

# The New Reality

by Charles L. Harness

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Published by Seattle Book Company, [www.seattlebook.com](http://www.seattlebook.com).

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## Chapter I Raid for the Censor

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Prentiss crawled into the car, drew the extension connector from his concealed throat mike from its clip in his right sleeve, and plugged it into the ignition key socket.

In a moment he said curtly: "Get me the Censor."

The seconds passed as he heard the click of forming circuits. Then: "E speaking."

"Prentiss, honey."

"Call me 'E,' Prentiss. What news?"

"I've met five classes under Professor Luce. He has a private lab. Doesn't confide in his graduate students. Evidently conducting secret experiments in comparative psychology. Rats and such. Nothing overtly censurable."

"I see. What are your plans?"

"I'll have his lab searched tonight. If nothing turns up, I'll recommend a drop."

"I'd prefer that you search the lab yourself."

A. Prentiss Rogers concealed his surprise and annoyance. "Very well."

His ear button clicked a dismissal.

With puzzled irritation he snapped the plug from the dash socket, started the car, and eased it down the drive into the boulevard bordering the university.

Didn't she realize that he was a busy Field Director with a couple of hundred men under him fully capable of making a routine night search? Undoubtedly she knew just that, but nevertheless was requiring that he do it himself. Why?

And why had she assigned Professor Luce to him personally, squandering so many of his precious hours, when half a dozen of his bright young physical philosophers could have handled it? Nevertheless E, from behind the august anonymity of her solitary initial, had been adamant. He'd never been able to argue with such cool beauty, anyway.

A mile away he turned into a garage on a deserted side street and drew up alongside a Cadillac.

Crush sprang out of the big car and silently held the rear door open for him.

Prentiss got in. "We have a job tonight."

His aide hesitated a fraction of a second before slamming the door behind him. Prentiss knew that the squat, asthmatic little man was surprised and delighted.

As for Crush, he'd never got it through his head that the control of human knowledge was a grim and hateful business, not a kind of cruel lark.

"Very good, sir," wheezed Crush, climbing in behind the wheel. "Shall I reserve a sleeping room at the Bureau for the evening?"

"Can't afford to sleep," grumbled Prentiss. "Desk so high now I can't see over it. Take a nap yourself, if you want to."

"Yes, sir. If I feel the need of it, sir."

The ontologist shot a bitter glance at the back of the man's head. No, Crush wouldn't sleep, but not because worry would keep him awake. A holdover from the days when all a Censor man had was a sleepless curiosity and a pocket Geiger, Crush was serenely untroubled by the dangerous and unfathomable implications of philosophical nucleonics. For Crush, "ontology" was just another definition in the dictionary: "The science of reality."

The little aide could never grasp the idea that unless a sane world-wide pattern of nucleonic investigation were followed, some one in Australia-- or next door-- might one day throw a switch and alter the shape of that reality. That's what made Crush so valuable; he just didn't know enough to be afraid.

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Prentiss had clipped the hairs from his nostrils and so far had breathed complete silence. But now, as that cavernous face was turned toward where he lay stomach-to-earth in the sheltering darkness, his lungs convulsed in an audible gasp.

The mild, polite, somewhat abstracted academic features of Professor Luce were transformed. The face beyond the lab window was now flushed with blood, the thin lips were drawn back in soundless demoniac amusement, the sunken black eyes were dancing with red pinpoint of flame.

By brute will the ontologist forced his attention back to the rat.

Four times in the past few minutes he had watched the animal run down an inclined chute until it reached a fork, choose one fork, receive what must be a nerve-shattering electric shock, and then be replaced in the chute-beginning for the next run. No matter which alternative fork was chosen, the animal always had been shocked into convulsions.

On this fifth run the rat, despite needling blasts of compressed air from the chute walls, was slowing down. Just before it reached the fork it stopped completely.

The air jets struck at it again, and little cones of up-ended gray fur danced on its rump and flanks.

It gradually ceased to tremble; its respiration dropped to normal. It seemed to Prentiss that its eyes were shut.

The air jets lashed out again. It gave no notice, but just lay there, quiescent, in a near coma.

As he peered into the window, Prentiss saw the tall man walk languidly over to the little animal and run a long hooklike forefinger over its back. No reaction. The professor then said something, evidently in a soft slurred voice, for Prentiss had difficulty in reading his lips.

"-- and both alternatives are wrong for you, but you *must* do something, you hesitate, don't you, little one? You slow down and you are lost. You are no longer a rat. Do you know what the universe would be like if a *photon* should slow down? You don't? Have you ever taken a bite out of a balloon, little friend? Just the tiniest possible bite?"

Prentiss cursed. The professor had turned and was walking toward the cages with the animal, and although he was apparently still talking, his lips were no longer visible.

After re-latching the cage door the professor walked toward the lab entrance, glanced carefully around the room, and then, as he was reaching for the light switch, looked toward Prentiss' window.

For a moment the investigator was convinced that by some nameless power the professor was looking

into the darkness, straight into his eyes.

He exhaled slowly. It was preposterous.

The room was plunged in darkness.

The investigator blinked and closed his eyes. He wouldn't really have to worry until he heard the lab door opening on the opposite side of the little building.

The door didn't open. Prentiss squinted into the darkness of the room.

Where the professor's head had been were now two mysterious tiny red flames, like candles.

Something must be reflecting from the professor's corneas. But the room was dark; there was no light to be reflected. The flame-eyes continued their illusion of studying him.

The hair was crawling on the man's neck when the twin lights finally vanished and he heard the sound of the lab door opening.

As the slow heavy tread died away down the flagstones to the street, Prentiss gulped in a huge lungful of the chill night air and rubbed his sweating face against his sleeve.

What had got into him? He was acting like the greenest cub. He was glad that Crush had to man the television relay in the Cadillac and couldn't see him.

He got to his hands and knees and crept silently toward the darkened window. It was a simple sliding sash, and a few seconds sufficed to drill through the glass and insert a hook around the sash lock. The rats began a nervous squeaking as he lowered himself into the darkness of the basement room.

His ear-receptor sounded. "The prof is coming back!" wheezed Crush's tinny voice.

Prentiss said something under his breath, but did not pause in drawing his infra-red scanner from his pocket.

He touched his fingers to his throat-mike. "Signal when he reaches the bend in the walk," he hissed. "And be sure you get this on the visor tape."

The apparatus got his first attention.

The investigator had memorized its position perfectly. Approaching as closely in the darkness as he dared, he "panned" the scanner over some very interesting apparatus that he had noticed on the table.

Then he turned to the books on the desk, regretting that he wouldn't have time to record more than a few pages.

"He's at the bend," warned Crush.

"Okay," mumbled Prentiss, running sensitive fingers over the book bindings. He selected one, opened it at random, and ran the scanner over the invisible pages. "Is this coming through?" he demanded.

"Chief, *he's at the door!*"

Prentiss had to push back the volume without scanning any more of it. He had just relocked the sash when the lab door swung open.

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## Chapter II

### Clues from History

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A couple of hours later the ontologist bid a cynical good-morning to his receptionist and secretaries and stepped into his private office. He dropped with tired thoughtfulness into his swivel chair and pulled out the infrared negatives that Crush had prepared in the Cadillac darkroom. The page from the old German diary was particularly intriguing. He laboriously translated it once more:

As I got deeper into the manuscript, my mouth grew dry, and my heart began to pound. This, I knew, was a contribution the like of which my family has not seen since Copernicus, Roger Bacon, or perhaps even Aristotle. It seemed incredible that this silent little man, who had never been outside of Königsberg, should hold the key to the universe-- the Critique of Pure Reason, he calls it. And I doubt that even he

realizes the ultimate portent of his teaching, for he says we cannot know the real shape or nature of anything, that is, the Thing-in-Itself, the Ding-an-sich, or *noumenon*. He holds that this is the ultimate unknowable, reserved to the gods. He doesn't suspect that, century by century, mankind is nearing this final realization of the final things. Even this brilliant man would probably say that the Earth was round in 600 BC, even as it is today. But *I* know it was flat, then-- as truly as it is truly round today. What has changed? Not the Thing-in-Itself we call the Earth. No, it is the mind of man that has changed. But in his preposterous blindness, he mistakes what is really his own mental quickening for a broadened application of science and more precise methods of investigation--

Prentiss smiled.

Luce was undoubtedly a collector of philosophic incunabula. Odd hobby, but that's all it could be-- a hobby. Obviously the Earth had never been flat, and in fact hadn't changed shape substantially in the last couple of billion years. Certainly any notions as to the flatness of the Earth held by primitives of a few thousand years ago or even by contemporaries of Kant were due to their ignorance rather than to accurate observation, and a man of Luce's erudition could only be amused by them.

Again Prentiss found himself smiling with the tolerance of a man standing on the shoulders of twenty centuries of science. The primitives, of course, did the best they could. They just didn't know. They worked with childish premises and infantile instruments.

His brows creased. To assume they had used childish premises was begging the question. On the other hand, was it really worth a second thought? All he could hope to discover would be a few instances of how inferior apparatus coupled perhaps with unsophisticated deductions had oversimplified the world of the ancients. Still, anything that interested the strange Dr. Luce automatically interested him, Prentiss, until the case was closed.

He dictated into the scriptor:

"Memorandum to Geodetic Section. Rush a paragraph history of ideas concerning shape of Earth. Prentiss."

Duty done, he promptly forgot it and turned to the heavy accumulation of reports on his desk.

A quarter of an hour later the scriptor rang and began typing an incoming message.

To the Director. Re your request for brief history of Earth's shape. Chaldeans and Babylonians (per clay tablets from library of Assurbanipal), Egyptians (per Ahmes papyrus, ca. 2700 BC), Cretans (per inscriptions in royal library at Knossos, ca. 1300 BC), Chinese (per Chou Kung ms., ca. 1100 BC), Phoenicians (per fragments at Tyre, ca. 900 BC), Hebrews (per unknown Biblical historian, ca. 850 BC), and early Greeks (per map of widely-traveled geographer Hecataeus, 51; BC) assumed Earth to be flat disc. But from the 5th century BC forward Earth's sphericity universally recognized....

There were a few more lines, winding up with the work done on corrections for flattening at the poles, but Prentiss had already lost interest. The report threw no light on Luce's hobby and was devoid of ontological implications.

He tossed the script into the waste basket and returned to the reports before him.

A few minutes later he twisted uneasily in his chair, eyed the scriptor in annoyance, then forced himself back to his work.

No use.

Deriding himself for an idiot, he growled at the machine:

"Memorandum to Geodetic. Re your memo history Earth's shape. How do you account for change to belief in sphericity after Hecataeus? Rush. Prentiss."

The seconds ticked by.

He drummed on his desk impatiently, then got up and began pacing the floor.

When the scriptor rang, he bounded back and leaned over his desk, watching the words being typed out.

Late Greeks based spherical shape on observation that mast of approaching ship appeared first, then prow. Not known why similar observation not made by earlier seafaring peoples....

Prentiss rubbed his cheek in perplexity. What was he fishing for?

He thrust the half-born conjecture that the Earth really had once been flat into his mental recesses.

Well, then how about the heavens? Surely there was no record of their having changed during man's brief lifetime.

He'd try one more shot and quit.

"Memo to Astronomy Division. Rush paragraph on early vs. modern sun size and distance."

A few minutes later he was reading the reply:

Skipping Plato, whose data are believed baseless (he measured sun's distance at only twice that of moon), we come to earliest recognized "authority." Ptolemy (Almagest, ca. 140 AD, measured sun radius as 5.5 that of Earth (as against 109 actual); measured sun distance at 1210 (23,000 actual). Fairly accurate measurements date only from 17th and 18th centuries....

He'd read all that somewhere. The difference was easily explained by their primitive instruments. It was insane to keep this up.

But it was too late.

"Memo to Astronomy. Were erroneous Ptolemaic measurements due to lack of precision instruments?"

Soon he had his reply:

To Director: Source of Ptolemy's errors in solar measurement not clearly understood. Used astrolabe precise to 10 seconds and clepsydra water clock incorporating Hero's improvements. With same instruments, and using modern value of pi, Ptolemy measured moon radius (0.29 earth radius vs. 0.273 actual) and distance (59 Earth radii vs. 60 1/3 actual). Hence instruments reasonably precise. And note that Copernicus, using quasi-modern instruments and technique, "confirmed" Ptolemaic figure of sun's distance at 1200 Earth radii. No explanation known for glaring error.

Unless, suggested something within Prentiss' mind, the sun were closer and much different before the 17th century, when Newton was telling the world where and how big the sun *ought* to be. But *that* solution was too absurd for further consideration. He would sooner assume his complete insanity.

Puzzled, the ontologist gnawed his lower lip and stared at the message in the scriptor.

In his abstraction he found himself peering at the symbol "pi" in the scriptor message. *There*, at least, was something that had always been the same, and would endure for all time. He reached over to knock out his pipe in the big circular ash tray by the scriptor and paused in the middle of the second tap. From his desk he fished a tape measure and stretched it across the tray, Ten inches. And then around the circumference. Thirty-one and a half inches. Good enough, considering. It was a result any curious schoolboy could get.

He turned to the scriptor again.

Memo to Math Section. Rush paragraph history on value of pi. Prentiss."

He didn't have to wait long.

To Director. Re history "pi." Babylonians used value of 3.00. Aristotle made fairly accurate physical and theoretical evaluations. Archimedes first to arrive at modern value, using theory of limits....

There was more, but it was lost on Prentiss. It was inconceivable, of course, that pi had grown during the two millennia that separated the Babylonians from Archimedes. And yet, it was exasperating. Why hadn't they done any better than 3.00? Any child with a piece of string could have demonstrated their error. Countless generations of wise, careful Chaldean astronomers, measuring time and star positions with such incredible accuracy, all coming to grief with a piece of string and pi. It didn't make sense. And certainly pi hadn't grown, any more than the Babylonian 360-day year had grown into the modern 365-day year. It had always been the same, he told himself. The primitives hadn't measured accurately, that was all. That *had* to be the explanation.

He hoped.

He sat down at his desk again, stared a moment at his memo pad, and wrote:

Check history of gravity-- acceleration. Believe Aristotle unable detect acceleration. Galileo used same instruments, including same crude water clock, and found it. Why?... Any reported transits of Vulcan since 1914, when Einstein explained eccentricity of Mercury orbit by relativity instead of by hypothetical sunward planet? ...How could Oliver Lodge detect an ether-drift and Michelson not? Conceivable that Lorentz contraction not a physical fact before Michelson experiment? ...How many

chemical elements were predicted before discovered?

He tapped absently on the pad a few times, then rang for a research assistant. He'd barely have time to explain what he wanted before he had to meet his class under Luce.

And he still wasn't sure where the rats fitted in.

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### Chapter III Imperiled World

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Curtly Professor Luce brought his address to a close.

"Well, gentlemen," he said, "I guess we'll have to continue this at our next lecture. We seem to have run over a little; class dismissed. Oh, Mr. Prentiss!"

The investigator looked up in genuine surprise. "Yes, sir?" The thin gun in his shoulder holster suddenly felt satisfyingly fat.

He realized that the crucial moment was near, that he would know before he left the campus whether this strange man was a harmless physicist, devoted to his life-work and his queer hobby, or whether he was an incarnate danger to mankind. The professor was acting out of turn, and it was an unexpected break.

"Mr. Prentiss," continued Luce from the lecture platform, "may I see you in my office a moment before you leave?"

Prentiss said, "Certainly." As the group broke up he followed the gaunt scientist through the door that led to Luce's little office behind the lecture room.

At the doorway he hesitated almost imperceptibly; Luce saw it and bowed sardonically. "After you, sir!"

Then the tall man indicated a chair near his desk. "Sit down, Mr. Prentiss."

For a long moment the seated men studied each other.

Finally the professor spoke. "About fifteen years ago a brilliant young man named Rogers wrote a doctoral dissertation at the University of Vienna on what he called... 'Involuntary Conformation of Incoming Sensoria to Apperception Mass.' "

Prentiss began fishing for his pipe. "Indeed?"

"One copy of the dissertation was sent to the Scholarship Society that was financing his studies. All others were seized by the International Bureau of the Censor, and accordingly a demand was made on the Scholarship Society for its copy. But it couldn't be found."

Prentiss was concentrating on lighting his pipe. He wondered if the faint trembling of the match flame was visible.

The professor turned to his desk, opened the top drawer, and pulled out a slim brochure bound in black leather.

The investigator coughed out a cloud of smoke.

The professor did not seem to notice, but opened the front cover and began reading: "-- a dissertation in partial fulfillment of the requirements for the degree of Doctor of Philosophy at the University of Vienna. A. P. Rogers, Vienna, 1957." The man closed the book and studied it thoughtfully. "Adam Prentiss Rogers-- the owner of a brain whose like is seen not once in a century. He exposed the gods-- then vanished."

Prentiss suppressed a shiver as he met those sunken, implacable eye-caverns.

The cat-and-mouse was over. In a way, he was relieved.

"Why did you vanish then, Mr. Prentiss-Rogers?" demanded Luce. "And why do you now reappear?"

The investigator blew a cloud of smoke toward the low ceiling. "To prevent people like you from

introducing sensoria that *can't* be conformed to our present apperception mass. To keep reality as is. That answers both questions, I think."

The other man smiled. It was not a good thing to see. "Have you succeeded?"

"I don't know. So far, I suppose."

The gaunt man shrugged his shoulders. "You ignore tomorrow, then. I think you have failed, but I can't be sure, of course, until I actually perform the experiment that will create novel sensoria." He leaned forward. "I'll come to the point, Mr. Prentiss-Rogers. Next to yourself-- and possibly excepting the Censor-- I know more about the mathematical approach to reality than anyone else in the world. I may even know things about it that you don't. On other phases of it I'm weak-- because I developed your results on the basis of mere logic rather than insight. And logic, we know, is applicable only within indeterminate limits. But in developing a practical device-- an actual machine-- for the wholesale alteration of incoming sensoria, I'm enormously ahead of you. You saw my apparatus last night, Mr. Prentiss-Rogers? Oh, come, don't be coy."

Prentiss drew deeply on his pipe. "I saw it."

"Did you understand it?"

"No. It wasn't all there. At least, the apparatus on the table was incomplete. There's more to it than a Nicol prism and a goniometer."

"Ah, you are clever! Yes, I was wise in not permitting you to remain very long-- no longer than necessary to whet your curiosity. Look, then! I offer you a partnership. Check my data and apparatus; in return you may be present when I run the experiment. We will attain enlightenment together. We will know all things. We will be gods!"

"And what about two billion other human beings?" said Prentiss, pressing softly at his shoulder holster.

The professor smiled faintly. "Their lunacy-- assuming they continue to exist at all-- may become slightly more pronounced, of course. But why worry about them?" The wolf-lip curled further. "Don't expect me to believe this aura of altruism, Mr. Prentiss-Rogers. I think you're afraid to face what lies behind our so-called 'reality.'"

"At least I'm a coward in a good cause." He stood up. "Have you any more to say?"

He knew that he was just going through the motions. Luce must have realized he had laid himself open to arrest half a dozen times in as many minutes. The bare possession of the missing copy of the dissertation, the frank admission of plans to experiment with reality, and his attempted bribery of a high Censor official. And yet, the man's very bearing denied the possibility of being cut off in mid-career.

Luce's cheeks fluffed out in a brief sigh. "I'm sorry you can't be intelligent about this, Mr. Prentiss-Rogers. Yet, the time will come, you know, when you must make up your mind to go-- *through*, shall we say? In fact, we may have to depend to a considerable degree on one another's companionship-- out there. Even gods have to pass the time of day occasionally, and I have a suspicion that you and I are going to be quite chummy. So let us not part in enmity."

Prentiss' hand slid beneath his coat lapel and drew out the snub-nosed automatic. He had a grim foreboding that it was futile, and that the professor was laughing silently at him, but he had no choice.

"You are under arrest," he said unemotionally. "Come with me."

The other shrugged his shoulders, then something like a laugh, soundless in its mockery, surged up in his throat. "Certainly, Mr. Prentiss-Rogers."

He arose.

The room was plunged into instant blackness.

Prentiss fired three times, lighting up the gaunt chuckling form at each flash.

"Save your fire, Mr. Prentiss-Rogers. Lead doesn't get far in an intense diamagnetic screen. Study the magnetic damper on a lab balance the next time you're in the Censor Building!"

Somewhere a door slammed.

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Several hours later Prentiss was eyeing his aide with ill-concealed distaste. Crush knew that he had

been summoned by E to confer on the implications of Luce's escape, and that Crush was secretly sympathizing with him. Prentiss couldn't endure sympathy. He'd prefer that the asthmatic little man tell him how stupid he'd been.

"What do you want?" he growled.

"Sir," gasped Crush apologetically, "I have a report on that gadget you scanned in Luce's lab."

Prentiss was instantly mollified, but suppressed any show of interest. "What about it?"

"In essence, sir," wheezed Crush, "it's just a Nicol prism mounted on a goniometer. According to a routine check it was ground by an obscure optician who was nine years on the job, and he spent nearly all of that time on just one face of the prism. What do you make of that, sir?"

"Nothing, yet. What took him so long?"

"Grinding an absolutely flat edge, sir, so he says."

"Odd. That would mean a boundary composed exclusively of molecules of the same crystal layer, something that hasn't been attempted since the Palomar reflector."

"Yes, sir. And then there's the goniometer mount with just one number on the dial-- forty-five°."

"Obviously," said Prentiss, "the Nicol is to be used only at a forty-five° angle to the incoming light. Hence it's probably extremely important-- why, I don't know-- that the angle be *precisely* forty-five°. That would require a perfectly flat surface, too, of course. I suppose you're going to tell me that the goniometric gearing is set up very accurately."

Suddenly Prentiss realized that Crush was looking at him in mingled suspicion and admiration.

"Well?" demanded the ontologist irritably. "Just what is the adjusting mechanism? Surely not geometrical? Too crude. Optical, perhaps?"

Crush gasped into his handkerchief. "Yes, sir. The prism is rotated very slowly into a tiny beam of light. Part of the beam is reflected and part refracted. At exactly forty-five° it seems, by Jordan's law, that exactly half is reflected and half refracted. The two beams are picked up in a photocell relay that stops the rotating mechanism as soon as the luminosities of the beams are exactly equal."

Prentiss tugged nervously at his ear. It was puzzling. Just what was Luce going to do with such an exquisitely-ground Nicol? At this moment he would have given ten years of his life for an inkling to the supplementary apparatus that went along with the Nicol. It would be something optical, certainly, tied in somehow with neurotic rats. What was it Luce had said the other night in the lab? Something about slowing down a photon. And then what was supposed to happen to the universe? Something like taking a tiny bite out of a balloon, Luce had said.

And how did it all interlock with certain impossibly, though syllogistically necessary conclusions that flowed from his recent research into the history of human knowledge?

He wasn't sure. But he was sure that Luce was on the verge of using this mysterious apparatus to change the perceptible universe, on a scale so vast that humanity was going to get lost in the shuffle. He'd have to convince E of that.

If he couldn't, he'd seek out Luce himself and kill him with his bare hands, and decide on reasons for it afterward.

He was guiding himself for the time being by pure insight, but he'd better be organized when he confronted E.

Crush was speaking. "Shall we go, sir? Your secretary says the jet is waiting."

\* \* \*

The painting showed a man in a red hat and black robes seated behind a high judge's bench. Five other men in red hats were seated behind a lower bench to his right, and four others to his left. At the base of the bench knelt a figure in solitary abjection.

"We condemn you, Galileo Galilei, to the formal prison of this Holy Office for a period determinable at Our pleasure; and by way of salutary penance, We order you, during the next three years, to recite once a week the seven Penitential Psalms."

Prentiss turned from the inscription to the less readable face of E. That oval olive-hued face was



smooth, unlined, even around the eyes, and the black hair was parted off-center and drawn over the woman's head into a bun at the nape of her neck. She wore no make-up, and apparently needed none. She was clad in a black, loose-fitting business suit, which accentuated her perfectly molded body.

"Do you know," said Prentiss coolly, "I think you like being Censor. It's in your blood."

"You're perfectly right. I *do* like being Censor. According to Speer, I effectively sublimate a guilt complex as strange as it is baseless."

"Very interesting. Sort of expiation of an ancestral guilt complex, eh?"

"What do you mean?"

"Woman started man on his acquisition of knowledge and self-destruction, and ever since has tried futilely to halt the avalanche. In you the feeling of responsibility and guilt runs exceptionally strong, and I'll wager that some nights you wake up in a cold sweat, thinking you've just plucked a certain forbidden fruit."

E stared icily up at the investigator's twitching mouth. "The only pertinent question" she said crisply, "is whether Luce is engaged in ontologic experiments, and if so, are they of a dangerous nature."

Prentiss sighed. "He's in it up to his neck. But just *what*, and how dangerous, I can only guess."

"Then guess."

"Luce thinks he's developed apparatus for the practical, predictable, alteration of sensoria. He hopes to do something with his device that will blow physical laws straight to smithereens. The resulting reality would probably be unrecognizable even to a professional ontologist, let alone the mass of humanity."

"You seem convinced he can do this."

"The probabilities are high."

"Good enough. We can deal only in probabilities. The safest thing, of course, would be to locate Luce and kill him on sight. On the other hand, the faintest breath of scandal would result in Congressional hamstringing of the Bureau, so we must proceed cautiously."

"If Luce is really able to do what he claims," said Prentiss grimly, "and we let him do it, there won't be any Bureau at all-- nor any Congress, either."

"I know. Rest assured that if I decide that Luce is dangerous and should die, I shall let neither the lives nor careers of anyone in the Bureau stand in the way, including myself."

Prentiss nodded, wondering if she really meant it.

The woman continued, "We are faced for the first time with a probable violation of our directive forbidding ontologic experiments. We are inclined to prevent this threatened violation by taking a man's life. I think we should settle once and for all whether such harsh measures are indicated, and it is for this that I have invited you to attend a staff conference. We intend to reopen the entire question of ontologic experiments and their implications."

Prentiss groaned inwardly. In matters so important the staff decided by vote. He had a brief vision of attempting to convince E's hard-headed scientists that mankind was changing "reality" from century to century-- that not too long ago the earth had been "flat." Yes, by now he was beginning to believe it himself!

"Come this way, please?" said E.

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#### Chapter IV A Changing World

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Sitting at E's right was an elderly man, Speer, the famous psychologist. On her left was Goring, staff advisor on nucleonics; next to him was Burchard, brilliant chemist and Director of the Western Field, then Prentiss, and then Dobbs, the renowned metallurgist and Director of the Central Field.

Prentiss didn't like Dobbs, who had voted against his promotion to the directorship of Eastern.

E announced: "We may as well start this inquiry with an examination of fundamentals. Mr. Prentiss, just what is reality?"

The ontologist winced. He had needed two hundred pages to outline the theory of reality in his doctoral thesis, and even so, had always suspected his examiners had passed it only because it was incomprehensible-- hence a work of genius.

"Well," he began wryly, "I must confess that I don't know what *real* reality is. What most of us call reality is simply an integrated synthesis of incoming sensoria. As such it is nothing more than a working hypothesis in the mind of each of us, forever in a process of revision. In the past the process has been slow and safe. But we have now to consider the consequences of an instantaneous and total revision-- a revision so far-reaching that it may thrust humanity face-to-face with the true reality, the world of Things-in-Themselves-- Kant's *noumena*. This, I think, would be as disastrous as dumping a group of children in the middle of a forest. They'd have to relearn the simplest things-- what to eat, how to protect themselves from elemental forces, and even a new language to deal with their new problems. There'd be few survivors.

"That is what we want to avoid, and we can do it if we prevent any sudden sweeping alteration of sensoria in our present reality."

He looked dubiously at the faces about him. It was a poor start. Speer's wrinkled features were drawn up in a serene smile, and the psychologist seemed to be contemplating the air over Prentiss' head. Goring was regarding him with grave, expressionless eyes. E nodded slightly as Prentiss' gaze traveled past her to a puzzled Burchard, thence to Dobbs, who was frankly contemptuous.

Speer and Goring were going to be most susceptible. Speer because of his lack of a firm scientific background, Goring because nucleonics was in such a state of flux that nucleic experts were expressing the gravest doubts as to the validity of the laws worshipped by Burchard and Dobbs. Burchard was only a faint possibility. And Dobbs?

Dobbs said: "I don't know what the dickens you're talking about." The implication was plain that he wanted to add: "And I don't think you do, either."

And Prentiss wasn't so sure that he did know. Ontology was an elusive thing at best.

"I object to the term 'real reality,'" continued Dobbs. "A thing is real or it isn't. No fancy philosophical system can change *that*. And if it's real, it gives off predictable, reproducible sensory stimuli not subject to alteration except in the minds of lunatics."

Prentiss breathed more easily. His course was clear. He'd concentrate on Dobbs, with a little side-play on Burchard. Speer and Goring would never suspect his arguments were really directed at them. He pulled a gold coin from his vest pocket and slid it across the table to Dobbs, being careful not to let it clatter. "You're a metallurgist. Please tell us what this is."

Dobbs picked up the coin and examined it suspiciously. "It's quite obviously a five-dollar gold piece, minted at Fort Worth in Nineteen Sixty-Two. I can even give you the analysis, if you want it."

"I doubt that you could," said Prentiss coolly. "For you see, you are holding a counterfeit coin minted only last week in my own laboratories especially for this conference. As a matter of fact, if you'll forgive my saying so, I had you in mind when I ordered the coin struck. It contains no gold whatever-- drop it on the table."

The coin fell from the fingers of the astounded metallurgist and clattered on the oaken table top.

"Hear the false ring?" demanded Prentiss.

Pink-faced, Dobbs cleared his throat and peered at the coin more closely. "How was I to know that? It's no disgrace, is it? Many clever counterfeits can be detected only in the laboratory. I knew the color was a little on the red side, but that could have been due to the lighting of the room. And of course, I hadn't given it an auditory test before I spoke. The ring is definitely dull. It's obviously a copper-lead alloy, with possibly a little amount of silver to help the ring. All right, I jumped to conclusions. So what? What does that prove?"

"It proves that you have arrived at two separate, distinct, and mutually exclusive realities, starting with the same sensory premises. It proves how easily reality is revised. And that isn't all, as I shall soon-- "

"All right," said Dobbs testily. "But on second thought I admitted it was a phony, didn't I?"

"Which demonstrates a further weakness in our routine acquisition and evaluation of pre-digested information. When an unimpeachable authority tells us something as a fact, we immediately, and without conscious thought, *modify* incoming stimuli to conform with that *fact*. The coin suddenly acquires the red taint of copper, and rings false to the ear."

"I would have caught the queer ring anyhow," said Dobbs stubbornly, "with no help from 'an unimpeachable authority.' The ring would have sounded the same, no matter what you said."

From the corner of his eye Prentiss noticed that Speer was grinning broadly. Had the old psychologist divined his trick? He'd take a chance.

"Dr. Speer," he said, "I think you have something interesting to tell our doubting friend."

Speer cackled dryly. "You've been a perfect guinea pig, Dobbsie. The coin was genuine."

The metallurgist's jaw dropped as he looked blankly from one face to another. Then his jowls slowly grew red. He flung the coin to the table. "Maybe I am a guinea pig. I'm a realist, too. I think this is a piece of metal. You might fool me as to its color or assay, but in essence and substance, it's a piece of metal." He glared at Prentiss and Speer in turn. "Does anyone deny that?"

"Certainly not, said Prentiss. "Our mental pigeonholes are identical in that respect; they accept the same sensory definition of 'piece of metal,' or 'coin.' Whatever this object is, it emits stimuli that our minds are capable of registering and abstracting as a 'coin.' But note: we make a coin out of it. However, if I could shuffle my cortical pigeonholes, I might find it to be a chair, or a steamer trunk, possibly with Dr. Dobbs inside, or, if the shuffling were extreme, there might be no semantic pattern into which the incoming stimuli could be routed. There wouldn't be anything there at all!"

"Sure," sneered Dobbs. "You could walk right through it."

"Why not?" asked Prentiss gravely. "I think we may do it all the time. Matter is about the emptiest stuff imaginable. If you compressed that coin to eliminate the space between its component atoms and electrons, you couldn't see it in a microscope."

Dobbs started at the enigmatic gold-piece as though it might suddenly thrust out a pseudopod and swallow him up. Then he said flatly: "No, I don't believe it. It exists as a coin, and only as a coin-- whether I know it or not."

"Well," ventured Prentiss, "how about you, Dr. Goring? Is the coin real to you?"

The nucleist smiled and shrugged his shoulders. "If I don't think too much about it, it's real enough. And yet..."

Dobb's face clouded. "And yet what? Here it is. Can you doubt the evidence of your own eyes?"

"That's just the difficulty." Goring leaned forward. "My eyes tell me, here's a coin. Theory tells me, here's a mass of hypothetical disturbances in a hypothetical sub-ether in a hypothetical ether. The indeterminacy principle tells me that I can never know both the mass and position of these hypothetical disturbances. And as a physicist I know that the bare fact of observing something is sufficient to change that something from its pre-observed state. Nevertheless, I compromise by letting my senses and practical experience stick a tag on this particular bit of the unknowable. X, after its impact on my mind (whatever that is!) equals coin. A single equation with two variables has no solution. The best I can say is, it's a coin, but probably not really-- "

"Ha!" declared Burchard. "I can demonstrate the fallacy of *that* position very quickly. If our minds make this a coin, then our minds make this little object an ash-tray, that a window, the thing that holds us up, a chair. You might say we make the air we breathe, and perhaps even the stars and planets, Why, following Prentiss' idea to its logical end, the universe itself is the work of man-- a conclusion I'm sure he doesn't intend."

"Oh, but I do," said Prentiss.

Prentiss took a deep breath. The issue could be dodged no longer. He had to take a stand. "And to make sure you understand me, whether you agree with me or not, I'll state categorically that I believe the apparent universe to be the work of man."

Even E looked startled, but said nothing.

The ontologist continued rapidly, "All of you doubt my sanity. A week ago I would have, too. But

since then I've done a great deal of research in the history of science. And I repeat, *the universe is the work of man*. I believe that man began his existence in some incredibly simple world-- the original and true noumenon of our present universe. And that over the centuries man expanded his little world into its present vastness and incomprehensible intricacy solely by dint of imagination.

"Consequently, I believe that what most of you call the 'real' world has been changing ever since our ancestors began to think."

Dobbs smiled superciliously. "Oh, come now, Prentiss. That's just a rhetorical description of scientific progress over the past centuries. In the same sense I might say that modern transportation and communications have shrunk the earth. But you'll certainly admit that the physical state of things has been substantially constant ever since the galaxies formed and the earth began to cool, and that the simple cosmologies of early man were simply the result of lack of means for obtaining accurate information?"

"I won't admit it," rejoined Prentiss bluntly. "I maintain that their information was substantially accurate. I maintain that at one time in our history the earth was flat-- as flat as it is now round-- and no one living before the time of Hecataeus, though he might have been equipped with the finest modern instruments, could have proved otherwise. His mind was *conditioned* to a two-dimensional world. Any of us present, if we were transplanted to the world of Hecataeus, could, of course, establish terrestrial sphericity in short order. Our minds have been conditioned to a three-dimensional world. The day may come a few millennia hence when a four-dimensional world will be commonplace even to schoolchildren; they will have been intuitively conditioned in relativistic concepts." He added slyly: "And the less intelligent of them may attempt to blame our naive three-dimensional planet on our grossly inaccurate instruments, because it will be as plain as day to them that their planet has four dimensions!"

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## Chapter V Sentence Is Passed

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Dobbs snorted at this amazing idea.

The other scientists stared at Prentiss with an awe which was mixed with incredulity.

Goring said cautiously: "I follow up to a certain point. I can see that a primitive society might start out with a limited number of facts, and then those first theories would require that new, additional facts exist, and in their search for those secondary facts, extraneous data would turn up inconsistent with the first theories. Secondary theories would then be required, from which hitherto unguessed facts should follow, the confirmation of which would discover more inconsistencies. So the pattern of fact to theory to fact to theory, and so on, finally brings us into our present state of knowledge. Does that follow from your argument?"

Prentiss nodded.

"But won't you admit that the facts were there all the time, and merely awaited discovery?"

"The simple, unelaborated *noumenon* was there all the time, yes. But the new fact-- man's new interpretation of the *noumenon*, was generally pure invention-- a mental creation, if you like. This will be clearer if you consider how rarely a new fact arises before a theory exists for its explanation. In the ordinary scientific investigation, theory comes first, followed in short order by the 'discovery' of various facts deducible from it."

Goring still looked skeptical. "But that wouldn't mean the fact wasn't there all the time."

"Wouldn't it? Look at the evidence. Has it never struck you as odd in how many instances very obvious facts were 'overlooked' until a theory was propounded that required their existence? Take your nuclear building blocks. Protons and electrons were detected physically only after Rutherford had showed they had to exist. And then when Rutherford found that protons and electrons were not enough

to build all the atoms of the periodic table, he postulated the neutron, which of course was duly 'discovered' in the Wilson cloud chamber."

Goring pursed his lips. "But the Wilson cloud chamber would have shown all that prior to the theory, if anyone had only thought to use it. The mere fact that Wilson didn't invent his cloud chamber until nineteen twelve and Geiger didn't invent his counter until nineteen thirteen, would not keep sub-atomic particles from existing before that time."

"You don't get the point," said Prentiss. "The primitive, ungeneralized *noumenon* that we today observe as subatomic particles existed prior to nineteen twelve, true, *but not sub-atomic particles*."

"Well, I don't know...." Goring scratched his chin. "How about fundamental forces? Surely electricity existed before Galvani? Even the Greeks knew how to build up electrostatic charges on amber."

"Greek electricity was nothing more than electrostatic charges. Nothing more could be created until Galvani introduced the concept of the electric current."

"Do you mean the electric current didn't exist at all before Galvani?" demanded Burchard. "Not even when lightning struck a conductor?"

"Not even then. We don't know much about pre-Galvanic lightning. While it probably packed a wallop, its destructive potential couldn't have been due to its delivery of an electric current. The Chinese flew kites for centuries before Franklin theorized that lightning was the same as galvanic electricity, but there's no recorded shock from a kite string until our learned statesman drew forth one in seventeen sixty-five. *Now*, only an idiot flies a kite in a storm. It's all according to pattern: theory first, then we alter 'reality' to fit."

Burchard persisted. "Then I suppose you'd say the ninety-two elements are figments of our imagination."

"Correct," agreed Prentiss. "I believe that in the beginning there were only four *noumenal* elements. Man simply elaborated these according to the needs of his growing science. Man made them what they are today-- and on occasion, *unmade* them. You remember the havoc Mendelyeev created with his periodic law. He declared that the elements had to follow valence sequences of increasing weight, and when they didn't, he insisted his law was right and that the atomic weights were wrong. He must have had Stas and Berzelius whirling in their graves, because they had worked out the 'erroneous' atomic weights with marvelous precision. The odd thing was, when the weights were rechecked, they fitted the Mendelyeev table. But that wasn't all. The old rascal pointed out vacant spots in his table and maintained that there were more elements yet to be discovered. He even predicted what properties they'd have. He was too modest. I state that Nilson, Winkler, and de Boisbaudran merely *discovered* scandium, germanium, and gallium; Mendelyeev *created* them, out of the original tetraelemental stuff."

E leaned forward. "That's a bit strong. Tell me, if man has changed the elements and the cosmos to suit his convenience, what was the cosmos like before man came on the scene?"

"There wasn't any," answered Prentiss. "Remember, by definition, 'cosmos' or 'reality' is simply man's version of the ultimate *noumenal* universe. The 'cosmos' arrives and departs with the mind of man. Consequently, the earth-- as such-- didn't even exist before the advent of man."

"But the evidence of the rocks..." protested E. "Pressures applied over millions, even billions of years, were needed to form them, unless you postulate an omnipotent God who called them into existence as of yesterday."

"I postulate only the omnipotent human mind," said Prentiss. "In the seventeenth century, Hooke, Ray, Woodward, to name a few, studied chalk, gravel, marble, and even coal, without finding anything inconsistent with results to be expected from the Noachian Flood. But now that we've made up our minds that the earth is older, the rocks *seem* older, too."

"But how about evolution?" demanded Burchard. "Surely that wasn't a matter of a few centuries?"

"Really?" replied Prentiss. "Again, why assume that the facts are any more recent than the theory?" The evidence is all the other way. Aristotle was a magnificent experimental biologist, and he was convinced that life could be created spontaneously. Before the time of Darwin there was no need for the various species to evolve, because they sprang into being from inanimate matter. As late as the eighteenth century, Needham, using a microscope, reported that he saw microbe life arise spontaneously out of

sterile culture media. These abiogeneticists were, of course, discredited and their work found to be irreproducible, but only *after* it became evident that the then abiogenetic facts were going to run inconsistent with later 'facts' flowing from advancing biologic theory."

"Then," said Goring, "assuming purely for the sake of argument that man has altered the original *noumena* into our present reality, just what danger do you think Luce represents to that reality? How could he do anything about it, even if he wanted to? Just what is he up to?"

"Broadly stated," said Prentiss, "Luce intends to destroy the Einsteinian universe."

Burchard frowned and shook his head. "Not so fast. In the first place, how can anyone presume to destroy this planet, much less the whole universe? And why do you say the 'Einsteinian' universe? The universe by any other name is still the universe, isn't it?"

"What Dr. Prentiss means," explained E, "is that Luce wants to revise completely and finally our present comprehension of the universe, which presently happens to be the Einsteinian version, in the expectation that the final version would be the true one-- and comprehensible only to Luce and perhaps a few other ontologic experts."

"I don't see it," said Dobbs irritably. "Apparently this Luce contemplates nothing more than publication of a new scientific theory. How can that be bad? A mere theory can't hurt anybody-- especially if only two or three people understand it."

"You-- and two billion others," said Prentiss softly, "think that 'reality' cannot be affected by any theory that seems to change it-- that it is optional with you to accept or reject the theory. In the past that was true. If the Ptolemaics wanted a geocentric universe, they ignored Copernicus. If the four-dimensional continuum of Einstein and Minkowsky seemed incomprehensible to the Newtonian school they dismissed it, and the planets continued to revolve substantially as Newton predicted. But this was different.

"For the first time we are faced with the probability that the promulgation of a theory is going to *force* an ungraspable reality upon our minds. It will not be optional."

"Well," said Burchard, "if by 'promulgation of a theory' you mean something like the application of the quantum theory and relativity to the production of atomic energy, which of course has changed the shape of civilization in the past generation, whether the individual liked it or not, then I can understand you. But if you mean that Luce is going to make one little experiment that may confirm some new theory or other, and *ipso facto* and instantaneously reality is going to turn topsy-turvy, why I say it's nonsense."

"Would anyone," said Prentiss quietly, "care to guess what would happen if Luce were able to destroy a photon?"

Goring laughed shortly. "The question doesn't make sense. The mass-energy entity whose three-dimensional profile we call a photon is indestructible."

"But if you *could* destroy it?" insisted Prentiss. "What would the universe be like afterward?"

"What difference would it make?" demanded Dobbs. "One photon more or less?"

"Plenty," said Goring. "According to the Einstein theory, every particle of matter-energy has a gravitational potential, lambda, and it can be calculated that the total lambdas are precisely sufficient to keep our four-dimension continuum from closing back on itself. Take one lambda away-- my heavens! The universe would split wide open!"

"Exactly," said Prentiss. "Instead of a continuum, or 'reality' would become a disconnected melange of three-dimensional objects. Time, if it existed, wouldn't bear any relation to spatial things. Only an ontologic expert might be able to synthesize any sense out of such a 'reality.'"

"Well," said Dobbs, "I wouldn't worry too much. I don't think anybody's ever going to destroy a photon." He snickered. "You have to catch one first!"

"Luce can catch one," said Prentiss calmly. "And he can destroy it. At this moment some unimaginable post-Einsteinian universe lies in the palm of his hand. Final, true reality, perhaps. But we aren't ready for it. Kant, perhaps, or *homo superior*, but not the general run of *h. sapiens*. We wouldn't be able to escape our conditioning. We'd be stopped cold."

He stopped. Without looking at Goring, he knew he had convinced the man. Prentiss sagged with visible relief. It was time for a vote. He must strike before Speer and Goring could change their minds.

"Madame"-- he shot a questioning glance at the woman-- "at any moment my men are going to report

that they've located Luce. I must be ready to issue the order for his execution, if in fact the staff believes such disposition proper. I call for a vote of officers!"

"Granted," said E instantly. "Will those in favor of destroying Luce on sight raise their right hands?"

Prentiss and Goring made the required signal.

Speer was silent.

Prentiss felt his heart sinking. Had he made a gross error of judgment?

"I vote against this murder," declared Dobbs. "That's what it is, pure murder."

"I agree with Dobbs," said Burchard shortly.

All eyes were on the psychologist. "I presume you'll join us, Dr. Speer?" demanded Dobbs sternly.

"Count me out, gentlemen. I'd never interfere with anything so inevitable as the destiny of man. All of you are overlooking a fundamental facet of human nature-- man's insatiable hunger for change, novelty-- for anything different from what he already has. Prentiss himself states that whenever man grows discontented with his present reality, he starts elaborating it, and the devil take the hindmost. Luce but symbolizes the evil genius of our race-- and I mean both our species and the race toward intertwined godhood and destruction. Once born, however, symbols are immortal. It's far too late now to start killing Luce. It was too late when the first man tasted the first apple.

"Furthermore, I think Prentiss greatly overestimates the scope of Luce's pending victory over the rest of mankind. Suppose Luce is actually successful in clearing space and time and suspending the world in the temporal stasis of its present irreality. Suppose he and a few ontologic experts pass on into the ultimate, true reality. How long do you think they can resist the temptation to alter it? If Prentiss is right, eventually they or their descendants will be living in a cosmos as intricate and unpleasant as the one they left, while we, for all practical purposes, will be pleasantly dead.

"No gentlemen, I won't vote either way."

"Then it is my privilege to break the tie," said E coolly. "I vote for death. Save your remonstrances, Dr. Dobbs. It's after midnight. This meeting is adjourned." She stood up in abrupt dismissal, and the men were soon filing from the room.

\* \* \*

E left the table and walked toward the windows on the far side of the room. Prentiss hesitated a moment, but made no effort to leave.

E called over her shoulder, "You, too, Prentiss."

The door closed behind Speer, the last of the group, save Prentiss.

Prentiss walked up behind E.

She gave no sign of awareness.

Six feet away, the man stopped and studied her.

Sitting, walking, standing, she was lovely. Mentally he compared her to Velasquez' Venus. There was the same slender exquisite proportion of thigh, hip, and bust. And he knew she was completely aware of her own beauty, and further, must be aware of his present appreciative scrutiny.

Then her shoulders sagged suddenly, and her voice seemed very tired when she spoke. "So you're still here, Prentiss. Do you believe in intuition?"

"Not often."

"Speer was right. He's always right. Luce will succeed." She dropped her arms to her sides and turned.

"Then may I reiterate, my dear, marry me and let's forget the control of knowledge for a few months."

"Completely out of the question, Prentiss. Our natures are incompatible. You're incorrigibly curious, and I'm incorrigibly, even neurotically, conservative. Besides, how can you even think about such things when we've got to stop Luce?"

His reply was interrupted by the shrilling of the intercom: "Calling Mr. Prentiss. Crush calling Mr. Prentiss. Luce located. Crush calling."

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## Chapter VI Impending Chaos

With his pencil Crush pointed to a shaded area of the map. "This is Luce's Snake-Eyes estate, the famous game preserve and zoo. Somewhere in the center-- about here, I think-- is a stone cottage. A moving van unloaded some lab equipment there this morning."

"Mr. Prentiss," said E, "how long do you think it will take him to install what he needs for that one experiment?"

The ontologist answered from across the map table, "I can't be sure. I still have no idea of what he's going to try, except that I'm reasonably certain it must be done in absolute darkness. Checking his instruments will require but a few minutes at most."

The woman began pacing the floor nervously. "I knew it. We can't stop him. We have no time."

"Oh, I don't know," said Prentiss. "How about that stone cottage, Crush? Is it pretty old?"

"Dates from the eighteenth century, sir."

"There's your answer," said Prentiss. "It's probably full of holes where the mortar's fallen out. For total darkness, he'll have to wait until moonset."

"That's three thirty-four a.m., sir," said Crush.

"We've time for an arrest," said E.

Crush looked dubious. "It's more complicated than that, Madame. Snake-Eyes is fortified to withstand a small army. Luce could hold off any force the Bureau could muster for at least twenty-four hours."

"One atom egg, well done," suggested Prentiss.

"That's the best answer, of course," agreed E. "But you know as well as I what the reaction of Congress would be to such extreme measures. There would be an investigation. The Bureau would be abolished, and all persons responsible for such an expedient would face life imprisonment, perhaps death." She was silent for a moment, then sighed and said: "So be it. If there is no alternative, I shall order the bomb dropped."

"There may be another way," said Prentiss.

"Indeed?"

"Granted an army couldn't get through. One man might. and if he made it, you could call off your bomb."

E exhaled a slow cloud of smoke and studied the glowing tip of her cigarette. Finally she turned and looked into the eyes of the ontologist for the first time since the beginning of the conference. "*You* can't go."

"Who, then?"

Her eyes dropped. "You're right, of course. But the bomb still falls if you don't get through. It's got to be that way. Do you understand that?"

Prentiss laughed. "I understand."

He addressed his aide. "Crush, I'll leave the details up to you, bomb and all. We'll rendezvous at these coordinates"-- he pointed to the map-- "at three sharp. It's after one now. You'd better get started."

"Yes, sir," wheezed Crush, and scurried out of the room.

As the door closed, Prentiss turned to E. "Beginning tomorrow afternoon-- or rather, *this* afternoon, after I finish with Luce, I want six months off."

"Granted," murmured E.

"I want you to come with me. I want to find out just what this thing is between us. Just the two of us. It may take a little time."

E smiled crookedly. "If we're both still alive at three thirty-five, and such a thing as a month exists, and you still want me to spend six of them with you, I'll do it. And in return you can do something for me."

"What?"

"You, even above Luce, stand the best chance of adjusting to final reality if Luce is successful in



destroying a photon. I'm a border-line case. I'm going to need all the help you can give me, if and when the time comes. Will you remember that?"

"I'll remember," Prentiss said.

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At 3 a.m. he joined Crush.

"There are at least seven infra-red scanners in the grounds, sir," said Crush, "not to mention an intricate network of photo relays. And then the wire fence around the lab, with the big cats inside. He must have turned the whole zoo loose." The little man reluctantly helped Prentiss into his infra-red absorbing coveralls. "You weren't meant for tiger fodder, sir. Better call it off."

Prentiss zipped up his visor and grimaced out into the moonlit dimness of the apple orchard. "You'll take care of the photocell network?"

"Certainly, sir. He's using UV-sensitive cells. We'll blanket the area with a UV-spot at three-ten."

Prentiss strained his ears, but couldn't hear the 'copter that would carry the UV-searchlight-- and the bomb.

"It'll be here, sir," Crush assured him. "It won't make any noise, anyhow. What you ought to be worrying about are those wild beasts."

The investigator sniffed at the night air. "Darn little breeze."

"Yeah," gasped Crush. "And variable at that, sir. You can't count on going in up-wind. You want us to create a diversion at one end of the grounds to attract the animals?"

"We don't dare. If necessary, I'll open the aerosol capsule of formaldehyde." He held out his hand. "Good-by, Crush."

His asthmatic assistant shook the extended hand with vigorous sincerity. "Good luck, sir. And don't forget the bomb. We'll have to drop it at three thirty-four sharp."

But Prentiss had vanished into the leafy darkness.

A little later he was studying the luminous figures on his watch. The UV-blanket was presumably on. All he had to be careful about in the next forty seconds was a direct collision with a photocell post.

But Crush's survey party had mapped well. He reached the barbed fencing uneventfully, with seconds to spare. He listened a moment, and then in practiced silence eased his lithe body high up and over.

The breeze, which a moment before had been in his face, now died away, and the night air hung about him in dark lifeless curtains.

From the stone building a scant two hundred yards ahead, a chink of light peeped out. Prentiss drew his silenced pistol and began moving forward with swift caution, taking care to place his heel to ground before the toe, and feeling out the character of the ground with the thin soles of his sneakers before each step. A snapping twig might hurl a slaving wild beast at his throat.

He stopped motionless in midstride.

From a thicket several yards to his right came an ominous snuffing, followed by a low snarl.

His mouth went suddenly dry as he strained his ears and turned his head slowly toward the sound.

And then there came the reverberations of something heavy, hurtling toward him.

He whipped his weapon around and waited in a tense crouch, not daring to send a wild, singing bullet across the sward.

The great cat was almost upon him before he fired, and then the faint cough of the stumbling, stricken animal seemed louder than his muffled shot.

Breathing hard, Prentiss stepped away from the dying beast, evidently a panther, and listened for a long time before resuming his march on the cottage. Luce's extraordinary measures to exclude intruders but confirmed his suspicions: Tonight was the last night that the professor could be stopped. He blinked the stinging sweat from his eyes and glanced at his watch. It was 3:15.

Apparently the other animals had not heard him. He stood up to resume his advance, and to his utter relief found that the wind had shifted almost directly into his face and was blowing steadily.

In another three minutes he was standing at the massive door of the building, running practiced fingers

over the great iron hinges and lock. Undoubtedly the thing was going to squeak; there was no time to apply oil and wait for it to soak in. The lock could be easily picked.

And the squeaking of a rusty hinge was probably immaterial. A cunning operator like Luce would undoubtedly have wired an alarm into it. He just couldn't believe Crush's report to the contrary.

But he couldn't stand there.

There was only one way to get inside, quickly, and alive.

Chuckling at his own madness, Prentiss began to pound on the door.

He could visualize the blinking out of the slit of light above his head, and knew that, somewhere within the building, two flame-lit eyes were studying him in an infra-red scanner.

Prentiss tried simultaneously to listen to the muffled squeaking of the rats beyond the great door and to the swift, padding approach of something big behind him.

"Luce," he cried. "It's Prentiss! Let me in!"

A latch slid somewhere; the door eased inward. The investigator threw his gun rearward at a pair of bounding eyes, laced his fingers over his head, and stumbled into more darkness.

Despite the protection of his hands, the terrific blow of the blackjack on his temple almost knocked him out.

He closed his eyes, crumpled carefully to the floor, and noted with satisfaction that his wrists were being tied behind his back. As he had anticipated, it was a clumsy job, even without his imperceptible "assistance." Long fingers ran over his body in a search for more weapons.

Then he felt the sting of a hypodermic needle in his biceps.

The lights came on.

He struggled feebly, emitted a plausible groan, and tried to sit up.

From far above, the strange face of Dr. Luce looked down at him, illuminated, it seemed to Prentiss, by some unhallowed inner fire.

"What time is it?" asked Prentiss.

"Approximately three-twenty."

"*Hm.* Your kittens gave me quite a reception, my dear professor."

"As befits an uncooperative meddler."

"Well, what are you going to do with me?"

"Kill you."

Luce pulled a pistol from his coat pocket. Prentiss wet his lips. During his ten years with the Bureau, he had never had to deal with anyone quite like Luce. The gaunt man personified megalomania on a scale beyond anything the investigator had previously encountered-- or imagined possible.

And, he realized with a shiver, Luce was very probably justified in his prospects (not delusions!) of grandeur.

With growing alarm he watched Luce snap off the safety lock of the pistol.

There were two possible chances of surviving more than a few seconds.

Luce's index finger began to tense around the trigger.

One of the chances was to appeal to Luce's megalomania, treating him as a human being. Tell him, "I know you won't kill me until you've had a chance to gloat over me-- to tell me, the inventor of ontologic synthesis, how you found a practical application of it."

No good. Too obvious to one of Luce's intelligence.

The approach must be to a demi-god, in humility. Oddly enough his curiosity *was* tinged with respect. Luce *did* have something.

Prentiss licked his lips again and said hurriedly: "I must die, then. But could you show me-- is it asking too much to show me, just how you propose to 'go through'?"

The gun lowered a fraction of an inch. Luce eyed the doomed man suspiciously.

"Would you, please?" continued Prentiss. His voice was dry, cracking. "Ever since I discovered that new realities could be synthesized, I've wondered whether *homo sapiens* was capable of finding a practical device for uncovering the true reality. And all who've worked on it have insisted that only a brain but little below the angels was capable of such an achievement." He coughed apologetically. "It is

difficult to believe that a mere mortal has really accomplished what you claim-- and yet, there's something about you..." His voice trailed off, and he laughed deprecatingly.

Luce bit; he thrust the gun back into his coat pocket. "So you know when you're licked," he sneered. "Well, I'll let you live a moment longer."

He stepped back and pulled aside a black screen. "Has the inimitable ontologist the wit to understand this?"

Within a few seconds of his introduction to the instrument everything was painfully clear. Prentiss now abandoned any remote hope that either Luce's method or apparatus would prove faulty. Both the vacuum-glassed machinery and the idea behind it were perfect.

Basically, the supplementary unit, which he now saw for the first time, consisted of a sodium-vapor light bulb, blacked out except for one tiny transparent spot. Ahead of the little window was a series of what must be hundreds of black discs mounted on a common axis. Each disc bore a slender radial slot. And though he could not trace all the gearing, Prentiss knew that the discs were geared to permit one and only one fleeting photon of yellow light to emerge at the end of the disc series, where it would pass through a Kerr electro-optic field and be polarized.

That photon would then travel one centimeter to that fabulous Nicol prism, one surface of which had been machined flat to a molecule's thickness. That surface was turned by means of an equally marvelous goniometer to meet the oncoming photon at an angle of exactly  $45^\circ$ . And then would come chaos.

The cool voice of E sounded in his ear receptor. "Prentiss, it's three-thirty. If you understand the apparatus, and find it dangerous, will you so signify? If possible, describe it for the tapes."

"I understand your apparatus perfectly," said Prentiss.

Luce grunted, half irritated, half curious.

Prentiss continued hurriedly, "Shall I tell you how you decided upon this specific apparatus?"

"If you think you can."

"You have undoubtedly seen the sun reflect from the surface of the sea."

Luce nodded.

"But the fish beneath the surface see the sun, too," continued Prentiss. "Some of the photons are reflected and reach you, and some are refracted and reach the fish. But, for a given wavelength, the photons are identical. Why should one be absorbed and another reflected?"

"You're on the right track," admitted Luce, "but couldn't you account for their behavior by Jordan's law?"

"Statistically, yes. Individually, no. In nineteen thirty-four Jordan showed that a beam of polarized light splits up when it hits a Nicol prism. He proved that when the prism forms an angle,  $\alpha$ , with the plane of polarization of the prism, a fraction of the light equal to  $\cos^2 \alpha$  passes through the prism, and the remainder,  $\sin^2 \alpha$ , is refracted. But note that Jordan's law applied only to streams of photons, and you're dealing with a single photon, to which you're presenting an angle of exactly  $45^\circ$ . And how does a single photon make up its mind-- or the photonic equivalent of a mind-- when the probability of reflecting is exactly equal to the probability of refracting? Of course, if our photon is but one little mote along with billions of others, the whole comprising a light beam, we can visualize orders left for him by a sort of statistical traffic keeper stationed somewhere in the beam. A member of a beam, it may be presumed, has a pretty good idea of how many of his brothers have already reflected, and how many refracted, and hence knows which he must do."

"But suppose our single photon isn't in a beam at all?" said Luce.

"Your apparatus," said Prentiss, "is going to provide just such a photon. And I think it will be a highly confused little photon, just as your experimental rat was, that night not so long ago. I think it was Schrödinger who said that these physical particles were startlingly human in many of their aspects. Yes, your photon will be given a choice of equal probability. Shall he reflect? Shall he refract? The chances are 50 percent for either choice. He will have no reason for selecting one in preference to the other. There will have been no swarm of preceding photons to set up a traffic guide for him. He'll be puzzled; and trying to meet a situation for which he has no proper response, he'll slow down. And when he does, he'll cease to be a photon, which must travel at the speed of light or cease to exist. Like your rat, like many

human beings, he solves the unsolvable by disintegrating."

Luce said: "And when it disintegrates, there disappears one of the lambdas that hold together the Einstein space-time continuum. And when that goes, what's left can be only final reality untainted by theory or imagination. Do you see any flaw in my plan?"

\* \* \*

## Chapter VII New World

\* \* \*

Tugging with subtle quickness on the cords that bound him, Prentiss knew there was no flaw in the man's reasoning, and that every human being on earth was now living on borrowed time.

He could think of no way to stop him; there remained only the bare threat of the bomb.

He said tersely: "If you don't submit to peaceable arrest within a few seconds, an atom bomb is going to be dropped on this area."

Sweat was getting into his eyes again, and he winked rapidly.

Luce's dark features convulsed, hung limp, then coalesced into a harsh grin. "She'll be too late," he said with grim good humor. "Her ancestors tried for centuries to thwart mine. But we were successful-- always. Tonight I succeed again and for all time."

Prentiss had one hand free.

In seconds he would be at the man's throat. He worked with quiet fury at the loops around his bound wrist.

Again E's voice in his ear receptor. "I had to do it!" The tones were strangely sad, self-accusing, remorseful.

Had to do *what*?

And his dazed mind was trying to digest the fact that E had just destroyed him.

She was continuing. "The bomb was dropped ten seconds ago." She was almost pleading, and her words were running together. "You were helpless; you couldn't kill him. I had a sudden premonition of what the world would be like-- afterward-- even for those who go through. Forgive me."

Almost mechanically he resumed his fumbling with the cord.

Luce looked up. "What's that?"

"What?" asked Prentiss dully. "I don't hear anything."

"Of course you do! Listen!"

The wrist came free.

Several things happened.

That faraway shriek in the skies grew into a howling crescendo of destruction.

As one man Prentiss and Luce leaped toward the activator switches. Luce got there first-- an infinitesimal fraction of time before the walls were completely disintegrated.

There was a brief, soundless interval of utter blackness.

And then it seemed to Prentiss that a titanic stone wall crashed into his brain, and held him, mute, immobile.

But he was not dead.

For the name of this armored, stunning wall was not the bomb, but Time itself.

He knew in a brief flash of insight, that for sentient, thinking beings, Time had suddenly become a barricade rather than an endless road.

The exploding bomb-- the caving cottage walls-- were hanging, somewhere, frozen fast in an immutable, eternal stasis.

Luce had separated this fleeting unseen dimension from the creatures and things that had flowed along

it. There is no existence without change along a temporal continuum. and now the continuum had been shattered.

Was this, then, the fate of all tangible things-- of all humanity?

Were none of them-- not even the two or three who understood advanced ontology-- to get through?

There was nothing but a black, eerie silence all around.

His senses were useless.

He even doubted he had any senses.

So far as he could tell he was nothing but an intelligence, floating in space. But he couldn't even be sure of *that*. Intelligence-- space-- they weren't necessarily the same now as before.

All that he knew for sure was that he doubted. He doubted everything except the fact of doubting.

Shades of Descartes!

To doubt is to think!

*Ergo sum!*

I exist.

Instantly he was wary. He existed, but not necessarily as Adam Prentiss Rogers. For the *noumenon* of Adam Prentiss Rogers might be-- whom?

But he was safe. He was going to get through.

Relax, be resilient, he urged his whirling brain. You're on the verge of something marvelous.

It seemed that he could almost hear himself talk, and he was glad. A voiceless final reality would have been unbearable.

He essayed a tentative whisper:

"E!"

From somewhere far away a woman whimpered.

He cried eagerly into the blackness, "Is that you?"

Something unintelligible and strangely frightening answered him.

"Don't try to hold on to yourself," he cried. "Just let yourself go! Remember, you won't be E any more, but the *noumenon*, the essence of E. Unless you change enough to permit your *noumenon* to take over your old identity, you'll have to stay behind.

There was a groan. "But I'm *me!*"

"But you *aren't*-- not really," he pleaded quickly. "You're just an aspect of a larger, symbolical you-- the *noumenon* of E. It's yours for the asking. You have only to hold out your hand to grasp the shape of final reality. And you *must*, or cease to exist!"

A wail: "But what will happen to my body?"

The ontologist almost laughed. "I wouldn't know; but if it changes, I'll be sorrier than you!"

There was a silence.

"E!" he called.

No answer.

"E! Did you get through? *E!*"

The empty echoes skirled between the confines of his narrow blackness.

Had the woman lost even her struggling interstitial existence? Whenever, whatever, or wherever she now was, he could no longer detect.

Somehow, if it had ever come to this, he had counted on her being with him-- just the two of them.

In stunned uneasy wonder he considered what his existence was going to be like from now on.

And what about Luce?

Had the demonic professor possessed sufficient mental elasticity to slip through?

And if so, just what was the professorial *noumenon*-- the real Luce-- like?

He'd soon know.

The ontologist relaxed again, and began floating through a dreamy patch of light and darkness. A pale glow began gradually to form about his eyes, and shadowy things began to form, dissolve, and reform.

He felt a great rush of gratitude. At least the shape of final reality was to be visible.

And then, at about the spot where Luce had stood, he saw the Eyes-- two tiny red flames, transfixing

him with unfathomable fury.

The same eyes that had burned into his that night of his first search!

Luce had got through-- but wait!

An unholy aura was playing about the sinuous shadow that contained the jeweled flames. Those eyes were brilliant, horrid facets of hate in the head of a huge coiling serpent thing! Snake-Eyes!

In mounting awe and fear the ontologist understood that Luce had not got through-- as Luce. That the *noumenon*, the essence, of Luce-- was nothing human. That Luce, the bearer of light, aspirant to godhood, was not just Luce!

By the faint light he began shrinking away from the coiled horror, and in the act saw that *he*, at least, still had a human body. He knew this, because he was completely nude.

He was still human, and the snake-creature wasn't-- and therefore never had been.

Then he noticed that the stone cottage was gone, and that a pink glow was coming from the east.

He crashed into a tree before he had gone a dozen steps.

Yesterday, there had been no trees within three hundred yards of the cottage.

But that made sense, for there was no cottage any more, and no yesterday. Crush ought to be waiting somewhere out here-- except Crush hadn't got through, and hence didn't really exist.

He went around the tree. It obscured his view of the snake-creature for a moment, and when he tried to find it again, it was gone.

He was glad for the momentary relief, and began looking about him in the half-light. He took a deep breath.

The animals, if they still existed, had vanished with the coming of dawn. The grassy, flower-dotted swards scintillated like emeralds in the early morning haze. From somewhere came the babble of running water.

Meta-universe, by whatever name you called it, was beautiful, like a gorgeous garden. What a pity he must live and die here alone, with nothing but a lot of animals for company. He'd willingly give an arm, or at least a rib, if--

"Adam Prentiss! *Adam!*"

He whirled and stared toward the orchard in elated disbelief.

"E! *Eve!*"

She'd got through!

The whole world, and just the two of them!

His heart was pounding ecstatically as he began to run lithely upwind.

And they'd keep it this way, simple and sweet, forever, and their children after that. To hell with science and progress! (Well, within practical limits, of course.)

As he ran, there rippled about his quivering nostrils the seductive scent of apple blossoms.