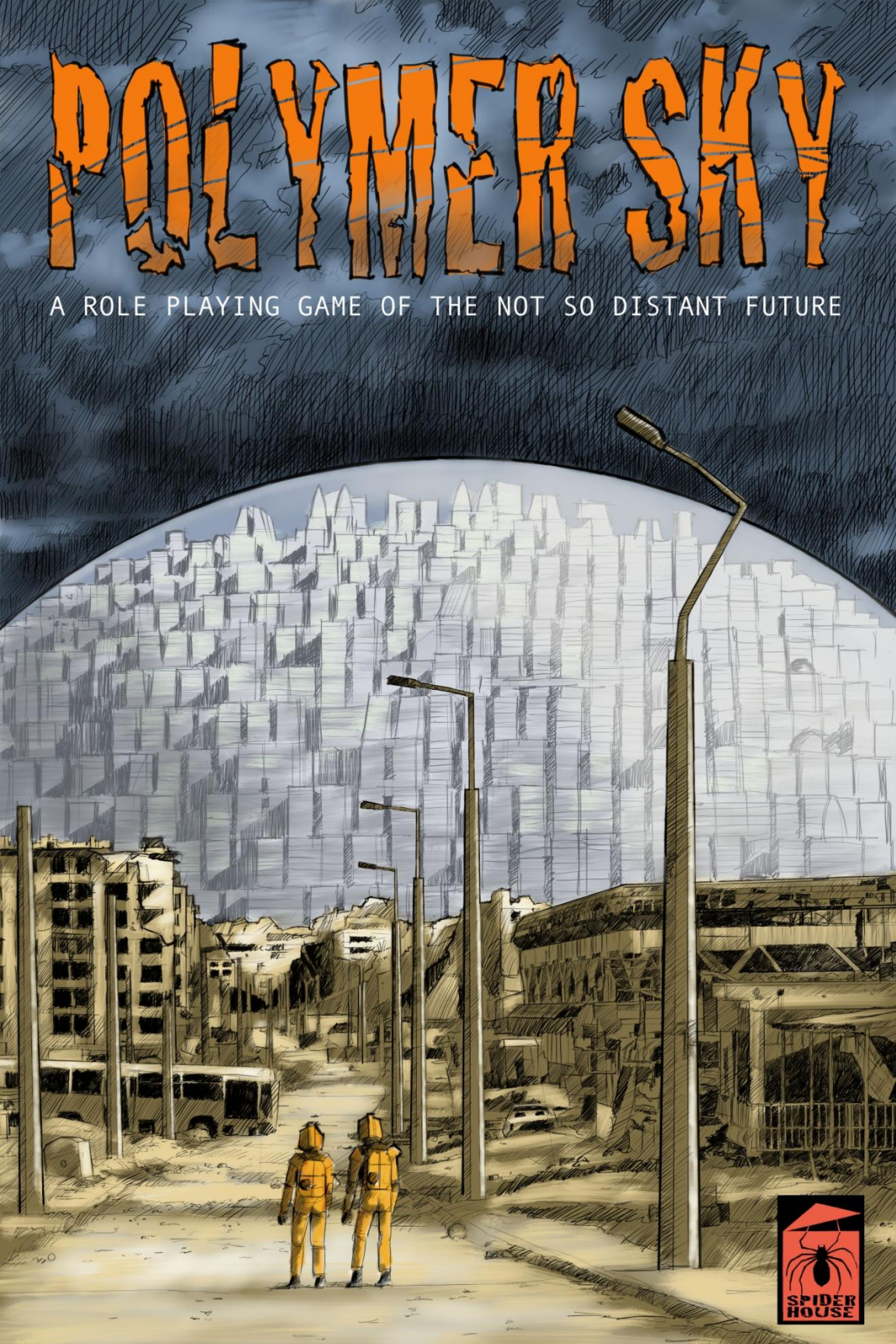
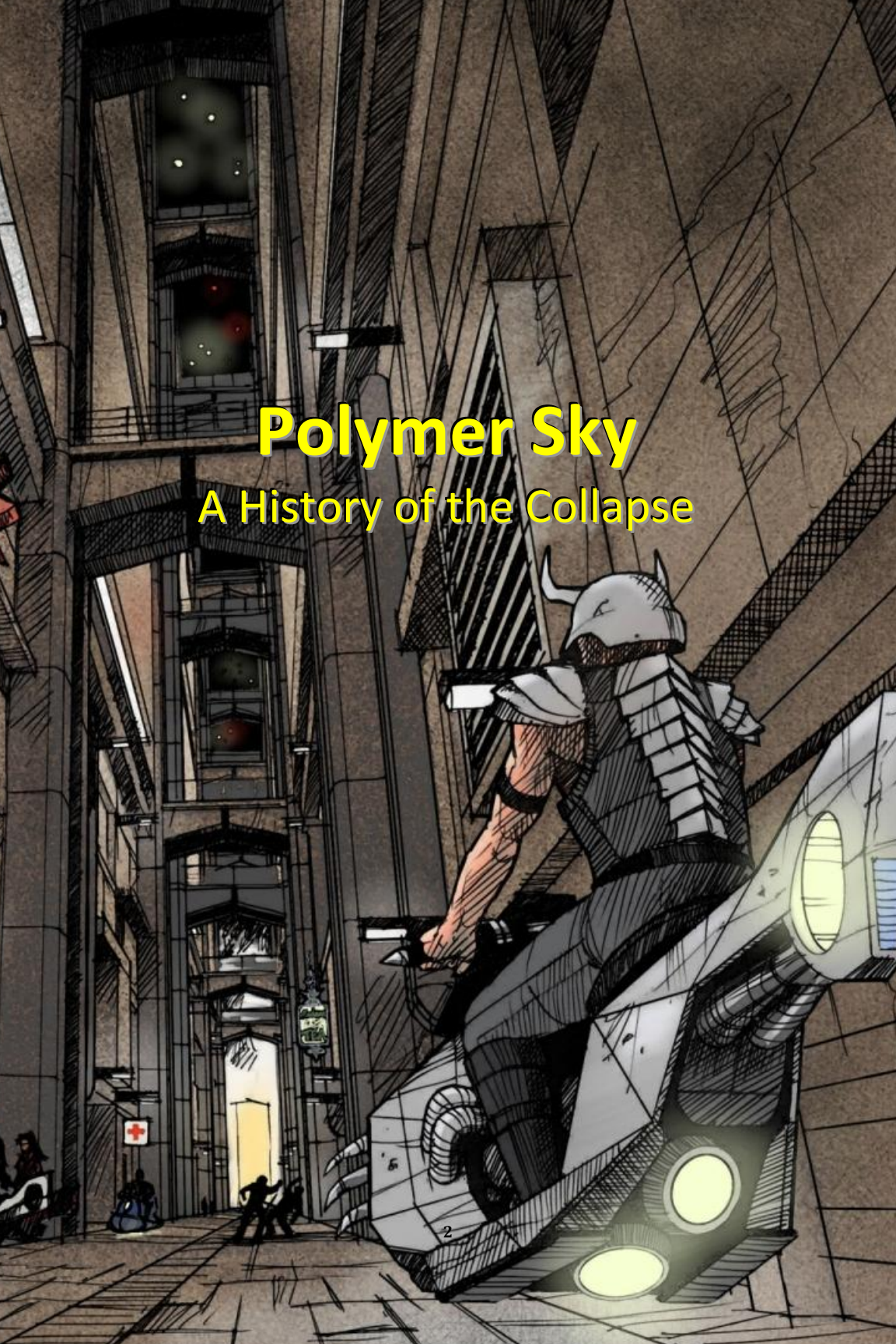
POLYMER SKY

A ROLE PLAYING GAME OF THE NOT SO DISTANT FUTURE



SPIDER HOUSE


Polymer Sky
A History of the Collapse

In the mid-21st Century, the first domino toppled in what would be an irreversible cascade of events leading to the collapse of earth's climate. Humankind spent the early decades of the century pretending it was not real, or serious, or serious enough—and by the time they realized their mistake, it was too late. By then, the only recourse humans had left was to seal themselves off from the toxic environment they'd created. People sent skins of clear polymer up over their homes and buildings and, eventually, up over entire cities. These domes became the limits of their new environment; their entire worlds. Cities stopped growing and became islands. To the inhabitants, the transparent spheres became the tops of their worlds, their polymer skies.

The year is 2415, and humanity lives only in pockets, safely protected, but isolated, unsure if cities even 100 miles distant continue to exist. This is the world of Polymer Sky, a setting contained within these domes.

Human Hubris and the End of the World

The Environment on a Knife's Edge (2050)

At midcentury, a growing chorus of corporate and government scientists sound alarms about the state of global warming. Air temperatures have risen on an average of 2.5° Fahrenheit, but the damage is worse at the poles. The arctic ice cap, originally projected to survive the century, is nearly completely melted. Permafrost is vanishing. Seas have risen an average over a foot since 1900. Storms are more violent and more common. Indicator species cannot keep pace with the change, causing mass extinctions.

While publicly dismissing claims of ozone depletion as "Chicken Little alarmism" the international conglomerate Petron Oil begins work on a project code-named *Polymer Sky*. The intent: to produce a flexible, durable material for use as a protective biosphere. A pilot dome, the first of its kind, is erected over a square mile of virgin forest in the Oregon Cascades. Pharmaceutical giant MedPac, capitalizing on fears of falling atmospheric oxygen, begins packaging and selling pure O_2 for home and office use. The companies conduct secret discussions concerning a possible merger to jointly produce protective biospheres.

Considering the Symptom, Ignoring the Problem (2075)

Although scientific findings are not widely reported through private media (a downer; bad for business), environmental problems are increasingly difficult to ignore. The rise in incidence and severity of tornadoes and hurricanes devastates wide swaths of land in the South, Northeast and Midwest. Changed rainfall patterns, once attributed to El Niño and La Niña, now appear to be permanent conditions: arid regions of the US now receive almost no rain, while the Northwest, Northeast, and Deep South are pounded by periodic bursts of torrential rain or heavy snow. Crop failures become the norm. Similar weather patterns and agricultural problems occur worldwide. Most disturbing, sunlight grows increasingly caustic, causing sunburns after relatively brief periods in direct sunlight.

An interdisciplinary team of scientists tasked with implementing geo-engineering solutions to correct climate change has been at work for two decades. Given global inaction, the scientists believe that the earth's natural cycles of heating and cooling have already been inalterably changed.

Efforts to scrub carbon from the atmosphere may result in long-term restoration, but only at the cost of a world-wide die-off. Based on statistical modeling, the scientists predict a 90% loss of species and a similar loss of human population. The earth would be plunged into a new stone age.

They propose solar geo-engineering, in which a mixture of particulate gasses would be injected into the atmosphere to reflect the sun's energy. It would effectively recreate the conditions experienced during climate-altering volcanic eruptions. In a UN assembly in 2074, all but a handful of counties tentatively endorse the scheme, which would be inexpensive and deliver immediate results. The proposal, dubbed "Plan B," is scheduled for January 2077.

Privately, world governmental and business leaders begin to actively consider the prospect of a "post-environmental lifestyle." Confidential projects, similar to *Polymer Sky*, begin in corporations throughout the world. Alternate power, post-environmental crop production, fish and animal programs, water recycling, and genetic research become top priorities.

Comes the Disaster (2077)

In 2076, the world begins preparations on Plan B, an effort to inject sulfate aerosols into the atmosphere, creating a solar barrier and instantly cooling the planet. The scientists call for a three-phase injection, with the first acting as a kind of trial for subsequent injections. In January 2077, a coordinated fleet of jets forming a lattice around the world simultaneously inject the compounds into the atmosphere. Within days, meteorologists record a predicted one degree drop in the average global temperature. By June, the experiment is deemed a success, and scientists ready Phase II.

This time, jets deliver five times the volume of aerosols. Within minutes, the level of sunlight dims appreciably, as the

aerosols diffuse high in the upper atmosphere. Again, meteorologists note a cooling trend, but within 24 hours, they notice that while the earth's average temperature dropped three degrees, they observe a marked uptick of unusual weather incidents. The patterns worsen, and within two weeks, the particles start falling back into the troposphere, interfering with cloud formation. In some areas, the film of particles act like a shade, but in others, particularly over water, it has the opposite effect. Humidity soars, but clouds are unable to form, creating what meteorologists called a "fishbowl" effect. Throughout the next three months, the effect persists, soon interfering with global heating and cooling cycles and wind streams.

By the end of the year, the aerosol particulates begin coming out of the atmosphere. Some scientists on the panel urged the UN to continue with Phase III, but most argue for caution. Then, on November 23 comes what is known as "the disaster" as world climate changes irreversibly. For months, energy has been gathering in the atmosphere, unable to find natural release. The balance tipped when the aerosol shield collapses, allowing the sun to activate the trapped energy. Clouds form a thick mat across the skies and electrical energy crackles above. For five weeks, until just about the new year, storms hammer the planet, causing flooding and devastation. Afterward, the population awakes to a new planet with permanently altered jet streams, cloud cover, weather, and temperature.

The new changes bring diminished winds and stagnant areas of extreme heat. There are a few islands of cool temperatures, but most of the earth warms overnight. Cloud cover increases 63% and electrical activity and violent storm events (tornados and hurricanes) increase in number and force.

Some scientists argue to repeat the aerosol experiment, but the global consensus collapses as national governments fall into disarray.

The Scramble to Survive (2100)

Post-disaster effects of global warming now dominate international focus. Average temperatures have risen an average of 8 degrees Fahrenheit in the last century. Melting ice caps put more moisture in to the atmosphere, magnifying the effect of heat, raising ocean levels another 12-16 inches worldwide, flooding many lower-lying coastal towns and severely threatening coastal metropolises like New York, Dublin, and Hong Kong. Except in latitudes North and South of 55°, light causes radiation-like lesions on exposed skin; melanoma affects 40% of the US population, 60% of the world population.

Crops no longer grow in exposed air due to violent rainfall and storms and severe heat; vast *Polymer Sky* greenhouses protect fruit and vegetables. Still, famine ravages all but the wealthiest of countries. Disease and exposure to the now fatal environment cause more death. Earth's population falls from a high of 8.7 billion in 2042 to 2.5 billion by 2100. Species depletion follows a similar pattern, with only *Polymer Sky*-protected plants and animals surviving the severe conditions. Troublingly, new super-insects and viruses flourish in the altered environment.

National governments collapse; increasingly, international corporations govern from dome-protected city headquarters, responsible only to their own employees. The US government receives minimal funds from corporate grants, functioning largely as a national archive and periodic census-taker. Defense is taken up by local militias, corporations, and individual cities.

Skirmishes and regional wars mark this period, as the world reverts to a pre-nation system of control.

Polymer Sky biospheres cover office buildings, homes, and recreational facilities. Individuals and communities work to build "post-enironmental" homes, shantytowns, and small villages. Citizens unaffiliated with corporate sponsors take to underground bunkers. Societies fragment as people leave pre-environmental-collapse cities to live in life-giving *Polymer Sky* towns: underground, in caves, in specially-built buildings. Typically built around a business or small industry (poultry, weapons manufacture, water harvesting and recycling, etc.), they become self-sufficient stand-alone communities. Interconnectivity is based on a kind of peddlar mercantilism that works alongside the International Monetary Fund (IMU)-based capitalist system.

Still, it is clear that these buildings alone will not provide sufficient protection; with the depletion of water and oxygen resources, these small structures are not self-sustaining. Rapid work continues on city-sized protective shells and research on the science of making them self-sustaining biospheres. Concurrent planning for transportation between the cities begins.

Enclosure Begins (2102)

Petron Oil and MedPac erect the first two *Polymer Sky* shells; Petron's, over a suburb of Dallas, and MedPac over the Oakland Hills region of San Francisco. In what becomes a model for future American corporate cities, domestic employees receive "berths" aboard their new bubble home. To fill remaining space, MedPac and Petron hold a lottery for remaining berths. The winners pledge a kind of allegiance to the corporations and agree to provide labor for the duration of their stay.

As the Oakland and Dallas biodomes come on line—a moment known as "Enclosure"—the North American Standards Act is adopted to introduce compatible standards around plastics, energy, fuels, transportation, weapons, and so on. Except where they may flourish outside the known world, older technologies and craftsmanship wane. Technological advances in electronics, medicine, robotics, computers, space research, and so on are all linked directly to inter-city trade, designed to run on inter-city energy grids.

A New Humanity Under Glass (2150)

Human consolidation into biospheres is near its end. *Polymer Sky* biospheres stretch up over the largest cities, covering unimaginably large spaces. As the science advances, the material out of which the biospheres is made grows increasingly light and durable. As thin as two inches in the most modern biospheres, the plastic material is light enough to be supported by the force of the oxygen inside the bubble, but strong enough to withstand the wrath of the devastated environment outside.

The environment outside these life-giving biodomes is severe. A thick band of clouds now circles the planet, fueled by released waters and swollen oceans. Storms rage over much of the earth, flickering the horizon with lightning. The average temperature is now 20 degrees above the average in 2000, and rising - an average of a degree each decade—though scientists have hope that the earth is beginning to come into a new balance, as the temperature spike does appear to slow.

Following the pattern laid out by the initial settlements of MedPac and Petron, in some cases the impoverished sell themselves into indentured servitude to corporations willing to allow them into life-giving biosphere cities. Although typically

called “employees,” this second-class group are little more than slaves, always relegated to separate sections of the biospheres, often subterranean caverns.

Later Centuries

The century following Enclosure is a dark time for many dome cities. Disease, water and food shortages, large-scale riots, and even dome structural collapse plague the survivors. During this time, most technological advances stagnate as dome governments dealt with more immediate crisis. But the majority of domes endure the turmoil of post-Enclosure civic reconstruction and began to thrive. They built their cities taller, expand their dome footprint, and even push other sections underground as their populations swell. By well into the 23rd century, most domes are recovering on the technological side as well—though they remain enclosed and isolated. For that reason, if one could travel from dome to dome around the world, they would find that each city has evolved its own technological marvels—some following a natural, scientific arc and some wildly imaginative and possibly counter to current scientific thought.

Life in the 25th Century

The World Outside the Dome

Compared to 21st century earth, the earth of 2415 is an unrecognizable sphere of hot, gaseous clouds, barren, blasted rock, and unpredictably violent thunderstorms. The rise in global temperatures finally resulted in a runaway greenhouse effect. The oceans and rivers literally boiled away and their moisture is now circulating in the atmosphere creating a permanent roiling cloud structure over the earth.

The average temperature across the globe is now over 200 degrees Fahrenheit. Only dense atmospheric pressure keeps the deepest oceans from boiling off completely. And so places like the Mariana Trench in what is left of the Pacific Ocean still contains seawater. albeit, at the surface, very hot seawater. The world's glaciers and lakes and rivers, however, are gone.

Occasionally the temperature drops below boiling long enough for the pregnant clouds to condensate and vaporous hot rains to fall. Multi-colored electrical storms hammer the land outside the domes and currents of lightning course through low-hanging clouds. The earth is uninhabitable except for the sustained life inside the domes.

The constant thunderstorms and the electrical interference they generate make it nearly impossible for communication with other domes. The old earth satellites that used to bounce digital signals around the world now orbit dormant, their broadcasts forever silenced. Even hardy robots sent outside the domes to establish contact or routes to other domes are quickly worn down by the ever-present electrical storms and the burning heat of the atmosphere.

Even if communication were possible, most corporate-controlled dome governments prefer isolation and the control

over the citizens that it offers. Most dome governments speak little of the outside world (at least in public) and even less of the dome cities that might survive elsewhere.

Life Inside the Dome

Post-Enclosure dome life is for the most part much like life in the early 21st century. People live, breathe, work, procreate, and die under the dome. Cities grow skyward under the domes and plunge lower below ground. The wealthiest gravitate towards the top—with grand views of the polymer sky above—while less fortunate live in the lower levels where the only light is artificial.

In most domes, the populace has come to terms with their new lot and life abides. New (often corporate-controlled) governments have formed and—beyond the normal dissatisfaction human institutions seem to foment—dome life flourishes. In some cities, chaos and disorder rule the day as different factions fight for control of dome resources. The common folk try to survive however they can while power hungry tyrants fight in the streets.

In still others, the population is critically high (or low) and strict—often byzantine—population control measures are in force. Those who defy the rules disappear and are "recycled," leaving those left behind to whisper about the content of their rationed protein bars.

In order to feed themselves, some domes have polymer-covered greenhouses that use what filtered sunlight is left—along with artificial lighting—to grow vegetables and fruits. Others have encompassed parts of the ocean to grow kelp or crafted their own fish-farms for much needed protein. In some, great caverns under the cities harvest edible fungi and insects for use in food gels and solids. And still other, baser domes, are

under strict rationing and hold lotteries to see who is allowed eat what and when (and, it is whispered in some cities, perhaps even whom).

A final note, one rule binds all these dome cities together: the dome itself is paramount. Any attempt to vandalize or destroy a dome is met with immediate and violent resistance. It is necessary as life cannot be sustained on the outside. Even tyrants recognize their limitations in this regard.