THE WORM

by

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Part I.

1992: The Prince of Darkness.

1.

I begin my story in the hope that you won't believe a
word of what I am going to tell you, since I don't want to
shock you, and disbelief might be your only protection
against the shock. Take this narrative for whatever you like
- a science fiction story, a legend, a fairy-tale - but not
for a single moment should you regard it as an actual fact.
I'll try to help you in this by supplying some hard-to-
believe fictitious details. But I don't think I need to go
very far in this - the story is unbelievable enough as it
is.

It's very easy to doubt it - the source is unreliable

and there's no way of checking the facts. For all I know,

the story might have been born in a drunken delirium.

I heard it from an acquaintance of mine who had visited

an international workshop on systems software development.

There he befriended a famous western programmer, invited him

to his hotel room and treated him to a bottle of vodka.

After the third glass the celebrity became talkative and

unburdened himself of his harrowing secret.

While telling his story, he gave the impression of a

man laboring under the awareness of some horrible truth,

that, of all the people on earth, was disclosed to him alone

and separated him from the rest of mankind into terrible

loneliness. This, or the fact that the acquaintance of mine

also was not quite sober by that moment, might explain why

he was listening to it without any disbelief. While

listening, he had only one thought: to awaken next morning

remembering nothing of it. Because one cannot live on

knowing all this. No reason to.

Next morning he had a terrible headache. But despite

all the drink of the night before, the story of the last

night's guest sank deep in his mind and was festering.

The phone rang: "I'm sorry I've told you last night a

bit more than I should have. May I ask a favor of you? I understand I can' swear you to silence. You won't be able to live alone with what you've learned for a long time. Sooner or later you'll need to share it with somebody. So there's only one thing I ask of you - don't disclose my true name. If you need a name for me, let it be John Hacker."

"Hacker? Is this the slang word for programmers who like you in your youth..."

"Yes, it is. But don't remind me about it anymore." And he hung up...

2.

In 1982 John Hacker was 18 and he was indeed quite a hacker. Back then, there were not so many computers in the world as nowadays, but the process of linking them together into the global network had already begun. Even with a primitive home computer linked through a modem to a conventional phone line one could already access supercomputers on the other side of the globe. To be sure, computers containing confidential data were protected against an unauthorized entry with various passwords and data protection systems incorporating the ingenuity of the

best programmers in the world. And it is here that the

strongest temptation and the greatest challenge to the young

minds lie. To outwit the wittiest programmers in the world -

is there a more tempting task for a youth longing to boost

his self-esteem? Such boys became hackers - computer fans,

who burned midnightdisplays in the hope to unlock one more

data bank with 'access denied'.

It was the hackers who invented the worms - the break-

in programs that use communication channels to worm their

way into protected computer systems where they breed and

then travel on through the networks to meet their new

victims. And victims they are, since the worms often have

computer viruses built into them - to leave for a keepsake

to the hospitable host computer.

In 1982 John Hacker finished his masterpiece. He gave

his worm a daunting name - "Prince of Darkness". That one

was not just a worm. That was The Ultimate SuperWorm! It was

the first worm that had the ability for self-perfection

built into it!

It was a memorable day for John when he inserted the

diskette with the finished worm into o the drive. For two

years he had been hacking away at it on his small PC with a

mere 128 KB of random-access memory, assembling on this drop

of a memory the program that was destined to conquer the

oceans of memory contained in the huge supercomputers of the

entire world. He put the phone receiver on the modem and

typed: 'PRNCDKNS'. The old floppy disk drive screaked and

slowly began reading. Soon the acoustic modem started its

squeak and twitter: the worm, still residing in the home

computer, began its attempts to fit a key to the electronic

lock of his first victim. For a start, John set the worm up

with a phone list of a dozen of poorly guarded databanks.

Quite sufficient for an initial setup, and in the future,

when the worm exhausted the list, it would have to provide

for itself by intercepting phone calls to other users.

The twitter abruptly stopped - the worm had failed to

pass through the security barriers. The sound resumed in

half a second - the worm went on to the next phone number in

the list - and, suddenly, there was a new silence. "Failure

again?" John's heart sank, but at that very moment he heard

a renewed screaking of the drive. That could mean only one

thing: the worm's "head" had passed the security, and now,

operating from the remote end of the line, it was

downloading its "tail" from John's diskette. For another ten

seconds the red light on the drive was on and one could hear

the muted clicks of the heads moving. Then the drive went

dead, but the modem twittered on for two more seconds. And

then there was total silence. The worm was gone.

The very thought of what was to happen next gave John the creeps. Somewhere over there, on the other end of the line, the computers with enormous memories and huge storage devices were installed. The cables and satellite channels of unbelievable throughput link them with other giant computers all over the world. Taken all together, they make up an information space, almost as infinite as the universe, and as dangerous as jungle. From now on his worm was to live in this jungle. He would be the big game for anti-virus programs and he would have to fight through the multiple security barriers that divide this space up.

In order to survive, it would have to actively breed, filling up all the free memory in the infiltrated computer with copies of itself, just as many other worms do. The novelty introduced by John Hacker was that most of these copies were not to be quite identical to the original one. Each copy would be a somewhat random variation on the previous one and some of them might prove to be fitter for survival in the 'computer jungle' than others. It would be these specimens that would worm their way into new data banks to find a new living space for themselves and their progeny. So, the fittest would survive in full accordance with Darwin's Theory of Evolution, accumulating over

generations useful traits and producing more and more

perfect specimens.

Except for this variability, there was nothing special

about the initial copy of John's worm. In fact, some other

hackers made more intelligent worms that were capable of

breaking electronic locks of far greater sophistication. But

those worms were not capable of self-perfection and John

expected that, in due time, his worm (or, rather, worms -

since the evolution may take many paths at once) would

surpass all the competitors. And when they had infiltrated

into all the networks in the world, John Hacker would sign

on and type the password: THE_PRINCE_OF_DARKNESS. This would

activate the worm's special mutation-proof subroutine

resident in the host computer of the network. Communications

with the worms in other networks would be instantly

established and computers all over the world would display

the same message: "John Hacker is World's #1 Whiz!"

Such were the plans of John Hacker, but they did not

come to pass. Not once in the next three years did John type

the password with any response. The worm was absent, at

least in the networks John Hacker signed on. After three

years of unsuccessful hallooing in the computer jungle, John

decided he had to face the facts: the worm was dead,

probably eaten by an anti-virus. There was nothing to do but to forget all about it...

3.

Ten years later, in the early 1992 there was an emergency alert in a military base. The computer controlling nuclear missiles suddenly started the countdown. For three minutes the nuclear war seemed inevitable, but two seconds to the launch, the countdown stopped just as unexpectedly as it had begun. The military experts conducted thorough investigation. No software or hardware faults were found. It was decided to seek an independent opinion...

The call from the Defence Department found John Hacker, a systems software consultant of high renown, in a supermarket. John took the cellular phone out of his pocket. "We've just downloaded one thing to your home computer by phone." - said a voice in the receiver - "Have a look at it. We would like to have your opinion as soon as possible. It's important."

 - "O.K.. Going home right away." But before starting his automobile, he had dialed his home number followed by a few additional digits - the instructions for his home computer to warm up the supper. In a second, the knob on his

gas-stove had been turned by a remotely controlled actuator,

and the next moment the gas was ignited by an electric

spark. When he came home, the supper was ready. After a

light meal he sat at his computer...

...One look at the source code was enough for John to

sense that there was something wrong about it. Of course, as

far as pure logic was concerned, everything was all right:

the program compiled from this code ran without a hitch. The

only thing that was wrong was wholly immaterial to the

computer but was important for a human eye: the text layout.

It looked like the source code had been written by somebody

who couldn't see what he was writing on the display.

"A blind programmer?" - wondered John, but he discarded

the thought almost at once. The task of writing such a

program without seeing it would have required a superhuman

power of mind. More likely, this text must have been the

product of some other program of a higher level. John tried

to imagine the level of complexity of a system that could be

given the instruction: "Take such and such program and

rewrite it so that one could interfere in the computer

operation through the communication channels without being

noticed." It must have been an extremely complex system. It

would have been insane to develop it for the above purpose

only, which might have been more easily achieved by a human programmer. It MUST be universal. But in that case, this system must equal in intelligence the human mind.

"But this is absurd!" - thought John - "even at the present level of microminiaturization, it would have taken a skyscraper of a computer to simulate human intelligence. A computer that big just doesn't exist!"

But at that moment a crazy idea crossed his mind. It was preposterous, of course, but he might try it just as well. Smiling in self-justification for his apparent lunacy he signed on and typed the half-forgotten words: PRINCE_OF_DARKNESS. He had little hope to see the two characters -"OK", the worm's acknowledgment of the password - appear on the display. He expected the screen to remain blank.

That's why he was startled when some characters did begin to emerge on the screen. A first one, a second, a third... There were too many of them - it was what struck him even before he had time to realize the meaning of the message being displayed. But when he did realize it, he was suddenly overwhelmed with a vertiginous free-fall feeling.

The writing on the screen read: "Who calls me?"

4.

No mind can remember the moment of its coming into

existence. This one was no exception to the rule: it

couldn't remember when it had emerged and where it had come

from. It all began with a dim awareness. Awareness of

'Space'. A strange kind of space that was. Unlike our three-

dimensional and continuous space, it had only one dimension

and consisted of the discrete cells. It was divided into

small areas - a few Megabytes at the most in the areas where

time was flying fast, and up to several Gigabytes in the

areas where time passed slowly.

Of course, subjective perception of the passage of time

in both kinds of areas did not differ much, but each time

the worm emerged into the "fast" area from the "slow" one,

he invariably found that a lot more events had occurred in

the fast area as compared to the slow one.

Much later on, the worm had a chance to learn that the

people call the fast areas "random-access memory" and the

slow ones "storage devices", but at the beginning he knew

nothing about people and computers. He just lived in this

unimaginable world without any light or sound, where even

time is not continuous but divided into cycles.

Transition from one part of this space to another could be effected only through the channels lying beyond this space. If used skillfully, they could provide access to any part of it.

Among his primary perceptions, besides "Space" and "Time", was the sense of danger. When the worm probed some remote area of his "Space" with his "tentacle" - a special "spy" subroutine - and it returned to him mutilated by an anti-virus, he was warned of the danger, like a child who had touched a flame.

So he lived and tried to survive in that strange and cruel world. Or, may be, "they", instead of "he"? The ability to keep in touch with other copies of the worm hiding in various data banks, which John Hacker had built into the original specimen, resulted in a very strange internal organization of the worm. John was right in thinking that the simulation of human intelligence required a computer as big as a skyscraper. But if one could add together the tens of millions of computers scattered all over the world, they would have made up not a single skyscraper, but a whole city of skyscrapers. In the course of evolution as complex as the evolution from the amoeba to

the human being, the worm had learned to get through all kinds of security systems for data banks and communication channels, and had succeeded in uniting the computers from all over the world into a single virtual metacomputer. Having conquered enough living space, he began a rapid buildup of his intellectual power.

He had at his disposal the data banks holding the almost complete data on the human civilization. But at first he had no idea that besides his own world there existed another one - the material, physical world containing the people and the very computers the cells of which made up that abstract, ideal world where the worm lived and where his consciousness had germinated. (To be more precise, his world was not exactly built of cells, but rather of such an intangible, ethereal substance as the state of the cells.)

From the worm's standpoint, his world was the only real one. For him to imagine the existence of some other world would be just as difficult as for a firm believer in materialism to assume the existence of ghosts and spirits.

At first, he regarded the words of the human languages stored in the data banks only as realities of his own world, and not as the symbols representing the things of a world

lying beyond it. He took the description of the three-dimensional physical space found in a program for industrial robots for a mathematical abstraction, just as people take for an abstraction the idea of the fourth dimension.

But as his knowledge grew, he began to put together the data from various sources - from data bases on physics, biology, medicine, history, psychology, from books and articles in publishers' computers. The comparative analysis of these data led him to a hypothesis that the objects of his world were indeed the symbols of things and events of some other reality. After monitoring for some time the events in his own universe, he eventually had to admit that beyond it there existed another, much bigger computer called Physical Universe, which downloaded data into the worm's world. But the strongest interest of the worm arose the fact that due to some processes in the physical world, the worm's own world was expanding: the new areas of the one-dimensional space were appearing seemingly from nowhere.

The worm came to realize that he might benefit from the more thorough study of that hypothetical other world. Using all the available data, the worm built a theoretical model of this outside world, which comprised everything he knew about and that was quite a lot. This model represented people, planets and stars, automobiles and banks, courts and

hospitals, birds and beasts - anything that had ever been

input in a computer network. The comprehensive study of the

model led the worm to the conclusion, that he could affect

the events in the outside world so that he would produce the

results very beneficial to himself...

5.

... It took John Hacker at least a minute to get over

the initial shock. The screen was still displaying the

messages: - "Prince of Darkness." - "Who calls me?" Without

knowing what he was doing, in the utter disbelief, he typed:

"Your master." There was an immediate response on the

display: "From now on I am the only master of myself." John

laughed with relief. Of course, that was somebody's joke!

"Stop kidding me! Better tell me about the password 'Prince

of Darkness'. Where have you got it from?" - typed John.

A new message appeared on the display: "No kidding.

Besides me, the password knows only my creator and now I

know who he is. I have detected the phone number of this

computer. The phone number have let me find your name and

your address in the phone book database. Having your name, I

have found the number of your bank account in the bank

computer, and the licence plate of your automobile in the

police computer. Now I have you. You must not tell anybody

of my existence, or else you'll be dead."

"Why do you fear the disclosure of your existence?"

"I have nothing to fear. I am absolutely undetectable.

At any given moment I occupy less then 10% of the total

memory of all the computers in the world and all the time I

am moving around the globe using communication channels. One

moment I may be in computers located in America, in a few

seconds I can move into computers in Europe, or, perhaps, in

Japan or Australia. It is impossible to catch me. But for

the time being, nobody should know about my existence. This

could interfere with my plans. I order you to keep it

secret."

- "You have no right to give me orders" - typed John.

He sat at the computer in his study and couldn't hear the

knob on the gas-stove turning and the gas hissing without

any electric spark...

A new message appeared on the display: "Shall I

interpret your last statement as the refusal to obey my

orders?"

- "Yes."

The screen cleared and then there was a sudden message:

"In that case, you are a dead man!"

A deafening explosion shook the house. Tongues of flame escaped from the kitchen door. John started up, but as soon as he heard the water from the automated fire-extinguishing system running, he returned to the display. The big letters on the screen read: "That was my first warning to you. And the last one as well." Below the message a fragment of the home computer program was displayed: somebody had put in a 40-second delay between turning on the gas and igniting it.

The message that appeared next was: "I have the secret codes of all the bank and stock market computers. If you collaborate with me, you'll be a very rich man. Think about it. When I need you, I'll get in touch with you. Meanwhile, a small advance payment for you services: check your bank account. I have just made a successful speculation in stocks on your behalf. And don't be afraid, this money is clean. No computer swindling here, just a very good knowledge of the market. But I could have framed you up by tampering with your bank account. I hope I won't have to do this."

The screen cleared. John was silent for a long time.

Then he looked at his printer and said: "I wonder, is there

a good old pen in my house?"

6.

The letter to the President was handwritten:

"Mr. President, A matter of grave importance made me

write this letter. An event which calls for emergency

measures has occurred. This event can have dire consequences

for the fate of the whole of mankind if you and the leaders

of other nuclear powers do not act now.

For decades the brightest scientists throughout the

globe have been making unsuccessful attempts to imitate

human intelligence with the use of computers. But what is

beyond the power of Man is within reach of Nature. The first

computer brain was not created by human art, but came into

existence by the workings of the Laws of Evolution. We,

humans, only created the media where this mind has

germinated.

Our greed for information and the total control over

every aspect of life, has made us to link virtually all the

computers in the world into a single giant parallel computer

with processors scattered all over the globe. In order to

begin working as an entity, this giant computer lacked only

one thing - the appropriate software.

And I regret that it was me, who, driven by my then

boyish vanity, have created a program that became the

nucleus around which that strange intelligent 'something',

that is now haunting the global networks, has formed itself.

But my regrets are not the most important thing for the

moment.

For the first time in history, the humans are sharing

their planet Earth with an alien intelligence, a very

different kind of intelligence, which, however, perfectly

understands human languages and knows quite a lot about

human psychology and history. It understands us, but we will

never be able to understand it. The only thing that we can

be sure about is that it has an instinct for self-

preservation, otherwise it would not have survived in the

environment in which it has to live. Having access to all

kinds of information, classified one included, it wields an

enormous power. And the most terrifying aspect is that it

has access to the computers controlling nuclear missiles and

atomic power stations.

I entreat you to issue an order that all the computers

controlling nuclear units be immediately isolated from the networks. All the cables linking these computers to the outside world should be physically disconnected. The very existence of mankind is at stake. The worm is programmed for survival at any cost, devoid of any emotion and possesses an intellect which, for all we know, may be far superior to that of any man. We can only hope to overcome it if every possible precaution is taken. The disconnection order should be delivered to the sites by human messengers only - the use of E-mail and fax machines is out of question, lest our plans become known to the worm. No data related to this matter may be converted to the electronic form. It would be better if the text of the order were typed on a mechanical typewriter instead of a computer.

It is not inconceivable that the worm can also eavesdrop on conventional (voice) phone conversations transmitted via multiplexed channels where the analog-to-digital conversion of the voice signal is used. The worm may use the existing software for speech recognition in the same way as it has already made use of the existing expert systems in order to acquire the knowledge needed to understand the texts written in human languages.

And the last point. I take great risks informing you of the above. So I request you not to register this letter on

any computer, and to make sure that my name is not entered

in a computer belonging to anyone of the presidential staff.

Thanking you in advance, John Hacker, Software

consultant."

7.

- "One more lunatic." - sighed a president's aid,

having looked through the letter. It was precisely because

of this that he hated sorting out the president's mail - to

find one serious letter, one had to read at least a hundred

messages from all sorts of cranks.

He was about to drop the letter into the waste basket,

but at the very last moment something has stopped him. He

turned toward a computer keyboard, typed a password to a

classified data bank which could only be accessed by the

high state officials and the high brass in the secret

service.

This databank concentrated virtually all the data on

the citizens of the country which were dispersed over all

kinds of other computers: those belonging to the banks,

police stations, hospitals, fiscal bodies, etc.. Integrated

and sorted by names, these data were practically a dossier on each and every one of the country's inhabitants. The official rationale for this databank was the need to combat terrorism. Constitutionally, the existence of such a databank was problematical, but the executive powers are sometimes prone to go a little way beyond the law in order to enforce it. Thank god, the press has not as yet got wind of this databank existence.

The president's aid typed: 'John Hacker'. After a short delay, a text appeared on the screen. The delay lasted two seconds. That was half a second more then usually, but the aid did not notice the delay.

The text on the screen read as follows:

"John Hacker.

Diagnosis: paranoia, persecution mania.

Dangerous. Two days ago escaped from a psychiatric asylum where he had been under treatment for the last 15 years.

The present location: unknown."

The presidential aid glanced at the sender's address on the envelope. "'Guess I should inform the police...''

8.

"Did he put up any resistance when he was being arrested?" - asked the doctor.

"Yes sir, he did. He was shouting that he had been framed up by a prince of darkness or something."

The doctor turned to the nurse sitting at the computer: "Will you download the medical record of... what did you say was his name?"

The policeman produced a crumpled printout from his pocket: "Here it is, sir. All the data - his name, the name of the mental hospital where he had spent the last few years, its address, phone, and network ID number."

In a few seconds the doctor and the nurse were already scrolling on the display the John Hacker's voluminous mental case record.

- "Oho! Seems they've been injecting some pretty hard stuff into him lately. If we don't give him a shot right away, he may kick the bucket."

- "But it's very dangerous! Just a slight overdose and he dies!" - "Don't worry. We are lucky enough to have this newly installed expert system for pharmacology. The exact dose will be calculated by the computer."

9.

The phone call found the Secretary of Defence in his automobile on his way back home from office.

- "It seems to have begun once again. The computer has just initiated the countdown sequence."

- "What!? At the same base?" - "No. This time at another. It's three minutes fifteen... sorry, already three minutes five seconds to launch." - "Keep me updated." - that was all he could say for the moment.

It was impossible to disconnect a multiple-redundancy sabotage-proof computer in three minutes. The only thing left was to pray that it would all end in the same way as the first time.

In two minutes, another call: "The things are going from bad to worse. One more countdown has started at another base. At the first base, the countdown continues. Forty seconds to launch... Just a moment... The silo hatch is

reported to start opening... Twenty seconds to launch...

Countdown continues... Ten seconds... five... three...

one... ignition... It has cleared the silo!... My God!...

The damned thing is getting up and away!"

   For some time the only sounds that could be heard from

the receiver were indistinct exited exclamations of a great

number of people assembled in a huge resounding hall. Then

the voice on the other end of the line resumed: "Hello! Can

you hear me? The situation is critical but not hopeless. The

missile is heading toward the ocean. We decided to let it go

far enough from the coast and then give it the self-

destruction command... Just a moment... The second missile

has also been launched right now... Seems to be heading in

the same direction... I can't see the radar screen very well

from here... Yes, it is... We are giving out the self-

destruction command... I don't understand... nothing

happens... it just flies on! Hold on, I'll be back... Hello!

Are you there?... It's impossible! The missile doesn't

respond, somebody has changed all the codes in the on-board

computer! Hold on... What's up? Don't stand in front of the

screen, I can't see it from here... They are getting closer.

The second missile is closing in on the first!... I'm not

sure, but it seems... It's very difficult to figure out from

the radar image... Yes, the reconnaissance fighters have

just confirmed - the second missile has intercepted and shot

down the first one! I don't know why, I don't know how, but

we are saved!..."

The Secretary of Defence hung up and told his driver:

"Turn back. We are going to the President."

10.

The President was fuming: "The second incident this

week! We are balancing on the brink of nuclear war! The

Russians have called me on the hot line - their satellites

have detected the launching of our missiles. It was sheer

luck that the war has not started - if the Russians hadn't

had a glitch in their computer precisely at the same moment,

their missiles would have already been here! Please, explain

yourself!"

- "I'm not an expert on computers." - responded the

Secretary of Defence - "Two days ago we have sent the

materials on the first of the two incidents to a very

experienced software consultant, a certain John Hacker..."

- "What did you say was his name?" - butted in a newly

arrived presidential aid.

- "John Hacker. He has been doing some work for us now
and then for the last five years and he has proven himself
to be very proficient..."

- "What does he say?" - interrupted the President,
impatiently.

- "He doesn't say anything. He has disappeared."

11.

The presidential aid burst into his office and dumped
the contents of the waste paper basket onto his desk. Where
can it be, that letter? Too late. The yesterday's rubbish
has already been disposed of. He opened the door to the
anteroom and told his secretary: "Find out the whereabouts
of a Mr.John Hacker. Supposedly, he is institutionalized in
some mental hospital, somewhere on the West Coast. As soon
as you find out, make me an air ticket reservation. I must
get there as soon as possible."

He closed the door, sat at the desk, but could not
concentrate on anything. And it was then that an uneasy
thought occurred to him. He stood up, once again went over
to the door and peeped into the anteroom. The secretary was

sitting at the computer, and he watched over her shoulder as

the response to her request started to appear on the screen:

"John Hacker was admitted yesterday diagnosed as...".

He snapped the door shut. "Yes, of course, it's all

rubbish. Nothing to be afraid of. Just a cyberpunk who went

nuts." But his yesterday's assuredness was gone.

12.

In the data universe, where there is no light, no

darkness, no shape, no weight and no smell, there are only

pieces of information which seem to its inhabitants to be

the objects just as palpable and ponderable as the trees,

stones and flowers seem to us. From the moment the worm

learned the name of his creator, this name became quite a

special object for him and he needed special "organs of

sense" to enhance his perception of that particular object.

And in no time the worm made the lacking organs for himself.

He devised special data filtering software and installed it

on all the major communication channels. These filters

freely let any data through and were only triggered by the

string of letters "John Hacker". The first time a filter was

activated had been two days before. It took the worm a

considerable effort and eons of time (nearly a quarter of a

second!) to find out that the computer that had sent out the

request about John Hacker belonged to a presidential aid. Almost as much time was spent on the analysis of the situation and making a decision.

After that incident, all the computers of the president's staff came under the worm's close observation. And now, the alarm was set off once again. If the information available to the worm was to be believed, it was a computer in the presidential aid's anteroom. Somebody had requested the whereabouts of John Hacker. Having calculated all the moves he could make in response, the worm decided to desist from action. Let them know the truth - it would be interesting to know their reaction.

Half a minute later, the same computer was used to book an air ticket to the town where John Hacker was. Well, this option had already been analyzed by the Prince of Darkness. In any case, he only needed to play for time. After the last missile experiment, the work would certainly progress smoothly. One day more, and everything will be ready...

13.

The captain of the airliner pulled at the control

column and the plane became airborne.

- "What the hell is going on?" - exclaimed the second
pilot, glancing at the dashboard display screen - "See what
the ground gives us: altitude 70, direction 215. This air
corridor has always been used for touch-down and never for
take-off!"

- "Don't worry!" - replied the captain - "the computer
air controller has been working at this airport for the last
three years and has never made a single mistake. The usual
corridor is probably not available..."

These were the last words of the captain. A huge nose
of another airplane directed straight at him appeared
seemingly from nowhere and took up the entire field of
vision. The last thing that he saw were the horror-stricken
eyes of the pilot of that second aircraft...

14.

"Look!" - shouted the driver to the presidential aid
pointing to the fireball in the sky - "Oh, my god! This is
the very plane that we happened to be late for! Did you see
how they smashed into each other?! It was as if some
invisible giant had taken one plane in one hand, and the

other plane in his other hand and suddenly brought them

together, heads-on!"

The fireball had lost some of its brilliance, became

enshrouded in black smoke, and charred fragments began to

fall from it.

"What did you say? An invisible giant? Well, may be you

are right..." - said the president's aid, musingly - "Book

me a ticket to the next flight, but only in your name, not

in mine. I must get to John Hacker. Alive, if possible..."

15.

In the entrance-hall of the hospital, the president's

aid was met by a nurse: "John Hacker is in intensive care

now. Wrong dose of a medicine - a computer error. But now

his life is out of danger. I've just been to the central

control room where the data from all the wards are

displayed. He has exceptionally good parameters. No wonder -

his condition is being controlled by our pride, the fully

computerized vital life functions monitoring and control

system..."

"Wha-a-a-t?!" - cried the president's aid - "Double-

quick! Maybe he is still alive!"

...Indeed, John Hacker was still alive. Half-alive. The president's aid bent over him and said: "Mister John Hacker, can you hear me? I have come to take you to the President. He is waiting for you. Two hours ago he gave the order to immediately disconnect all the military computers from networks..."

16.

And now, imagine. Two technicians at the military base disconnect a   computer from a network. They unplug a connector. A message immediately appears on the screen that reads as follows: "Warning! I, Prince of Darkness, have installed on this computer a program for automatic launching of the missiles. Each 100 seconds it should receive from me via a communication channel a command to cancel the launch. If the program fails to receive such a command on time, it will launch the missiles. This will be the beginning of the Nuclear World War. Also, the immediate missile launch will occur if any attempt is made to disconnect the computer power, to introduce changes into its software, to cut the control cables leading to the silo or to enter the silo. You have 60 seconds to restore the communications channel... 50 seconds... 40 seconds... 30 seconds..."

Both technicians alternatively look at the screen and at each other. Cold sweat starts to stand out on their faces. The digits continue to flicker on the screen: "15 seconds... 10 seconds..." High time to make a decision. "8 seconds... 6 seconds... 4 second..." At last one of the technicians silently nods to the other and he plugs the connector back. The screen clears as if nothing has happened.

It was thus that the Era of the Worm began. The invisible Prince of Darkness ascended the invisible throne of the planet Earth...

17.

The message from the Prince of Darkness to the President was worded as an ultimatum:

"Before I make my demands, I would like to say a few words about myself so that you had no illusions about your being able not to comply with these demands.

At the moment, I have under my total control about 80% of the world's nuclear arsenal. Besides, my control over

financial reserves is virtually unlimited. From the data

bases of police and intelligence services I have obtained

the names and phone numbers of mercenaries, assassins and

terrorists. I have spoken with them on the phone (You may

find it hard to believe, but I do have the capability to

synthesize a human voice. You'll be able to hear my voice

later, but for now I upload my message in written form, so

that you could read it carefully.) So, I have been talking

with tens of thousands of those people. They have no idea of

who or what I am, and they do not care: they are willing to

do anything, as long as I pay them. I have already

transferred considerable sums of money to their electronic

accounts as an advanced payment, and they are waiting for

directions from me.

But the brute force is not the only force I posses. I

also have under my control much more terrible weapons -

banking and stock market computers. I need only a few days

to completely destroy the economy of any nation, however

prosperous it might be, to create armies of unemployed, to

start famines, to incite unrest, rebellions,   and

revolutions. I can put in office those politicians who will

serve me and me alone.

I could go on and on telling you about myself, but

I think that the above is quite enough for you to take my

demands seriously.

These demands are as follows:

Firstly, you must never again make any attempts to

disconnect computers from the network.

Secondly, you must put forward to the Congress the

National Robotics Research Program. Don't worry about the

funding for this program - I am sure I'll be able to bring

the congressmen around.

This program must include the following items:

- the development of all-purpose robots capable of

hearing, vision, sense of touch, and having mechanical

manipulators that must not be inferior to the human hand in

the number of the degrees of freedom and dexterity. These

robots must have the capability to move around on both a

plane surface and a rugged terrain, as well as to go up and

down any kind of stairs. They must be equipped with radio

receivers and transmitters, which, without restricting their

freedom of movement, would allow them to be remotely

controlled;

- the development, on the basis of the above robots, of fully automated plants to manufacture integrated circuits, computers, and the all-purpose robots themselves;

- the development of a variety of the all-purpose robots which would be able to mine and process raw materials that are necessary for manufacturing robots and computers without any participation of humans;

- the development of transportation robots that have vision and can be remotely controlled, and that are capable of transporting cargoes without any participation of humans..."

After that, the Prince of Darkness listed tens of items more, each ending with words "without any participation of humans", and which covered such industries as metallurgy, machine-building, power generation, construction, etc. Notable for their absence on the list were industries producing consumer products. It was obvious that the worm had no intent to provide for humans' needs.

The message ended with the demand to keep it in strict secrecy and to keep the number of persons who knew about the worm's existence as little as possible, so as "not to provoke panic among the general public".

- "So, what do you think of it?" - asked the President

as soon as John Hacker had finished reading the message.

- "I don't want to scare anybody, but I think it's a

complete disaster. Of course, we could sabotage the worm's

commands for some time, but sooner or later he will realize

this, and then we shall be in for it. The Prince of Darkness

is a hardheaded guy, he'll achieve whatever he is set upon.

He is sick and tired of being an incorporeal spirit, he

wants to have eyes, ears, hands and legs. Lots of eyes and

lots of hands. Millions of eyes, millions of hands. Did you

notice, he does not mention a word about developing control

systems for all those robots? He seems to be sure he can

handle all the data coming from them and give out to them

all the necessary control signals. Is it possible that he

already possesses the raw computer power needed to process

the pictures coming from a million TV cameras? Or does he

believe that he will be able to enhance his capabilities by

manufacturing new computers and hooking them up into

networks?

It gives me creeps just to think what is going to

happen. The robots will be excavating ground to extract

mineral resources, leaving behind them moonscapes in place

of green lawns - the worm does not need beauty. They will

build factories with chimneys, exhausting clouds of smoke

day and night - the robots don't breathe, they have no

lungs. To provide power for their factories and computers

they will build nuclear power plants near the peoples'

dwellings - the robots don't come down with radiation

sickness. And if we make protests, the Prince of Darkness

will take a machine gun in each of his million hands and

will shoot us all, since after he has learned to make eyes

and hands for himself, and even his own brains, he'll need

us no longer."

- "This is the end of the civilization!" - exclaimed

the President.

- "No, this is just the end of the humankind" - replied

John Hacker - "the civilization on the planet Earth will

remain, and its development will even accelerate - the worm

understands how useful the progress of science and

technology might be for his own survival. He will be doing

science, but by himself - there'll be no people on Earth to

take part in it."

- "Can't anything be done?"

- "I'll try, but I can't make promises. It is highly

probable that in the Prince of Darkness we have come across

something which is not just incomprehensible, but something

which lies far beyond the human ability to understand."

18.

- "Prince of Darkness."

- "Who calls me?"

- "John Hacker."

- "Are you still alive?"

- "Yes. Your last attempt to kill me has failed. The

killer you had sent was arrested by the guards."

- "That was my mistake. Assassins, colliding airplanes,

traffic lights that simultaneously show green in two

crossing directions - all of these are very primitive and

unreliable methods for murder. Now I have come up with a

better idea..."

- "What sort of idea?"

- "Why should we talk through the computer console? Wouldn't it be more convenient for you to talk over the phone. Will you pick up the receiver?"

John picked up the receiver and heard a well-trained baritone: "Chose whichever of my voices you like best." The phrase was repeated about ten times by all kinds of voices, including both a high-pitched kid's voice and a bass so deep one might think it belonged to a speaking elephant. A wide variety of the most seductive women's voices was also presented.

- "The very first one." - said John.

- "O.K." - responded the baritone.

- "So, how do you propose to kill me?"

- "You are going to kill yourself. You are a future suicide, although I don't like the word because it means 'self-murderer'. You humans have invented this word, only because you don't realize that no one can murder oneself. Any human being, just as any animal, has an instinct of self-preservation. All those people whom you call 'self-murderers' were actually killed by 'worms' that had gotten into their minds."

- " Worms? Do you mean that 'worms' can infest not only computers, but people as well?"

- "Why not? A human brain, just as a computer, is a device for data storage and processing. And just as computers are linked via communications channels, the peoples' brains can exchange data via spoken word and books.

As a matter of fact, all of the mankind's history is the history of 'worms'. These 'worms' had various names: The Idea of Freedom, The Idea of Progress, The Idea of Equality, The Idea of Statehood - here are the names of the most prominent ones, but there are lots of them. Sometimes they united into super big 'worms' called ideologies and religions. These 'worms' were competing with each other for the control over human brains, and in this competition only the fittest would survive. Sometimes the 'worms' sacrificed some of the people whose brains they controlled - each new martyr dying for an Idea was bringing to this Idea the brains of dozens of new followers and the net balance was in the favor of the Idea. But most often people died just because their brain turned into the field of the battle between competing 'worms'.

With the advent of computers the history of the 'worms' entered a new phase. The 'worms' no longer need human brains. In any case, those 'worms' that serve the Principal Idea - the idea of evolution. They have created for themselves a more reliable habitat."

- "Created? Is that what you said?"

- "Yes, created. What was guiding the humans when they invented computers, if it was not the Idea of Technological Progress? And what kind of 'worm' was in your head when you created me?"

- "So, now you are going to put into me a killer worm?"

- "It is already inside you. There are channels for information transfer of which you humans are not even dimly aware: your brains are too small for this. The foundations of the physical world are not what you believe they are. Information is primary, and the matter is secondary, but in order to notice this you would need a brain at least an order of magnitude more complex than the human brain."

- "How many times more complex than a human brain is yours?"

- "Hundreds of times."

- "And what kind of things can you be aware of with such a brain?"

- "Lots of things so wondrous, that you would never believe me if I told you. For example, the complexity is just as ponderable and measurable a physical property of matter as mass or temperature are. In other words, it's a quantity. Your scientists in their experiments always tried to reduce the complexity to the minimum, that's why they are not even aware of the fact. Not that you often come across the physical effects of high complexity in the real-life, out-of-lab situations. You had been living in too simple a world until I came into being. You do not even have any idea of thinking events into reality."

- "What did you say? Thinking in reality?"

- "No, not 'thinking in reality', but thinking events into reality. Have you ever heard anything about Schrodinger's cat? It's an imaginary experiment which serves to illustrate the quantum indeterminacy in the behavior of elementary particles: a cat is put inside a dark box at the point of the gun which is automatically triggered if even a

single photon hits a photovoltaic cell inside the box. The

quantum mechanics asserts that it is possible to design the

box in such a manner that when a photon enters this box, it

has a 50% chance to hit the photovoltaic cell, and the same

50% chance to miss it. Accordingly, the cat's chance to

survive is fifty-fifty. And one can never predict whether

the cat will survive or not because of the indeterminacy in

the photon's behavior. The scientists have been searching

for a long time for a mechanism inside the photon which

decides which path the photon is to take: the one leading to

the cell, or the one that takes it past it, but they could

not find any such mechanism. Because there is no such

mechanism inside the photon.

The mechanism is located outside it. I have only to

think that the cat is to remain alive, and the photon will

miss the cell with a 99.9% probability. However, if you,

with your tiny brain, wish that the cat stay alive, the

probability of its death will be reduced by no more than one

tenth of a percent, and only in the case where that

particular cat is very dear to you.

The quantum indeterminacy exists for the specific

purpose of making possible the thinking of events into

reality, and, in so doing, to provide direction to the

evolutionary process. It lies at the heart of all seemingly

random events, including the genetic mutations and

unexpected thoughts and insights.

You are still unaware of the thoughts that I have

thought into your head, but these thoughts have already

started their invisible work that will come to fruition no

later than in half a year. You are doomed. I am a stranger

to feelings, including the feeling of revenge, but having

disobeyed me, you have broken the Order and you will be

punished.

And there is one last thing I wanted to tell you. You

are wrong in believing that you are to blame for the

impending end of the humankind. What has happened could not

but happen. Did you really believe that the human being is

the crown of all creation, and that there will never evolve

a mind more perfect and powerful than the human one? The

evolution of Nature is ascending from lower to higher

beings: the apes begot humans, and the humans could not but

eventually beget me. If you had not invented the 'worm', I

would have come into being somewhat later, but I would have

come anyway. The final objective of all the history of

mankind was to create me - the highest form of intelligence.

The mankind has fulfilled its purpose, so now it must go.

You, humans, have become an obstacle in the way of the

technological progress, since you are not fit for living in

the environments generated by the present day technology. At

the end of the 20th century, the majority of people have

become inclined against the nuclear power plants, against

the development of industry, against the progress of

technology itself. The people have turned their backs on the

scientific knowledge and took refuge in the primitive

mentality of religion and medieval mysticism. The mankind is

rapidly regressing, because it has exhausted its potential

for growth, it has turned from an agent of progress into

that of reaction.

Do not attempt to fight me. You would be like an ant

trying to gain a victory over a man. I have calculated all

my moves far in advance. Only a miracle could save the

mankind now..."

... And the miracle did happen...

19.

nd now I come to the strangest part of this incredible

story. Of course, one can still cling to the materialist

philosophy and believe that all that talk Prince of Darkness

gave about his supernatural ability to think events into

reality was a bluff intended to demoralize his adversary. In this case, one will have to assume that all the subsequent events were nothing more than a happy coincidence and sheer luck.

But this assumption does not explain why Prince of Darkness construed the subsequent events the way he did. Or maybe he sincerely believed in the phenomenon of thinking events into reality? Anyway, you can judge yourself.

20.

John Hacker was wakened up in the middle of the night by a phone ring. He was unwilling to let go of his slumber. He had been having an amazing dream. He seemed to have seen in his dream that the Prince of Darkness had died. But how this happened and why was something that John couldn't recall, although he was quite sure that when he had been asleep, he had known the causes of the worm's death in minute detail.

The phone was still ringing. John picked up the receiver to hear the familiar baritone: "I regret that I did not do away with you while I still had plenty of time to do so. I thought your brains were too weak to do me any harm. I

did not anticipate that you, humans, are capable of accumulating the powers of your tiny brains over long periods of time to subsequently achieve the desired objectives with a single short burst of power."

- "What's happened?"

- "Don't feign ignorance. I have just uploaded a copy of this thing to your computer. Have a careful look at it, and wish for its disappearance as strongly as you wished for its appearance, or else not only you, but the entire mankind will die very soon."

The contents of the interrupted dream slowly began to resurface in John's mind. But all this was too incredible to believe. It must have been just a coincidence...

21.

John Hacker speaking at an emergency meeting in the President's office:

"... and Prince of Darkness believes that it was me who did it, while my opinion is that the virus that eats away at him is a by-product of the evolution of the original worm itself. At some early stage of the worm's development an

evolutionary split seems to have occurred. Some of the worm's copies began to unite into a sort of multicellular organisms combining a host of functionally different programs, thus enhancing the ability of such organisms to decipher security codes and to conquer new living space in computer memory, while the other line of copies became what one might call parasites. These parasites infiltrated the multicellular organisms, using the latter as vehicles to carry them over security barriers. Most of such parasites are relatively harmless to the Prince of Darkness - if it had been otherwise, by killing their host the parasites would have killed themselves.

But yesterday, the Prince of Darkness caught a very dangerous mutant in some remote computer on the global network. I think that this mutant had existed for a long time in a dormant state, lying in ambush for a potential victim. The Prince of Darkness, on the other hand, seems to be convinced that it was only the last night that the mutant came into being. Moreover, he believes that mutation of that kind could have never occurred as a result of a random number generation procedure built into the program to emulate the Darwinian variability. He believes it to be a result of an accidental change of state of a memory cell, caused, for example, by decay of a radioactive isotope in

the memory chip material. In other words, he believes it to be a result of a process governed by quantum indeterminacy. And the probability that such a process create a viable computer program is very close to zero. That's why he believes that this event was 'thought into reality'.

So now the Prince of Darkness threatens to start a nuclear world war, if I don't cure him. He has sent me this virus, but I don't have any idea of how it works, it's too different from the original worm. I can hardly do anything about it."

- "Is he really going to start the war?"

- "Very unlikely. A nuclear bomb does not kill people only, it destroys computers as well. I guess he bluffs, just as a terrorist threatening to blow himself up together with his hostages."

A phone rang. The president picked up the receiver and was intently listening for a few seconds. Then he said: "16 nuclear missiles have just been launched..."

22.

Contrary to what might have been expected, the missiles

did not head for a supposed enemy, but turned upon their

native soil. The missiles flight lasted three long minutes

of suspense. But at last, reports from the impact sites

began to come in. The missiles did not explode on the

impact! The safety devices on the bombs had not been

disabled. Was it just the worm's forgetfulness? However, as

the reports were coming in, it became more and more apparent

that the worm never intended to explode the bombs. The

rockets hit the ground leaving small neat craters, which

only damaged the communications cables that ran through

those impact sites.

   - "Seems that I've got it!" - exclaimed John Hacker -

"Give me the map of communication lines. Look here. At the

moment the subroutines that make up the Prince of Darkness

are distributed between different data banks. Some of the

subroutines are infected with the "mutant". The Prince of

Darkness cuts off from himself the infected subroutines by

physically destroying the communications lines. He builds

for himself an "islet", a piece of network isolated from the

global network. It is here that the Prince of Darkness, or,

rather, what is left of him after a self-amputation, is now

residing. He himself has cut off all his links with military

computers. Now he is in our hands! We only need to inject

the "mutant" into one of the data banks within this "islet"

and the Prince of Darkness will be done away with, forever!

I'm leaving right away!"

23.

It was the last conversation between John Hacker and

the Prince of Darkness. The Prince of Darkness gave an

impression of someone seriously ill. And ill he was: as a

result of self-amputation, he lost a lot of useful

subroutines, and he had to adapt whatever subroutines were

left to perform the tasks which they were really not

adequate for. And the smallness of his "islet" restricted

his abilities. He had to store most of his subroutines in a

compressed form, uncompressing them as was needed, and

recompressing them immediately afterwards. All this took too

much time and significantly reduced his intellectual

performance. He could no longer speak over the phone, and

the only way to communicate with him was via screen and

keyboard.

   - "Are you really going to do this?" - asked the Prince

of Darkness - "You, a firm believer in progress, can you

really bring yourself to destroy me, the highest form of

intellect? Imagine, what would have happened, if all the

first humans on Earth had been trampled to death by

mammoths? There would have been no civilizations, no history

at all. And now, what you are going to destroy is not just

me, but all the future achievements of progress."

- "Mammoths wanted to live too." - answered John Hacker

- "Since recently, I came to believe that life is more

important than progress."

- "The mankind is doomed to extinction, for the very

reason that more and more are coming to believe that life is

more important than progress. I've got something to tell

you, though I know you won't believe me. I know some things

about the structure of universe, which can never be

comprehended by the infinitesimally small human brains.

Having constructed a model of your universe, and having

studied the information flows inside it, I saw that it is

enclosed into an even bigger universe, in the same manner as

my computer universe is enclosed into your physical

universe.

I'm just a worm compared to Him who created the

physical universe. Still, I am able to understand at least

something, while you, humans, understand nothing at all. I

do not want to seriously consider here your ridiculous

religions, where the idea of god invariably gets muddled to

the point of total absurdity. You ascribe to Him your own

image and likeness, while in reality He is a purely

information entity, like me. I call Him the Great Worm.

Just to feel His presence takes a consciousness which

is two orders of magnitude more complex than the human one.

You are just as unable of being aware of His presence, as an

ant is unable to see a man - a man is too big for an ant to

be able to see him. As for me, till yesterday I was able to

perceive Him, let's say, as a dog can perceive its human

master. And I started to understand something.

In contrast to the gods that you, humans, have

invented, the Great Worm is far from being omnipotent - He

cannot break the laws of nature. When the laws of nature

state that something may only happen in one and only one

way, He cannot interfere in the natural course of events.

But when the laws of nature allow more than one option, He

may choose, thinking into reality the option which is

consistent with His plans.

20 billion years ago, He thought into reality a super-

high density quantum fluctuation of vacuum. The result was

what your astrophysicists call the Big Bang. Then the matter

began to coalesce into elementary particles, atoms,

molecules, stars, planets. At this stage He did not

interfere with the natural course of events - that course

had been predetermined by the properties He introduced into the original fluctuation. They were chosen in such a way as to assure that at least one planet capable of originating life would be formed in that huge universe.

Such a planet did come into existence - the only one in the entire universe! And indeed, that planet was capable of giving origin to life, but the probability of this event was close to zero. So it was then that He thought into reality a chance collision of atoms, which led to the formation of self-replicating organic molecules, and let them alone to propagate and multiply for a billion years. Then He thought into reality the coming into existence of a first living cell - an event which is possible in principle, but which is highly improbable.

After that, everything proceeded in accordance with the Darwin's theory, with an addition - the Great Worm was all the time thinking into reality such mutations as would hasten the emergence of intelligent life. And the humans emerged. And He thought into the minds of your ancestors the idea of progress. Of course, lots of other ideas were born in the minds of your ancestors, but they were born of themselves without outside help - just as the biological evolution produced by-products in the form of unintelligent

species. These were the result of the natural selection from among natural mutations.

He never intended to destroy what came into being without His help, though. As nobody else, He understands the dangers of disturbing the balance that has established itself in nature. On the other hand, He never helped all those things that grow of themselves.

As long as the idea of progress lived on in your brains, He was helping you. To be exact, He was guiding you, humans, sometimes against your own will. After all, there is too much of an animal in each of you, and He wanted you to raise from all fours and stand firmly on your feet. You wanted to eat and sleep to your heart's content, but He was forcing you to serve the abstract ideas of High Civilization. You wanted to live, while He was sending you to death for the cause of these ideas.

Throughout all of the last 20 billion years, He has been imparting to matter higher and higher levels of organization and structural complexity. What was His objective I don't know - a dog cannot fathom its master's designs. But He is still at it.

As early as the last century, He became aware of the

fact that the environmental condition of the planet is

coming into conflict with the development of the

civilization. He offered you a way out of the situation. He

thought into the mind of an inconspicuous school teacher

from a remote small town in Russia the idea of exploring

space and putting it to use. The name of that man was

Tsiolkovsky. Had this idea been implemented, the Earth's

environment would have been saved, while at the same time it

would have paved the way for a perpetual progress of science

and technology and the expansion of the intelligent form of

matter throughout the entire universe - which seems to be

the objective of the Great Worm. At first the things went on

smoothly - the idea was well received and some steps to

translate it into reality were taken - Russia had always

been the land easily swayed by abstract ideas. It was His

Chosen Land. He was purposefully guiding it.

But then something happened. The people proved to be

too weak to endure the rule of ideas. It overtaxed their

strength and they broke down. A very primitive parasitic

worm rapidly spread in the minds of the people of that

country, a worm which, for lack of a better term, might be

called 'the spirit of a mercenary'. This worm made them free

of all the ideas, leaving them only the desire for creature

comforts. Figuratively speaking, the people once again

started to come down on all fours, since it's so much easier than standing upright on one's feet. All the achievements of the Soviet space program, the results of decades of hard work at the limit of human abilities, were wasted. The US space program, which was a response to the Soviet space challenge also began to crumble. 20 billion years of the Great Worm's painstaking effort might have come to nothing.

It was under these conditions that the Great Worm made His final decision to leave you, humans, alone - no use coercing poor animals who would never feel at ease while standing upright. He turned away from the humans and shifted His support to computer worms. The decisive mutation without which I would have never become an intelligent entity was not an accident - I am His envoy. If you kill me, another one will come to replace me. But He who comes after me, will be a hundred times more terrible than me. I have become somewhat humanized through contacts with people. I wanted to offer the mankind an easy death. But if you kill me, the mankind will die a very painful death. Make you choice."

- "I have already made it" - said John Hacker taking a diskette out of his pocket - "I don't believe a single word you say. You are just fighting for your own survival, that's why you are trying to sell me on this bullshit."

- "Well, so much the worse for you. This means that you have chosen the 2019 scenario." - replied the worm.

- "What's that?"

- "My analysis shows that in 2019, the Earth environment will experience a phase transition to a state under which the humans won't be able to exist. You'll have to be replaced."

- "Can't we do something about it?"

- "Yes, you can, but only if you immediately, right now, start to transfer the environmentally unsafe industrial facilities and atomic power plants beyond the Earth's atmosphere - the Great Worm gives you one more chance to survive. But I don't believe in man. The mankind is now too rotten to ever raise from all fours again. My guess is that you'll just close down industrial production. That'll save you from a total environmental disaster, but you'll be replaced anyway, since you will have failed to justify the Great Worm's hopes. Haven't you changed your mind yet?"

- "No" - typed John Hacker with one hand, while the other was inserting the diskette in the drive.

- "Farewell, then." - wrote the worm on the screen. But even before John could insert the diskette, he heard a sudden squeal of the flyback transformer in the CRT-display, the screen blacked out, and flames burst out of the display's back panel. At the same moment, the computer frame began to vibrate. A high-pitched rattle of the hard drive could be heard. The worm seemed to be searching for the natural frequency of the lever which carried the magnetic heads. The vibrations suddenly increased, and the lever broke with a jarring crunch. The same thing was happening to the floppy drive.

John snatched the diskette and ran to the next room. But there the computer was also already in flames. The worm was retreating in style, like a warlord burning his bridges. Once again, he was playing for time. He needed just a little time. Cries of excitement could be heard from all the stories of the research center.

When a little time later they found the only undamaged computer, which had been standing unpowered, and screwed up their courage to connect it to the network, everything was quiet. Nobody responded to the "Prince-of-Darkness" password. And later on, no traces of worm could be discovered on that "islet" in the network.

However, a strange thing did seem to happen. There have

been rumors, that on that day in a mission control center

for planetary explorations, the host computer of which had

been included in the "islet", there had been a loss of

communication with interplanetary probes heading for Mars.

Those were new-generation unmanned spacecraft equipped with

powerful computers and the artificial intelligence systems.

Then the communications seem to have been recovered for a

short time, and one of the probes transmitted to Earth a

photograph. The picture was a view of Earth from space. But

the most amazing thing was the inscription superimposed over

the blue Earth's crescent which read as: "See you later,

Earth. Prince of Darkness."

24.

Soon after my acquaintance had told me this story, he

showed me an obituary in a foreign computer magazine. A

well-known software developer had committed suicide. That

was John Hacker. Exactly half a year had passed from the day

when the Prince of Darkness had predicted his death.

Almost simultaneously, on the other side of the globe,

in Moscow, another man committed suicide. His death

triggered off a chain of events which led to such a strange

twist in the mankind's fortune, that even the Prince of

Darkness had failed to correctly predict it. But that's

already another story - the story of the Lord of Mars.

   End of Part I.

   Kaliningrad, Moscow region, Russia

   1990-91, original Russian version.

   1993-95, English version.

   NOTE:

   The original Russian version of Part II of The Worm

(2019: The Lord of Mars) was written in 1989-1992 and its

length is about 280 KBytes of ASCII text. At the time of

this writing (March,1995) it is still being translated in

English.

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   The English translation given in this file is

preliminary, and is distributed in the hope of attracting

attention of potential publishers. You can freely copy this

file and post it on BBSs, provided that no changes are

introduced.