Cellular Phreaking

The cellular/mobile phone system is one that is perfectly set up to be exploited by phreaks with the proper knowledge and equipment. Thanks to deregulation, the regional BOC's (Bell Operating Companies) are scattered and do not communicate much with each other. Phreaks can take advantage of this by pretending to be mobile phone customers whose "home base" is a city served by a different BOC, known as a "roamer". Since it is impractical for each BOC to keep track of the customers of all the other BOC's, they will usually allow the customer to make the calls he wishes, often with a surcharge of some sort.

The bill is then forwarded to the roamer's home BOC for collection. However, it is fairly simple (with the correct tools) to create a bogus ID number for your mobile phone, and pretend to be a roamer from some other city and state, that's "just visiting". When your BOC tries to collect for the calls from your alleged "home BOC", they will discover you are not a real customer; but by then, you can create an entirely new electronic identity, and use that instead.

How does the cellular system know who is calling, and where they are? When a mobile phone enters a cell's area of transmission, it transmits its phone number and its 8 digit ID number to that cell, who will keep track of it until it gets far enough away that the sound quality is sufficiently diminished, and then the phone is "handed off" to the cell that the customer has walked or driven into. This process continues as long as the phone has power and is turned on. If the phone is turned off (or the car is), someone attempting to call the mobile phone will receive a recording along the lines of "The mobile phone customer you have dialed has left the vehicle or driven out of the service area." When a call is made to a mobile phone, the switching equipment will check to see if the mobile phone being called is "logged in", so to speak, or present in one of the cells. If it is, the call will then act (to the speaking parties) just like a normal call - the caller may hear a busy tone, the phone may just ring, or the call may be answered.

How does the switching equipment know whether or not a particular phone is authorized to use the network? Many times, it doesn't. When a dealer installs a mobile phone, he gives the phone's ID number (an 8 digit hexadecimal number) to the local BOC, as well as the phone number the BOC assigned to the customer. Thereafter, whenever a phone is present in one of the cells, the two numbers are checked - they should be registered to the same person. If they don't match, the telco knows that an attempted fraud is taking place (or at best, some transmission error) and will not allow calls to be placed or received at that phone. However, it is impractical (especially given the present state of deregulation) for the telco to have records of every cellular customer of every BOC. Therefore, if you're going to create a fake ID/phone number combination, it will need to be "based" in an area that has a cellular system (obviously), has a different BOC than your local area does, and has some sort of a "roamer" agreement with your local BOC.

How can one "phreak" a cellular phone? There are three general areas when phreaking cellular phones; using one you found in an unlocked car (or an unattended walk-about model), modifying your own chip set to look like a different phone, or recording the phone number/ID number combinations sent by other local cellular phones, and using those as your own. Most cellular phones include a crude "password" system to keep unauthorized users from using the phone - however, dealers often set the password

(usually a 3 to 5 digit code) to the last four digits of the customer's mobile phone number. If you can find that somewhere on the phone, you're in luck. If not, it shouldn't be TOO hard to hack, since most people aren't smart enough to use something besides "1111", "1234", or whatever. If you want to modify the chip set in a cellular phone you bought (or stole), there are two chips (of course, this depends on the model and manufacturer, yours may be different) that will need to be changed - one installed at the manufacturer (often epoxied in) with the phone's ID number, and one installed by the dealer with the phone number, and possible the security code. To do this, you'll obviously need an EPROM burner as well as the same sort of chips used in the phone (or a friendly and unscrupulous dealer!). As to recording the numbers of other mobile phone customers and using them; as far as I know, this is just theory... but it seems quite possible, if you've got the equipment to record and decode it. The cellular system would probably freak out if two phones (with valid ID/phone number combinations) were both present in the network at once, but it remains to be seen what will happen.