



Exploding The Phone

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PROGRAM	"Sorry, the Telephone Company You're Dialing Has Been Temporarily Disconnected?"	STATION	WETA FM NPR Network
DATE	January 30, 1973 7:00 PM	CITY	Washington, D.C.

FULL TEXT

AL BELL: Two months ago "Ramparts" came out with an article that has been suppressed, so you may not have heard too much about it. It told how to rip off the telephone company by installing a device in your home telephone that enables you to receive calls at no charge to the caller. Okay? Now we have perfected the device to the point where anyone -- anyone in the country can do this, young or old. Even a child can do it.

Basically the way this works is you open up your telephone, the two screws on the bottom, and it's very simple to do. The only tools you need for this conversion process are a screw driver. And you only need two parts...

JIM RUSSELL: This is the story of a war which is taking place right now in cities and towns throughout the country. This war finds small bands of guerrillas attacking an enormous conventional army. While the large conventional army has been quick to publicize its victories, there is still great uncertainty about who is winning.

[Sound clip.]

OPERATOR'S VOICE: I'm sorry. The telephone company you're dialing has been temporarily disconnected. Disconnected. Disconnected.

ANNOUNCER: National Public Radio presents a report on phone phreaks and their assault on the world's largest and most powerful corporation, the American telephone system.

Here is Jim Russell.

RUSSELL: It began less than a decade ago in the mid 1960's when telephone companies around the world took part in a multibillion dollar conversion of their equipment. The new

system was based on twelve different tones, and operators almost anywhere in the world could control telephone equipment virtually anywhere by using combinations of these same twelve tones.

The tones themselves were relatively unsophisticated. They are produced by combining two different frequencies, and, to the ear, they sound just like variations on the touch tones we hear on our home telephones.

The new dialing control system was a tremendous advance for the telephone company. But it brought with it two fatal flaws. First, the twelve control tones used by telephone operators are relayed over the same voice circuits that we speak on. Thus anyone who knows what the tones are can recreate them and send them down the phone line as easily as can an operator. And thus was born the generation of phone "phreaks." Phone phreaks is the name given to people who know how to control the phone system from their home telephone or from pay phone booths. There are several hundred phone phreaks in America, and many of them have engineering backgrounds. But it's not necessary to have extensive training in electronics to become a phone phreak. At a recent phone phreaks' convention in New York, a man who calls himself Al Bell, a pseudonym, demonstrated how anyone, even a child, could build a device that would permit the average home telephone to receive long distance calls free of charge to the caller and the receiver. The device costs less than one dollar to make, and it is called a mute.

BELL: To answer the phone -- the phone will start ringing. You leave the switch always in the normal position for normal use. When they call, you take the receiver, you left it up and hang it up as quick as you can. Don't go like that. Just lift it up and hang it up, and the ringing will stop. Slip the switch to three, pick up the phone and talk, and the call is good for up to fifteen minutes; the shorter the better, because the phone company has ways of checking on these. But right now what they're trying to do is basically to install new telephone systems. And they will have new telephone systems installed that will make the system obsolete by 1978. So we have six years, okay? [Laughter.] Six years to totally -- to totally destroy them. Now, you see, they can't put in those new telephone systems if we all tell all our friends about how to do this, because then they won't get any revenue in, essentially. I think, because we're going to find out other ways, too. We have many other ways of ripping off the phone company. And the people who subscribe to the Youth International Party Line Newsletter and people who write into underground newspapers contributing ideas daily are finding news ways to get back at them.

So you see how simple it is. Now we have reprints of all of this.

RUSSELL: Ironically, the phone company admits that it bears a lot of the guilt for the development of these phone phreaks. Joseph Dougherty (?) is the director of corporate security for AT&T in New York.

JOSEPH DOUGHERTY: The candor with which we have published technical information through the years, especially in the early years, as to how the system works has come back to plague us to some extent, because, actually, most of the information that they have gotten they have gotten through "Bell System" and other technical journals. And so it is available if they look hard enough for it. We try to be careful now and not to make it too easy to obtain.

RUSSELL: This loose security was the telephone company's second fatal flaw. The phone company had carelessly made available to almost anyone who wanted it the technical information on how the phone system works. It was all there in black and white, available to any would-be saboteur of the telephone system; available in any college library.

But even if that data had not been so readily accessible, phone phreaks would probably have discovered the facts and frequencies anyway through trial and error and experimentation.

Part I: the birth of a phone phreak. In a babysitter's house, a young blind boy sits and waits. He is bored and lonely, and for lack of anything better to do he starts to play with the telephone.

JOE ENGRESSIA: It was over at her house one day that I was listening to a recording in Los Angeles; you know, (words unintelligible) number of a recording which I used to dial because they were free. And I liked to listen to the different voices and the different accents, and such. And I just happened to go [he whistles]. And when I hit that last tone, I heard a [imitates sound], and the recording went off. So I said, well, I wonder who cut the recording off. So I dialed it again, and I figured, well, what was going on when the recording cut off. And I said, well, I was whistling. And so I found the tone again and realized that my whistle was cutting it off. And finally I whistled some digits; you know, I mean I whistled once, then I whistled twice, just playing with it. And it turned out it was actually dialing through the circuit. I could see that the call was going through. And gradually through a process of figuring out what it was doing and everything and thinking about it, I realized that I could actually make long distance calls that way.

RUSSELL: The young blind boy's name is Joe Engressia. Joe is in his early twenties today, and he lives in a suburb

of Memphis, Tennessee where he holds down a job with the local telephone company. But in the years between six and twenty-two, Joe Engressia became one of America's most exceptional phone phreaks. And although he has now stopped phone phreaking, he is still greatly respected by phone phreaks who call him the original granddaddy of phone phreaking.

He lives alone in a small dark apartment now and seldom has visitors. But he is rarely lonely any more. Phone phreaks call him from all over the country. When I visited Joe Engressia in Tennessee he told me about his days as a phone phreak and how he developed his early interest in the phone system.

ENGRESSIA: Yes, it was always a challenge to me. And there was very little in the way of getting information. You know, there weren't that many people that could really tell me. So I mostly did things on my own by dialing and figuring things out. When phone men would come to the house -- and I'd always, you know, save any kind of food I could, you know, sort of like giving a carrot to Santa Claus. You know, mother would, you know, usually cook up sandwiches and coffee and anything else to lure him, you know, and subvert him into talking. And I would fire up. I'd prepare my questions three or four days in advance and, you know, have the advantage on the poor guy, because he would just be able to, you know, have to give me answers off the top. And so I'd start spouting and just ask him anything I could.

And one day one thing he told me -- well, you'll have to call the central office for that. So he gave me the number of the central office, and I called them and asked them some technical questions about digit absorbing set switches. He said, well, who is this, ma'am when I asked him about his digit absorbing selector levels. And I said, "I'm not ma'am; I'm Joe, and I'm seven years old." So he didn't quite believe me, but he answered my questions. And he said, well, if you're really seven years old, why don't you come down for a tour of the office. And, boy, was that a thrill. I didn't understand it all then. I really found out how stupid I was in telephony about that time, you know. And I said I really want to learn the circuits of this stuff to myself. And I said, boy, one of these days I'm going to work for a phone company; I'm going to know where all those wires go and what they do and what all the different switches do.

RUSSELL: Joe's fascination with the phone system knew no bounds. But the loneliness of his blindness and his natural curiosity about the world were also factors in his phone phreaking.

ENGRESSIA: You know, and the house would be kind of lonely there, and everything. And I could talk to thousands

of people. I talked to all kinds of people in different countries, learning the culture, like talking to a guy in Moscow and learning about Red Square and the U. S. Embassy. Just everything. You know, it makes my whole world so much bigger.

But back when I was three and four, I was just entranced by the phone. It was just so amazing to me. I mean things more complicated, like radio and color television, or anything like that, you know, that's not half as interesting to me as the phone was. I really don't know what struck me when I was at any early age. I think one of the reasons it did [was] because nobody could tell me anything. And my parents sort of discouraged me. They said, you know, the phone is kind of a stupid thing to play with and everything. And maybe that's why I did it, because, you know, nobody appreciated its complexity except me. So it was the way I felt back when I was five and six.

RUSSELL: As he grew older, Joe found he had to reach out beyond his local phone company for the information he needed to quench his thirst. He literally saved pennies for months so he could afford the price of bus fares to take him to visit far-off central telephone offices. He speaks routinely of staying awake for thirty-six hours at a stretch to make the most of these information gathering trips.

His initial obsession to become an employee of the phone company never left him. And he finally devised a plan to land him a job with the phone company. He increased the pace of his phone phreaking, making sixteen hundred free calls in one week. And he began to call the phone company to report malfunctions of the system.

ENGRESSIA: I really, you know, was getting low on money, and I needed a job, and I was hoping that I could get a phone company job. But I decided that the best chance of getting a phone company job was to get arrested, which might sound crazy to most people that don't know the circumstances. But I figured, you know, that that would bring things that I was doing to people's attention, especially in the phone company, graphically enough to where, hopefully, they would hire me.

So the first thing I did once I planned it -- well, I did this before I planned it, actually. I reported some troubles to them, which I wanted improved anyway; you know, some watt (?) codes that couldn't be reached from states they were supposed to be reached from, and various things. And I gave my phone number. And they called me up and asked me about it. And I told them a little more. And they were wondering how I knew this. They didn't ask me how I knew it, but they started wondering.

They started checking my line and found out I was making some free calls. And I heard them checking. So I made

some more free calls and told them exactly what I'm doing, like, I said, well, now I'm going to try Moscow -- country code 071, area code, 095, U. S. industry number, 2520011. And I gave some frequencies and said, now, this is how I'm doing it. And, you know, I talked to some phreaks and call up test boards. And finally the arrest did come. So I went to jail, you know, all excited and everything, thinking, well, I'm going to be getting a job soon.

Then I found out that Bell won't hire me. That was a big disappointment. But I figured, well, as soon as they get a little publicity or something, they'll hire me. Then, you know, I got a little publicity, and even the mayor called them, the mayor of Memphis, and asked them to hire me and told them, "You hire him." And they still wouldn't. So then I figured, "My God, my plans are for nothing. Everything is for nothing." And I was really depressed and down.

About two days later I got a call, this little independent about fifteen miles from Memphis, saying, "I don't know if you'd like to take a job with such a small company, just a little job, but if you want to take it, we'd be glad to have you, Joe." And sure enough, I did start Monday, and I've been working there ever since.

RUSSELL: Joe Engressia says his real interest is learning about and improving the phone system. But when he took the job with the local phone company in Tennessee, many of his phone phreak friends accused him of selling them out. They still call him, though, and younger novice phone phreaks seek information from him.

One of his callers asked Joe how safe it was to phone phreak any more.

ENGRESSIA: Not very safe. If they find out about it, you know, it's just real, real soon that you can get busted.

It's just not very safe.

CALLER: Is it very, very unsafe?

ENGRESSIA: I really don't know. I mean it just varies. You never really can tell. I mean you might get away with it for five years or you might be caught in five days. It's just impossible to tell.

RUSSELL: Joe hangs up and tells me why he tries to impress upon novice phone phreaks the potential danger of their activity.

ENGRESSIA: I don't like to see them get in any trouble.

especially since they don't always know the seriousness of it. You know, they'll be playing games and having a little fun, and all of a sudden they'll find themselves in jail and realize it's not so much fun any more.

RUSSELL: Joe Engressia says the American phone system is the best in the world. But he concedes that right now it is pretty vulnerable to tampering by phone phreaks. He debates the claims of some phreaks that they could take over the phone system. But he admits that some of their claims are not exaggerated.

Some phone phreaks, for example, say they can use their phones and home brew equipment to dial into corporate or governmental computers and even to remove information and reprogram these computers. Joe Engressia concedes this can be done.

Joe says that phone phreaks can also seize a number of long distance lines at one time. But he says that there are so many long distance trunks between major cities that it would take thousands of people to jam the phone service in even one single city.

Before leaving Joe Engressia, I had one final question for him. What motivates people to play with the telephone? What is it that makes phone phreaks phreak?

ENGRESSIA: Well, a good many of them do it for kicks. In other words, they don't really have any desire so much to learn about the system. It's just another play toy to some of them. Of course, some of them are pretty dedicated and want to learn about the system, even if they aren't, you know, exactly pro company. They do want to learn about the system, nevertheless, and are interested for that reason. But there's some of them, I have to admit, that are just in it to learn how to make free calls better. They could care less about the system. And they really couldn't care, you know, about how it works. They're mainly interested, you know, for what they can -- you know, they call it rip off. You know, they say "I love phone phreaking because it's such a king size rip off." They say, "This darn establishment, all these people in here that don't have any conception of social justice or welfare or equality, or anything, I just feel good ripping 'em off."

There's all different kinds of people that are interested in the phone for various reasons. But me? I'm interested in it just to learn about the system. But that is really pretty rare.

RUSSELL: Part II: the development of the little blue box.

Most phone phreaks do not have Joe Engressia's ability

to whistle on a perfect pitch. Most of them have to rely on electronic devices to produce the twelve tones required to become a super operator to dial free calls around the world.

Early phone preaks used electric organs, and they found that by pushing various combinations of keys on these organs, they could produce the required control tones. Then an engineering student named Al Gilbertson (?) came along. Gilbertson discovered a publication in his college library which listed the correct frequencies for the twelve control tones. He raced from the library to the laboratory, and there he produced the first blue box. It was big and clumsy, but it worked.

AL GILBERTSON: And the first time we found the frequencies we put together a working blue box in about twelve hours and had it on the air, and it worked the first time. Construction of a blue box -- given the frequencies, it's very easy for any engineer to do. Someone with journeyman's experience, for instance a television repairman, could build one very easily. And most of the blue box factories are run out of TV repair shops.

RUSSELL: Modern blue boxes are no longer big and clumsy. They are miniaturized. Al Gilbertson has built one smaller than a pack of cigarettes.

But no matter what size the blue box is, the basic principle remains the same: they all produce the control tones needed to become your own super operator.

The key to the blue box's power is its ability to fool the phone company's equipment. This basic deception is produced when the phone phreak depresses one of his twelve buttons, and the blue box emits a high pitched whistle. In order not to violate the law, we will not at any point in this program actually give out the details needed to defraud the phone company. So in the following tape you'll hear that we have cut out any mention of the actual frequencies used.

Back to the blue box. This is the way it works. The user dials an eight hundred number, one of those no charge long distance numbers used by companies like Hertz and Avis Rent-a-Car. When the eight hundred number begins to ring, the phone phreak and his blue box go into action. Al Gilbertson explains.

GILBERTSON: And as the eight hundred number is ringing, you hit [high pitched sound] the cycles per second. The equipment in White Plains hears [high pitched sound], and he says, "Ah, he hung up." At that point it clears out its registers and assumes that the line is idle. You then send it the key pulse signal, which is a signal that says, get ready, I'm about to send you information. You follow that with ten digits, followed

by a start signal. When it hears start, it takes the information that you've given it and then proceeds to route it overseas for you.

RUSSELL: I am in Washington, and I dial one of those eight hundred numbers, one of the toll-free numbers used by the rental car agencies. [Sound of touch dial, followed by ringing.] I wait until the number begins to ring in St. Louis. And as soon as I hear that ring start, I depress one of the buttons on my blue box. The ringing on the Hertz line stops immediately, because when I pushed that button, I fooled the phone company equipment into thinking I had hung up. So the equipment cancelled the call, and it also stopped the rental agency's phone from ringing.

But in reality, I did not hang up at all. I am still on the line. And not only am I still on the phone line, but I'm still in control of the long distance eight hundred trunk, which I used to get to St. Louis in the first place. So now I am free to use the other buttons on my blue box to dial any number anywhere in the world. For example, I can dial the time in France. [Sound of dialing, followed by reception and the relay, in French, of the time.] Or the time in Italy. Or in Germany. Or even around the world in Australia.

VOICE: At the third stroke, it will be 11:22 and forty seconds.

RUSSELL: And the point of all this is that I will not be charged for the calls because I have deceived the phone company's billing equipment into thinking that I first dialed a nontoll number and then hung up. When the phone company's accounting computer goes over its records for the day, all it will show is that I made a call to a nontoll eight hundred number, and there is no charge for that call.

After they have gotten over the thrill of making a call to the time in Italy, France, Germany or Australia, of course phone phreaks are not satisfied with these rather simple calls. There are conference calls and toll-free loop-arounds. In layman's terms, these are numbers which, for one reason or the other, permit several phone phreaks, all dialing the same number or consecutive numbers, to hold party line conversations. Some of these numbers have provided the forum for weeks and even months of continuous conversation with hundreds of people joining the conference call during its existence.

But as with all experimentation, after the theory is proven, the phone phreaks often tire of calling Moscow or dialing their own voices around the world and back into a second phone right next to them. Some of these phreaks are now into computers. And they claim that from their home phones they can call major computers around the country, use them and even

subvert them. One phone phreak says he has reprogrammed the computer of a large institution so that part of its circuitry is now reserved for his exclusive personal use. He also says it would be possible, for example, for a phone phreak to enter the FBI's crime control computers and phreak around with the FBI's memory bank.

UNIDENTIFIED PHONE PHREAK: The big game in phone phreaking these days is to get into (word unintelligible) computers and reprogram them. Particularly in automatic inventory type warehouses, the fun thing to do is to get into the computer and start shipping refrigerators to Alaska, etc.

RUSSELL: How much real damage can phone phreaks do to these corporate or government computers? Al Gilbertson explains one program which phreaks often inject into computers. They call the program the glob or cancer. The program can be injected into a computer by the phone phreak, and Gilbertson explains what happens then.

GILBERTSON: And once it's in there, this thing's sole purpose is to duplicate itself. And of course, it understands operating systems. And everytime control passes into this thing, it looks around through the catalogues, finds new places to stuff itself, orders copies put up, will scratch out the user's real data at random and in small quantities so that the operating system just gets slowly sick. And then if you come in to try to kill it off, you have to kill off every single copy of it everywhere simultaneously. Because if you ever -- if you miss one of its brothers, the first thing is if you pass control to some routine out in one of your libraries and you haven't cleaned it up, the first thing this guy does is he looks up and he looks around to find out if his brothers are still alive. And if they're not, he starts duplicating himself into other data sets in the computer. And this is a pretty vicious program, very hard to get rid of. That's a fun game.

RUSSELL: Is this really possible? Well, a computer expert told me it is not science fiction. It can and has happened, and it is a deadly serious problem.

Part III: the phone phreaks gather to show their wares.

This past summer in New York, phone phreaks gathered at a rundown hotel to hold a convention. The conventioners were a weird variety of actual and would-be phone phreaks, hangers-on and phone company spies. They spent their time viewing new equipment and attending seminars on technique.

Reporter Bill Touey (?) was there, and he talked with

the organizer of the Youth International Party Line about phone phreaking.

MAN: Phone phreaks have a sort of love/hate attitude toward the phone company. They love 'em, yet they hate 'em. For example, I wanted to work for them, but they wouldn't let me. So I hate them. But it's more -- it's a sort of deeper thing than that, you know. A lot of people realize how the phone company's unfair to both its customers and to its employees. They rip off operators, and the operators, in turn, rip off the people. People get, you know, sometimes angry at the operators when they shouldn't. It's not their fault. They're being supervised, monitored and harassed daily. And they know that anything they say over the phone is overheard by up to eight people by their octopus devices that monitor and listen in. See, the phone company doesn't believe in wiretapping, but they do believe in monitoring, which is the same thing, but it's just the way the phone company likes to use semantics to its own advantage.

BILL TOUEY: Now that's kind of a political/social attitude. Do you have any emotional feelings towards the phone company?

MAN: Well, they symbolize for a lot of people -- Ma Bell symbolizes repressive agencies. They symbolize the establishment. But as you know, it -- not only that, the phone company -- so many people hate the phone company of all different political persuasions, because they realize, common sense-wise, simply what it is. It's a big rip off. It's a big corporation, and the people who are making profits are not the millions of stockholders, but the few stockholders who own the millions of stocks. And they keep reaping in profits, but their rates soar higher and higher; the service declines to the people who need it most.

TOUEY: What's the difference between the phone company's rip off of people and your rip off of the phone company?

MAN: No difference, except that the people are involved in ours. The people are getting finally a fair shake on it.

TOUEY: So it's a social movement, phone phreaking?

MAN: It's the issue that could bring the right and left together. It will bring the right and left together, because everyone agrees that the phone company should be free.

RUSSELL: Phone phreaks have a variety of ways of rationalizing or justifying their phone phreaking. For some, phone phreaking is a way to attack the establishment. Others cite different reasons.

TOUEY: Why do you phone phreak?

MAN: It's a lot of fun.

TOUEY: What makes it fun?

MAN: I'm an electronics enthusiast. (Words inaudible.) I like to do it. I don't enjoy ripping off the phone company, as far as, like, maybe long distance calls go. I like their equipment. I like the way things are designed. And I like to learn about electronics through their equipment.

RUSSELL: It is not unusual for phone phreaks to feel a sexual attraction toward the phone system and phone phreaking. The danger involved, the sweetness of success, of forbidden fruit all produce in some phone phreaks a distinctly sexual reaction.

TOUEY: The first time you succeeded in ripping off the phone company, how did you feel?

MAN: I felt amazing. The first time I reached England, I felt -- it was like one of the best feelings I've ever felt.

MAN: Phone phreaking is a -- it's a unique thrill. It's like having an orgasm for the first time when you make your first blue box call and it goes through. It's quite an amazing thing and gives you a feeling of power over a computer system that is designed to work for computers by robots, not for people.

RUSSELL: Phone phreaking also breeds fear among its practitioners, even to the point of paranoia.

TOUEY: Are you worried that you might get caught?

MAN: I'm very worried, but I try to be as careful as I can, you know. And I hope I won't get caught, you know. I'm not as careful as I should be, you know. But I think -- the way I look at it, in a city -- let's say in New York City, there're millions of phones, you know, literally millions of phones. And in order to catch me in the way I do it, the way I figure they'll have to tap my phone, you know. And for them to do that it takes a lot, you know. They have to get a court order and this and that. It's not that easy for them to do it. And plus, you have to -- like, it takes at least a month, I figure, for them to move in on you. And by that time I've moved or I've changed, or I've stopped doing it the way I'm doing it, you know.

TOUEY: What -- what made you get started? What made you cross that line?

MAN: Well, a friend of mine had a blue box, you know. And I started borrowing it, you know. And like I said, I'm an electrical engineer. So I said why should I borrow it, you know; I want to build one myself. And, like, it was a great project; it was a big project, you know. And I thought it'd be a very good accomplishment, you know. And it was. It took me about three months to get the first one working, you know. And it works beautifully. It really works everytime.

TOUEY: Do you get that sweet taste of victory when you've beaten the phone company?

MAN: Yes, definitely. Definitely.

RUSSELL: Like other movements, the phone phreaks also attract hangers-on, people who don't themselves phone phreak but like to be around those who do. It's rather easy to join the movement. All you have to do is dislike the phone company, based on a bad experience with them. With these criterion in mind, the phone phreak movement probably has a potential membership in the tens of millions for there is hardly an American alive who has not had some kind of bad trip aboard Ma Bell's circuit.

WOMAN: With the phone prices just rising and rising, it's just cheating everybody. And everybody is being cheated. And it seems like the more you try, you know, you can't do anything. And finally people are doing something and people do really care. You know, people haven't cared. They've just let the prices rise and rise and let themselves be cheated, you know, with the phone bills and with never getting help when you want it, waiting. We just called the phone company because our line was dead for three days. They didn't come. And, you know, that could be a serious problem in a lot of cases, you know.

RUSSELL: Many of the more serious phone phreaks say they're into phone phreaking because it's a form of social protest. Their rationalizations of their behavior have a familiar ring about them, because these rationalizations are drawn in the language first popularized by the civil rights movement and later the peace movement.

MAN: Obviously we don't want to break laws. There's no reason to break laws unless you're pushed to the point where you can't do anything else. And certainly we'd like to be able to do things reasonably. I feel that phones should be free and they should possibly be part of the tax design. This is my personal opinion. I just can't see how the phone company merits running the world, literally. And they're a tremendous war machine thing, too. I mean, I just can't see agreeing with that and just sitting still.

RUSSELL: Other phone phreaks have fewer hang-ups about explaining their behavior. One young man who cheats the phone company by using a fraudulent telephone credit card had

this to say to Bill Touey.

MAN: The first credit call I made was great. Stayed on for fifteen minutes. I did about twenty times in one day. It's such a feeling and it's a great thrill to be able to call anywhere for free. It's a great thrill to be able to do anything for free.

TOUEY: So you don't feel guilty about it at all?

MAN: Not at all. I love it.

RUSSELL: Part IV: phone phreaking as an example of pure science.

Despite the fact that phone phreaking has been around for nearly a decade, there is a terrific scarcity of published material on the subject. Numerous articles about how to do it have appeared in underground publications, but for some reason we're unable to locate any serious research on phone phreaking as a social phenomenon.

Professor Howard Becker of Northwestern University is one of the few sociologists to have thought about the subject on a serious level. And Professor Becker has a theory about phone phreaking. He calls it a kind of people science.

PROFESSOR HOWARD BECKER: I think one of the really interesting things about phone phreaking and the phone phreaks is the way it represents a kind of nonprofessional effort at scientific exploration and discovery. In other words, we're used to thinking of science as something that you have to have a Ph. D. to do, something that has to be done through universities, something that has to be funded by the government, and so forth.

In this case, quite a lot of knowledge has been established in a fairly rigorous scientific way by a bunch of essentially amateurs, using techniques that they didn't have to get a Ph. D. in order to use.

So I think it's an interesting example of how people might escape what you might call the tourney of experts.

RUSSELL: But isn't it stretching things too far to call the phone phreaks scientists and the information they unearth scientific knowledge. Professor Becker thinks not, and he defends the phone phreaks and their discoveries.

PROFESSOR BECKER: It's knowledge in just the same sense that scientific knowledge is knowledge. That is, you might think of the phone company in this case as a big secret in the sense that nature is a big secret to the scientist. And the object of the game, so to speak, is to find out, you

know, the character of that secret.

Now you speak by the way of the phone phreaks as though they were individuals. And the thing that interests me most about them is the degree to which they are in touch with one another, in communication with one another; the degree to which they share their knowledge and use the findings of each individual investigator, you know, to further the whole collective enterprise, very much in the style of conventional, legitimate science.

They don't have professional journals in the strict sense. But on the other hand, they do share their information in something like a scientific meeting; you know, like the conventions that scientific associations have every year. Only they do it by phone since it doesn't cost them anything. So that they, you know, so to speak, do their research, arrive at certain findings, and they communicate them to one another so they can be checked by other people, which I take to be one of the chief characteristics of scientific work.

The fact that the thing they're investigating is illegal to know, so to speak, or illegal to use doesn't differentiate them from all kinds of scientists in the past. You know, anatomy used to be a forbidden subject.

RUSSELL: Professor Becker's apparent kindly regard for the phone phreaks and his elevation of them to a level of serious scientists would all seem to imply that he condones their behavior. And I asked him if he considers phone phreaking a socially desirable form of behavior.

PROFESSOR BECKER: Well, I don't know that, you know, ripping off the phone company is in itself necessarily desirable, or it certainly isn't necessarily undesirable. But the model of using the scientific method to arrive at knowledge without the intervention of experts as intermediaries seems to me very socially worthwhile.

RUSSELL: Finally, there are many different kinds of phone phreaks for phreak for many different reasons. And while some are obviously doing it to gain knowledge about the system, other phone phreaks admit that they do it merely for the fun of doing it. And still others contend there is a form of political protest against Ma Bell and the phone company monopoly.

PROFESSOR BECKER: The reasons why people do it are quite separate from the consequences of them doing it, you see. In other words, you know, people do science for all kinds of reasons too. And some of the reasons are the kind of reasons that are ordinarily alleged, you know, to help mankind and further knowledge. But a lot of scientists engage in scientific research because it is fun, you know, and it's one of the reasons I like

to do research, and it's a pleasure.

Some people do it in the hopes of effecting social change. That's a not uncommon reason to engage in scientific activity.

So in that variety of motives, the phone phreaks aren't really different from ordinary scientists.

RUSSELL: Howard Becker, professor of sociology and urban affairs at Northwestern University in Chicago.

Part V: Ma Bell and institutional vulnerability.

We've already talked about blue boxes and about the phone phreaks' claims that they can sabotage computers. But in addition to these kinds of phone phreaking, the phreaks say they also have the ability to order basic electronic changes made in the phone company's circuitry. And they do this without any complicated devices, as Al Gilbertson explains.

GILBERTSON: Some of the best phone phreaks don't use any hardware at all. You can talk people in the telephone company into doing stuff for you, because it's such a big organization and they, often as not, could not identify an authority. And they will take orders over the telephone. And you simply have to imitate a person of authority to get something done for you. And since the phone phreaks do have the ability to tap lines, if they can locate a manager or someone else in the phone company, they can sit there and monitor his line until they find out how he talks and what he sounds like, and his actions, and what channels you have to go through to get something done. And then they just imitate him to get something else done.

This can actually go so far as to making hard physical rewiring changes ordered in the LAC (?) rooms and the relay rooms.

RUSSELL: Phone phreaks say they can tap almost any telephone in America without going near the victim's telephone. Gilbertson explains.

GILBERTSON: All you do is to dial the verification operator, and there's one operator that sits there and verifies that circuits are really busy. If you call up and say, is this circuit really busy, I think it's off the hook, an operator will go onto the line and listen to it for a second to see if anybody's talking on it. That's the way they do it.

Well, you can do the same thing. You call to the

verification operator by dialing the prefix. You'll dial area code, plus prefix, plus the last four digits -- they vary slightly -- indicating that you want the verification operator. When you get the verification operator, you will appear on her board as having supervisory authority, only you'd have to be an insider in the phone company to appear on her board anyway. She's very used to talking to repairmen and other people in the phone company.

So she automatically assumes you're authorized when you appear on her board asking for service. And if you use the correct jargon, she will do exactly what you ask her to. And you say, "Hello, operator. Will you put me up to your no test trunk." Well, "put me up to" is an old cord board phrase, which means pull out one of your plugs and pull it up and stick it into the board or put me up to the board. Okay?

Well, nowadays, they just throw a key. And you vanish into a board once she throws that key. You then pulse -- start the last four digits, the number that you want to monitor. You hit key pulse, four digits and the number you want to tap -- start -- and you appear on the line. And you can sit there forever. And you can monitor or do anything you want to it. And there's no thing [sic].

One of the top phreaks in New York -- his phone is always busy. You cannot talk to him directly. However, he will have five or six conversations going simultaneously to people. You have to tap his line to talk to him. You cannot call him directly. So this is the way he screens out crank calls. You have to know what you're doing to talk to him.

RUSSELL: Part VI: the telephone company answers some questions about phone phreaking.

Joseph F. Dougherty has been with the Bell Telephone System for eighteen years. He is now the director of corporate security at AT&T in New York. He is the ranking general in Ma Bell's war effort against the phone phreak. Dougherty's army is well staffed and has a great deal of technical support. But his best weapon is the law, as he explained when we talked with him in New York.

DOUGHERTY: We have statutes in all of the states, and there is also a federal statute, which is called for by wire (?), which is Section 13, Title 18 of the United States Code, and that is a felony statute, incidentally, which also covers both toll fraud and credit card fraud.

TOUEY: What are, say, some of the penalties for using the so-called blue box?

DOUGHERTY: Well, the federal statute, of course, is the easiest, because we just have the one. And that -- the

penalty for that is one thousand dollar fine and/or five years in jail.

Now the state statutes vary. They vary from as low as sixty days in jail to as long as fifteen years in jail. And usually it depends upon whether the individual had already been convicted for prior use of one of these electronic toll fraud devices, as you mentioned, the blue box or the black box. Also in many of the states it depends upon the amount that he has defrauded us. But you'd have to look at each specific state statute, because they vary as far as the penalties are concerned.

RUSSELL: How widespread does the phone company think that phone phreaking really is. Again, Joe Dougherty.

DOUGHERTY: From what we have been able to discern, it is relatively small, both in the number of perpetrators and also in the dollar amount. However, we feel that with the widespread publicity that it has been receiving in the last year or two, that certain there's an increase, and, unfortunately, with the increase in all types of crime in the United States, we can expect a further increase unless we take some very firm deterrent action, which we are doing in a much more extensive and aggressive manner than in prior years.

RUSSELL: So the phone company appears more worried about the danger of future phone phreaking than by the present small number of phreaks.

How much money are phone phreaks now costing the telephone company?

DOUGHERTY: The actual losses today we don't feel are of any great amount. But the potential loss is certainly there. And we don't intend to allow this to get to a stage of potential losses, or, translating the potential losses, actual losses, or the dollar loss, would be quite significant. We feel that we're going to certainly prevent that, and our aggressive approach, I think, has certainly curtailed it.

At one time, to be perfectly frank, we were, in my view, somewhat overly lenient in that we would just caution these people and more or less slap them on the wrist and give them a deterrent interview. And we did not prosecute to any great extent. We have changed that policy. We are prosecuting as a rule now, rather than the exception, where, before, it was the exception rather than the rule.

TOUEY: Some of the phone phreaks who have been quoted in the various bits of underground press seem to feel that the problem with AT&T is not so much the financial loss -- it's actually costing you more to prosecute than they are taking

from you -- rather, you just won't tolerate anyone interfering with your system. How would you respond to that?

DOUGHERTY: Well, that may be true. But that's just good common business sense. Any business, at the inception of a security problem, will probably spend more to establish preventive measures, because it's worthwhile; it's a good investment. And one of the problems in the whole security field is you can never equate what you spend with what you have prevented. In other words, if we prosecute two or three, or half a dozen people, within a short period time, a six months' period, and it's well publicized, we might have deterred a hundredfold from engaging in this fraud. And this is true in any area.

RUSSELL: The phone phreaks say that the telephone company is going to solve the loophole which permits phone phreaking in the first place, by changing its system and converting its equipment. Is that true?

DOUGHERTY: The technical knowledge is available and always has been available to prevent the use of blue boxes. But it's a trade-off between the cost of prevention and what we're losing. We don't feel that the losses are significant enough to go into a full-scale preventive program which would mean a great deal of modification of the network.

Now, we are going toward a change in the signalling of the network from what we call in band to outer band, in layman's terms -- and I'm not a technical man by education or training -- which will eventually eliminate this problem any way. And we are restudying the most economical way to modify the network at the present time.

RUSSELL: The telephone company has developed equipment to use in ferreting out of phone phreaks. But while many phone phreaks report that they have sensed the presence of these electronic spies on the phone lines, Ma Bell has still been able to prosecute only a fraction of the estimated hundreds, or even thousands, of phone phreaks in America.

Although the phone company has successfully prosecuted and convicted hundreds of people who have tried to defraud them by using phony credit cards or charging calls to other users, their record in prosecuting blue box users is not nearly so good. Nationwide, an estimated fifty arrests were made for phone phreaking in 1972. And of those arrested, only twenty phone phreaks were convicted. Fourteen of these people were arrested in a series of raids last September in cities including Chicago, Houston, Memphis, Minneapolis, Cleveland and Detroit. Interestingly, the people arrested in these raids were not the common variety of phone phreak. Rather, the telephone company described them as average, middle to upper middle class American businessmen who were using blue boxes to reduce their business

telephone costs. The telephone company published the story in the most recent issue of "Bell" magazine, obviously hoping that giving widespread publicity to arrests and convictions will have a deterrent effect.

But privately, phone company officials concede that the only practical solution to the problem now is to change their system. That will take millions of dollars and several years. The new system, reportedly, will not be fully operational until the year 2000.

In the meantime, phone phreaks will continue to play with, experiment with and rip off the telephone company. If they are caught, these phone phreaks will be prosecuted. State law enforcement officials are investigating phone phreaking, and here in Washington three federal agencies have some jurisdiction: the FCC, the FBI and the Justice Department. Officials at all three federal agencies were reluctant to talk with me on the record about phone phreaking. But Justice Department lawyer Jim Robinson did make this statement about phone phreaks' claims that they can tap telephones.

JIM ROBINSON: Under Title III of the Omnibus Crime Control and Safe Streets Act of 1968, Congress made interception of communications a federal felony, punishable by imprisonment for a period of five years and a fine of up to ten thousand dollars. The Department maintains a vigorous prosecution program in support of this statute. We have increased our prosecutions seven times over what they were under the old Section 605 of the Federal Communications Act. And, in general, the punishments meted out by the courts are sufficiently severe that I would advise anyone -- avoid it.

It's unfortunate that more people do not realize the serious nature of such a violation.

RUSSELL: Justice Department lawyer Jim Robinson.

One of the best known phone phreaks in America until a few months ago was a twenty-nine year old Californian named John Thomas Draper. For several years, Draper's exploits on the telephone were near legendary. And he was known as Captain Crunch.

Reportedly, Captain Crunch used to drive around the country in a Volkswagen bus which contained super sophisticated equipment. He was one of the most advanced phone phreaks who delighted in the beauty of the Bell phone system.

Not long ago, Captain Crunch agreed to be interviewed by Lorenzo Mylum (?) of Public Station KTAO in Los Gatos, California. When Captain Crunch placed his call to the radio station, he did so by way of a satellite across the ocean to London, and

then back again to the United States.

LORENZO MYLUM: How far away do you think that our signal is going?

JOHN THOMAS DRAPER: ...I think the satellite circuit. And probably -- probably over fifty thousand miles. There's a delay, a distinct delay, between the time I talk -- start talking and the time you start talking.

MYLUM: So you think that fifty thousand miles is a fair evaluation of how far you're going?

DRAPER: Yes, because I'm going -- well, actually, I'm going further than that. Let's figure it out. I'm going twenty-four thousand miles up to the satellite on the way to London. Add three thousand miles from where I'm at to the satellite center.

You there?

MYLUM: Yes.

DRAPER: Okay?

MYLUM: Yes.

DRAPER: Then add another twenty-four thousand miles on its way back. Okay. Then add another three thousand miles to that.

MYLUM: That sounds like a very long way.

DRAPER: Now hold on a minute. Hold on. No, forty-eight thousand miles. Forty-eight thousand miles, because it's twenty-four to the satellite, twenty-four to London. That's forty-eight thousand miles, plus three thousand miles, then forty-eight thousand miles again on its way back, plus another three thousand miles, make it...

MYLUM: That's probably why I hear all those sunspots...

DRAPER: ...thousand miles.

MYLUM: How many?

DRAPER: A hundred and two thousand miles, roughly.

MYLUM: [Laughing] I'm really tickled because I asked you to call me back on a clear circuit. But I'm going to go ahead and interview you anyway.

DRAPER: Oh, no, I'll call you right back. I want

you to hear the drop-off. Let me call you back.

MYLUM: Okay.

DRAPER: Listen to the disconnect.

MYLUM: All right.

RUSSELL: In the interview, Captain Crunch explained how he had avoided arrest by maintaining tight security over his phone phreaking activities.

DRAPER: Nobody really knows my number and how to get in touch with me. Besides that, nobody can tie me down to any particular city even. I've been kind of wandering and hopping around all over the West Coast. So really, like where I'm coming to you from now, I could be anywhere between Pasadena and Seattle.

MYLUM: So you're sort of a wandering phone phreak, as it were.

DRAPER: Yes. Yes, I'm a wanderer. I'm the one that moves around. This is another reason why I probably haven't been busted, because they can't pin me down to any particular phone.

MYLUM: Well, you're a ghost. That's what you are. You're a telephone ghost.

DRAPER: That's about it, man, just tripping through the wires.

MYLUM: And you move around from city to city and you play your musical instrument, the little whistling thing...

DRAPER: Not the whistling thing any more. That doesn't ride (?).

MYLUM: The tape recorder.

DRAPER: All I have -- all I have -- all I have -- let me describe my equipment to you.

MYLUM: Okay.

DRAPER: All I have now is a cassette recorder. It's an ordinary old cassette recorder with a small detachable speaker. Okay. I have a master tape that I have locked up in a safe deposit box. And I have a -- I have a master tape. And every number that I have on tape are all my friends' numbers. So anytime I want to make a call I have an indexing system on the

tape. So I can find the number within, I'd say, about a minute. And on the recorder I have a red button. And all I have to do is press it. And everything on that tape gets wiped out, because the built-in bulk eraser (?) is right on the recorder. I built it myself.

MYLUM: A fail safe system.

DRAPER: Yes. All I do is press the button, and anything on that tape is gone.

MYLUM: When...

DRAPER: ...completely gone.

MYLUM: You are a ghost.

DRAPER: And legally -- of course, legally -- legally, I can't get busted for having a cassette recorder in a phone booth.

MYLUM: Well, I really have been fascinated by this.

DRAPER: I hope I gave you a lot of information.

MYLUM: Oh, it's terrific.

DRAPER: And, oh, listen. One thing though, you know, about anybody who think they might try to get by with doing this, a word of caution...

MYLUM: You're going to tell them not to do it.

DRAPER: Yes, I think I better, because I'll tell you why. I'll tell you why...

MYLUM: (Laughing). Yes.

DRAPER: Like a good friend of mine in the San Jose area got busted two days ago.

MYLUM: Yes.

DRAPER: And, like, you know...

MYLUM: You've got to be cautious.

DRAPER: ...And he got busted because he was doing it -- he was doing it in a safe way. But he got busted because I think too many people knew about him.

MYLUM: So you think a real phone phreak can't have any friends.

DRAPER: That's true. Either you can't have any friends and play with the phone. See, the thing is if you play with your phone, don't tell anybody you do it. Here's a good rule to go by. If you play with your phone, don't tell anybody that you play with your phone. And if you don't play with your phone, you can tell anybody.

MYLUM: That seems good advice.

DRAPER: Because anybody who knows that you play with your phone will then have leverage against you in case [sic] and can blackmail you or do something bad to you and can fink on you. So good advice is if you do play with your phone, don't tell anybody about it.

MYLUM: Thank you Captain Crunch.

DRAPER: Yes. See you later.

MYLUM: Good-bye.

DRAPER: Bye.

MYLUM: Bye.

RUSSELL: However, despite his precautions, Captain Crunch was soon to discover that even he was not invincible. Last May he was arrested and indicted on seven counts by a federal grand jury. Six of the charges were dismissed, and he was convicted on the seventh count of using a multifrequency signalling device to enter the phone system and place a free call to Australia. Captain Crunch was fined one thousand dollars and placed on five years' probation. And before he left the courtroom, the presiding judge warned him that if he ever again engaged in phone phreaking he would go to jail for five years.

Captain Crunch's arrest and conviction will undoubtedly put a damper on phone phreaking, at least for a while. But eventually Captain Crunch's fate will be forgotten, or at least put aside, and the phreaks will continue to phreak.

But for the phone company and law enforcement agencies, a large part of the problem is the public's attitude toward phone phreaking. As one phone company official said, many people just don't think this is stealing. Somehow when you steal an intangible thing like phone company services, it's just not as socially condemned as shoplifting or bank robbery.

This is Jim Russell reporting.

[Music.]

SUSAN STAMBERG: "Sorry, The Telephone Company You're

"Dialing Has Been Temporarily Disconnected" was produced for National Public Radio by Jim Russell. Reporters for this program were Jim Russell, Bill Touey and Leo Lee (?). Technical direction by Rene Chaney, David Cray (?) and John Cater (?). Special thanks for assistance provided by Ron Rosenbaum of the Village Voice and to Lorenzo Mylum of Radio Station KTAO, Los Gatos, California for the interview with Captain Crunch.