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## "Phone Phreaks" Are Bugging Ma Bell

In payment for his inalienable right to McDonald's hamburgers and the Johnny Carson show, the average American often seems resigned to accepting an occasional kick in the assets from a corporate foot. Think about it: Did you picket your utility company the last time they raised your electric bill? Did you throw a brick through IBM's window the last time a computer tried to wreck your life? Probably not. If you're like most of your neighbors, you seldom entertain serious thoughts of molesting a multinational monster—unless that monster is American Telephone and Telegraph and you are one of those technological outlaws called "Phone Phreaks."

**THE BLACK BOX BLUES:** Armed with a variety of electronic gadgets—usually homemade—these privateers of the private line agree that long distance is the next best thing to being there, especially when it's free. The basic phone phreak arsenal consists of the "black box," the "blue box," and the "red box" (the color reference designates function rather than appearance), and the user's choice of weapons depends on which of AT&T's services he wants. Attach a black box to your phone and anybody who calls you—whether it's from next door or Nome—does so without charge. With a blue box, probably the most widely used piece of phone phreak equipment, you can place long distance calls to just about any telephone in the world at no cost. Finally, there's the red box. Get your hands on this baby and you'll never lose another dime to a pilfering pay phone; you can feed it electronic chirps instead of change.

They're all quite illegal, of course, and the Bell System's security people will do their darnedest to pack you off to the Big House if they catch you using one. The editors of *Moneysworth* firmly recommend, therefore, that you have no truck with the purveyors of these devices. Penalties for use or possession of a blue, black or red box (in some states, possession of

schematics is also illegal) vary from place to place, but it is generally classed as a misdemeanor punishable to the tune of a \$1,000 fine and/or a year in jail.

The potential for electronic fraud has existed for around 20 years, ever since AT&T (and, subsequently, telephone companies all over the world) adopted the multi-frequency system (MF). It involves the use of six master tones, combinations of which are used to produce the ten tones which correspond to dialed digits (these are not the same tones you hear when you dial a touch-tone phone). Other combinations of master tones are used as switching and access signals in routing calls through the Bell network.

**WHISTLING IN THE DARK:** Though various forms of phone phreaking have been around for more than a decade, Bell's troubles really began when Joe Engressia, a blind college student, discovered that he could make free long distance calls by whistling the right combination of notes into his telephone. In 1968, he was caught placing calls for his friends, and the publicity attending his arrest stimulated interest in electronically produced master tones. About the same time, a Bell engineer wrote an article for a technical journal and included in it a list of the exact frequencies of the MF system. It wasn't long after that before some enterprising college students began making devices in technical school laboratories to reproduce those tones.

Speaking for AT&T, Dennis Mollura told *Moneysworth* that the company took it easy on the first offenders they caught. "We would just go to the schools, explain that it was illegal and ask them to stop using the things," he said. That may have worked in some cases, but in many it did not. Blue box fever spread across the country as phreaks began swapping new ideas and discoveries. In 1971, about the time underground phreak publications like the Youth International Party Line (YIPL) started

appearing, AT&T got serious. They began developing special equipment to detect and track down blue box users, but the added risk factor seems to make phreaking even more appealing to some.

YIPL evolved into the Technological American Party, which publishes a monthly newsletter that enables phreaks to communicate with each other—when they don't use the telephone. Listing as their address a scroungy mid-Manhattan mail drop (152 W. 42nd St., Room 504, New York, N.Y. 10036), the newsletter's anonymous contributors publish not only schematics for boxes of every color, but helpful hints for persons who prefer to make calls on pay phones with quarter inch washers, information on credit cards (they print the new card codes almost as soon as Bell introduces them) and detailed plans for stealing nickels from parking meters and getting free electricity by outfoxing utility company meters. It's all "published for informational purposes only," says TAP, and if you can't afford to pay for it (subscriptions are \$2 per year), they say they'll send it to you free.

One of TAP's most important functions is to keep their readers abreast of Bell's moves in the phone phreak detection fight. What used to be a hide-and-seek game with Ma Bell has turned into full-fledged electronic guerilla warfare, complete with hard-nosed AT&T security agents. Each side escalates the sophistication of its equipment and techniques in what Mollura characterizes as "a never-ending battle, like a game of chess."

In fact, the TAP phreaks recently congratulated themselves on making "a definite contribution to the nation's economy" by enabling AT&T to "blame rising phone rates partly on us," and by forcing the communications giant to "put people to work making devices to catch us."

According to Mollura, the total number of electronic defrauders arrested nationally is hard to pin down. However, arrests for all

types of fraud (including electronic and credit card) shot up from 215 in 1970 to more than 1,100 in 1973.

**GOTCHA!** Phreaks are generally caught either by electronic detectors or through tips provided by Bell security informants. Electronic detectors enable Bell to monitor the process involved in making a blue box call. Simplified, it works like this:

To make a free long distance call, a blue box user must first dial a toll-free 800 call (these are WATS lines maintained by hotel chains, rent-a-car people and others). Before the connection is made, he beeps a tone of 2,600 cycles-per-second with his blue box. This stops the 800 call from going through, but keeps the line open and at his disposal. Then, he simply blue boxes any area code and number he wants and the call registers on phone company equipment as an 800 freebie.

When the Bell people find a suspicious number of 800 calls originating from a single phone (some of their billing computers are trained to drop a "trouble card" when they find over-long or over-many such calls), they put a device on the line which detects the 2600 tone (it's not supposed to turn up on customer equipment) and either cuts the call off or records the presence of the tone. At that point, the Bell boys may keep the device on the line in hopes of catching more than one box user, or they can arrange to arrest the one they've detected.

Mollura was reluctant to say anything about the type of equipment AT&T employs to detect and track down box users, but Robert Kitzinger, security supervisor for Illinois Bell, admitted that his men are using Hekimian Laboratories' model 51-A dialed-number recorder, as well as a similar machine manufactured by Northeast Electronics. Hekimian, a Rockville, Md., company, sells Bell a device which, when placed on a suspected phreak's line, jots down the time and length of every phone call made on the line, notes every number dialed, detects the 2600 tone and is capable of printing out every number called with a

blue box. It sells for around \$4,000 (\$5,000 if you want it to print out blue boxed numbers) and comes with enough paper tape to make notations on 5,000 calls. Northeast's recorder is somewhat cheaper, but the security people have to change its tape every 500 calls.

The gadgets are fine for detecting blue box and black box calls (the black box emits a 2600 tone and, in effect, makes the user's line a toll-free 800 number for incoming calls). They are worthless, however, against that nemesis of pay phones, the red box. Mollura called the red box "probably the latest development" in phreak technology. And how does AT&T detect it? "We're working on it."

TAP believes that the Bell security people are still "relying on operators' ears" for red box detection, but that "operators are so used to broken equipment that you can usually act indignant if they get suspicious and get away with it."

Though phreaks' detector-avoidance strategies include a taboo on home phone blue boxing (naturally, they have special affection for pay phones), keeping black box calls short and making their choice of phone booths for red and blue box calls as random as possible, TAP recently warned its phreak readers: "The most important security precaution you can take is to watch what you say. More phreaks have been caught because of big mouths than anything else. Before they put a detector on your line, they have to suspect you, right?" In addition, TAP speculates that if you subscribe to its newsletter using your own name and address, Bell will probably slap a detector on your line for the hell of it.

**HOT OFF THE WIRE:** Nobody knows just how many blue boxes are in use now. Plans are readily available, and you can build your own for less than \$100. Ready-made boxes range from shoebox sized rudimentary devices costing \$300 or so, to sophisticated little things the size of a cigarette package which have been sold for as much as \$3,000.

Who's buying and using them? Everybody, says Mollura. People caught with boxes in the early days were usually students or electronics hobbyists, he told us, but recent blue box bustees have included private detectives, housewives and stockbrokers. "Let's face it," Mollura said, "people do save, or think they save money with these things." According to police who recently seized 16 "beautifully made" blue boxes in Vancouver, B.C., the California-made items were being retailed for \$1,000 each to members of the local underworld. Mollura said the boxes are being used by gangster-types not for saving a few phone bill bucks, but to avoid having records of their phone calls made.

Though hundreds, perhaps thousands, of phreaks and other box users will continue to evade the AT&T security forces, their numbers have probably peaked. Kitzinger told us he thought the whole thing was a "childish kind of anti-establishment fad" anyway. He figures it will soon die out because of stiffer penalties and an overall "return to some respect for law and order." In the meantime, he regards phreaks "just like any other thief. I don't respect them and I don't treat them lightly."

Mollura, on the other hand, told *Moneyworth* that while the number of phreaks will gradually diminish as new anti-fraud techniques and devices are designed into the Bell network, there will always be a diehard few who can and will continue to beat the Bell system. The fact that somebody up at AT&T likes phone phreaks won't help the security agents either. Details of Bell's new anti-fraud procedures and equipment frequently appear in the TAP newsletter, indicating that they have almost as many informants inside AT&T as vice versa. Or maybe AT&T is TAP, who knows?

In any case, our advice stands: Phone phreaking is quite illegal, and shouldn't be condoned by anybody. And, as Mollura reminded us, "Phone phreaks aren't stealing from AT&T; ultimately, they're picking your pocket."

## Value Judgment: Power Drills that Do Their Bit

There's no such thing as a home or apartment that never needs minor repairs or improvements, and no friend, no matter how close, will stick around long if you're constantly asking him to hang curtain rods, put up shelves, or secure mirrors. To accomplish these prestigious feats alone, you'll need a portable electric drill. However, unless you arrive at your local hardware or appliance store armed with some basic facts about drills, you could be chiseled into buying a product that will put a hole in your wallet, but not in your wall.

**DRILLING THE FACTS INTO YOUR HEAD:** When you set out to make your purchase, you'll be faced with an array of drills that sell for anywhere from \$7.88

(Sears 1/4" single-speed) to \$49.99 (Skil Hammer Drill). You will have to choose from among drills that accommodate bits ranging from 1/4" to 1/2" in diameter, drills that operate at one or many speeds, drills that can hammer their way through brick or mortar and drills that can slice through steel with the precision of a scalpel. All of these tools are classified as "consumer" (rather than "industrial") equipment, but while they'll all grind out at least 50 solid hours of labor for you, chances are that only a few of them will actually suit your needs.

If all that you're looking for is a tool to make an occasional screw hole, then a single-speed 1/4" drill, selling for approximately \$10, is just right for you. These drills are

cheap, serviceable and operate at sufficiently high speeds (averaging 2200 RPM) to handle virtually any household task that you might tackle.

If, however, you're planning on performing any sophisticated carpentry work, you'll need a drill that accommodates multiple bit sizes (3/8" or smaller) and offers multiple speeds (slower movement for boring into hard metals, faster for breaking through two-by-fours). The average price of a 3/8" variable-speed drill is \$30; single-speed models are slightly cheaper, but your ability to control the power output is fair worth the few extra dollars you'll spend for a variable-speed drill. What's more, most

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