Perception

I made a polite noise and motioned for the curtain to be opened and light extinguished. The empty Stage appeared, with its backdrop set in default mode, waiting input for definition. The audience behind me quickly quieted, with the more jaded socialites trying to affect they weren't bothered by the great well of chaotic emptiness directly in front of me. The emptiness was not black, which implies color and form, and even the absence of color would have been something compared to the perfectly round nothingness in front of me. The only perceptible boundary was a region surrounding it where what was, met what was not, a region hard to concentrate on for long without feeling uncomfortable. Looking into the middle of it, if "nothing" has a middle, the mind would imagine all sorts of things: a flicker of color at the edge of one's perceptions, or a feeling that something was there, if you only looked long enough. A tension stretched the air, as the crowd grew restless with the intimidating flux of the empty Stage and anxious for the Show to begin.

I acknowledged the presence of the audience and then quickly stepped forward into the region of the Stage. I left behind all of my perceptions of the audience as I entered the flux, although those watching would see everything that happened on stage.

I could sense absolutely nothing in any direction around me; even the concept of direction seemed to be entirely internalized and had no relation within the confines of the Stage that enclosed me. All experienced Designers felt this when starting to manipulate the simulated reality of the Stage. The Stage was perhaps the greatest help to the pursuit of Art in the history of civilization, for on its blank canvas almost anything imaginable could be simulated, all the way to the limit of the Stage's resolution, only noticeable at well below the atomic level.

In its default mode, the sensory deprivation of the Stage could be quite troubling to the inexperienced or unprepared initiate mind. An intelligent mind needs input of some kind or

another and will eventually go insane without it, whether the mind is organic wet-life or the complex neural algorithms of hard-life intelligence. Personally, I liked the on-Stage feeling of being the only thing in the entire simulated universe—at least, at first. It gave me an exaggerated feeling of self-importance.

The audience would start to grow impatient, so, I opened with the traditional first parameter: the establishing of an energy-gradient. I set my mind for an intentional change, spoke the traditional words, and the Stage responded to my request by popping out of default mode and instituting the first parameter of the Drama.

Blazing light immediately surrounded me. There was still no concept or feeling of distance or direction. I could see light and feel a temperature change, even if the change was simply the existence of temperature. The light came without variation, in a seamless stream wherever I looked. I felt awash on an ocean of golden fire, an image that came to me as my rational mind struggled to make sense out of the raw chaos enveloping me.

I quickly established the accompanying variations, giving definition to the light by separating it into groups of light and not-light. Basic concepts of space and matter came from variations on the energy theme, coupled with distance, direction, and movement as a function over time. The Stage could simulate an atom down to the basic particles that composed it; although the limit in resolution prevented even its data-processing abilities from knowing either precisely the exact location or the exact momentum of each particle at the same time. This quantum level of uncertainty was unimportant to the Stage; it had elaborate algorithms that defined a range of behavior for each particle. I freely admit that I have never been able to tell the difference between the simulated reality of the Stage and the real world.

As soon as I'd entered enough parameters into the Stage, the view around me started to take shape. There were now regions composed of the absence of matter, where nothingness had existed before. Even in a perfect vacuum, there was still the space-time fabric imposing order out of the primal chaos that is Flux without definition. Soon, I had the Stage simulate matter, and filled the Stage with the simplest of static energy: hydrogen gas.

The real secret to being a great General Designer lies in the set-up. Once the basics were established, the Stage would simulate changes over time and the Drama would unfold. The Stage now presented a Reality ordered by rules and parameters but with no specific details established, other than a giant cloud of hydrogen gas.

I reached out to one of the pockets of gas and molded it into a ball. I squeezed the ball of gas until the Stage responded to my request by simulating an entire sun that started blazing away as soon as I released my little ball of light. I took a moment to examine the composition of the sun, making a few changes here and there in the concentration of hydrogen to the heavy metals that started to form as the sun started its fusion fires, slamming the hydrogen atoms together to release the bound-up energy. I then sprinkled in a little metal from out-system, to flavor this single sun. I had contemplated a binary system, or even a dark star that would suck everything, including space, into its hungry maw, but opted instead for a less flashy, more Dramatic simulation. I wanted a stable system that would last long enough to be interesting.

Once the sun was in place, I gathered more balls of gas and squeezed them together to make a couple of gas giants. I carefully chose clumps that were not so big as to self-ignite; I only wanted one energy source for this system. Gas giants have always been popular Stage simulations, and even though I couldn't directly sense the audience watching, I knew that they were there and I could not resist a little flashiness.

Once I applied the function of time to the Drama, things started to happen. The remaining cloud of hydrogen gas and the particles put off by the sun started to swirl around in giant elliptical orbits, slowly falling down the gravity well of the sun. The attraction of neighboring particles and the tidal forces of the sun pulled things together. Soon, clumps of matter started to aggregate together along specific paths around the flaming ball. I opened up a steady stream of heavier matter into the system, with ice-comets and chunks of out-system metal occasionally peppering the hunks of molten dirt dancing through their orbits around the warming sun. After a while, a nice round number of ten discrete planets had formed, and it was time to start making things interesting.

The five inner planets surrounding the sun were hot, dirty, molten balls of churning, seething rock and vapor. I had stuck the gas giants into the middle of the system to set them off, with a couple of cold methane-ice planets circling along the perimeter. The fifth planet out was the first of the inner planets to cool enough to be stable, so I directed my attention and the focus of the Stage to it.

There is an old rule to setting up General Operations: if you have a stable, constant energy gradient and a varied enough environment, then over time, some form of life will necessarily arise to exploit it. The form of matter is usually irrelevant, whether it be silicon, carbon, metallic, or even gaseous. Over time, a life form will arise to make use of the energy. You can look into the most inhospitable environments imaginable, and if there is an available supply of energy and some raw materials to convert it, some life form will have tapped into it.

The first form of life that appeared on the surface of the fifth planet was a very basic form of silicate: simple unicellular constructs that grew like crystals when conditions were right. Gradually, more advanced crystalline forms begin to appear as the competition for energy and space grew.

Although the Stage had every parameter of the fifth planet completely mapped out, down to the lowest level of resolution, the crystalline life forms were more than merely points of data changing as they interacted with other points of data. The Stage imposed my Rules over the raw stuff of chaos, but the limit to resolution, the quantum uncertainties, and the randomizing effect of merely observing the Drama meant that there was no way to know exactly what would Happen. The Drama was furthered as each potentiality was expressed, each unplanned quantum event was realized, and each possibility was explored. The limit to rendering raw chaos meant that the only way to determine definitively the outcome of any event was to let the simulation run. Even I didn't know exactly what would Happen.

The crystalline formations of the fifth planet begin to spread and fill the entire surface of the world. As soon as the last space had been filled, the growth of the system stopped. The static, unmoving nature of crystalline life forms eventually leads to stagnation. There was an interesting battle over the last spaces, with crystal armies slowly locked for all time into a dramatic embrace for the last available spaces to grow. Soon, there was no room for new crystals, and the old crystals had no hope for any change in their existence. The Drama for this planet was fizzling out, so I decided to end it with a flourish.

I gave the crystal world a tiny "Tap!" and it splintered into a billion shards of rock. I could just imagine the collective gasp from the audience as the crystals were dispersed. The now lifeless rocks continued their slow journey around the sun, spread out over the entire length of their former orbit, and gradually scattered around the system. By this time, the fourth planet had cooled enough for Drama to spring up.

I learned a lesson from the simulation of the fifth planet. Silicates were not my favorite expression of life. They were too static, and it got boring seeing the same crystalline formations

every time, no matter how beautiful. I decided to go with a carbon-based life form. Carbons are much more dynamic and there is no comparing them for their diversity, adaptability, and vigor. Besides, their short life spans and explosive reproduction rates make for high Drama.

The first organics appeared on the still steaming surface of the fourth planet. They gradually took in the water vapor and methane gas of the primeval planet and began the long process of converting the inhospitable environment into one more conducive to their propagation. Unicellular forms gave way to more complex forms as the environment changed. The rock and water released more and more oxygen as the organics did their work. Soon, the levels of oxygen were so high that they became poisonous to the original organics, and they gave way to more advanced forms that depended upon the more efficient carbon dioxide/oxygen cycle rather than methane for the stripping of electrons.

The struggle between the methane users and the oxygen users gave many good scenes for the audience and me. The two life forms' diametrically-opposed respiration cycles led to huge pockets of resistance bordering each other, with fierce battles for resources along the perimeters. The battle lasted a subjective long time, but the oxy-users eventually prevailed.

I let the battle run without any intervention. Once the parameters were established for the Stage's action, it was generally considered bad form to meddle too much with the expression of the potentialities. Destroying the fifth planet was more easily excused: major corrections were all right if done early in the course of the Drama, and I had other Plans for the fifth planet. And even the greatest Designers would occasionally tweak the system every now and then. Over time, even a tiny amount of chaos plays havoc with even the best-designed system. Besides, the Dramas were all about change over time, and the crystals had reached an evolutionary impasse, anyway.

The Plot began to thicken. After the oxygen-users had swept over the fourth planet and slowly changed the surface of the world, they began the inevitable struggle among themselves that would produce more and more complex forms. Over enough time, and with a tiny tweak every now and then to the system, intelligence was born. After the usual lengthy squabbles amongst themselves for resources, they eventually established a peaceful society around a giant mountain, the largest in the system. They carved their environment up into the usual great monuments to organic icons, with pyramidal structures, faces on mountains, and cities built to last the ages.

However, unbeknownst to their little simulated lives, several huge, random chunks of rock—spun off from the now-defunct planet five—would intersect with their planet’s orbit, wiping out their cultures periodically. The intelligent inhabitants made very Dramatic efforts to resist cataclysmic change, and three or four times they even tried to rebuild everything, only to have it all wiped out again by random remnants of planet five. I watched as the very last of their great cities rusted away. The Drama on the fourth planet closed as the red, rusty sands covered the barren surface of a dead world. I took the focus of the Stage off the now-static world and allowed the audience a split subjective aeon or so to reflect.

The Drama was far from over. If anything, the Plot was just getting intricate. A piece of planet five the size of a small continent had hit the southern pole of planet four when life had first started there. This impact knocked loose chunks of the young planet to drift through the space between the lanes of the planets and finally burn up on the slowly cooling surface of the third planet. This planet was just ripe for interesting things to happen. It was a very rare binary planet, created when an ancient comet collided with the planet and cracked it into two pieces. The smaller piece became a huge, dead moon orbiting the larger piece, which was tectonically active, with vigorous volcanoes and drifting continental plates. After the larger piece of the third planet had

cooled somewhat, it gradually became one of my favorite scenes for Drama: a water world, and one seeded with an organic template lodged in chunks spun off of the fourth planet when part of the fifth planet had impacted. The Plot was becoming very intricate—as my early actions had now come full circle, from my hasty destruction of the crystal planet. This was high Drama and I was pleased.

The oceans of the planet covered most of the surface. Even though a little of the cooling lava-rock peaked over the top of the waves, it was sterile and unusable, and blasted with harsh radiation poorly filtered by a weak atmosphere. The organic templates began reproducing in the oceans instead, where they found a stable energy gradient and the necessary raw materials for life. I watched the transplanted carbon chains reproduce and the genetic material gradually change and adapt to fully exploit the environment and compete with each other.

After life had filled the ocean, a few organisms started in on the long conquest of land. There was gradually more and more land that became usable, as the planet cooled and some of the water began to freeze up at the poles and lower the overall level of the oceans. Soon, this planet underwent the usual methane to oxygen switch and life continued the inevitable struggle toward complexity and adaptability.

The poikilothermic reptiles became the dominant life on land and they filled every niche available in the new, virgin environment. Sessile plant forms and aggressive bacteria competed for the available CO2, releasing free oxygen and setting up a cycle of continuous circulation of resources. The Stage took each data point of this scene and fully simulated all of the potential interactions over time. The inevitable simulated intelligences arose out of the most advanced of the reptiles: a quadrupedal omnivore with very little direct specialization, but who had abstract reasoning powers and a well-defined neural net that was capable of learning and improving. The

canny little reptile soon dominated many of the bigger, dumber carbon constructions, until it was at the top of the food chain. The intelligent reptile lasted a few subjective millenniums, and built great cities out of bio-engineered vegetable matter. Since they lived in such an aggressive environment, with fierce competition for the energy streaming onto the fertile planet, they advanced the concepts of war and hand-to-hand combat until they reached an Art form. They industrialized, fought great battles, and put off wastes until they changed the climatic conditions of the planet.

I took the Stage’s focus through several important aspects of their fascinating culture before it ended. And I knew it would end very soon. Another general rule: nothing lasts forever, and if it did, where’s the Drama in that?

If you simulate enough time passing, almost anything is possible. And although extremely unlikely, even the improbable becomes the certain over enough time. I moved the focus of the Stage back until the third planet was in full view of my unheard audience, and so that they could see the meteor that was hurtling towards the equator of the water world. This was an un-Planned, random event, of which I was not directly responsible for. This chunk of rock came from out-system, and was not one of the fifth planet’s fragments. I steeled myself for the potentiality that I could see becoming certainty. The rock collided and sent up a cloud of dust that blocked out the sun.

The reptiles began to die off, as their habitats dwindled in the long darkness. The larger reptiles were hunted to extinction as the environment started to change on the reptilian civilization. Soon, even the intelligent reptiles were gradually becoming extinct, unable to find food and keep warm in the slightly colder environment. Eventually, the last of the intelligent reptiles killed each other in a struggle for the now-scarce resources of their colder habitat.

The active tectonic plates of this world slowly ground down the last traces of the cities and the monuments, as the plates made their slow migration into the center of the planet's molten core. Given enough time and a sufficiently geologically active world, even the most advanced of races will not leave a trace of themselves behind, as all their works are crushed in the slow process of making mountains and the recycling of crust and mantle.

Fortunately for the Drama, the third planet was not irreparably damaged. The dust eventually settled and a long alternating period of glaciations and thawings commenced. The ice at the poles slowly advanced towards the equator and then receded, tearing huge furrows into the soil and leaving behind new habitats in their wake that were ripe for exploitation. The warm-blooded mammals, better able to handle the changing climate, soon filled all of the empty niches left behind by the demise of the reptiles.

Some of the land animals returned to the sea, which was a more stable environment than the ice-locked land. The Stage implemented the algorithmic progression of the mammals as they competed against the other carbon constructs, and I tweaked the largest of the sea-mammals just a touch. I wanted to try a different form of intelligence, one that internalized rather than externalized. The large ocean-mammals developed a high order of intelligence, that created great abstractions but did little actually to alter their surrounding environment. They didn't have the loco-motor manipulators of the reptiles, and their broad fins and flukes were not specialized for the adept manipulation of the physical world. However, what they lost in technology, they made up for in Art. I listened to several of the poignant, philosophical discussions and songs of the great ocean mammals and thought that this could be the climax of the entire Drama. I kept the focus on the ocean culture as long as I could, because these interesting creatures were what the public wanted to see.

The mammals on land eventually caught up to the progressing sea mammals in their development, but they usually developed a more tactile, manipulative way of life. Some mammals turned introspective like the whales, but most developed into tool-cultures. The most successful of the deep-thinkers were the pachyderms, who used their massive brains in exploring the subtle complexities of emotion and poetry. Since they had very little predators, and food was easy to come by, their development turned inward, eschewing the use of vulgar tools.

I spent a lot of subjective time with the focus of the Stage going back and forth among the several mammalian intelligences that the third planet developed. My personal favorites were the pachyderms. They had a simulated culture that stressed poetry, beauty, and subtleties of emotion. They were physically large enough not to have to depend on the science and Art of warfare and they needed very little tool-technology.

The later biped mammals were nothing special. The reptiles had been more warlike, the crystals more beautiful, the whales better singers, and the pachyderms better poets. The fourth planet had built bigger cities, that had lasted longer. The early oxygen-emitting unicellular plant constructs had changed their environment more than the bipeds. I struggled to find some redeeming Drama for the bipeds, but decided that they were definitely anticlimactic. This Drama was at a close.

I ritually ended the Drama by accessing the Gallery, where all General Operations Designers store their finished works for more casual viewing by the public. An almost infinite number of works in progress appeared in the simulated Stage, each represented by a far-off point of light. I moved through the Gallery and stuck my system along one far spiral arm, in a backwater corner of the Gallery.

I disengaged from the Stage simulation and turned around to face a cheering audience. They seemed to have enjoyed the Drama, even though it was a little long. But five billion years or so is about average, and I think this one went all right.

Too bad about the ending.