

CODE OF THE LIFEMAKER

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INTRODUCTION

Back in the early 1980's, when I was a new science-fiction writer living in the Sierra Foothills region of California about three hours' drive inland from San Francisco, I got invited to a summer study held at the Goddard Space Center in Maryland. It was attended by people from NASA, the academic world, various space related industries, and a science fiction writer. The object was to explore what roles computers might play in advanced space missions over the next twenty years and beyond. One of the topics considered was the concept of a self replicating lunar factory. Essentially, the idea is to land a starter kit "seed" package on the lunar surface, consisting of a basic factory system and robot work-force whose first task is to locate and deliver materials that the factory uses assembles to produce more robots. When a critical size is reached, a migrant robot force relocates to commence construction of a second factory, a duplicate of the first. The pattern repeats in a multiplying progression until it becomes possible to divert surplus capacity into supplying the manufacturing needs of Earth from lunar resources. Analysis of the applicable numbers led to the astonishing conclusion that after twenty years the output could exceed the entire production of all Earth's present industries combined.

I had long been toying with a tongue in cheek story idea involving an upside down world in which the "natural" inhabitants were machines and things like houses, tools, and other artifacts were organic, cultivated artificially by an intelligent, dominant species. We could then go on to develop some amusing debates between machine philosophers and theologians about whether "artificial"--i.e. non-machine--intelligence was

possible, they knowing of no other kind, and what kind of being must have created the first machine, since by definition it couldn't have been a machine.

But the problem I'd never been able to solve satisfactorily was, how it got started in the first place. It was only when I was on the plane back to California that I made the obvious connection: an advanced, alien, interstellar version of the lunar factory idea which somehow goes out of control. I started writing that very evening, and the Prologue to Code of the Lifemaker was completed by the end of the next day. Since the book was first published in 1983, readers have written to say that it alone was worth the price of the book, and that none of the ideas that it discusses, even with regard to such a fast-changing area as computing, has aged in the least.

So it gives me great pleasure to have Arc Manor Books releasing another edition, and I trust that readers will continue to derive as much pleasure, entertainment, and food for thought from it as they tell me they have in the past.

James P. Hogan
County Leitrim, Ireland
April, 2010

PROLOGUE

THE SEARCHER
1.1 MILLION YEARS B.C.
1,000 LIGHT-YEARS FROM
THE SOLAR SYSTEM

Had English-speaking humans existed, they would probably have translated the spacecraft's designation as "searcher." Unmanned, it was almost a mile long, streamlined for descent through planetary atmospheres, and it operated fully under the control of computers. The alien civilization was an advanced one, and the computers were very sophisticated.

The planet at which the searcher arrived after a voyage of many years was the fourth in the system of a star named after the king of a mythical race of alien gods, and could appropriately be called Zeus IV. It wasn't much to look at—an airless, lifeless ball of eroded rock formations, a lot of boulders and debris from ancient meteorite impacts, and vast areas of volcanic ash and dust—but the searcher's orbital probes and surface landers found a crust rich in titanium, chromium, cobalt, copper, manganese, uranium, and many other valuable elements concentrated by thermal-fluidic processes operating early in the planet's history. Such a natural abundance of metals could support large-scale production without extensive dependence on bulk nuclear transmutation processes—in other words, very economically—and that was precisely the kind of thing that the searcher had been designed to search for. After completing their analysis of the preliminary data, the control computers selected a landing site, composed and transmitted a message home to report their findings and announce their intentions, and then activated the vessel's descent routine.

Shortly after the landing, a menagerie of surveyor robots, equipped with imagers, spectrometers, analyzers, chemical sensors, rock samplers, radiation monitors, and various manipulator appendages, emerged from the ship and dispersed across the surrounding terrain to investigate surface features selected from orbit. Their findings were transmitted back to the ship and processed, and shortly afterward follow-up teams of tracked, legged, and wheeled mining, drilling, and transportation robots went out to begin feeding ores and other materials back to where more machines had begun to build a fusion-powered pilot extraction plant. A parts-making facility was constructed next, followed by a parts-assembly facility, and step by step the pilot plant grew itself into a fully equipped, general-purpose factory, complete with its own control computers. The master programs from the ship's computers were copied into the factory's computers, which thereupon became self-sufficient and assumed control of surface operations. The factory then began making more robots.

Sometimes, of course, things failed to work exactly as intended, but the alien engineers had created their own counterpart of Murphy and allowed for his law in their plans. Maintenance robots took care of breakdowns and routine wear and tear in the factory; troubleshooting programs tracked down causes of production rejects and adjusted the machines for drifting tolerances; breakdown teams brought in malfunctioning machines for repair; and specialized scavenging robots roamed the surface in search of wrecks, write-offs, discarded components, and any other likely sources of parts suitable for recycling.

Time passed, the factory hummed, and the robot population grew in number and variety. When the population had attained a critical size, a mixed workforce detached itself from the main center of activity and migrated a few miles away to build a second factory, a replica of the first, using materials supplied initially from Factory One. When Factory Two became self-sustaining, Factory One, its primary task accomplished, switched to mass-production mode, producing goods and materials for eventual shipment to the alien home planet.

While Factory Two was repeating the process by commencing work on Factory Three, the labor detail from Factory One picked up its tools and moved on to begin Factory Four. By the time Factory Four was up and running, Factories Five through Eight were already taking shape, Factory Two was in mass-production mode, and Factory Three was building the first of a fleet of cargo vessels to carry home the products being stockpiled. This self-replicating pattern would spread rapidly to transform the

entire surface of Zeus IV into a totally automated manufacturing complex dedicated to supplying the distant alien civilization from local resources.

From within the searcher's control computers, the Supervisor program gazed out at the scene through its data input channels and saw that its work was good. After a thorough overhaul and systems checkout, the searcher ship reembarked its primary workforce and launched itself into space to seek more worlds on which to repeat the cycle.

FIFTY YEARS LATER

Not far—as galactic distances go—from Zeus was another star, a hot, bluish-white star with a mass of over fifteen times that of the Sun. It had formed rapidly, and its life span—the temporary halt of its collapse under self-gravitation by thermonuclear radiation pressure—had demanded such a prodigious output of energy as to be a brief one. In only ten million years the star, which had converted all the hydrogen in its outer shell to helium, resumed its collapse until the core temperature was high enough to burn the helium into carbon, and then, when the helium was exhausted, repeated the process to begin burning carbon. The ignition of carbon raised the core temperature higher still, which induced a higher rate of carbon burning, which in turn heated the core even more, and a thermonuclear runaway set in which in terms of stellar timescales was instantaneous. In mere days the star erupted into a supernova—radiating with a billion times the brightness of the Sun, exploding outward until its photosphere enclosed a radius greater than that of Uranus' orbit, and devouring its tiny flock of planets in the process.

Those planets had been next on the searcher's list to investigate, and it happened that the ship was heading into its final approach when the star exploded. The radiation blast hit it head-on at three billion miles out.

The searcher's hull survived more-or-less intact, but secondary x-rays and high-energy subnuclear particles—things distinctly unhealthy for computers—flooded its interior. With most of its primary sensors burned out, its navigation system disrupted, and many of its programs obliterated or altered, the searcher veered away and disappeared back into the depths of interstellar space.

One of the faint specks lying in the direction now ahead of the ship was a yellow-white dwarf star, a thousand light-years away. It too possessed a family of planets, and on the third of those planets the descendants of a species of semi-intelligent apes had tamed fire and were beginning to experiment with tools chipped laboriously from thin flakes of stone.

Supernovas are comparatively rare events, occurring with a frequency of perhaps two or three per year in the average galaxy. But as with most generalizations, this has occasional exceptions. The supernova that almost enveloped the searcher turned out to be the first of a small chain that rippled through a localized cluster of massive stars formed at roughly the same time. Located in the middle of the cluster was a normal, longer-lived star which happened to be the home star of the aliens. The aliens had never gotten round to extending their civilization much beyond the limits of their own planetary system, which was unfortunate because that was the end of them.

Everybody has a bad day sometimes.

ONE MILLION YEARS B.C.

One hundred thousand years after being scorched by the supernova, the searcher drifted into the outer regions of a planetary system. With its high-altitude surveillance instruments only partly functioning and its probes unable to deploy at all, the ship went directly into its descent routine over the first sizeable body that it encountered, a frozen ball of ice-encrusted rock about three thousand miles in diameter, with seas of liquid methane and an atmosphere of nitrogen, hydrogen, and methane vapor. The world came nowhere near meeting the criteria for worthwhile exploitation, but that was of no consequence since the computer programs responsible for surface analysis and evaluation weren't working.

The programs to initiate surface activity did work, however, more or less, and Factory One, with all of its essential functions up and running to at least some degree, was duly built on a rocky shelf above an ice beach flanking an inlet of a shallow methane sea. The ship's master programs were copied across into the newly installed factory computers, which identified the commencement of work on Factory Two as their first assignment. Accordingly Factory One's Supervisor program signaled the ship's databank for a copy of the "How to Make a Factory" file, which included a set of subfiles on "How to Make the Machines Needed to Make a Factory," i.e., robots. And that was where everything really started to go wrong.

The robots contained small internal processors that could be reprogrammed via radiolink from the factory computers for each new task to be accomplished. This allowed the robots to proceed with their various jobs under autonomous local control and freed up the central computers for other work while they were waiting for the next "Done that—what do I

do now?” signal. Hence many software mechanisms existed for initiating data transfers between the factory computers and the remote processors inside the robots.

When the copying of the “How to Make a Factory” file from the ship to Factory One was attempted, the wrong software linkages were activated; instead of finding their way into the factory’s central system, the subfiles containing the manufacturing information for the various robots were merely relayed through the factory and beamed out into the local memories of the respective robot types to which they pertained. No copies at all were retained in the factory databank. And even worse, the originals inside the ship managed to self-destruct in the process and were irretrievably erased. The only copies of the “How to Make a Fred-type Robot” subfile were the ones contained inside the Fred-types out on the surface. And the same was true for all the other types as well.

So when the factory’s Supervisor program ordered the Scheduler program to schedule more robots for manufacture, and the Scheduler lodged a request with the Databank Manager for the relevant subfiles, the Databank Manager found that it couldn’t deliver. Neither could it obtain a re-copy from the ship. The Databank Manager reported the problem to the Scheduler; the Scheduler complained to the Supervisor; the Supervisor blamed the Communications Manager; the Communications Manager demanded an explanation from the Message Handler; and after a lot of mutual electronic recriminations and accusations, the system logging and diagnostic programs determined that the missing subfiles had last been tracked streaming out through the transmission buffers on their way to the robots outside. Under a stern directive from the Supervisor, the Communications Manager selected a Fred from the first category of robots called for on the Scheduler’s list, and beamed it a message telling it to send its subfile back again.

But the Fred didn’t have a complete copy of the subfile; its local memory simply hadn’t been big enough to hold all of it. And for the same reason, none of the other Freds could return a full copy either. They had been sprayed in succession with the datastream like buckets being filled from a fire-hose, and all had ended up with different portions of the subfile; but they appeared to have preserved the whole subfile among them. So the Supervisor had to retrieve different pieces from different Freds to fit them together again in a way that made sense. And that was how it arrived at the version it eventually handed to the Scheduler for manufacture.

Unfortunately, the instruction to store the information for future reference got lost somewhere, and for each batch of Freds the relevant

“How to Make” subfile was promptly erased as soon as the Manufacturing Manager had finished with it. Hence when Factory One had spent some time producing parts for Factory Two and needed to expand its robot workforce to begin surveying sites for Factory Three, the Supervisor had to go through the whole rigmarole again. And the same process was necessary whenever a new run was scheduled to provide replacements for robots that had broken down or were wearing out.

All of this took up excessive amounts of processor time, loaded up the communications channels, and was generally inefficient in the ways that cost accountants worry about. The alien programmers had been suitably indoctrinated by the alien cost accountants who ran the business—as always—and had written the Supervisor as a flexible, self-modifying learning program that would detect such inefficiencies, grow unhappy about them, and seek ways to improve things. After a few trials, the Supervisor found that some of the Freds contained about half their respective subfiles, which meant that a complete copy could be obtained by interrogating just two individuals instead of many. Accordingly it made a note of such “matching pairs” and began selecting them as its source for repeat requests from the Scheduler, ignoring the others.

Lost along with the original “How to Make a Fred” subfiles were the subsubfiles on “Programs to Write into a Fred to Start It Up after You’ve Made It.” To make up for the deficiency, the Supervisor copied through to the Scheduler the full set of programs that it found already existing in the Freds selected to provide reproduction information, and these programs, of course, included the ones on how to make Freds. Thus the robots began coming off the line with one-half of their “genetic” information automatically built in, and a cycle asserted itself whereby they in turn became the source of information to be recombined later for producing more Freds. The method worked, and the Supervisor never figured out that it could have saved itself a lot of trouble by storing the blueprints away once and for all in the factory databank.

The program segments being recombined in this way frequently failed to copy faithfully, and the “genomes” formed from them were seldom identical, some having portions of code omitted while others had portions duplicated. Consequently Freds started taking on strange shapes and behaving in strange ways.

Some didn’t exhibit any behavior at all but simply fell over or failed during test, to be broken down into parts again and recycled. A lot were like that.

Some, from the earlier phase, were genetically incomplete—"sterile"—and never called upon by the Supervisor to furnish reproductive data. They lasted until they broke down or wore out, and then became extinct.

Some reproduced passively, i.e., by transmitting their half-subfiles to the factory when the Scheduler asked for them.

A few, however, had inherited from the ship's software the program modules whose function was to lodge requests with the Scheduler to schedule more models of their own kind—program modules, moreover, which embodied a self-modifying priority structure capable of raising the urgency of their requests within the system until they were serviced. The robots in this category sought to reproduce actively: They behaved as if they experienced a compulsion to ensure that their half-subfiles were always included in the Scheduler's schedule of "Things to Make Next."

So when Factory One switched over to mass-production mode, the robots competing for slots in its product list soon grabbed all of the available memory space and caused the factory to become dedicated to churning out nothing else. When Factory Two went into operation under control of programs copied from Factory One, the same thing happened there. And the same cycle would be propagated to Factory Three, construction of which had by that time begun.

More factories appeared in a pattern spreading inland from the rocky coastal shelf. The instability inherent in the original parent software continued to manifest itself in the copies of copies of copies passed on to later generations, and the new factories, along with their mixed populations of robot progeny, diverged further in form and function.

Material resources were scarce almost everywhere, which resulted in the emergence of competitive pressures that the alien system designers had never intended. The factory-robot communities that happened to include a balanced mix of surveyor, procurement, and scavenger robots with "appetites" appropriate to their factories' needs, and which enjoyed favorable sites on the surface, usually managed to survive if not flourish. Factory Ten, for example, occupied the center of an ancient meteorite crater twelve miles across, where the heat and shock of the impact had exposed metal-bearing bedrock from below the ice; Factory Thirteen established itself inside a deep fissure where the ice beneath was relatively thin, and was able to melt a shaft down to the denser core material; and Factory Fifteen resorted to nuclear transmutation processes to build heavier nuclei from lighter ones frozen in solution in the ice crust. But many were like Factory Nineteen, which began to take shape on an ill-chosen spot far out on a bleak ice field, and ground to a halt when its deep-drilling robots and

transmutation reactors failed to function, and its supply of vital materials ran out.

The scavenger and parts-salvaging robots assumed a crucial role in shaping the strange metabolism that was coming into being. Regardless of what the Schedulers in the various factories would have liked to see made, the only things that could be assembled readily were the ones for which parts were available, and that depended to a large degree on the ability of the scavengers to locate them, or alternatively to locate assemblies suitable for breaking down—"digesting"—and rebuilding into something useful. Factory Twenty-four was an extreme case. Unable to "metabolize" parts directly from any source of raw materials because of the complete failure of its materials-procurement workforce, it relied totally on its scavengers. Factory Thirty-two, on the other hand, could acquire raw materials but couldn't use them since it had been built without a processing facility at all. Its robots delivered instead to Forty-seven, which happened to produce parts for some of the scavengers being manufactured by Thirty-two, and the two factory-robot organisms managed to coexist happily in their bizarre form of symbiosis.

The piles of assorted junk, which shouldn't have accumulated from the earlier phases of the process but had, were eaten up; the machines that broke down were eaten up; and the carcasses of defunct factories were eaten up. When those sources of materials had been exhausted, some of the machines began to eat each other.

The scavengers had been designed, as they had to be, to discriminate between properly functioning machines and desirable products on the one hand and rejects in need of recycling on the other. However, as with everything else in the whole, messed-up project, this function worked well in some cases, not so well in others, and often not at all. Some of the models turned out to be as likely to attempt the dismantling of a live, walking-around Fred as of a dead, flat-on-its-back one. Many of the victims were indifferent to this kind of treatment and soon died out, but others succeeded in developing effective fight-or-fee responses to preserve themselves, thus marking the beginnings of specialized prey and predators in the form of "lithovores" and "artifactovores."

This development was not always an advantage, especially when the loss of discrimination was total. Factory Fifty was consumed by its own offspring, who began dismantling it at its output end as soon as they came off the assembly line, and then proceeded proudly to deliver the pieces back to its input end. Its internal repair robots were unable to undo the undoings fast enough, and it ground to a halt to become plunder for

marauders from Thirty-six and Fifty-three. The most successful factory-robot organisms protected themselves by evolving aggressive armies of “antibody” defenders, which would recognize their own factory and its “kind” and leave them alone, but attack and attempt to destroy any “foreign” models that ventured too close. This gradually became the dominant form of organism, usually associated with a distinct territory which its members cooperated in protecting collectively.

By this time only a few holes in the ground remained at opposite ends of the rocky shelf to mark where Factories One and Two had once stood. They had failed to keep up with the times, and the area had become the domain of Factory Sixty-five. The only trace left of the searcher spacecraft was a long, rounded depression in the ice beach below, on the shore of the liquid methane sea.

The alien engineers had designed the system to enjoy full planetary communications coverage by means of satellites and surface relays, but the idea hadn't worked too well since nothing had been put into orbit and surface relays tended not to last very long. This enabled some of the organisms without strong defenses to remain protected, for a while, from the more metal-hungry empires by sheer distance. But, to allow for communications blackouts and interference, the aliens had also provided a backup method of program and data exchange between robots and factories, which took the form of direct, physical, electrical interconnection. This was a much slower process than using radiolinks, naturally, since it required that the robots travel physically to the factories for reprogramming and reporting, but in a self-sustaining operation far from home the method was a lot better than nothing. And it kept the accountants happy by protecting the return on the investment.

With defects and deficiencies of every description appearing somewhere or other, it was inevitable that some of the organisms would exhibit partial or total communications breakdowns. Factory Seventy-three, built without radio facilities, was started up by programs carried overland from Sixty-six. None of its robots ever used anything but backup mode, and the factories that it spawned continued the tradition. But this very fact meant that their operating ranges were extended dramatically.

So the “defect” turned out to be not so much of a defect after all. Foraging parties were able to roam farther afield, greatly enlarging their catchment areas, and they frequently picked up as prizes one or more of the territories previously protected by geographical remoteness. Furthermore, selective pressures steadily improved the autonomy of the robots

that operated in this fashion. The autodirected types, relying on their comparatively small, local processors, tended to apply simple solutions to the problems they encountered, but their close-coupled mode of interaction with their environment meant that the solutions were applied quickly: They evolved efficient “reflexes.” The teledirected types, by contrast, tied to the larger but remote central computers, were inclined to attempt more comprehensive and sophisticated solutions, but—as often as not—too late to do any good. Autodirection thus conferred a behavioral superiority and gradually asserted itself as the norm, while teledirection declined and survived only in a few isolated areas.

The periodic instinct to communicate genetic half-subfiles back to their factories had long become a universal trait among the robots—there could be descendants only of ancestors who left descendants—and they responded to the decline of radio as a means of communication by evolving a compulsion to journey at intervals back to the places whence they had come, to return, as it were, to their “spawning grounds.” But this method of reproduction had its problems and posed new challenges to the evolutionary process.

The main problem was that an individual could deliver only half its genome to the factory, after which the Supervisor would have to store the information away until another robot of the same type as the first happened to show up with a matching half; only then could the Supervisor pass a complete copy to its Scheduler. If, as frequently happened, the Supervisor found itself saturated by a peak workload during the intervening period, it was quite likely to delete the half-subfile and allocate the memory space to other, more urgent things—bad news for the Fred that the data had come from, who would thus have enacted the whole reproductive ritual for nothing. The successful response to this problem came with the appearance of a new mode of genetic recombination, which, quite coincidentally, also provided the solution to an “information crisis” that had begun to restrict the pool of genetic variation available for competitive selection to draw on for further improvement.

Some mutant forms of robot knew they were supposed to output their half-subfiles somewhere, but weren’t all that sure, or perhaps weren’t too particular, about what they were supposed to output it into. Anything with the right electrical connections and compatible internal software was good enough, which usually meant other robots of the same basic type. And since a robot that had completed its assigned tasks was in a receptive state to external reprogramming, i.e., ready for fresh input that would normally come from the factory system, an aspiring donor had

little trouble in finding a cooperative acceptor, provided the approach was made at the right time. So to begin with, the roles adopted were largely a matter of circumstance and accidental temperament.

Although the robots' local memories were becoming larger than those contained in their earlier ancestors, the operating programs were growing in size and complexity too, with the result that an acceptor still didn't possess enough free space to hold an entire "How to Make a Fred" subfile. The donor's half, therefore, could be accommodated only by overwriting some of the code already residing in the acceptor. How this was accomplished depended on the responses of the programs carried inside the various robot types.

In some cases the incoming code from the donor was allowed to overwrite entire program modules inside the acceptor, with the total loss to the acceptor of the functions which those modules controlled. This was usually fatal, and no descendants came into being to repeat such mistakes. The successful alternative was to create space by trimming nonessential code from many modules, which tended to leave the acceptor robot with some degradation in performance—usually manifesting itself as a reduction in agility, dexterity, and defensive abilities—but at least still functioning. The sacrifice was only temporary since the acceptor robot would be reprogrammed with replacement modules when it delivered its genetic package at the factory.

But in return for these complications and superficial penalties came the immense benefit that the subfiles presented at the factories were complete ones—suitable for dispatch to the Schedulers without delay and the attendant risk of being deleted by overworked Supervisors. The new method thus solved the reliability problem that had plagued the formerly universal "asexual" mode of reproduction.

The information crisis that it also solved had developed through the "inbreeding" caused by the various Supervisors having only the gene pools of their respective "tribes" available to work with, which made recombination difficult because of the restrictive rules imposed by the alien programers. But the robots swapping genes out on the surface were not always averse to adventuring beyond the tribal limits, knew nothing and cared less about programers' rules, since nothing approaching intelligence or awareness was operative yet in what was unfolding, and proceeded to bring half-subfiles together haphazardly in ways that the aliens' rules didn't permit and which the Supervisors would never have imagined. Most of the offspring resulting from these experiments didn't work and were scrapped before leaving the factories; but the ones that

did radiated functionally outward in all directions to launch a whole new, qualitatively distinct phase of the evolutionary process.

The demands of the two sexual roles reinforced minor initial physical differences and brought about a gradual polarization of behavioral traits. Since a female in a “pregnant” condition suffered the loss of some measure of self-sufficiency for the duration, her chances of delivering (literally!) were improved considerably if her mate happened to be of a disposition to stay around for a while and provide for the two of them generally, thus helping to protect their joint genetic investment. Selection tended, therefore, to favor the genes of this kind of male, and by the same token those of the females who mated preferentially with them. As a consequence a female trait emerged of being “choosy” in this respect, and in response the males evolved various repertoires of rituals, displays, and demonstrations to improve their eligibility.

The population had thus come to exhibit genetic variability and recombination, competition, selection, and adaptation—all the essentials for continuing evolution. The form of life—for it was, wasn’t it?—was admittedly somewhat strange by terrestrial standards, with the individuals that it comprised sharing common, external reproductive, digestive, and immune systems instead of separate, internal ones...and of course there were no chains of complicated carbon chemistry figuring anywhere in the scheme of things....But then, after all, what is there apart from chauvinism to say it shouldn’t have been so?

I

Karl Zambendorf stood gazing down over Seventh Avenue from the window of his penthouse suite in the New York Hilton. He was a tall man in his early fifties, a little on the portly side but with an erect and imposing bearing, graying hair worn collar-length and flowing, bright, piercing eyes, and hawklike features rendered biblically patriarchal by a pointed beard that he bleached white for effect. Although the time was late in the morning, Zambendorf's breakfast tray on the side table beside the window had only recently been discarded, and he was still in his shirt-sleeves from sleeping in after his team's late-night return from its just completed Argentina tour.

A prominent Argentine news magazine had featured him as *THE AUSTRIAN MIRACLE-WORKER* on its cover for the previous week's issue, and the hostess of one of the major talk shows on Buenos Aires TV had introduced him as "Perhaps one of the most baffling men of the twenty-first century, the scientifically authenticated super-psychic . . ." Thus had Latin America greeted the man who was already a media sensation across the northern continent and Western Europe, and whose ability to read minds, foretell the future, influence distant events, and divine information inaccessible to the human senses had been proved, the public was assured, by repeated tests to be beyond the power of science to explain.

"Karl, I don't like it," Otto Abaquaan said from behind him. Zambendorf pursed his lips and whistled silently to himself while he waited for Abaquaan to continue. The exchange had become a ritual over the years they had worked together. Abaquaan would voice all the reasons why they shouldn't get involved and couldn't afford the risks, and Zambendorf

would explain all the reasons why they didn't have any choice. Abaquaan would then reconsider, and eventually, grudgingly, he would concede. Having disposed of the academic issues, they would then proceed somehow to resolve the crisis. It happened that way about once a week. Abaquaan went on, "We'd be out of our minds to get mixed up in it. The whole situation would involve too much of the wrong kind of exposure. We don't need risks like that."

Zambendorf turned away from the window and thrust out his chin. "It was reported as if it were our idea in the first place, and it received a lot of news coverage," he said. "We can't afford to be seen to back down now. On top of that, it would destroy our credibility not only with a lot of the public, but with GSEC...and GSEC can do us a lot of good, Otto. So the situation didn't work out as we expected. What's new? We're stuck with it, but we can handle it."

Otto Abaquaan, a handsomely lean and swarthy Armenian with black hair, a droopy mustache, and deep brown, liquid eyes, rubbed his nose with a knuckle while he considered the statement, then shook his head and sighed. "Why the hell did you have to get us into it, Karl? You said the GSEC Board would never take any notice of a turkey like Hendridge. That was why the rest of us agreed to go along with the crazy idea—because there would be all kinds of good publicity opportunities when GSEC turned it down...you said." He threw out his hands and sent an exasperated look up to the ceiling. "But now what have we got? Mars!...as if we didn't have better things to do than go fooling around on Mars for six months. Is there really no way we can get ourselves out of this?"

Zambendorf shrugged unconcernedly and showed his empty palms. "Certainly—we can call the whole thing off and admit to the world that we never really expected anybody to take us seriously...because that's how they'll see it. And as for better things to do, well, maybe we could spend the time in better ways and then, maybe not. Who knows? When was the last time a psychic operated from Mars? The situation might turn out to have opportunities we never thought of."

"Very philosophical," Abaquaan commented, with less than wild enthusiasm. It was all very well for Zambendorf to talk about grandiose schemes and opportunities; it would be Abaquaan and the rest of the team who did the legwork.

"'Philosophical,' my dear Otto, is the state of mind one reverts to when unable to change anything anyway. And that's the situation we are in. In short, we don't have a choice."

GSEC, General Space Enterprises Corporation, and NASO—the European-American military and civilian North Atlantic Space Organization that had grown from a merger of many of the former interests of NASA, ESA, and NATO—were funding expansion of one of the pilot bases on Mars to test ideas on the organization of extraterrestrial communities as a prelude to the construction of full-scale colonies. A GSEC director by the name of Baines Hendridge—a long-standing true believer in ESP and the “paranormal,” and a recent convert to the Zambendorf cult—had proposed sending Zambendorf with the mission in order to perform the first-ever tests of clairvoyance and psychic communication over interplanetary distances, and to conduct ESP experiments in conditions free from terrestrial “interference.” Zambendorf, confident that the GSEC Board would never go along with the idea, had reacted with a show of enthusiasm, partly because anything else would have failed the expectations of the faithful and partly to set the stage in advance for exploiting another “Scientists Back Off Zambendorf Challenge” story when the proposal was turned down. Baines Hendridge’s influence had turned out to be greater than he had calculated, however, and the Board’s acceptance of the proposal had left Zambendorf in a position that he could retreat from only at the cost of more public ignominy than his image could afford.

“I guess you’re right,” Abaquaan conceded after a short silence. “But I still don’t like the idea of getting mixed up with a NASO space mission.” He shook his head again, dubiously. “It’s not like dealing with the public. There are some good scientists in that outfit...in a different league from the assholes we’re used to handling. It’s risky.”

“Scientists are the easiest to fool.” That was one of Zambendorf’s favorite lines. “They think in straight, predictable, directable, and therefore misdirectable, lines. The only world they know is the one where everything has a logical explanation and things are what they appear to be. Children and conjurers—they terrify me. Scientists are no problem; against them I feel quite confident.”

Abaquaan smiled humorlessly. “Confidence is what you feel when you don’t really understand the situation.” He raised his arm to glance at his wristset.

Zambendorf was about to reply when the call tone sounded from the room’s comnet terminal. Abaquaan walked across to answer it. The screen came to life to show the smooth, clean-cut features of Drew West, Zambendorf’s business manager, calling from another suite farther along the hallway. “Those NBC people should be arriving downstairs anytime

now," West said. "You'd better be getting on down to the lobby." Clarissa Eidstadt, who handled the team's publicity affairs, had arranged for a short television interview to be taped that morning, for screening later in the day to mark Zambendorf's return to New York.

"I was just about on my way," Abaquaan said.

"Has Karl finished breakfast yet?" West asked. "Time's getting on. We've got a full schedule this afternoon."

"Yes," Abaquaan said. "He's right here. You want to talk to him?"

"Good morning, Drew," Zambendorf said cheerfully, stepping into the viewing angle as Abaquaan moved away. "Yes, I'm almost ready. How did you sleep?" He nodded across the room as Abaquaan let himself out the door.

"Hi, Karl. Fine, thanks," Drew West acknowledged. West had accepted the Mars situation matter-of-factly. Taking the team to the Andromeda galaxy would have been fine by him as long as there was money in it. "The NBC team's due here in about fifteen minutes, and there are a couple of things we need to go over before they show up. If you're through with breakfast, we'll come on down."

"Yes, why don't you do that," Zambendorf said. "We can talk while I finish dressing."

"See you in a couple of minutes, Karl."

Downstairs, at the hotel's side foyer in front of the ramp leading down to the parking levels, Otto Abaquaan pretended to study a New York street map while he memorized the details and registration number of the car that had arrived with the NBC van from which two men were unloading TV cameras and recording equipment. The smartly dressed, fair-haired woman who had driven the car was standing nearby, holding a briefcase and a sheaf of papers and talking with two colleagues—another woman and a man—who had come with her. Abaquaan guessed her to be the owner of the car and also the reporter who would be interviewing Zambendorf; but he needed to be sure.

NBC had neglected to advise them of the name of their reporter in advance, which was unusual and meant, possibly, that Zambendorf was being set up for something. An enquiry from Clarissa Eidstadt or from Drew West could no doubt have answered the question easily enough, but that would have wasted an opportunity of exactly the kind that Zambendorf and his team excelled at seizing. A gamble was involved, of course—Abaquaan might turn up nothing in the short time available—but one of

the advantages enjoyed by psychics was that negative results were always soon forgotten.

A hotel valet drove the car away toward the ramp, and the woman and her two companions walked through into the main lobby with Abaquaan following them inconspicuously at a short distance. One of the clerks at the front desk raised his eyebrows enquiringly. "Can I help you, ma'am?"

"Yes. My name is Marion Kearson, from NBC. I arranged with the assistant manager, Mr. Graves, to tape an interview in the lobby with Karl Zambendorf. Is Mr. Graves available, please?"

"One moment. I'll call his office."

That answered one question. Time was now crucial if the gamble was going to pay off. Abaquaan turned and walked quickly to the line of computer terminals at the rear of the lobby, sat in one of the booths, closed the door, and called a number in the Vehicles Registration Department of the State of New Jersey. Seconds later a man with pink, fleshy features and a balding head appeared on the screen. "Hello, Frank. Long time no see. How're things?" Abaquaan spoke quietly but urgently.

The face frowned for a moment, then recognized the caller. "Say, Harry! Things are good. How's the private-eye business?" Abaquaan never made public appearances and hence could command a long list of aliases.

"It's a living. Look, I need some information fast. The usual deal and terms. Any problem?"

Frank glanced about him with an instinctively furtive look. "Can I ask what it's to do with?"

"Nothing to lose any sleep over—a domestic thing. I need to find out who owns a car that's been seen in a couple of places. The usual suspicious husband routine."

Frank licked his lips, then nodded. "Okay. Got the number?"

"New Jersey registration KGY27-86753."

"Hang on a minute." Frank looked away and began operating another terminal offscreen. Abaquaan produced a pen and notebook, and then sat drumming his fingers on the side of the terminal while he waited. "Well?" he asked as Frank at last turned back to look out of the screen.

"It's registered under the name of a Mrs. Marion Kearson, 2578 Maple Drive, Orangeton," Frank said. "You want details of the car?"

"I've got a description. Has it been reregistered at the same address for very long, and is there any accident record?"

"Renewed successively for the last three years. No accidents."

"Any other vehicles registered at the same address? What information do you have on the drivers? . . ."

“Very well, we’ll be down in a few minutes,” Drew West said to the screen of the terminal in the living room of Zambendorf’s suite. He cut the call, turned, and announced, “That was Graves, the assistant manager. He’s with Clarissa downstairs. The NBC people are all set up and ready when we are.”

Dr. Osmond Periera, middle-aged, wispy haired, wearing a bow tie with a maroon jacket and smoking a Turkish cigarette through an ornate silver holder, resumed talking from the point where the call had interrupted. The introductions and author profiles in his best-selling pseudoscience books described him as Zambendorf’s discoverer and mentor; certainly he was among the staunchest of the disciples. “One of the most intriguing possibilities on Mars will be the opportunity to verify that extrasensory information does indeed propagate in a mode not constrained by any form of inverse-square law. Although experiments on Earth seem to suggest that the field strength does not diminish with distance at all, my feeling is that until now the scale has simply been too small to reveal significant differences. After all, even though we are venturing into a completely new phenomenological realm, we mustn’t allow ourselves to lose our sense of realism and scientific plausibility, must we?”

Zambendorf blinked and rubbed his nose with the back of his hand. Periera’s ability to invent the most outrageous explanations for Zambendorf’s feats and, moreover, to believe them himself totally uncritically and without reservation, constantly amazed even Zambendorf. “It’s an interesting thought,” he agreed. “Another possibility is that the remoteness of negative influences might well have a beneficial effect on repeatability.”

Periera brought a hand up to toy unconsciously with his bow while he considered the suggestion. It was intriguing—certainly something that hadn’t occurred to him before. “I could design tests to be conducted through the voyage for investigating any correlations with distance,” he mused. “That might be very informative.”

“Yes, why don’t you do that,” Zambendorf agreed.

Periera turned to Baines Hendridge, a dark-haired, clean-shaven man with a collegiate look about him, who was wearing his usual intense expression. Hendridge had come to the Hilton early that morning to convey personally the news of the GSEC Board’s decision concerning the Mars project, and to invite Zambendorf and colleagues to lunch with some of the other directors. “It is a well-established fact that manifestations of paranormal phenomena differ from observables at the more mundane, material level of existence in that their repeatability is affected by the presence of negative or critical influences,” Periera explained. “The

effect is predictable from elementary quantum mechanics, which proves the interdependence between the observer and the observed.” Hendridge nodded as he absorbed the revelation, and looked even more intense.

The call tone sounded from the room’s terminal. Drew West answered, and a second later Otto Abaquaan’s face appeared on the screen. “Is Thelma there?” Abaquaan enquired, signaling with an eyebrow that he had information to impart. “I need to talk to her.” He meant that he couldn’t talk openly with Periera and Hendridge there in the room.

Zambendorf looked across at Thelma, the team’s blonde, shapely, long-legged secretary, who was listening from the couch by the far wall. “Oh, it’s probably about some places I told him he ought to see while we’re in New York,” Thelma said. “He’s planning to spend the afternoon touring the city.”

“Yes, well, can you talk to him on the extension next door?” Zambendorf said. Thelma nodded, unfolded herself from the couch, and disappeared into the suite’s bedroom. Drew West switched the call and cleared the screen in the living room. Periera and Hendridge could be tedious at times, but their wealthy and influential social acquaintances made them worth putting up with.

“Where are we due to have lunch?” Zambendorf asked, looking at West.

“At that Austrian place you liked last time—Hoffmann’s on East Eighty-third,” West answered. “We can go straight on after the interview. I’ll have a cab waiting.”

“Is Osmond joining us?” Zambendorf asked.

Periera shook his head. “I have to attend a meeting this afternoon, thanks all the same. Next time, hopefully.”

“A pity,” Zambendorf murmured, and went on to talk for a minute or two about the food at Hoffman’s. Then, judging that they had given Abaquaan and Thelma enough time, he gave West a barely perceptible nod.

West glanced at his watch. “We’d better be moving.”

Joe Fellburg, the huge, six foot three, black ex-fighter and former military-intelligence agent who functioned as Zambendorf’s bodyguard and the team’s security man, straightened up from the wall just inside the doorway, opened the closet next to him, and took out Zambendorf’s overcoat.

Zambendorf shook his head as he put on his jacket. “No, I don’t think the weather’s quite cool enough for that, Joe. Perhaps my blue cape . . .” He looked around the room. “Oh yes, I left it next door. Excuse me for a moment.” He went through into the bedroom where Thelma was waiting

and allowed the door to swing shut behind. “What have you got?” he asked in a low voice.

“We’re in luck,” Thelma said, speaking quickly. “The reporter is a woman called Marion Kearson. She drives a 2018 Buick six-seat limo compact, hydrogen-burning, silver-gray, black trim, white wheels; small dent on driver’s side, front; registration is New Jersey, KGY27-86753. Kearson’s address is 2578 Maple Drive, Orangeton.” Zambendorf nodded rapidly as he concentrated on memorizing. Thelma went on, “Two other drivers with cars are registered at the same address: William Kearson, born August 4, 1978, five ten in height, brown hair, green eyes, one hundred eighty pounds—has to be her husband; drives a USM Gazelle, new this year; speeding fine last April, minor accident the previous fall; also a Thomas Kearson, born January 14, 2001, also five ten, fair hair, gray eyes, one twenty pounds; drives a 2013 Datsun—sounds like the son.”

Zambendorf repeated the information, and Thelma confirmed it. “Good,” Zambendorf said. “Will you and Otto be able to get anything on those GSEC people we’re having lunch with?”

“Maybe. Otto’s following up a couple of leads.”

“Call Drew or me at Hoffman’s after twelve-thirty with whatever you come up with.”

“Hoffmann’s, East Eighty-third, after twelve-thirty,” Thelma confirmed. “Okay. You’d better get moving.”

Ten minutes later, Zambendorf, his sky-blue silk cape flowing grandly over his black velvet jacket, swept into the lobby with Drew West, Joe Fellburg, Osmond Periera, and Baines Hendridge bringing up the rear. Clarissa Eidstadt, the team’s publicity matron, her short black hair cut off in a fringe across her forehead, her eyes framed by heavy-rimmed butterfly glasses, and her mouth accentuated by lipstick that was too heavy and too red, was waiting. She escorted Zambendorf over to Marion Kearson and the NBC crew while curious hotel guests began to gather in the background. “Who’s the reporter?” Zambendorf murmured. “The blonde in the pink coat?”

“Yes.”

“Do you know her name?”

“They didn’t tell me, and I didn’t ask them,” Clarissa muttered from the corner of her mouth.

Zambendorf nodded and smiled to himself. “Even better.”

And then a rapturous Marion Kearson was pushing a microphone close to Zambendorf’s face. “Well, here in the New York Hilton after

getting back from South America only last night is Karl Zambendorf, who I'm sure needs no further introduction. Welcome home."

"Thank you."

"And how was your tour?"

"Most enjoyable and extremely successful."

"I'm glad to hear that. In fact I'd like to come back to that subject in a moment. But first, before I do any more talking that might give things away, I wonder if I could persuade you to accept a small challenge for the benefit of the viewers." Kearson smiled impishly for a second. "Now, I can certainly vouch that we've never set eyes on one another before, and it might interest the viewers to know that back at NBC this morning, we didn't even know ourselves which reporter was coming on this assignment until five of us drew lots less than an hour ago." She paused to allow that to register, and then said, "Now, I wonder, Herr Zambendorf, what you can make of me, a complete stranger...apart from that I'm blonde, medium in height, and have a few freckles." She smiled into the camera at the joke, then turned back toward Zambendorf and waited curiously.

Zambendorf looked at her for a few seconds, then closed his eyes and appeared to concentrate his powers. The people watching around the lobby fell quiet. An expression of calm and serenity spread over his face, and he smiled faintly. When he opened his eyes again, his features remained tranquil but his gaze was piercing. "You are not from the city," he said slowly, still searching her face with his eyes. "I see water. Your home is across water, but not very far from here...to the west. It must be across the river, probably in New Jersey. Somewhere in the Newark area seems to suggest itself...with a name that suggests a fruit or a color...lemon, maybe, or orange . . ."

Kearson's eyes widened incredulously; the cameramen and engineers exchanged glances that said they were impressed. "This—this is absolutely amazing!" she stammered at the camera. "I swear this man and I have never met before this moment."

"There are two men very close to you," Zambendorf went on. "One of them is called William, William or Bill. He is the older of the two...your husband, unless I am mistaken. You do have a husband?" Kearson nodded numbly. "Mmm," Zambendorf said knowingly. "I am beginning to see him a little more clearly now—tallish, with brown hair...No, don't say anything, please. Just continue to concentrate, if you will, on the image of your husband. . . ."

2

"Hmph!" Walter Conlon, Director of the North Atlantic Space Organization's Planetary Exploration Program, scowled down at the sheet of paper lying on the desk in front of him, took in the objections and deletions copiously scattered in heavy red ink along with the initials of various people from the top levels of NASO's management hierarchy, and raised his face defiantly. It was a florid pink face with untamable bushy eyebrows, and made all the more vivid and pugnacious by his white, inch-cropped hair, short, stocky build, and somewhat bulbous nose. The senior scientists in PEP called him the GNASO Gnome. "I still don't see what's wrong with it," he repeated. "It says what needs to be said and it's factual. You wanted my input. Well, that's it. I'm not in the political cosmetics and don't-upset-the-freaks business. What else can I say?"

Allan Brady, the NASO North American Division's recently appointed broad-shouldered, fair-haired, and stylishly dressed public relations director, managed to suppress his exasperation with an effort as he sat in the chair opposite. He had been warned to expect problems in dealing with Conlon, and had thought that in going out of his way to solicit Conlon's opinion on the Korning UFO-flap press release, due out the next day, he would at least be making a start in the right direction. But the draft that had come back over the wire from Conlon's desk terminal within fifteen minutes of Brady's request had come close to causing heart attacks in the PR department. "But we can't go putting out things like this, Walt," Brady protested. "It's saying in effect that a U.S. senator is either a simpleton or a fraud. And the—"

“He is,” Conlon retorted. “Both. Scientifically he’s an illiterate, and if the truth were known, he’s got about as much interest in New Gospel Scientific Solidarity as I have in medieval Turkish poetry. It’s pure politics—bank-rolling, bandwagoning, ballyhoo, and baloney. You can quote me on that.”

Brady bunched his mouth for a second, and then raised his hand briefly in a conciliatory gesture. “Okay. That’s as may be, but we can’t make allegations like this in an official NASO statement. Ethics apart, we’re a government-driven operation, and we can’t afford to make enemies of people like Korning. And programs like PEP that are still primarily public funded—” He broke off and shook his head, giving Conlon a puzzled look. “But I don’t have to spell things like that out to you, Walt. You know how the system works. We just need something milder in tone and worded more tactfully. It doesn’t really even have to say anything.”

Conlon shook his head. “Not from me. The precedent has gone too far already and should never have been set in the first place. We can’t afford to let ourselves be seen acquiescing to things like this. If it goes on the way it is, we’ll end up with every kook and nut-cult in the country parading crusaders around Washington to decide what NASO’s business ought to be. I don’t want to get mixed up with them. I’ve got enough already with this Zambendorf nonsense on Mars. I don’t have the time; I don’t have the budget; I don’t have the people.”

The New Gospel Scientific Solidarity Church of Oregon had combined a complete retranslation of the Bible with the latest pseudoscientific writings on ancient astronauts to produce a new, “rationalized” doctrine in which all the revelations and mystical happenings of old were explained by visitations of benevolent aliens with supernatural powers, who had access to secrets that mankind would be privileged to share on completion of its “graduation.” The Second Coming was really a symbolic reference to the time when the Powers would be divulged, and contemporary UFO lore had been woven into the theme as tangible evidence that the Day of Return was imminent. The church claimed a following of millions, certainly commanded a monthly income of such, and had been campaigning vigorously for recognition of scientific legitimacy, which—the skeptics quickly noted—would qualify the movement for federal research funding. Orthodox scientists challenged to refute the sect’s claims found themselves in the usual no-win bind: If they responded at all they were proclaimed as having “acknowledged the importance” of the assertions, and if they didn’t they had “no answers.” The church supported an ardent lobby that was demanding, among other things, specific allocations

of NASO resources and funds for investigating UFO phenomena, and which had ostensibly succeeded in recruiting Senator Korning of Oregon as a spokesman and champion. And Korning had made the headlines often enough to ensure a response of some kind from NASO.

Brady sought to avoid leaving the meeting empty-handed. "Well, I guess PR can handle the Korning side of it, but there's another part of this draft that ridicules the whole UFO phenomenon and doesn't mince any words about it." He sat back and showed his palms imploringly. "Why go out of your way to upset lots of people who don't care about Korning and aren't interested in any religion, but who tend to be enthusiastic about the space program? NASO has some strong supporters among UFO buffs. Why antagonize them?"

"I'm in the science business, not the business of making myself popular by propping up popular myths," Conlon replied. "That means looking for explanations of facts. In that area there aren't any facts that need explaining. Period."

Brady looked across the desk in surprise. He wasn't a scientist, but he thought he did a pretty good job of keeping abreast by reading the popular literature. Something was going on in the skies that scientists couldn't account for, surely. And, Senator Korning's demands aside, Brady rather liked the idea of NASO's committing some serious effort to investigating the subject. It would be an exciting activity to be associated with and something interesting to tell his friends about. "But there has to be something out there," he objected. "I mean, I know ninety-five percent, or whatever, of what's reported is rubbish, but what about the other five? How can you explain that?"

Conlon snorted and massaged his forehead. How many times had he heard this before? "I can't, and neither can anyone else," he replied. "That's why they're what they call unidentified. That's what the word means. It's no more mysterious than car accidents. If you analyze the statistics, you'll find that some percent are due to drunks, some to carelessness, some to vehicle defects, and so on until you end up with five percent that nobody can pin down to any specific cause, and nobody ever will. The causes are unidentified—but that's no reason to say they have anything to do with aliens. It's the same with UFOs."

"That doesn't prove they don't have something to do with aliens though," Brady pointed out.

"I never said it did," Conlon replied. "I can't prove Santa Claus doesn't exist either. You can't prove a negative. Philosophically it's impossible."

"So, what are you saying?" Brady asked him.

Conlon tossed his hands up and shrugged. "I told you, I'm a scientist. Science doesn't have anything to say about it. It's not a scientific matter."

"How can you say that, Walt?" Brady sounded incredulous. "It's connected with space and spacecraft, alien life...How can you say it's not scientific?"

"The way a theory is constructed logically is what makes it scientific. Not its content. To be scientific, one of the conditions a theory has to meet is that it must be falsifiable—there must be some way you can test it to see if it's wrong. You can never prove, absolutely, that any theory is right. If you've got a theory that says some UFOs might be alien spacecraft, then I agree with you—some might. There's no way I could prove it false. That's all I could say, and that's all science says. It isn't a falsifiable theory. See what I mean?"

Brady was shaking his head reluctantly. "I can't buy that. There has to be some way for science to evaluate the subject, some way to test some part of it at least."

"There is. You invert the logic and put forward the theory that I do: No UFOs are alien spacecraft. Now, that theory can be falsified conclusively and very simply, but not by anything that's been offered as evidence so far."

"But what about the astronomers who've endorsed it publicly?" Brady persisted.

"What astronomers?"

"Oh, I can't recall their names offhand, but the ones you read about."

"Pah!" Conlon pulled a face. "You mean people like Jannitsky?"

"Well, he's one, yes."

"He used to be a scientist—shut up in a lab all day with nobody ever having heard of him. Now he's a celebrity. Some people will do anything for recognition. How many more like him can you find? You can count 'em on one hand, and in a country this size that's the least you'd expect. It doesn't mean a damn thing, Al. Less than two percent of professional American astronomers consider the subject even worth showing an interest in. That *does* mean something." After a few seconds of silence Conlon added, "Anyhow, asking astronomers for opinions on something like that is ridiculous. It's not a subject they're competent to comment on."

"What!" Brady exclaimed.

"What does an astronomer know about UFOs?" Conlon asked him.

Brady threw up his hands helplessly. "Well, how do I answer that? They're things in the sky, right? So, astronomers are supposed to know about things in the sky."

"What things in the sky?"

“What things?...The ones people say they see.”

“Exactly!” Conlon sat back and spread his hands in a show of satisfaction. “The things people *say they see*—All of the evidence boils down to eyewitness testimony. What does an astronomer know about evaluating testimony? How many times in his whole career does he have to try to learn whether a witness believes his own story, or decide whether the witness saw what he thought he saw, and whether it meant what he thought it meant? See my point? An astronomer’s the wrong guy. What you need is a good lawyer or police detective, except they’ve all got other things to do than worry about investigating UFOs.”

“But at least you know an astronomer’s not just any dummy,” Brady said.

“If that’s all you need, why not ask a heart surgeon or a poker player?” Conlon shook his head. “Being an expert in one field doesn’t make somebody’s opinions on subjects they’re not qualified to talk about worth more than anybody else’s. But all too often they think they’re infallible about anything and everything, and people believe them. You can see it everywhere—political economists who think they know more about fusion than nuclear engineers do; lawyers trying to define what’s alive and what isn’t; Nobel Prize-winning physicists being taken with simple conjuring tricks by so-called psychics. What does a physicist know about trickery and deception? Quarks and photons don’t tell lies. We have stage magicians and conjurers who are experts on deception and the art of fooling people—it’s their business. But who ever thinks of asking them in?”

Conlon’s tone had mellowed somewhat while he was talking, and Brady began to sense the message that he was trying to communicate: Whether Brady agreed with him or not about UFOs, Conlon and the people in the Planetary Exploration Program had better things to do than get involved in public relations concerning the likes of Senator Korning. That was Brady’s department. And the way Conlon was beginning to fidget in his chair said that he was getting near the end of the time he was prepared to spend trying to communicate it.

Brady spread his hands for a moment, then acknowledged with a nod and picked the paper up from Conlon’s desk as he rose to his feet. “Well, sorry to have taken your time,” he said. “We’ll take care of this. I just thought...maybe you’d appreciate the opportunity to contribute something.” He turned and walked over to the door.

“Al,” Conlon called out gruffly as Brady was about to leave the room. Brady stopped and looked back. “I realize that you meant it for the best.

Don't think you goofed. You've got your job to do—I know that. I guess from now on we understand each other, huh?"

Brady returned a faint smile. "I guess so," he replied. "I'll talk to you more about UFOs sometime."

"Do that."

"Take care." With that, Brady left.

Conlon sighed and sat staring down at the desk for a while with his chin propped on his knuckles. He wondered where it would all lead—pendulum-wavers being hired by oil companies to locate deposits; degrees in the "paranormal" being awarded by universities that should have known better; kook papers appearing in what used to be reputable scientific publications; politicians calling for a phase-down of the fusion program because they were convinced of the imminence of unlimited "cosmic energy" forever from pyramids, this at a time when the U.S. was having to import up-to-date tokamak reactors from Japan.

It was becoming all but impossible to find good engineers and technicians. Science, engineering, the true arts, and the professions—in fact just about anything that demanded hard work, patience, and diligence—were coming increasingly, it seemed, to be regarded among younger people as out of style, strictly for nerds. And as fast as they were trained and gained some experience, the ones who did manage to turn themselves into something worthwhile tended to leave for more lucrative and challenging opportunities overseas. The peoples of such places as Japan, China, India, and Africa had lived too close to reality for too long to be deluded by notions of "finding themselves," whatever that meant, or searches for mystical bliss. Having "found" the twenty-first century, they were rapidly abandoning their trust in the magic and superstitions that had solved nothing, and were busy erecting in their place the solid foundations of advanced, industrialized, high-technology civilization.

Conlon wasn't really sure where the degeneration had started either—in the latter half of the twentieth century, he suspected from what he had read. In earlier times, it appeared, the American system had worked fine as a means of stimulating productivity and creativity, and of raising the living standards of a whole nation for the first time in history. But habits of thought had failed to change as quickly as technology. When the spread of automation made it possible for virtually all of life's basic needs to be met with a fraction of the available capacity, new, artificial needs had to be created to keep the machines and the workforce busy.

With the Third World looking after its own, a major portion of the West's ingenuity and effort came to be expended on manufacturing

new appetites for trivia and consumer junk in its own domestic markets. Unfortunately, left to themselves, rational, educated, and discerning people tended not to make very good consumers; therefore no great attempt had been made to create a rational, educated, and discerning population. The mass media that could have been an instrument of genuine mass education had become instead an instrument of mass manipulation which delivered uncritical audiences to advertisers, and the school system had degenerated to little more than a preprocessing which cultivated the kind of banality that moved products. Nevertheless, despite the plethora of conspiracy theories in vogue among intellectuals, academics, and political activists, Conlon didn't believe that cabals of tycoons plotting secretly in boardrooms had planned it all; things had simply evolved, a little at a time, through the selective reinforcement of whatever happened to be good for profits.

The call tone from his desk terminal interrupted his thoughts, and Conlon tapped the unit's touchpad to accept. The face that appeared on the screen was of a man approaching fifty or so, with a high forehead left by a receding hairline, rugged features setting off a full beard that was starting to show streaks of gray, and bright, penetrating eyes that held an elusive, mirthful twinkle. It was Gerold Massey, a professor of cognitive psychology at the University of Maryland and one of Conlon's long-standing friends. Massey was also an accomplished stage magician who took a special interest in exposing fraudulent claims of paranormal powers. It was Conlon's familiarity with Massey's work that had prompted him to mention the subject to Allan Brady earlier.

"Hello, Walter," Massey said. "My computer tells me you've been calling. What gives?"

"Hi, Gerry. Yes, since yesterday. Where've you been?"

"Florida—Tallahassee."

"Oh? What's happening there?"

"Some research that Vernon and I are working on." Vernon Price was Massey's assistant, magical understudy, and general partner in crime. "We're presenting Vernon in an ESP routine to classes of students around the country. Some are told beforehand that it's just a conjuring act, and some are told it's the real thing. The object is to get a measure of how strong preconceived beliefs are in influencing people's interpretations of what they see, and how much difference what they're told at the rational level makes." Massey's specialty was the study of why people believed what they believed.

"Sounds interesting."

"It is, but I doubt if you were calling to ask me about it," Massey replied.

"True. Look, I'd like to get together with you and talk sometime soon. It's about a NASO project we've got coming up, but I really don't want to go into the details right now. How are you fixed?"

"Sounds like you might be trying to offer me a job," Massey commented. While he spoke he looked down to operate the terminal, and then back up again but slightly to the side, apparently reading something in an inset area of his screen. "Pretty busy just about every day for a while," he murmured. "Any reason why we couldn't make it an evening? How would you like to come round here again? We could make it a dinner, and maybe go to that Italian place you like."

"Sounds good," Conlon said.

"How about tomorrow?"

"Even better. Oh—and I'll be bringing Pat Whittaker with me. He's involved with it too."

"Why not? I haven't seen him for a while." Patrick Whittaker was a production executive with Global Communications Networking, a major provider of TV and dataservices. Massey's features contorted into a bemused frown. "Say, what the hell is this all about, Walt? Are you sure you don't want to give me a clue even?"

Conlon grinned crookedly. "Get Vernon to tell you via ESP. No, really, I'd rather leave that side until tomorrow. We'll see you at about what, six-thirty?"

"That'll do fine. Okay, we'll see you then."

Conlon returned his attention to his desk and allowed his eyes to stray over it while he reviewed what he planned to do next. His gaze came to rest on the folder from the Project Executive Review Committee containing the final appraisal, specification of goals, and departmental assignments for the Mars project. Lying next to it was a copy of that day's *Washington Post*, folded by someone in the department and marked at an item reporting Karl Zambendorf's return to the U.S.A. The hue of Conlon's face deepened, and his mouth compressed itself into a tight downturn.

"Psychics!" he muttered to himself sourly.

3

"Look, we have to do a TV show that's going out live at seven-thirty," Drew West shouted through the partition at the cab driver. "There's an extra twenty if we make it on time."

Grumbling under his breath, the cabbie backed up to within inches of the car behind, U-turned across the on-coming traffic stream amid blares of horns and squeals of brakes, and exited off Varick into an alley to negotiate a way round the perpetual traffic snarl at the Manhattan end of the Holland Tunnel. On one side the streets were blacked out for seven blocks beneath the immense, ugly canopy of aluminum panels and steel-lattice supports that made up the ill-fated Lower West Side Solar Power Demonstration Project, which was supposed to have proved the feasibility of supplying city electricity from solar. Before the harebrained scheme was abandoned, it had cost the city \$200 million to teach politicians what power engineers had known all along. But it kept the streets dry in rainy weather and a thriving antique, art, and flea market had come into being in the covered arcades created below.

"I'm certain there's more to it, Drew," Zambendorf resumed as West sat back in his seat. "Lang and Snell were only being polite to avoid embarrassing Hendridge. They were classical corporation men—hard-nosed, pragmatic, no-nonsense—and not a grain of imagination between the two of them. They weren't at lunch because of interest in paranormal powers. They were there on GSEC business."

West nodded. "I agree. And what's more my gut-feeling tells me they're representative of official thinking inside GSEC's Board, which says that GSEC isn't interested in psychic experiments on Mars. That's

just for public consumption. But if that's so, what's the real reason they want to send us along, Karl?"

The cab slowed to a halt at the intersection with Broadway. From the seat on Zambendorf's other side, Joe Fellburg kept a watchful eye on a group of unkempt youths lounging outside a corner store smoking something that was being passed round. "Maybe someone in the corporation somewhere decided it's time that space arrived for the people," he offered.

Zambendorf frowned and looked at West. West shrugged. "What do you mean?" Zambendorf asked, looking at Fellburg.

Fellburg relaxed as the cab began moving again, turned his head from the window, and opened a pair of black ham-fists. "Well, things like space and space bases have always been for astronauts, scientists, NASO people—people like that. They've never been for just anybody. Now, if GSEC is making plans to put up space colonies someday, somebody somewhere is gonna have to do some work to get that image changed. So maybe they figure that getting someone like Karl in on this Mars thing might do them a lotta good."

"Mmm...you mean by sending along a popular figure that everyone can relate to . . ." Drew West nodded and looked intrigued. "It makes sense... Yes, if you could establish that kind of connection in people's minds... And that could also explain why Lang, and Snell, and probably most of the other GSEC directors might go along with Hendridge even if they think the guy's crazy."

"That's just what I'm telling you," Fellburg said. "What would they care whether Karl's for real or not?"

Zambendorf stroked his beard thoughtfully while he considered the suggestion. Then he nodded, slowly at first, and then more rapidly. Finally he laughed. "In that case we have nothing to worry about. If GSEC has no serious interest in experiments, then nobody will be trying very hard to expose anything. In fact, when you think about it, good publicity for us would be in their interests too. So the whole thing could turn out to be to our advantage after all. I told you that Otto worries too much. The whole thing will be a piece of cake, you'll see—a piece of cake."

Hymn-singing evangelists with placards warning against meddling in *DARK POWERS* and denouncing Zambendorf as a *CONSORT OF SATAN* occupied a section of the sidewalk opposite NBC's television studio when the cab rounded the corner into Fulton Street. Drew West spotted Clarissa Eidstadt waiting at the curb in front of the crowd outside the entrance, and directed the cabbie to stop next to her. She climbed in by

the driver and waved for him to keep moving. “The freaks are out in force tonight,” she said, turning her head to speak through the partition. “The stage door’s under siege, but I’ve got another one opened for us round the side.” Then to the driver, “Make a right here...Drop us off by those guys talking to the two cops.”

The cab halted, and they climbed out. While West was paying the driver, Clarissa slipped Zambendorf a folded piece of paper, which he tucked into his inside pocket. Written on the paper were notes of things that Otto Abaquaan and Thelma had observed and overheard during the last hour or so, such as oddments glimpsed inside a purse opened in the course of purchasing tickets at the box office, or snatches of conversation overheard in the ladies’ room and the cocktail lounge. Upon such seeming trivia were many wondrous miracles built.

The party was whisked inside, and Zambendorf excused himself to visit the washroom in order to study the notes Clarissa had given him. He rejoined the others in a staff lounge five minutes later and was introduced to Ed Jackson, the genial host of the popular “Ed Jackson Show,” on which Zambendorf would be appearing as the principal guest. Jackson exuberated and enthused for a while in the standard manner of a media-synthesized Mr. Personality, and then left to begin the show with the first of the evening’s warm-up guests. Zambendorf and his companions drank coffee, talked with the production staff, and watched the show on the green-room monitor. A makeup girl came in and banished a couple of shiny spots on Zambendorf’s nose and forehead. Zambendorf checked with the stage manager that a couple of props would be available on the set as previously requested.

At last it was time to descend backstage, and Zambendorf found himself waiting in the wings with an assistant while Ed Jackson went through a verbal-buildup with the audience to fill an advertising break on air-time. Then Jackson was half turning and extending an arm expectantly while the orchestra’s theme crescendoed to a trumpet fanfare; the director’s finger stabbed its cue from the control booth, and Zambendorf was walking forward into the glare of spotlights to be greeted by thunderous applause and a wave of excitement.

Jackson beamed as Zambendorf turned from side to side to acknowledge the applause before sitting down behind the low, glass-topped table, and then took his own seat and assumed a casual posture. “Karl, welcome to the show. I guess we’re all wondering what kinds of surprises you might have in store for us tonight.” Jackson paused to allow the audience and viewers a moment to attune themselves to his approach. “Were you, ah...

were you surprised at the small demonstration outside in the street here when you arrived earlier?"

"Oh, I'm never surprised by anything." Zambendorf grinned and looked out at the audience expectantly. After a second or two he was rewarded with laughter.

Jackson smiled in a way that said he ought to have known better. "Seriously though, Karl, we bear some rather scary warnings from certain sections of the religious community from time to time concerning your abilities and the ways in which you make use of them—that you're dabbling in realms that no good can come out of, tapping into powers that we were never meant to know about, and that kind of thing...What's your answer to fears like these? Are they groundless? Or is there something to them that people ought to know about?"

Zambendorf frowned for a second. This was always a delicate question. Anything that sounded like a concession or an admission would not serve his interests, but nothing was to be gained by being offensive. "I suspect it's a case of our not seeing the same thing when we look at the subject," he replied. "Their perceptions result from interpreting reality from a religious perspective, obviously, and must necessarily be influenced by traditional religious notions and preconceptions...not all of which, I have to say, are reconcilable with today's views of the universe and our role in it." He made a half-apologetic shrug and spread his hands briefly. "My interpretation is from the scientific perspective. In other words, what I see is simply a new domain of phenomena that lie beyond the present horizons of scientific inquiry. But that doesn't make them 'forbidden,' or 'unknowable,' any more than electricity or radio were in the Middle Ages. They are simply 'mysterious'—mysteries which cannot adequately be explained within the contemporary framework of knowledge, but which are explainable nevertheless in principle, and will be explained in the fullness of time."

"Something we should treat with respect, then, possibly, but not something we need be frightened of," Jackson concluded in an appropriately sober tone.

"The things that frighten people are mostly products of their own minds," Zambendorf replied. "What we are dealing with here opens up entirely new insights to the mind. With improved understanding of themselves, people will be able to comprehend and control the processes by which they manufacture their own fears. The ultimate fear of most people is the fear of being afraid."

“Maybe there isn’t any real conflict at all,” Jackson commented. “Isn’t it possible that religious mystics through the ages have experienced intuitively the same processes that people like you are learning to apply at the conscious level, scientifically...in the same way, for example, that magnetism was applied to making compasses long before anyone knew what it was? At the bottom line, you could all be saying the same thing.”

“That is exactly how I see it,” Zambendorf agreed. “The medieval Church persecuted Galileo, but religion today has come to terms with the more orthodox sciences. We can learn a lot from that precedent.” Zambendorf was being quite sincere; the implication was ambiguous, and what he meant was the exact opposite of what most people chose to assume.

Jackson sensed that the audience had had its fill of profound thoughts and heavy philosophy for the evening, and decided to move on. “I understand you’re just back from a long trip, Karl—to Argentina. How was it? Is there as much activity and enthusiasm in Latin America as here?”

“Oh, the visit was a success. We all enjoyed it a lot and met some very interesting people. Yes, they are starting to get involved in some serious work there now, especially at one of the universities we visited—But speaking of long trips, have you heard about our latest one, which has just been confirmed?”

“No, tell us.”

Zambendorf glanced out at the audience and then across at the live camera. “We’re going to Mars as part of an official NASO mission. Not many people know how much research NASO has been doing in the field of the paranormal, especially in connection with remote perception and information transfer.” That was true. Not many people did know; and the ones who did knew that NASO hadn’t been doing any. “We’ve been talking with NASO for some time now via one of the larger space-engineering corporations, and the decision has been made to conduct comprehensive experiments to assess the effects of the extraterrestrial environment on parapsychological phenomena. . . .”

Zambendorf went on to outline the Mars project, at the same time managing to imply a somewhat exaggerated role for the team without actually saying anything too specific. Jackson listened intently, nodded at the right times, and injected appropriate responses, but he kept his eye on the auditorium for the first signs of restlessness. “It sounds fascinating, Karl,” he said when he judged the strain to have increased to just short of breaking point. “We wish you all the success in the world, or maybe I should say out of the world—this one, anyhow—and hope to see you back here on the show again, maybe, after it’s all over.”

“Thank you. I hope so,” Zambendorf replied.

Jackson swiveled to face Zambendorf directly, leaned back to cross one foot over the opposite knee, and allowed his hands to fall from his chin to the armrests of his chair, his change of posture signaling the change of mood and subject. He grinned mischievously, in a way that said this was the part everyone knew had to come eventually. Zambendorf maintained a composed expression. “I have an object in my pocket,” Jackson confided. “It’s an item of lost property that was handed in at the theater office earlier this evening, probably belonging to somebody in the audience here. Somebody thought Zambendorf might be able to tell us something about it.” He turned away for a second and made a palms-up gesture of candor toward the cameras and the audience. “Honestly, folks, this is absolutely genuine. I swear it wasn’t set up or anything like that.” He turned back to resume talking to Zambendorf. “Well, we thought it was a good idea, and as I said, I have the object with me right here in my pocket. Can you say anything about it...or maybe about the owner?...I have to say I don’t know a lot about this kind of thing, whether this would be considered too tough an assignment, or what, but—” He broke off as he saw the distant look creeping over Zambendorf’s face. The auditorium became very still.

“It’s vague,” Zambendorf murmured after a pause. “But I think I might be able to connect to it. . . .” His voice became sharper for a moment. “If anyone here has lost something, please don’t say anything. We’ll see what we can do.” He fell silent again, and then said to Jackson, “You can help me, Ed. Put your hand inside your pocket, if you would, and touch the object with your fingers.” Jackson complied. Zambendorf went on, “Trace its outline and visualize its image...Concentrate harder...Yes, that’s better . . . Ah! I’m getting something clearer now...It’s something made of leather, brown leather...A man’s wallet, I think. Yes, I’m sure of it. Am I right?”

Jackson shook his head in amazement, drew a light tan wallet from his pocket; and held it high for view. “If the owner is here, don’t say anything, remember,” he reminded the audience, raising his voice to be heard above the gasps of amazement and the burst of applause that greeted the performance. “There might be more yet.” He looked back at Zambendorf with a new respect. When he spoke again, he kept his voice low and solemn, presumably to avoid disturbing the psychic atmosphere. “How about the owner, Karl? Do you see anything there?”

Zambendorf dabbed his forehead and returned his handkerchief to his pocket. Then he took the wallet, held it between the palms of his hands, and stared down at it. “Yes, the owner is here,” he announced. He looked

out to address the anonymous owner in the audience. "Concentrate hard, please, and try to project an image of yourself into my mind. When contact is established, you will feel a mild tingling sensation in your skull, but that's normal." A hush fell once more. People closed their eyes and reached out with their minds to grasp the tenuous currents of strange forces flowing around them. Then Zambendorf said, "I see you...dark, lean in build, and wearing light blue. You are not alone here. Two people very close to you are with you...family members. And you are far from home...visiting this city, I think. You are from a long way south of here." He looked back at Jackson. "That should do."

Jackson swiveled to speak to the audience. "You can reveal yourself now if you're here. Mr. Dark, Lean, and Blue," he called out. "Is the owner of this wallet here? If so, would he kindly stand up and identify himself, please?"

Everywhere, heads swung this way and that, and turned to scan the back of the theater. Then, slowly and self-consciously, a man rose to his feet about halfway back near one of the aisles. He was lean in build, Hispanic in appearance, with jet-black hair and a clipped mustache, and was wearing a light-blue suit. He seemed bewildered and stood rubbing the top of his head with his fingers, looking unsure of what he was supposed to do. A boy in the seat beside him tugged at his sleeve, and a dark-skinned woman in the next seat beyond was saying something and gesticulating in the direction of the stage. "Would you come forward and identify your property, please, sir," Jackson said. The man nodded numbly and began picking his way along the row toward the aisle while applause erupted all around, lasting until he had made his way to the front of the auditorium. The noise abated as Jackson came forward to the edge of the stage and inspected the wallet's contents. "This is yours?" he said, looking down. The man nodded. "What's the name inside here?" Jackson enquired.

"The name is Miguel," Zambendorf supplied from where he was still sitting.

"He's right!" Jackson made an appealing gesture as if inviting the audience to share his awe, looked back at Zambendorf, and then stooped to hand the wallet to Miguel. "Where are you from, Miguel?" he asked.

Miguel found his voice at last. "From Mexico...on vacation with my wife and son...Yes, this is mine, Mr. Jackson. Thank you." He cast a final nervous glance at Zambendorf and began walking hastily back up the aisle.

"Happy birthday, Miguel," Zambendorf called after him.

Miguel stopped, turned round, and looked puzzled.

“Isn’t it your birthday?” Jackson asked. Miguel shook his head.

“Next week,” Zambendorf explained. Miguel gulped visibly and fled the remaining distance back to his seat.

“Well, how about that!” Jackson exclaimed, and stood with his arms outstretched in appeal while the house responded with sustained applause and shouts of approval. Behind Jackson, Zambendorf sipped from his water glass and allowed the atmosphere to reinforce itself. He could also have revealed that the unknown benefactor who had turned the wallet in after picking Miguel’s pocket, and whose suggestion it had been to make a challenge out of it, had also been of swarthy complexion—Armenian, in fact—but somehow that would have spoiled things.

Now the mood of the audience was right. Its appetite had been whetted, and it wanted more. Zambendorf rose and moved forward as if to get closer to them, and Jackson moved away instinctively to become a spectator; it had become Zambendorf’s show. Zambendorf raised his arms; the audience became quiet again, but this time tense and expectant. “I have said many times that what I do is not some kind of magic,” he told them, his voice rich and resonant in the hall. “It is anyone’s to possess. I will show you...At this moment I am sending the impression of a color out into your minds—all of you—a common color. Open your minds... Can you see it?” He looked up at the camera that was live at that moment. “Distance is no barrier. You people watching from your homes, you can join us in this. Focus on the concept of color. Exclude everything else from your thoughts. What do you see?” He turned his head from side to side, waited, and then exclaimed, “Yellow! It was yellow! How many of you got it?” At once a quarter or more of the people in the audience raised their hands.

“Now a number!” Zambendorf told them. His face was radiating excitement. “A number between one and fifty, with its digits both odd but different, such as fifteen...but eleven wouldn’t do because both its digits are the same. Yes? Now...think! Feel it!” He closed his eyes, brought his fists up to his temples, held the pose for perhaps five seconds, then looked around once more and announced, “Thirty-seven!” About a third of the hands went up this time, which from the chorus of “ooh”s and “ah”s was enough to impress significantly more people than before. “Possibly I confused some of you there,” Zambendorf said. “I was going to try for thirty-five, but at the last moment I changed my mind and decided on—” He stopped as over half the remaining hands went up to add to the others, but it looked as if every hand in the house was waving eagerly. “Oh, some of you did get that, apparently. I should try to be more precise.”

But nobody seemed to care very much about his having been sloppy as the conviction strengthened itself in more and more of those present that what they were taking part in was an extremely unusual and immensely significant event. Suddenly all of life's problems and frustrations could be resolved effortlessly by the simple formula of wishing them away. Anyone could comprehend the secret; anyone could command the power. The inescapable became more palatable; the unattainable became trivial. There was no need to feel alone or defenseless. The Master would guide them. They belonged.

"Who is Alice?" Zambendorf demanded. Several Alices responded. "From a city far to the west . . . on the coast," he specified. One of the Alices was from Los Angeles. Zambendorf saw a wedding imminent, involving somebody in her immediate family—her daughter. Alice confirmed that her daughter was due to be married the following month. "You've been thinking about her a lot," Zambendorf said. "That's why you came through so easily. Her name's Nancy, isn't it?"

"Yes...Yes, it is." Gasps of astonishment.

"I see the ocean. Is her fiancé a sailor?"

"In the navy...on submarines."

"Involved with engineering?"

"No, navigation...but yes, I guess that does involve a lot of engineering these days."

"Exactly. Thank you." Loud applause.

Zambendorf went on to supply details of a successful business deal closed that morning by a clothing salesman from Brooklyn, to divine after some hesitation the phone number and occupation of a redheaded young woman from Boston, and to supply correctly the score of a football game in which two boys in the second row had played the previous Tuesday. "You can do it too!" he insisted in a voice that boomed to the rear of the house without aid of a microphone. "I'll show you."

He advanced to the edge of the stage and stared straight ahead while behind him Jackson wrote numbers on a flip-chart. "Concentrate on the first one," Zambendorf told everybody. "All together. Now try and send it...Think it...That's better...A three! I see three. Now the next . . ." He got seven right out of eight. "You see!" he shouted exultantly. "You're good—very good. Let's try something more difficult."

He picked up the black velvet bag provided by prior arrangement and had Jackson and a couple of people near the front verify that it was opaque and without holes. Then he turned his back and allowed Jackson to secure the bag over his head as a blindfold. Then, following Zambendorf's

instructions, Jackson pointed silently to select a woman in the audience, and the woman chose an item from among the things she had with her and held it high for everyone to see. It happened to be a green pen. She then pointed to another member of the audience—a man sitting a half dozen or so rows farther back—to repeat the procedure. The man held up a watch with a silver bracelet, and so it went. Jackson noted the objects on the flip-chart. When he had listed five, he covered the chart, turned the stand around to face the wall for good measure, and told Zambendorf he was free to remove the blindfold.

“Remember, I’m relying on every one of you,” Zambendorf said. “You must all help if we’re going to make this a success. Now, the first of the objects—recall it and picture it in your minds. Now send it to me. . . .” He frowned, concentrated, and pounded his brow. The audience redoubled its efforts. Viewers at home joined in. “Writing...something to do with writing,” Zambendorf said at last. “A pen! Now the color. The color is...green! I get green. Were you sending green?” By the time he got the fifth item correctly, the audience was wild.

For his finale Zambendorf produced his other prop—a solid-looking metal rod about two feet long and well over an inch thick. Jackson couldn’t bend it when challenged, and neither could three men from near the front of the audience. “But the power of the mind overcomes matter,” Zambendorf declared. He gave Jackson the rod to hold, and touched it lightly in the center with his fingers. “This will require all of us,” Zambendorf called out. “All of us here, and everybody at home. I want you all to help me concentrate on bending. Think it—bending. Say it—bending! *Bending!*” He looked at Jackson and nodded in time with the rhythm as he repeated the word.

Jackson caught on quickly and began motioning with a hand like a conductor urging an orchestra. “Bending! Bending! *Bending! Bending!* . . .” he recited, his voice growing louder and more insistent.

Gradually, the audience took up the chant. “Bending! Bending! *Bending! Bending!*” Zambendorf turned fully toward them and threw his arms wide in exhortation. His eyes gleamed in the spotlights; his teeth shone white. “*Bending! Bending! Bending!*” He laid a hand on the rod. Jackson gasped and stared down wide-eyed as the metal bowed. Some of the audience were staring ashen-faced. Zambendorf took the rod and held it high over his head in one hand, gazing up at it triumphantly while it continued to bend in full view while a thousand voices in unison raised themselves to a frenzy. Women had started screaming. A number of people fled along the aisles toward the exits. A bearded, hawk-faced man with an open

Bible in one hand climbed onto the stage, pointed an accusing finger at Zambendorf, and began reading something unintelligible amid the pandemonium before security guards grabbed him and hustled him away.

A frantic viewer in Delaware was trying to get past a jammed NBC switchboard to report that her aluminum chair had buckled at the precise moment that Zambendorf commanded the rod to bend. Another's lighting circuits all blew at the same instant. A hen coop in Wyoming was struck by lightning. A washing machine caught fire in Alabama. Eight people had heart attacks. A clock began running backward in California. Two expectant mothers had had spontaneous abortions. A nuclear reactor shut itself down in Tennessee.

In the control room on a higher level behind the stage area, one of the video engineers on duty stared incredulously at the scenes on the main panel monitor screens. "My God!" he muttered to the technician munching a tuna sandwich in the chair next to him. "If he told them to give him all their money, rip off their clothes, and follow him to China, you know something, Chet—they'd do it."

Chet continued eating and considered the statement. "Or to Mars, maybe," he replied after a long, thoughtful silence.

4

Early the following evening, Conlon and Whittaker arrived at Gerold Massey's house, situated at the end of a leafy cul-de-sac on the north side of Georgetown. Although lofty, spacious, and solidly built, it was an untidy and in some ways inelegant heap of a house—a composition of after-thoughts, with walls and gables projecting in all directions, roofs meeting at strange angles, and a preposterous chateau-style turret adorning the upper part of one corner. The interior was a warren of interconnecting rooms and passages, with cubbyholes and stairways in unexpected places, old-fashioned sash windows, and lots of wood carving and paneling. The part of the cellars not dedicated to storing the junk that Massey had been accumulating through life contained a workshop-lab which he used mainly for developing psychological testing equipment and perfecting new magic props, while the floors above included, in addition to the usual living space, an overflowing library, a computer room, and accommodations for his regular flow of short-term guests, who varied from students temporarily out on the street to fellow magicians and visiting professors from abroad.

Contrary to widespread belief, including that prevalent among many scientists, scientific qualifications were largely irrelevant to assessing reliably the claims of alleged miracle-workers, mind readers, psychics, and the like. Scientists could be fooled by deliberate trickery or unconscious self-deception as easily as the average layman and, sometimes, more easily if competence and prestige earned in other fields were allowed to produce delusions of infallibility. The world of natural phenomena that was properly the object of the scientist's expertise could be baffling at times, but it never resorted to outright dishonesty and always yielded rational

answers in the end. Theorems were provable; calculations, checkable; observations, repeatable; and assumptions, verifiable. Things in the natural world meant what they said. But that was seldom the case in the world of human affairs, where illogic operated freely and deception was the norm. To catch a thief one should set a thief; the adage tells; and to catch a conjuror, set a conjuror. If the skills of the physicist and the neurochemist were of little help in comprehending the deviousness of human irrationality and the art of the professional deceiver, those of the psychologist and the magician were; Gerold Massey happened to be both, and he was engaged regularly by government and private organizations as a consultant on and investigator of matters allegedly supernatural and paranormal.

That was how Massey and Walter Conlon had come to know each other. In 2015 a “psychic” had claimed to travel over vast distances through the “astral plane” and described the surface features of Uranus and Neptune in vivid detail. When French probes finally arrived and sent back pictures contradicting his accounts, his excuse had been that he had perhaps underestimated his powers and projected himself to planets in some entirely different star system! The year 2017 had seen another flap about bodies from a crashed alien spacecraft—this time hidden in a secret base in Nevada. A year later some officials in Washington were giving serious consideration to an offer from a California-based management recruiting firm to screen NASO flight-crew applicants on the basis of a crank numerology system involving computerized personal “psychometric aptitudinal configurator charts.” And, inevitably, there was always someone pushing for NASO to involve itself in the perennial UFO controversy. In fact Massey supposed that Conlon wanted to talk about Senator Koring and the whatever-it-was Church of Oregon. But Massey was wrong. Conlon had involved him in some strange situations over the years and occasionally sent him off to some out-of-the-way places. But never anything like this. Conlon had never before wanted him to leave Earth itself, and travel with a NASO mission across interplanetary space.

“The idea is to expand the pilot base at Meridiani Sinus into a mixed, experimental community of about five hundred people to provide data on extraterrestrial living for future space-colony design,” Conlon explained from a leather armchair standing before a grandfather clock built to look like an Egyptian sarcophagus. “One area that needs a lot more study is how such conditions will affect the behavior and emotions of sizeable groups of people, what kinds of stress are likely to be experienced, and so on, which means there’ll be a number of psychologists going along. Officially you’d be filling one of those slots, with Vernon there to assist.

Unofficially some of us in NASO want somebody knowledgeable to get the real story on this Zambendorf stunt...and maybe even blow the whole thing out of the water if the opportunity presents itself. It's gone too far, Gerry. We've got better things to do. If we don't put a stop to this nonsense now, the next thing will be astrologers being hired to fix launch dates."

Massey returned a puzzled frown from across the room, where he was sitting sprawled untidily across a couch with one foot propped on a piece of a partly dismantled trick-cabinet that he had been meaning to move for weeks. "You have to do something," he agreed. "But what I don't understand is why it's happening at all. What on earth possessed NASO to go along with this Zambendorf thing in the first place?"

Conlon sighed and threw up his hands. "That was how it came down the line to me...there's been a lot of high-level politics between GSEC and NASO that I'm not in on. Anyhow, most of the funding's coming from GSEC. Defense takes first place for government money; social experiments on Mars don't even get on the list. With lawyers and accountants taking over the government, we've had to depend more on the private sector to keep a planetary program going at all. Naturally, that gives outfits like GSEC a say in the planning and policymaking."

"Maybe the best thing would be for you to opt out," Vernon Price said from an elaborately ornamented stool, his back to the church organ that Massey had picked up in a yard-sale six years previously while driving through Mississippi. He was in his late twenties, lithe, with dark, wavy hair and alert, bright brown eyes. "I mean, if the mission's being turned into a circus, the wisest thing might be to keep PEP out of it."

Conlon shook his head. "I hear what you're saying, Vernon, but we can't do that. The scientific opportunities are too valuable to miss. And besides that, the mission will involve the first operational use of the *Orion*, which we have to retain our interest in for the sake of planetary projects now on the drawing boards. If we dropped out, it would leave the Pentagon as the only government department with an interest in further development of the *Orion*. We can't afford to let that happen."

The European-American scientific base near the Martian equator at Meridiani Sinus had begun as a purely American attempt to rival the Soviet plan for establishing a permanently manned facility at Solis Lacus. However, the U.S. program had bogged down over problems with the development of the inertial fusion drive considered essential to supporting human life reliably over interplanetary distances. A crash program conducted cooperatively with the European NATO nations and Japan

had eventually provided a prototype system that did work, and Meridiani Sinus had followed as a joint U.S.-European venture two years behind both the original American schedule and the Soviets; shortly afterward, the space agencies on both sides of the Atlantic were merged to form NASO. Intensified work from then on had made up for some of the lost time and produced a series of test designs for thermonuclear-propelled space-vehicles, culminating in the *Orion*—the first vessel built specifically for carrying heavy payloads and large numbers of passengers between planets. Completed in orbit in 2019, the *Orion* had been shuttling back and forth on trials between Earth and Moon for over half a year, six months to a year ahead of a similar project which the Japanese were pursuing independently. The Soviets, who were concentrating on large platforms in Earth orbit, had nothing to compare with either of the large interplanetary ships, so at least the US. had some compensation for the embarrassment incurred by its earlier fiasco.

Massey turned his head to look across at Whittaker, tall and tanned, with dark, crinkly hair just beginning to show gray at the temples, who was sitting in the armchair opposite Conlon. With the comfortable income that he commanded independent of his position at Global Communications Networking, he seemed to regard his job as much as an intellectual exercise and a challenge in problem-solving as anything else, and had always struck Massey as something of an enigma. “So how do you fit into this, Pat?” Massey asked. “Is this where you get your chance to give us some real news for a change?”

Whittaker’s eyes twinkled briefly as he nodded. “It sounds as if it could be, doesn’t it.”

Things that were different were supposed to constitute news, Whittaker had often said. But miracle-workers, disaster-imminent scares, nonexistent Soviet superweapons, economic ruin always just around the corner, and all the other media-manufactured myths that kept millions glued to screens in order to sell products were no longer different. Therefore they weren’t news. But turning a contrived sensation round and boomeranging it by reporting the intended deception straight for once—*that* could be very different.

“Well, if Pat did manage to pull something spectacular out of it, it might persuade other GSECs to stay out of NASO’s business in future,” Vernon remarked.

“That’s what I want,” Conlon said, nodding emphatically.

Whittaker spread his hands and made a face. “Well, I mean...using a NASO mission to try and legitimize this kind of stuff? Do you think the directors at GSEC believe in it?”

Massey shrugged. “How do I know? Nothing would surprise me these days, Pat. I hope you guys at GCN don’t rely too much on them for advertising revenues though.”

“Aw, what the hell?” Whittaker said. “Someone’s got to do something to put a stop to this before it goes any further.”

There wasn’t a lot more to be said. Conlon looked from Vernon to Massey and asked simply, “Well?”

They looked at each other, but neither of them had pressing questions. “What do you think?” Massey asked at last. Vernon raised his eyebrows, hunched his shoulders, and opened his arms in a way that said there could be only one answer. Massey nodded slowly, tugged at his beard and thought to himself for a few moments longer, and then looked back at Conlon. “I guess we’ll buy it, Walt. You’ve just got yourself a deal.”

Conlon looked pleased. “Good. The *Orion’s* scheduled for liftout from Earth orbit three months from now. I’ll have NASO’s confirmation of the offer, including remuneration, wired through within forty-eight hours. We’ll have the other details and specifics worked out for you both in about a week. There’ll be a training and familiarization course at the NASO Personnel Development Center in North Carolina for all the non-NASO people going on the mission, so leave the last three weeks or so clear when you make your arrangements for leave of absence from the university, et cetera.”

Whittaker sat up in his chair, rubbed his hands together, and picked up his empty wineglass from the side table next to him. “I think this calls for a refill,” he said. “Same again for everyone?”

“I’ll get them,” Massey said.

Whittaker watched as Massey collected the glasses and took them over to the open liquor cabinet. “Did you see Zambendorf on the Ed Jackson Show last night?”

“Uh-huh,” Massey grunted over his shoulder.

“Quite a performance,” Whittaker said.

“Oh, Zambendorf’s a good showman—let’s not make any mistake about that,” Massey answered. “And if he’d only be content to come up with a straight act, he’d make a first-rate stage magician. But I can’t go along with this business about claiming to be genuine. A lot of people are taken in by it and spend too much of their time and money looking for

fairylane when they could be getting something worthwhile out of life. It's a tragic squandering of human potential and talent."

"The thing with the color and the number was pretty straightforward, I thought," Whittaker said.

"Simple probability matches, weren't they?" Conlon said, looking at Vernon. Vernon nodded. Whittaker looked at him inquiringly.

"With an audience that size, enough people would think of yellow to make the demonstration look impressive—or any other color you care to name, come to that," Vernon explained. "Zambendorf didn't have to be thinking of anything. The audience only assumed he was because he said he was."

"How about the number?" Whittaker asked. "That couldn't have worked the same way, surely. Thirty-something...thirty-seven, wasn't it? I'd have thought the odds would be much worse there."

"So would most people," Vernon said. "But think back to what Zambendorf said—a number below fifty with both digits odd but different. If you work it out, there aren't really that many possibilities. And do you remember him giving fifteen and eleven as examples? That narrows it down further because for some reason hardly anyone will pick them after they've been mentioned. Of the numbers that are left, about thirty-five percent of a crowd will go for thirty-seven every time. No one knows why. It's just a predictable behavior pattern among people. Psychologists call it a 'population stereotype.' And it also happens to be a fact that around twenty-three percent will choose thirty-five. So all that business about changing his mind at the last moment was baloney to widen his total catch to over half. And it worked—it looked as if every hand in the place were up."

"Mmm...interesting," Whittaker said.

"Do you remember Zambendorf telling the woman about her daughter's being about to get married to a navigation officer, in the navy, on submarines?" Massey asked, turning away from the cabinet and coming back with two refilled glasses.

"Yes," Whittaker said. "That was impressive. Now how could he have known all that?"

"He didn't," Massey replied simply. Whittaker looked puzzled. Massey handed the drinks to Whittaker and Conlon, then returned to the cabinet to pour his own and Vernon's. "Your memory's playing tricks, Pat. We've got a recording of the whole show that I'll replay if you like. Zambendorf only said Alice's daughter was about to get married to a sailor. He never said navy, he never said submarines, and he never mentioned navigation."

Alice did—but people don't remember it that way. In fact Zambendorf guessed that the guy was in engineering, which was reasonable but wrong as it happened, and Alice corrected him. But not only that—she turned the miss into a semihit by manufacturing an excuse for him. Did you notice? I'd bet that practically everyone who saw it has forgotten that failure; but if he'd guessed right, they'd all have remembered. People see and remember what they want to see and remember. The Zambendorfs in the world get a lot of mileage out of that fact."

Vernon nodded. "So the only information he actually originated himself was that the daughter was marrying a sailor."

"So how could he have known even that much?" Whittaker asked.

Massey shrugged. "There are all kinds of ways he might have done it. For instance, anyone hanging around the box office before the show could have overheard plenty of that kind of talk."

Whittaker looked astonished. "What, seriously? You're kidding! I mean, it's too—too simple. A child could have thought of that."

"Easily," Massey agreed. "But most adults wouldn't. Believe me, Pat, that one's been worked for years. The simpler the answer, the less obvious it is to most people. They always look for the most complicated explanations imaginable." Massey handed a glass to Vernon and began moving past Whittaker to return to the couch.

"Was the wallet planted?" Conlon asked. "Martha says it had to be, but I'm not so sure. Somehow I don't think Ed Jackson would have gone out of his way to lie so brazenly."

Massey was about to reply when his arm knocked against the side table beside Whittaker, causing a drop of wine to spill from the glass that Massey was carrying. "Oh, I'm sorry, Pat! Here, I'll take care of it," he exclaimed, setting down the glass and dabbing lightly at the collar of Whittaker's jacket. "Only a spot—it won't show." Then Massey picked up his drink again, sat down on the couch, and looked over at Conlon. "Sorry, Walt. What were you saying?"

"I said I wasn't convinced the wallet was planted."

"Oh yes, I think I agree with you," Massey said. "The Mexican guy looked genuine enough to me. That part didn't come across as an act at all."

Whittaker looked from Massey to Vernon, who was grinning oddly, and back at Massey: "So...how did he know it was a wallet, and how did he know who owned it?" he asked.

"You really want to know?" Massey asked lightly.

“Well, sure.” Whittaker looked puzzled. “What’s so funny? Am I missing the obvious or something? If I am, all I can say is that a hell of a lot of other people must have missed it too.”

There was silence for a few seconds. Then Vernon said, “Remember, we’re pretty sure that Zambendorf had a confederate or two around the place. The information he came up with was all the kind of stuff you’d expect to find inside a wallet, plus he knew what the owner of the wallet looked like. Now think about that.”

Whittaker thought hard for a while, then looked over at Conlon. Conlon shrugged. Whittaker looked back at Massey, shook his head, and showed his empty palms. “Okay, I give in. How’d he know?”

Massey laughed, produced Whittaker’s wallet from his armpit, and tossed it back to him. “That tell you enough? And there wasn’t anything on your jacket, by the way, so don’t worry about it.”

“You’re kidding!” Whittaker protested. “You mean somebody stole it and then turned it in?”

“See what I mean, Pat—too simple to think of, isn’t it?”

“And the things the people showed while he had the bag over his head?”

Massey brushed an imaginary speck of dust from his eyebrow, rubbed the tip of his nose with a thumb, drew a finger lightly from left to right along his upper lip, and then pinched the lobe of his right ear. “A confederate giving coded signals from somewhere in the front rows...probably an Armenian character called Abaquaan, who’s always close by Zambendorf somewhere, but you never see him.”

“And the metal bar?”

“Standard magician’s equipment. If you saw it done at a school variety show without all the hype, you’d applaud politely and say it was a clever trick. In fact that’s one aspect of some research that Vernon and I are into at the moment. It’s amazing—if people have made their minds up that what they’re seeing is genuine paranormal power in action, they’ll stick to their conviction even after they’ve agreed that any good stage magician can produce exactly the same effect. No amount of appealing to reason will change them. In fact—”

At that moment the organ behind Vernon blasted out a series of rising and falling notes, and a hollow, synthetic computer voice announced, “Visitor at the portals.”

Massey glanced at the sarcophagus clock. “That’ll be the cab. Drink up. We can have a couple more at the bar before we sit down to eat.”

They left the house five minutes later and stopped for a moment below the porch to pick out the pinpoint of Mars in the evening sky. “It makes

you think,” Conlon said absently. “Sometime back in the eighteen hundreds, they thought it was miraculous when the first clipper ship made it from Boston round the Horn to San Francisco in under a hundred days. And here we are a century and a half later, going to Mars and back in the same time.”

“*Limits to Growth*,” Vernon murmured.

“Huh?” Whittaker said.

“Oh, it’s the title of some dumb book I read from the seventies,” Vernon replied.

“I see no limits,” Conlon said, scanning the stars. “Where do I look?”

“In people’s minds,” Massey answered.

A thoughtful look came over Vernon’s face as he followed Conlon’s gaze upward. “I guess there have to be other intelligences out there somewhere,” he mused. “Do you think they have kooks too, or is it a uniquely human thing?”

Massey snorted as they resumed walking toward the waiting cab. “Nothing out there could be dumber than some people,” he said.