible smoothness. I say "framed" because the entire rear wall was a gigantic vivipict monitor. Strangely, in the center of the monitor was a circular window not part of the monitor. The view through the window was indistinct from where I stood, but the monochromatic pict in the monitor blazed with bursting constellations of sparks which twinkled and danced in a sea of smoky, seismic currents. The vivipict, which by its nature appears three-dimensional, seemed ready to overflow its surface boundary and engulf the room.

It was not a comfortable feeling. Moreover, all that energy created no sound, as though it were straining behind an invisible barrier as close to me as the wall.

My companion was not unmindful of the display occurring around the maid's head, but an outdated sense of courtesy imprisoned her from asking the question most on my mind.

I suffered from no such sense of courtesy. "What the devil is that supposed to be?" I pointed as I interrupted.

The maid smiled again, more ingenuously than before. The tips of her moving fingers tapped each other. "It's eye-catching, isn't it? All those winking lights. My husband arranges words better than I do, and you will get a clearer picture if he explains it."

"Your husband?" I inquired, disguising my sarcasm. "Does he repair the monitors? The sound isn't working. And the visual, whatever it is, has no color."

"MakeMake is Doctor Atum's wife," said my research assistant. Her tone suggested that this was news to me. My reply assured her that the contrary was true.

"Of course she is. But that doesn't answer my question, does it? May we see the Doctor now?"

The wife-maid's smile was now set in stone, as though I had said something permanently funny. "The Doctor is waiting. He has been looking forward to your visit. This way, please."

Because of MakeMake's short stature I was forced to take smaller than my normal man-sized steps. As we crossed the room I saw several monitors set into the concrete floor; I myself walked over one displaying a pink crustacean

crawling across the bottom of a seabed. The next "room" was the pyramid I had seen while standing outside; as part of that huge ellipse of discrete structures I had seen from the copter, it seemed equally correct to call each building a room of the entire ring, as it did to call each division within a building a room of that building. As we passed beneath the area where the visor supplanted a portion of the pyramid's wall, I noticed figures looking down at us.

The pyramid itself had been hollowed out, but hologram generators created the impression of an intact Egyptian tomb; passageways, relics and temples directed the eye to an inlaid sarcophagus crowned with trails of burning incense. Unexpectedly, hieroglyphics were replaced by tiny vivipict monitors; there were numerous galleries built into the walls right up to the pointed apex, allowing access to the monitors. The rear wall was the same as in the helmet room, a dark hurricane of unstable brilliance surrounding a small circular window.

Several robots were working on the vivipicts in the monitors, re-arranging and re-coloring the elements. The robots had monitors in place of faces; the monitor screens displayed the same images of aphonic turmoil as the rear wall. The screen of the robot nearest me had something that looked like an eye floating amongst the chaos; I noticed that the calf of its otherwise metal body appeared to be human skin covering flexible muscles. I must say that the sight of such a freak would have been unnerving to a man of lesser courage than my own, but it had no effect on me. When I casually pointed the freak out to my companion she hurriedly hid behind her piCrystallizer.

I could see some of the larger wall monitors as I walked; while most contained images of other rooms, a dozen or so were blank, and others were blinking or divided up into multiple screens. Not all the pict were clear; some suffered from severely inadequate focusing. A pict in the floor displayed a monitor within a monitor series, disappearing downward; I felt drawn into it, but I pulled myself away using the extraordinary inner strength so many people have complimented me on. Long after I recovered I helped Spirit-To-Change by answering a question she had asked me.

In this manner we passed through many more rooms; I recorded only a comparative anatomy laboratory, a medieval banquet hall, a large indoor garden, two room-buildings under new construction, a library, and a foul-smelling zoo. Every room contained pict monitors with views into other rooms and other assorted images, and the rear wall of every room was a window-within-a-monitor, displaying the soundless percussion I have previously described. My companion oohhhed and aaahhed dutifully as she snapped her picts, all the while bothering MakeMake for details on this or that object. Robots were everywhere, and also a few humans who chose to keep apart from us. Again and again I saw freaks, metallic robots with partially developed human or animal appendages; I was suspicious that Doctor Atum was engaged in illegal experiments, which would explain his desire to work in such an isolated laboratory as Living Spaces.

My suspicions were soon confirmed. We arrived at a spherical room, like the helmet but with a mirrored dome for a roof; the angle of the mirrors allowed us to watch ourselves enter. A rectangular slot running the radius of the dome was open to the sky, servicing a telescope that dwarfed any I had ever seen. Surrounding the curved wall beneath the dome was a continuous pict monitor, with four small windows set at ninety degree intervals.

A man in a white lab coat was working on the exposed circuits of a robot; the machine featured grotesque wings in place of its arms. MakeMake said "There he is." and motioned us to wait. She approached the man from behind, put her arms around his waist and squeezed him, simultaneously whispering in his ear.

I turned away slightly to give them privacy, although I can't say the same for my research assistant. The Doctor appeared to be of Oriental descent, with a small build. The scene continued for entirely too long.

"Doctor Atum," I intoned, making no secret of my impatience. "Doctor Atum, I am Professor Lithic Frost. We have an appointment."

The man disengaged himself from his wife, kissed her hands, and made a gesture that seemed to indicate his respect for me.

"Please Professor, give me a moment," he answered in a voice too deep for his moderate physique. He made a final adjustment to the robot and then closed up the back of its skull; the machine immediately came to life, swinging its head back and forth. Apparently satisfied as to its bearings, it then walked toward and past us out the door. I noticed a whorled mass resembling a pale egg in its visor, and gnarled webbing between its toes.

Doctor Atum nodded and said "Excellent! Excellent!" And with a smile equal to his wife's he rushed up to me, grasped my hand and pumped it like a well handle.

"I am so very pleased to meet you, s very pleased. I am Keter Atum, I am so glad you came. Visitors are always welcome."

I was temporarily taken aback by the force of his enthusiasm, but I must say I recovered my composure before anyone knew it was missing. I extricated my hand from his, citing an old war injury, and introduced my companion.

"She's a Native American," I added, by way of explaining her name. He nonetheless captured her hand as he had mine, vigorously shaking it and pouring forth compliments.

"Such beautiful eyes, and your hair, so long and dark, a gift you share with my beloved wife. Hmm, let me see, your heritage is ... Navajo, isn't it? I am sometimes correct in these things. North American Indians, your ancestors lived with a beautiful knowledge, that every natural creation is inhabited by power. Do you know of this knowledge, do you believe in the wisdom of your past?"

Spirit-To-Change was repulsed by the Doctor's effusions; he was old enough to be her father. She disguised her feelings by giggling like a schoolgirl. "Yes Doctor, I know of their wisdom, but I don't just believe it, I live it. My great grandmother was called Daughter-To-Turquoise-Woman by her friends."

"Certainly, Turquoise Woman, a shape-changer with the power to pass through an endless stream of lives, always changing but never dying." The Doctor released Spirit-To-Change's hand, and in the same motion embraced her.

I am a man of the world, as you may have guessed, and I myself have often made advances toward women, but never in front of their mates. I looked at MakeMake for her reaction, but she was looking at me as she opened and closed her hands. From her smile I assumed she wanted me to embrace her in a like manner, but I pretended not to notice.

"Er, Doctor," I said firmly, "as you say, you don't get many visitors, so I feel it is my responsibility to inform you that your wife is present."

One final squeeze and he released my research assistant; the hug had crumpled her sweater, forcing her to adjust it properly over her large breasts. I instantly stepped between them and re-assumed my leadership role. "Well, now that we've all met, perhaps we can get down to business."

Doctor Atum bowed in the Mandarin style, no doubt in apology, but he chose to make the moment ambiguous by erupting into laughter. I towered over him in height; if I were a violent man, I could have crushed him like an insect. I admit, however, that he did have a certain solidity about him. For the first time I noticed his full head of hair. The women laughed good-naturedly as well.

"Professor, we have much to learn from each other. By all means let us begin. Would you like tea? My darling, would you?"

MakeMake, probably grateful to put her moving fingers to work, retired from the room. "Before we sit down, let me show you my pride and joy."

Before I could object Doctor Atum was describing the great satisfaction he received from the instrument in the center of the room, which he said was a combination microscope and telescope. My research assistant politely listened while I pretended to review my notes. Doctor Atum got the message soon

enough and led us to a horseshoe-shaped gathering of sofas and chairs; it was then that I noticed that the entire floor was a blank vivipict monitor.

I sat on a love seat which allowed me to place my recorder next to me when Spirit-To-Change sat next to the Doctor on a sofa; MakeMake sat on a separate chair between myself and her husband. Thanks to my rugged physical conditioning my legs did not ache from the long walk through Living Spaces, but I must say the upholstery was comfortable. We were located near the rear wall, and the sparkling lights and thrashing eddies of the monitor loomed above us. I felt entirely too close to it.

"Just what is that, Doctor Atum? There is one in every room." I pointed.

"Please call me Keter, everyone does."

"That's hardly professional, Doctor Atum." The monitor beneath my feet sprang to life; the displayed vivipict was segmented, and under me I saw a filthy jail cell in some cold latitude. I felt as though I was standing on air. Suddenly, the screen went blank again. Not caring to share my feelings when there was work to be done, I straightened my body and pointed at the wall again. "So what is it?" I said, faking a slight breathlessness.

He told me.

I saw immediately that this man was a charlatan. My breath returned. I took out my "snow shovel" and put on my "hip boots". I tilted my head downward, as though I were a very tolerant person who had neared his limits. "An omen of what, Doctor?"

"You misunderstand, Professor. A ... G-n-o-m-o-n."

"I thought that's what you said," blathered my research assistant.

"Is that spelled with a capital 'G', Doctor?" He answered in the affirmative. I assumed a pose of deep thought, crossing my arms and then my legs. "A work of art of some sort," I conjectured, by way of testing him. "A common abstract vivipict."

"A Gnomon is a sundial, I think." Spirit-To-Change, in her eagerness to gain my approval, tried to fluster the Doctor. "No. Yes. Am I right?"

"Yes, you are right - it is that and more. Originally, Gnomon was the name given to the Babylonian shadow clock; a sundial, if you like. A little later the name referred only to the raised style that actually cast the shadow; this second definition, of course, was just a refinement of the first; it now took two words - sundial and Gnomon - to describe an object that once could be completely

identified by one word. Basically, the word Gnomon referred to an instrument which assigned meaning to the motion of the sun - the instrument was a 'knower of time'."

Doctor Atum was nothing if not vigorous; his speech forged ahead at top speed, and his entire body gesticulated as he spoke, forming shapes in the air with his hands and dramatizing points with exuberant, even flamboyant kinematics.

"The Greeks developed the ability to abstract concepts - to separate - to place distance between - the word for an object and the object itself. The idea, the feeling of 'assigning meaning' became an independent entity - a thing - and the word Gnomon was the word they used to identify that thing, that feeling. The definition of Gnomon became "one who knows", and 'interpreter', and 'mind', and 'judgment', and 'knower'. The Pythagoreans used the word Gnomon to describe that part of a parallelogram that remains after a similar parallelogram has been removed from one of the corners; the Gnomon contains enough information to reconstruct the whole figure - it 'knows' the whole. Thus the name Gnomon referred to a part of the whole which contained all the information necessary to reconstruct the whole."

I uncrossed my legs and placed my hands on my knees. "Yes, yes," I said imperiously, implying that I already knew all this. "But that is not a sundial, or a parallelogram. I want to know what that is." I pointed again.

"In different degrees, it is all the things I have just described, but the last definition is the most useful to you. Professor, I realize this will require some explanation."

"No doubt. But lest you think you are talking to a fool, let me tell you a little about myself. I was selected for this interview because I am an expert in all the great philosophies, both past and present. I understand the world and how it works intimately." I lowered my voice and looked him directly in the eye. "I understand the dialectics of Truth."

Doctor Atum, if I may say so, was suitably impressed. I felt encouraged and went on. "It is my job to make sense of your work, whatever it may be. I understand you have developed what is known in the trade as a Theory of Everything. I must warn you that I also have developed such a theory, and that my theory is still being seriously considered at the highest levels. In a word, Doctor, I know you and your species well." I sat back and crossed my legs again. Right from the start he knew exactly where he stood with me. I said, "Humph."

My companion Spirit-To-Change stared at me with what can only be called astonished admiration. Her angelic face quivered.

The Doctor was smiling, but I knew I had hit him hard. "You are a formidable foe indeed, Professor," was his initial reply. "May I say that I don't refer to my work as a Theory of Everything; those theories must navigate treacherous waters, and many a good soul has been lost in them, as you know. Rather, I see myself developing a window into the structure of consciousness, which may or may not meet your definition. If I had to label my work, I would call it a Theory of Power Relationships. Excellent, our tea is here."

"And not a moment too soon," my assistant-companion added quixotically.

I waited while MakeMake made the ritualistic distributions. After a round of mandatory flattery on the quality of the tea I continued.

"So you agree that your work can be described as a Theory of Everything."

"But that's not what Keter said," interjected my research assistant, in spite of my admonition against using first names.

"Tell me, Professor, what do you think of my home Living Spaces?"

"I am asking the questions, Doctor Atum. Why don't you tell me YOUR opinion of Living Spaces?" I am not a psychiatrist, but I know one. I turned his question back upon him.

"I hold few opinions, Professor; opinions are toys of the imagination. In geometry, with one point you can construct any design of any size; as the number of points increases, the number of non-equivalent - different - designs you can construct using all the points decreases. To draw any particular design, you must select certain points and omit others.

"Opinions are geometric designs drawn with selected, rather than inclusive points. They are useful for short-term goals requiring self-deception, but they are an unstable foundation for a balanced relationship with reality. Opinions are a form of delusion."

MakeMake intervened before I could formulate a reply.

"Opinions are valid as revealed structure of the mind that creates them; but they lack the indiscriminating structure of truth, which uses all the visible geometric points to create its picture of reality. This is just a way of saying that truths are complete definitions of visible reality, while opinions are partial definitions." She spoke first to me, then to my assistant. From her direct manner, I received the distinct impression that MakeMake was a strumpet.

"God is always doing geometry." Spirit-To-Change mused out loud, shocking everyone. "Plato said that."

"He also said that ideas exist independently of the world we live in," added MakeMake. "The world changes, but ideas are eternal. Or as my husband would say, the power relationships the ideas represent are eternal."

"Precisely put as always, my darling." The Doctor slowly finished his tea, carefully replaced his cup in its saucer, and then resumed his exposition with renewed frenzy. "Living Spaces, as you may have been told, was once the location of a cyclotron - an atom smasher. Many years ago scientists from around the world gathered here to conduct an epochal experiment; their goal was to re-create the conditions existing at the fraction of time preceding the origin of the Universe - the instant before the Big Bang.

"Their plan was to fuse together each different atomic particle in ratios consistent with their population in nature; for safety's sake, they decided to employ the absolute minimum number of particles necessary while still maintaining the proper numerical proportions. By this method, of course, the scientists intended to go back in time to the point when all the particles were a single entity.

"Miraculously, the experiment - code-named 'Small Bang' - succeeded. But the experimenters had grossly underestimated the power of the forces they were unleashing. The resulting explosion devastated this macrocosm and turned it into a desert. No one and nothing survived."

The Doctor turned to the wall and faced the demented, seething tempest that threatened to overwhelm us at any moment. "The macrocosm was abandoned because the detonation took a generation to complete. When it was finally possible to return, this is what was found."

"A vivipict?" I said cleverly.

"A Gnomon," said Spirit-To-Change, in a voice loud enough to annoy everyone who heard it.

"A Gnomon," the Doctor repeated unnecessarily. "The remnant, the wake, the offspring of the Small Bang induced by those heroic dreamers. A context composed of pure energy, composed of all the power relationships its original creator - the creator of all power relationships - bestowed upon our Universe. It is an essence of the sublime wisdom from which it came."

It was an easy target. After some deliberation I attacked immediately. "You've overlooked a small detail, Doctor. If this is a re-creation of the Big Bang, as you claim, why isn't it expanding?" I smiled like a dog.

"The apparent stability of the Gnomon is an illusion, Professor. Our readings show that it is expanding in a complexity of processes beyond our ability to accurately measure. The core we see here may be regenerating itself, or exhausting an internal energy source of astronomical density; of course, these options are both speculation. We haven't yet developed the tools to explain what is really happening."

Spirit-To-Change stood up and stared at the wall screen, blocking my view. While I was not in the least impressed with the Doctor's arguments, I also stood up.

"The surrounding vivipict is a magnification of a small area of the Gnomon," said MakeMake, gesturing with her hands as she spoke. "A microscopic viewpoint. For a comparison, look in the window."

I placed my hands on my research assistant's soft shoulders and moved her aside with less delicacy than I had intended, and looked. Sunlight surrounded the perimeter of the window like a corona, enclosing a spherical cloud flexing huge gray muscles. The cloud was some distance away, and difficult to see.

"I can't see a thing," I said as I turned away, but as if anticipating my words, MakeMake was already motioning me to the telescope; the base of the telescope had been jacked up, and its barrel was now nearly horizontal. She made an adjustment as she peered into an eyepiece, and then waved me to an adjoining viewer, whose eyepiece seemed much smaller than hers.

Although we were in a desert, I saw a lake of ice covered with a thin layer of water; the water was animated by spreading ripples. I heard MakeMake spin a dial, and the image moved slightly upward to reveal the cause of the ripples. It was a huge convulsive nebula of ephemeral points of light. The nebula expanded and contracted like a heart.

I alternated my gaze from the telescope to the window and back again. The motions I observed appeared to be synchronized.

I stepped away from the telescope. My research assistant took my place.

"A cheap trick," I said with plenty of savvy. "But I've seen better."

"No trick, Professor. We will see the Gnomon in person before you leave."

"Keter, you mentioned power relationships," Spirit-To-Change said out of turn. Because my recorder still occupied the seat next to me, she again sat down next to Doctor Atum, pausing first to take a pict of him, then his wife.

It was distressing to see my assistant so easily taken in by parlor games. I found it necessary to again assert my authority.

"Assuming this fantastic story is true, Doctor Atum, which it most certainly is not, what do you mean by power relationships?"

"To discuss power relationships we must also discuss primordial particles, thoughts and architecture. The story is not long but it is intense. Shall we begin?"

"It is why I am here." Primordial particles, thoughts and architecture. The man was on drugs. Illegal drugs. "Begin now." I pretended to switch on the recorder, even though it was already on.

"Very well, my friend. We will begin at the beginning. The Big Bang Theory states that the Universe was created in a great explosion of energy. Before this explosion there was nothing; after the explosion there was energy, matter and space. Yet matter and space owe their existence to energy, and we can therefore say that energy, in its various states of being, is the sole substance of the known Universe."

"There are those who would say that God created the Universe, Doctor Atum," I correctly informed him.

"I am not describing a religion, Lithic - excuse me, Professor Frost - I am a scientist, not an apostle. Let's just assume that energy is the tool God chose to execute his magnificent plan."

"That is perfectly acceptable."

"Excellent."

"I have heard matter described as 'frozen energy'," chimed in my research assistant, apropos of nothing. "Is that right?"

"Perfectly right. Albert Einstein's formula $E=MC^2$ describes the relationship between energy and matter. In plain language, the formula states that energy and matter are equivalent - interchangeable - that matter is 'frozen energy', if you like. Let me pict it for you.

"Imagine two rockets, A and B, sitting at rest on the surface of the earth. Now imagine that both rockets are launched from earth at the same time, at the same speed, on parallel courses, within sight of each other. An observer on earth sees Rocket A accelerate from zero to great speed as it lifts off and shoots into the sky. To the observer on earth, Rocket A has increased its velocity, and therefore its energy. Simply, something has been added to Rocket A.

"Now imagine an astronaut observer on Rocket B looking over at Rocket A. Assume a uniform background. Because both rockets are traveling at the same velocity, Rocket A seems to be standing still to the astronaut on Rocket B; to him, it doesn't look like anything has been added to Rocket A.

"The difference between energy and mass is the difference between the points of view of the earth observer and the astronaut observer. The reality of Rocket A is the same in both points of view - it is moving and it is at rest at the same time.

"The two-headed point - the parallax point - we are leading to is that (1) energy is the sole substance of the Universe, and (2) every entity in the Universe is composed of energy. You must accept these points or all that follows will not make sense. Professor?"

"You have said the same identical thing twice, it appears to me. But this is not new information."

"The points are equivalent, but not identical. They are like two doors opening into the same room. Did you follow my explanation, Spirit-To-Change?"

Unless I missed my guess, my research assistant was baffled but embarrassed to show it. "Yes, yes, please go on."

"Excellent, excellent. A practical result of Einstein's equation is that energy can be described in terms of matter, and vice versa. Now go back to the instant of the Big Bang. Everything that has existed, everything that exists, everything that will exist - assuming that energy is and remains the sole substance of the Universe - is the spawn of that moment.

"Think of it in terms of a gene pool - a gene pool of innumerable primordial energy particles - quarks, electrons, protons, neutrons, W particles, Z particles, antiquarks, pions, neutrinos, positrons - the subatomic family in all its manifestations - zooming and spiraling and diving and colliding in an expanding space of their own creation - mated variously into electromagnetic and nuclear and gravitational embraces with other particles, yet always speeding to their next impact, their next moment of freedom, their next embrace.

"Imagine the relationship each particle had with every other particle in the primordial soup - the physical attraction, repulsion, or relative indifference each had for every other as they flew through the mix. If your mind can hold even a small part of this picture, you can get a sense of the indescribable pushing and pulling and battering - the poetry and the violence - the love and the madness that must have occurred."

Incredibly, my research assistant was nodding her head.

The Doctor leaped up, histrionically exaggerating his speech with outright pantomime. Beads of sweat formed on his brow, and he seemed to dance as he spoke. It was then that I noticed his socks didn't match.

"The relationships between these particles was of course physical. The electromagnetic, nuclear and gravitational forces - themselves forms of energy - that affected the particles are physical forces, acting on mass and energy both because energy and mass are two sides of the same coin. The coercions affecting a particle - the amount of power each different force applied to each different particle - varied with the location and the type of particle; the relationships among all the particles can therefore be called power relationships.

"Do you see it? Power is influence - bigger particles influenced smaller particles in greater measure than moderate particles; but the number, position and distance of competing forces on a particle tended to mitigate sheer size as the dominant influencing factor."

"So?" I said impatiently. "What is your conclusion?"

"That the energy relationships - the power relationships - the googols of multiple interactions - existing at the moment of the Universe's birth are the parents and structure of all that followed. That not only planets and stars, not only men and women, but also the thoughts of men and women are expressions of these energy interactions, and they all obey the same physical laws that energy obeys."

I humphed. "Meaning what?"

"That is my conclusion, Professor Frost. The rest is merely explication." He sat back down, knees and arms splayed. One hand came perilously close to touching Spirit-To-Change.

"Doctor. Doctor, doctor, doctor. You should have started with your conclusion. I am a busy man. You've told a fairy tale with minimal entertainment value, nothing more." I felt the glance of my companion, and I knew she understood the point I was making.

"Perhaps improperly, I felt it best to provide the complete picture for you and your editor." He neglected to include Spirit-To-Change, and I saw her react.

I went for the quick kill. "So this is your theory? For this I dared a blindfolded journey over a burning desert in a computer-operated sonicopter? And my companion as well?"

"It is just the beginning, Professor. The next step may interest you more. Would you like to hear more?"

I looked at my companion, overruled her unspoken wish, and sighed "I knew the risks the day I chose to become a Professor. You may proceed."

"Excellent. As I hope I have established, thoughts are composed of energy; and because energy is interchangeable with matter, thoughts are interchangeable with matter. From that point of view we can see thoughts as entities with physical properties, even though we can't pick them up and hold them in our hands."

"You can't pick up and hold an atom, either," I informed him. Then, making it appear as a continuous thought, I added "But you can pict it."

"We can pict thoughts too, Professor, but not in the way you suggest. Human creations are a direct result of a mind's thought processes; therefore human creations are necessarily a reflection of a mind's thought processes. Do you see it? Human creations must exist in here - " he tapped his temple, "before they can exist out there - " he spread his arms out.

"'What is perceptible to the senses is the reflection of what is intelligible to the mind' - Plato." said MakeMake, audaciously intruding with a non sequitur.

"'What is below is like what is above' - Tabula Smaragdina." reposted the Doctor.

"'What is within is also without' - Goethe."

"'Out of the lowest the highest reaches its peak' - Nietzsche." finished the Doctor. He and MakeMake had apparently had this conversation before, and they both began laughing. Eventually the Doctor turned to me and said "Let me see if I can build a pict for you, a pict of what the inside of a mind looks like."

Unless I am suffering from delusions, and I most certainly am not, the Doctor said he was going to describe the inside of a human mind - in front of witnesses. I hid my pity. "You poor misguided man. Go ahead and try."

"We have much to learn from each other, Professor. Very well." He leaned forward and again began shaping the air with his pantomimes. "By definition, a thought is an idea or a related group of ideas. We have established that the particles which constitute the Universe must also constitute ideas, so we can define any particular idea as the specific power relationships among the elementary particles which compose it. Correct?"

I shrugged, not giving him anything. Spirit-To-Change was immobile; the Doctor was putting her to sleep. MakeMake templed her fingers and bounced them against each other. She smiled slavishly at her husband.

"A context is a group of related ideas, so we can define a context as the power relationships between and/or among ideas. Since both ideas and contexts are composed of primordial particles, and since a context is really just a complex idea, the terms 'idea' and 'context' are equivalent, and they can be used interchangeably.

"This leads us to an interesting place: because contexts are composed of energy particles, and because anything composed of energy has physical properties, then contexts are the architecture of the thinking process; contexts are the physical psychic structures that direct our conscious and unconscious mental calculations."

I had him. "You are hallucinating, Doctor. I can't think of a more humane way to say it. You need help. Something as ethereal, as sublime as human thought can never be proven to have a physical counterpart. Don't you agree, Spirit-To-Change?"

I had shocked my companion back to my point of view, as was my intention. She was forced to agree with me. "I can see the reasoning, but I can't feel it. Do you see what I mean, Doctor? I can't touch my thoughts, and so they don't seem real."

"You mean you could believe in a thought's physicality if, and only if, one or more of your five senses could feel it?"

"It is the only proof an intelligent person such as myself could accept," I declared. "The scientific method demands it."

I had Doctor Atum on the defensive, although he hid his emotions well. Spirit-To-Change was solidly on my side. MakeMake tried to put up a good front; she had stopped bouncing her fingers and was now scratching her palms. She was still smiling, but now the smile was aimed at me. All in all, I didn't like it.

"Perhaps we can solve this problem; I will try to prove to you that ideas can be physically accessed by your senses. I will give you both a problem, and you will solve it silently, repeating the answer only to yourself. Are you ready?"

"As long as it is a fair test, Doctor. My knowledge is extensive in many areas, and of course I am an expert in my field, but I won't allow a trick question."

"I assure you - and your editor - that this is not a trick question. Remember, answer the question in your mind, not out loud. Here it is. One plus one equals"

Two. One plus one equals two.

"Did you hear it?" Doctor Atum asked with uncivilized elan.

"Hear what? I assure you I answered correctly, but you said not to answer out loud."

"Did you hear the answer in your head?"

"Of course. I heard 'two'."

"The sound of that thought is a sense-visible proof that thoughts have a physical structure."

"Of course," said my research assistant.

"What?" I said. "Of course what?"

"You're not trying very hard, Professor. Sound is a measurable physical quantity. Your mind created, or forced to be created, a sound. Ergo your mind has a physical quality. You can wend your way through all the alternatives, but all must lead you back to a point where the mind affects - and effects - a physical process. There is no escaping the conclusion."

"I see it now," said my research assistant. "Reading operates the same way."

"Yes, but my husband prefers the math demonstration. It is more dramatic," said MakeMake. She shared a pompous smile with Doctor Atum.

"It is more direct," replied the Doctor, flatly contradicting her.

I re-assumed control of the situation. "Suppose that what you say is correct," and here I leaned a little closer to my recorder, "just suppose it is correct. So what?"

"So everything, Professor. Consider my home, Living Spaces. The thousands of rooms here re-create the architecture of every known historical and present civilization; it is a three dimensional map of evolving construction techniques. And Living Spaces naturally contains new architectural designs, extrapolated from designs which already exist; some of these new designs withstand the forces exerted upon them, while others, as you may have noticed, are renovated by the forces or simply fall.

"Architecture is the imposition of mass on space, of structure on freedom; Living Spaces is the physical reflection of the psychic reality that processes and orders human thoughts. The ideas of architecture - proportion, scale, symmetry, harmony - the equilibrium of merging patterns of weight, light and direction - the recognition of which is the glory of ancient Greece - are reflections of the same structures which created them, the human mind.

"Follow a simple time line: The Greek post and lintel. The Roman arch. The Byzantine dome - a Roman idea whose circular implications the Byzantines found irresistible. The Gothic tower and flying buttress. All these innovations are distinctive structures reflective of the mind that built them, and each reveals a more advanced knowledge of physical forces - inward, downward, outward thrusts of physical weight - than the mind which preceded them.

"For example, the Greeks and Romans relied on interior supports - walls and columns - to keep their buildings - their ideas - standing. Compare that to the Gothics; the invention of the flying buttress shifted emphasis from interior supports and sheer bulk to elaborate exterior supports - exterior contexts - for walls thrust outward by the massive domes sitting atop them. The idea of balance, of competing forces held in check to create a stable building - a stable idea - had graduated from pyramids and rectangles to a complex mix of hemispheres, internal supports, and external supports. The human mind had recognized part of its own construction and mastered the projection of that construction out into the world. Imagination had crystallized into action. The human psychic architecture had expanded, and the expansion was reflected in its creations."

MakeMake unceremoniously interrupted her husband. "Some buildings are constructed from the outside in - the exterior influences the design of the interior, and some buildings from the inside out - the interior influences the exterior design.

"Idols - statues of gods - are physical expressions of the idea the god embodies. Religious temples were originally built to protect the idols of ancient gods; the protecting context - the temple - came after the idol. The interior influenced the construction of the exterior."

"Yes. And if you follow that line further back, then caves preceded temples - caves were protecting contexts for the idea of existence - of survival," my research assistant said stupidly.

"You are an archeologist in the making, Spirit; an archeologist of ideas, just like my own support context - my MakeMake. Expand the line you are on laterally - form a plane. You will see that ideas are protected not only by walls, but also by

rules, rites, secrets; the manifestations of all the structures an idea requires to endure.

"Windows, multiple rooms, multiple floors and similar singular accretions in the architecture of perception are analogies, are physical manifestations of the psychic structures which created them. And civilization, itself such a creation of mental structures, is no more that a reflection of the internal physical architecture of human minds. The multiplicity of Living Spaces, of opinions, of personal relationships, of variation itself, of creativity itself, can be traced to small differences in the architectures of individual minds."

My research assistant surprised everyone by pretending to follow all this. "And variations like biodiversity, molecular forms, musical melodies can be traced to the infinity of power relationships created with the Big Bang." I looked at her with some dissatisfaction, but to make herself more comfortable she had angled her body away from mine and our eyes did not meet.

The Doctor smiled. " 'Variations' is a very big context, isn't it?"

MakeMake intruded again, destroying my train of thought. "A context is big because it has many rooms. The biggest context is God, because it contains all the other contexts.

"In monotheism, God is always the greater thought. In polytheism, thoughts are categorized under different gods. But even in polytheism, there is always one god who rules the others – one greater thought that unites - connects to and organizes the lesser thoughts. The message of religion is that a greater thought exists, a more powerful thought exists, and that as the thought becomes greater, God becomes greater. The awareness of a greater thought has guided human history from its first mating dance to the creation of the Gnomon."

"My wife has a way of putting everything in perspective, doesn't she?" Doctor Atum narrowed his eyes at MakeMake, who narrowed hers back. "The entire Universe can be considered a matter of architecture. What we do here at Living Spaces is study the building, maintenance, renovation and demolition of contextual architectures. Our purpose is to design and construct an ideal Living Space, efficient in form and flexible in goals, and conscious by its very nature, for the good of all humanity."

"Hogwash." I said without hesitation.

"Conscious?" queried my companion. Her good sense was apparently returning.

"The right question," Doctor Atum said approvingly.

"Just what do you mean by conscious, Doctor?" I lifted my foot and stamped it down. Immediately the floor monitor awakened, displaying a bottomless fissure; it was as though the earth had divided below me. Before I could fall the fissure closed and the screen went blank again. No one said anything; apparently it had happened so quickly that I was the only one who noticed it.

I soon continued in a strong, clear voice. "Is it possible to get even one straight answer from you? My companion is completely confused, and although I can easily follow your argument, I can tell you it is seriously flawed."

"Perhaps we can discuss the flaws later, Professor. For the moment, let me explain what I mean by conscious."

"I hope your explanation will avoid complexity. My companion is nearing the end of her patience." This last remark elicited a long gaze from Spirit-To-Change, which I returned with pleasure.

"I promise to be very basic in my definition; I will define it by its structure alone. Step back for a moment and look at psychic structure. The architecture of the mind is an interaction of contexts - an ordering of power relationships in spreading increments; the ordering is both mandated and controlled by the laws of physics. Many power relationships - undiscovered physical laws, undiscovered inventions, or alternate points of view, for example - apparently exist outside the visibility of our senses - in a phrase, they are unconscious."

"Doctor Atum, if you please. There is a man called Freud, now long dead, whose work I should introduce you to."

"I'm sure they have already been introduced," Spirit-To-Change said suddenly, and inexplicably.

"Yes we have, thank you. I acknowledge my debt to him, Professor, but I am not repeating his work. My definition of a conscious idea is one whose architecture is visible to our senses; we can describe the ideas that compose it. If you have a pet cat named 'Kitty' you know the ideas composing the context 'Kitty'; an animal you love with four legs, a tail and a soft meow. By our definition, 'Kitty' is a conscious idea to you, but unconscious to me if I didn't know you had a cat."

"Then you are saying that a conscious idea is one with exposed architecture," my research assistant said, raising her head as though she smelled something fishy.

"Yes, it's a simple definition. It follows that consciousness is the state of being conscious - the state of examining the architecture of the psyche."

Spirit-To-Change's face closed around her nose, and her expression became the very pict of disinterest. "And what is doing the examining, if you know what I mean?"

"That I cannot answer."

"AHA!" I almost shouted.

"You are correct, Professor; you have me. I can speculate for hours, but until I have an answer that can be reduced to structure, I would only be guessing. I have glimpses but no mastery of the truth. My present work involves mapping the revealed design – and looking for the answer."

"How can you study consciousness when you don't know what it is?" asked my companion. She pulled her legs up under her on the sofa and sat on her iridescent shoes. It was clear that she had lost all confidence in the Doctor.

"True, I don't know how it works - I cannot design a working model - but I have a defined idea of what I am trying to construct; I have a hypothesis I am trying to prove through observation and experiment. This is the way science works. As you may have noticed, robots are my test subjects. I design power relationships - programs - which when successful embody specific ideas. I then combine the ideas, like DNA combines genes, and wait.

"You have seen some of the results. The robots have no faces; instead they have monitors picting the robot's thought processes - the interaction of the power relationships we call ideas. Over time, the monitors of some robots display nascent eyes; those robots develop familiar biological components - animal and botanical - as the eyes mature. Unfortunately, as yet I am unable to control the development of those eyes; some interaction between ideas occurs that I cannot identify."

"What do you think is happening?" asked Spirit-To-Change. She stroked the soft skin of her cheek as she spoke; one finger slightly smudged her vermilion lipstick.

"I'm not sure, Spirit. I can control the initial ideas I program into the robots, but there may be some flaw in the construction of those ideas; or there may be a process, unknown to me, that occurs hen consciousness expands - when the 'examiner' grows. Ultimately one or more of the ideas breaks down and mutates into another power relationship - another idea. The resulting chain reaction, as the ideas move into new power relationships with each other, sometimes creates an advanced development, and sometimes just cripples or deactivates the robot." Doctor Atum's yellow skin darkened, then brightened. "If you like, I can pict the grand design of my working hypothesis - the model that best fits the facts I have so far uncovered."

"I've heard enough," I said. At this Spirit-To-Change turned and looked at me, her eyes full of mercy for the Doctor. I responded to her plea. "But go on if you must."

"I will be brief. Let's delve into the structure of a mental architecture. Imagine a group of contexts; now imagine that each of these contexts contains an identical idea in its construction."

"And by idea, you mean a unique power relationship."

"Yes, Spirit. As defined by its composing particles, yes. Ideas are power relationships, contexts are groups of ideas - groups of power relationships. When a group of contexts share an idea - when each context contains an identical idea - an identical power relationship - that identical idea 'organizes' - connects - the contexts together; in effect, they share the architecture of that identical idea, as a door is shared by adjoining rooms. For simplicity, let's name that shared identical idea a Polyvalent Context, or PVC. Then the PVC 'tail' physically organizes all contexts like 'dogs', 'cats' and 'horses', which all contain the idea of 'tail' in their physical psychic structure.

"The PVC is the functional - architectural - equivalent of what we mean by the words 'Point of View' - a group of contexts united by a single idea, whether large or small. Obviously, since 'head', 'eyes' and 'animal' also apply to dogs, cats and horses the relationships among PVCs - like a window that looks out over many rooms - like the Roman groin vault with four entrances - create a Roshomon of interconnected passageways. Do you see? Following the contexts connected to the architecture of 'eyes' will ultimately lead you to the contexts of heads, animal, tail, dogs, cats and horses."

"Yes, I see that. And consciousness is that feeling of 'following the contexts'; the phenomenon that is actually doing the examining." Spirit-To-Change was humoring him, a service I was loath to perform.

"Yes, according to my working hypothesis. Consciousness is the 'context of contexts' that is doing the detective work - finding and putting the pieces of the puzzle together. As I said, I cannot build the actual mechanism, so I cannot pict the thing itself. But I can give you a microscopic view of the detective work, within the limits of my experimental findings."

The Doctor jumped up, completely galvanized by his fantasy. MakeMake giggled and clapped her hands a few times.

"Psychic architecture is the 'Living Space' of ideas. Raw data from the senses has a physical structure - because a datum is just an idea - and like any other idea, the meaning of any single datum is just the power relationships between its

composing primordial particles. The physical shape of this datum - its structure - the spacial design of its composing particles - can be abstractly designated as the datum's Geometric Outline or GO. As the GO passes through the psychic architecture - as an idea passes through a framework of other ideas - it is physically handled, directed, modified and/or destroyed by the 'circuitry' - the physical shape of the architecture it is passing through. The GO is the energy of change that stimulates the building, modification, and deconstruction of existing psychic structures. It is the protagonist to every mental and bodily response.

"Now imagine a 'context of contexts' composed of essential ideas like survival and death, power and weakness, balance and imbalance, truth and delusion; a context so intertwined in the psychic architecture it is rooted in all the polyvalents." To emphasize this point, the Doctor knotted his fingers into different combinations.

"The polyvalents - PVCs - are each one a Point of View - a contextual place to stand and evaluate incoming GOs from the senses. Consciousness is then the 'context of contexts' - the parallax view - the mandala of polyvalents - that routes the incoming GOs through multiple PVCs - revealing the structure of the contexts through which the GO passes as it is processed. Consciousness is the feedback system that thus far is beyond my ability to design. This feedback - this 'mirroring' of data between PVCs and consciousness - is a very complex phenomenon. Any group of contexts with this ability can be said to be conscious. And this ability is an essential component in the definition of humanity."

MakeMake snapped her fingers.

"Ahhhh," said my research assistant.

"Of course man is conscious," I said without hostility. Hearing no rebuttal, or any response of any kind, I added "To be alive is to be conscious."

"And the Gnomon contains all the contexts," Spirit-To-Change said slowly. Suddenly she struck her forehead with the palm of her hand.

At that moment I nearly rose to comfort her, but my companion unexpectedly turned to me and repeated my last statement - "To be alive is to be conscious."

I smiled broadly, nodding my head decisively, until a curious thought occurred to me. After a few permutations, I confronted Doctor Atum.

"Surely you are not suggesting that the Gnomon is alive?"

"Before I answer that, Professor, why don't we visit the Gnomon. It is some distance away, but I have a barkos."

I pretended reluctance, and my research assistant agreed for both of us. I decided to use this opportunity to change the course of the interview and commence with my real mission.

Before we left MakeMake said "Please, I have something to show you. This Living Space has a unique design." Using a remote she turned off the lights in the room, simultaneously closing the telescope opening in the dome. The mirrored interior of the dome now reflected the Gnomon pict now emanating not only from the walls but from the floor as well. In the eerie silence, I felt as though I were trapped in a grotto of brute pandemonium, attacked by an immanent storm of conflicts over which I had no control. An ordinary man would have felt suffocated, but as you know I am no ordinary man. However, as time passed, I found it difficult to breathe, and my heart beat in rhythm with the beat of the Gnomon. I began perspiring, and fearing for the health of my companion, prepared to cry out.

At that moment the lights came back on and the dome parted, pouring in sunlight. I noted that Spirit-To-Change was safe, and mopped my brow in relief.

"Exhilarating, isn't it?" said Doctor Atum.

My companion, though trembling inside, was all smiles. "Doctor Atum, MakeMake, I am so glad that I have met you."

"And we you, Spirit-To-Change. And we you, Professor Frost. Shall we go?"

The far doorway was hidden in the monitor; part of the pict just swung open. It led directly to the outside of the building, and we were confronted with the interior of the ellipse. Since entering at the helmet, I had walked so far that I could not tell whether the posteriors of the Living Spaces matched the facades I had seen. The ellipse was so immense it was impossible to see the entire structure. Straight ahead, despite its great distance, the Gnomon quietly dominated the landscape.

The whirring sound of the approaching barkos drew my attention to the ground, and I was surprised to see that the "roads" I had seen from the sonicopter were actually raised cords, some thick and some quite thin; they reminded me of tree roots. The barkos was equipped with spiked concave wheels that allowed it to dig in and ride the roots.

"The driver's appearance may shock you," said Doctor Atum. "Please be prepared."

But when the robot driver stepped out of the barkos my companion screamed anyway.

"Hold no fear," MakeMake said quickly, shaking Spirit-To-Change's hands. "Loosen your vision."

I must say that even a man as battle-tested as myself would have felt a visceral terror at the sight of this creature; it was two organisms in one form, a hybrid split right down the middle. One half of its body was completely metallic, while the other half was ... completely human. His head was half flesh and half vivipict monitor, and his human eye was complimented by a vaguely formed globule that floated in the gray madness that was the right half of his face. His genital organ was covered by shorts.

"I'm sorry, I wasn't ready ... I didn't expect - "

"The apology is mine to offer, and I offer it a thousand times. RevoloveR - " and here Doctor Atum spelled the name - "is a unique creation, and he is my friend. He wishes you no harm."

"RevoloveR will guide us to the Gnomon," added MakeMake. "He is here to help."

RevoloveR could not or would not speak for itself. After a while I went over and shook its hand to show everyone I was not afraid of it, although the desert heat had tightened my voice somewhat and I chose not to talk to it.

"Friendly enough," I told the Doctor when I had returned to the group.

After more small talk intended to calm my research assistant we all entered the barkos with RevoloveR driving. I sat in the far corner. Our destination was the Gnomon, and the roots, which formed a complex grid across the body of the desert, served as our pathways. The ride was not smooth but the vehicle had air-conditioning. It gave me time to think. The half-human, half-robot, driver-thing turned toward me to make an adjustment in the barkos controls. Our glances met.

The line I would take against the Doctor came to me in a flash.

Thus far I had shrewdly masked my true reason for requesting this interview, and I had carefully cultivated my relationship with Doctor Atum to the point that he now trusted me. It was time to begin his interrogation.

As the Gnomon loomed before us, I made my move, masking my agenda behind a kindly expression. "Tell me, Doctor, why have you waited so long to grant an interview with the press? As I understand it, you haven't talked to anyone in years."

The Doctor faked bemusement. "But that's not true, Professor. I grant interviews freely, and my work has been widely published."

"Yes, I do seem to remember reading something about you. So tell me about yourself. Your parents were named Atum?"

He and MakeMake were sitting across from me and my research assistant, with their seats facing us. Doctor Atum took the bait whole. "Actually, Keter Atum is a name I have taken. Keter is the Hebrew name - a cabala name - of a primal essence which existed before matter - without form, without intention, without attributes of any kind. It is an idea that I like to keep in front of me." He smiled slyly, like a cat which has just eaten the canary.

"Atum, on the other hand, is an Egyptian god who created polarity - duality - the world - from his semen. From one came the many. I see Atum as a structurally sound next step in the development of Keter, and so I joined them to make my name."

"I see," I said with disguised sincerity.

"I also chose Atum because he was Egyptian, representing a civilization rife with many interesting ideas. They, like the Navajo," and here he looked at Spirit-To-Change, "saw the world as a living entity. There were no degrees of life in ancient Egypt - a flower participated in the idea of life equally with a god.

"Moreover, Egyptian deities didn't live in the heavens - they lived on the land, each one in a specific area separate from other gods - a kind of territorial imperative. Think of it - ideas attached to the earth itself; stability and reality associated with the purely abstract. What better way for the Egyptians to express their feeling that ideas are as real as the earth?"

MakeMake put one arm around Doctor Atum and began drumming her fingers on his chest as he spoke. Her garish ruby-painted fingernails bounced up and down as though playing a tune. To the Doctor's credit he pretended not to notice and continued speaking.

"The function and attraction of mythology is the identification - the naming - of the unseen but felt forces which permeate our lives - gods and demons, creation and destruction, fertility and sterility, power and weakness, good and evil, love and hate, life and death, and all the degrees of power relationships between and among them. We name them and make them part of the visible psychic architecture - we name them to reveal them and make them conscious.

"The forces, of course, are the primordial power relationships descended to us from the Big Bang, the progeny of a potent birth. And from the beginning of

recorded history men have identified the activities of these unseen energies as clashes between gods.

"Let me show you the kind of power this naming may have had on an early man. Go back for a moment to the demonstration we did in the laboratory: one plus one equals"

"Again?" I said. But my research assistant signaled that she had complied.

"Now imagine the first time that a human heard that sound in his head. A human still familiar with savagery. A human, perhaps, still carrying a club in his hand. Imagine. He hears a sound in his head. Imagine." Here Doctor Atum turned toward a window and closed his eyes. MakeMake stopped drumming on his chest, and there was a lengthy pause. "Imagine. Do you think he felt it was the voice of a god?"

After a few moments of peace my research assistant squealed "Yeoooww." It was easy to assert my authority with this group, and so I did.

"I wouldn't even try to guess, Doctor. What is your point?"

"I was merely making a pict for you, a dramatization of the importance early humanity may have placed on naming things - on creating the spoken word. And we are still naming things - still naming and renaming the same primordial titans of our most ancient ancestors. But our terminology has evolved, has become more discrete, more exacting. Today we no longer give a power relationship the name of a god - instead we call it Schrodinger's wave equation, or a neurotransistor, or Slecter vs LIFEunlimited. Yet these modern names dominate an arena of thought just as intensely as a Mars dominated the idea of war to the Romans.

"Ideas, gods and forces are all manifestations of the same essence, Professor. Ideas are gods and forces, gods are ideas and forces, forces are ideas and gods. These ideagodforces are the same progeny of the Big Bang our forefathers tried to explain. Ideagodforces exist as expressions of the elementary particles which compose them."

MakeMake leaned toward me, closing the distance between us. "In my homeland, we worship both mortal and immortal gods. Human heroes - expressions of our highest ideals - were elevated to the status of gods - but they lived and died while the immortal deities watched. Just the ideas that our heroes incarnated lived on."

"Like pict stars today," said Spirit-To-Change, in what I assumed was an attempt to be facetious.

"Yes, yes," I said loudly. "It's all about control."

"At this level, Professor, control is an illusion."

MakeMake put a hand on my knee. "'Naming' is a euphemism for constructing - the focused attention gives psychic form to - crystallizes - the felt power relationships." I advised MakeMake of a physiological problem I suffered in my joints, and she removed her hand before she went on.

"We name forces to build a physical psychic structure for them. These forces fabricate the Universe, and therefore fabricate our conscious - and unconscious lives. We name them to give them structure, and define them by describing their power relationships with - their influence over - other forces - other names."

"But what about feelings?" said my impetuous research assistant, looking back and forth from Doctor Atum to MakeMake. "You haven't said anything about feelings."

The Doctor's face took on what he no doubt thought was a sympathetic expression. "What are feelings but power relationships? Feelings are the naked primordial forces, the things themselves. Abstractions define feelings, feelings define power relationships. And power relationships define the interactions of energy.

"You already know that you are an energy trader with your environment - you breathe air, eat food, drink liquids - extract and process their energy - and return their byproducts to the environment. You are strong when you take in more energy than you return, and you are weak when the opposite occurs. Love is the name we give to an equal trading of energy - love is no more, and no less, than a state of balanced trading."

MakeMake hooked arms with Dr. Atum, and then alternately pulled away from and bumped into him in a rocking motion. "Love and war are parts of the same design," she declared. "Aristotle said 'We make war that we may live in peace'. War is the traditional arbiter of power disputes; it's function is to maintain or renovate power relationships between competing states.

"Ares, the Greek god of war, was described as under the continuous spell of Aphrodite, goddess of love. In the Greek mind the struggle to re-arrange power relationships was directly related to the balance of forces embodied by Aphrodite.

"Feelings are everywhere around and inside us. Music is the relationship between sounds, and sounds are the names of feelings, and feelings are the naked power relationships among energy forces."

"All this mixing," said Spirit-To-Change. "It sounds almost sexual."

"Almost?" smiled MakeMake.

Spirit-To-Change, I am sorry to say, smiled back. "Ideas, gods and forces," she said with a rising voice. "MakeMake, I can see it, I can see it."

The roots we were riding on were becoming progressively intertwined; tangled is perhaps a better word. I pointed this out.

"Like a ganglia of nerves," my research assistant said. I had never seen ganglia and therefore I could not agree with her. The Gnomon was growing in size as we approached; from its direction I felt an unexplainable tugging at my abdomen.

The barkos stopped at the edge of a frozen lake. A thin layer of water covered the ice, and it was lapping onto the sand. "This is as close as we can safely go," said the Doctor. He stepped out, placed his hands on his hips, and said, simply, "The Gnomon."

It was close enough for me. Though we were still several kilometers from the Gnomon, it dominated the landscape like a fermenting planet. The Gnomon was a spherical force at once luminous and nocturnal, a reactive ... titanic ... thought suspended between earth and heaven, a swirling mass of white, grey and black torrents. It is difficult to describe the sense of ... power that one felt while gazing upon it. It was pulsating with ebullient pressures, and glittering with billions of evanescent ignitions, ecstatically swimming in a plasma of darkneses. Strangely, I felt no wind, and heard no sound; this somehow made the experience all the more threatening. After a moment I noticed that the lapping of the water coincided with the throbbing of the Gnomon; invisible precipitating waves spread out from the Gnomon's presence as they do from a stone tossed into a placid pool.

"Unrealized passion," murmured Spirit-To-Change, her chin pointed upward and her eyes misty from the heat. "I feel an immense unrealized passion."

As though her own words had awakened her, my research assistant suddenly lifted her piCrystallizer and began snapping away. Oddly enough, it was to her that the Doctor spoke.

"The Gnomon is a intimate balance of fire and ice, of energy and mass. It is composed of every possible power relationship - it is the refined essence of infinity. It is the creator of reality itself - because its thoughts are its will, and its will is identical to the architecture of reality. It is the child of the children of the Big Bang, containing all the energy relationships of the vast knowledge, the vast consciousness, the vast soul from which every individual thing was born."

Doctor Atum gushed on in this manner for a long time, long after my enthusiasm for this freak of nature had waned.

On the way back to Living Spaces the Doctor looked at me and said "You asked me if the Gnomon is alive. I am ready to answer you - I am ready to answer your editor, now. An idea is its meaning, and its meaning is its structure, and its structure is determined by the power relationships of the primordial particles which compose it. And because every primordial particle is influenced by the particles that surround it, and every idea is composed of particles, then every idea is in some measure influenced by the particles of other ideas. Every idea affects the structure of the universal architecture; every idea is part of the geometry of ideas; every idea is a building block in the macrocosm that the combined ideas create.

"Ideas are composed of primordial particles, and human beings are composed of primordial particles. The Gnomon is alive in the same sense that a person, a tree, or ideas themselves are alive; every primordial particle is related by universal forces to every other, and every human being is a Gnomon."

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For some reason I was not blindfolded on the flight back from Living Spaces. I used the time to transcribe from my recorder the conversations you have read in this report. Spirit-To-Change was delayed and did not return with me.

At the office, the door clanged shut behind me. An old man, his face concealed by flickering shadows, was in the room. I didn't have to be told who he was.

My grim-faced editor dispensed with formalities and asked me the question I had been sent to answer.

"Well? Was Doctor Atum born a man - or a robot?"

I answered in four words. I never heard the name Doctor Keter Atum again.

THE END