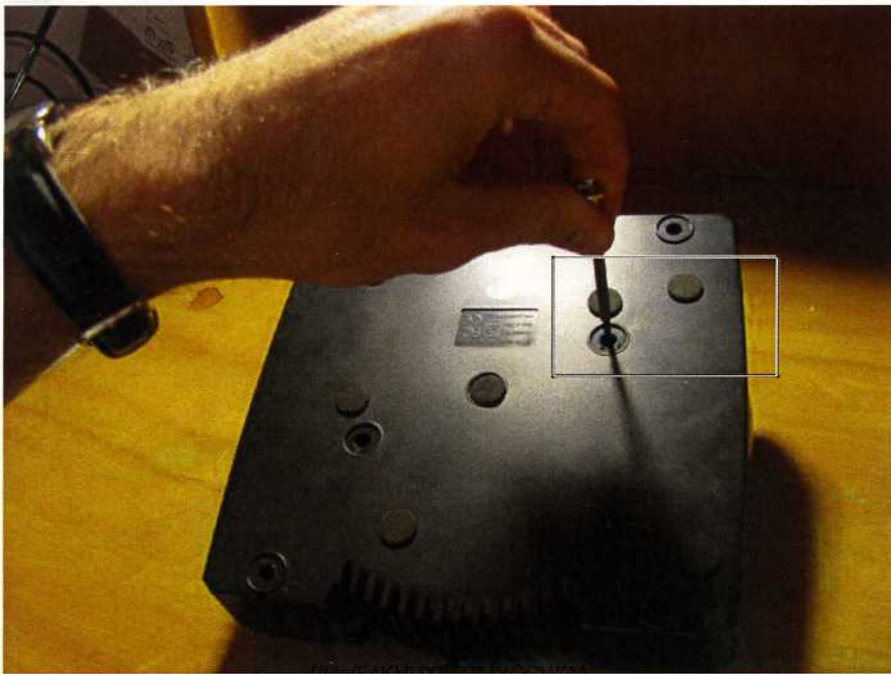


Step 5: Deconstructing the Gametrak



Start by removing the six screws in the bottom of the controller to remove its plastic top. Once you have the cover off let's take a look under the hood.

You'll notice that the Gametrak is actually a remarkably simple device. There are basically two systems each with three variable outputs; this gives X, Y, and Z coordinates for each glove.

In each, the wire is wound around a spring-bound spool laying horizontally. On top of the casings for these spools a simple set of gears transfers the spinning of the spool to a potentiometer. This measures the glove's distance from the controller, more or less its Z axis.

From the opening in the spool casing the wire passes through a vertical pulley which sends it up under and out the tip of the joystick. This allows the wire to be freely pulled from the controller while simultaneously measuring the X and Y axis with the joystick.

The string ends in a plastic female connector which fits to matching male connector on the glove. These wires are under constant tension from the steel spring in the spool and these connectors are the only thing that keeps the wire from snapping back into the spool.

We'll be using almost all of the controller's important parts. The only parts we won't be using are the plastic casing, the gloves, the two glove-wire connectors, one plastic pulley, and the four weights found in each of the controller's corners. If you can find ways to use these in the finished project, go right on ahead. I'm all for conservation of resources.

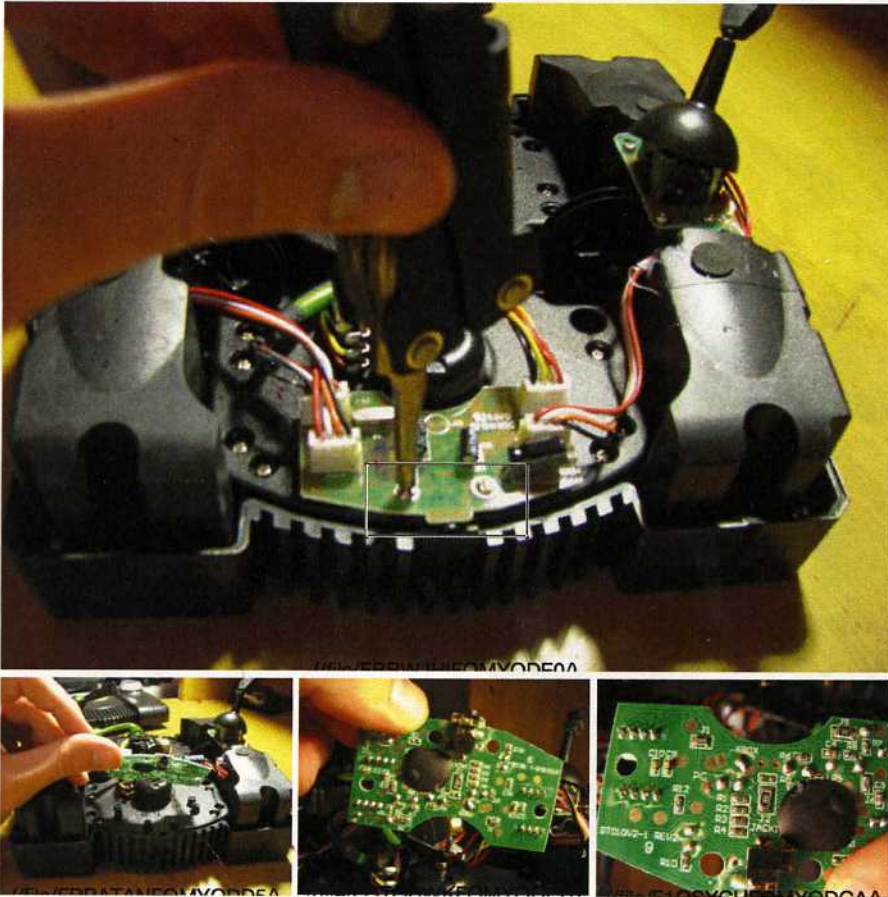
F Dean

PLEASE

DO
NOT

LOSE

Step 6: Turning your Gametrak into a HI device



Before you take any part of the device apart you should make sure that you can turn it into a HID. HID stands for Human Interaction Device (http://en.wikipedia.org/wiki/Human_interface_device). When you plug the controller into your computer it will most likely not show up as a recognized device. In MaxMSP you can use the HI Device Tester to see if your Gametrak is indeed communicating with your computer.

Getting your Gametrak to send data is one of the simplest steps, yet one of the most frustrating if you're just expecting your device and computer to immediately communicate. First, remove the two sets of screws and washers which connect the electrical board to the top of the spool casing. Gently lift the board up. On the bottom side you should notice a lot of text labeling the various parts of the board. Luckily, you don't really need to understand any of this.

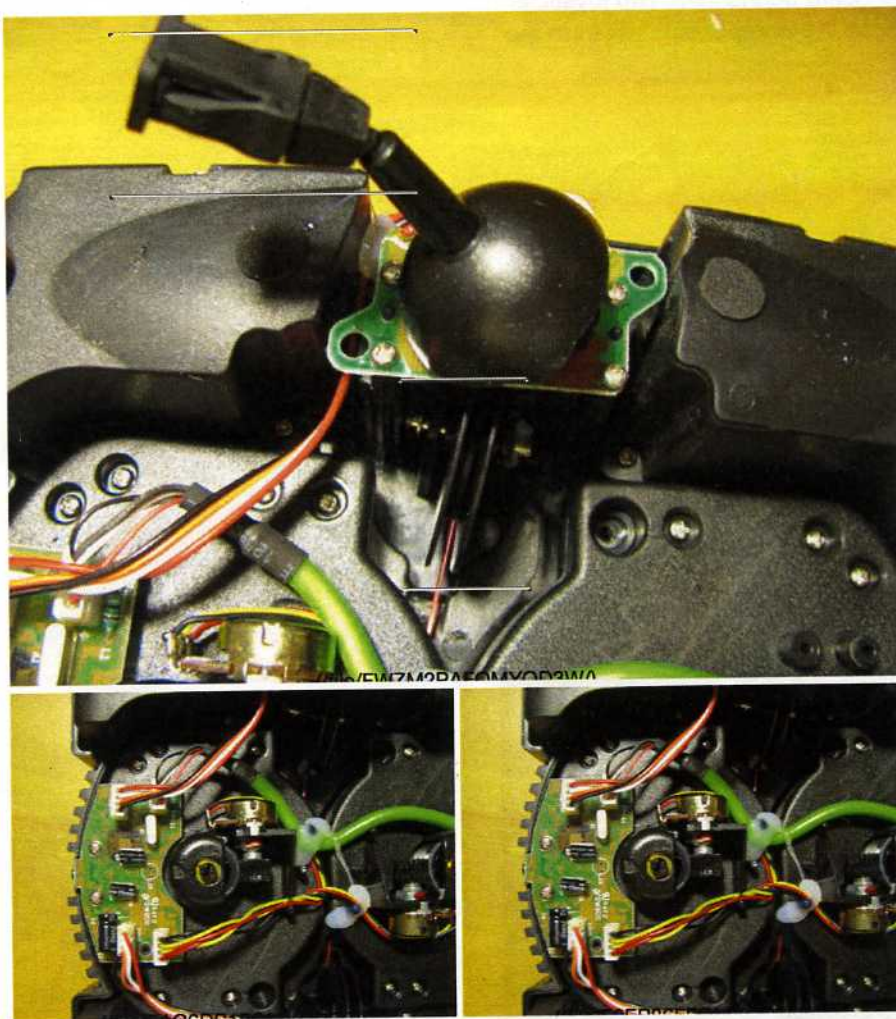
The important parts are the ones labeled "PC" and "XBOX." These two connection points merely need a touch of solder to determine the device's output. If your Gametrak, like the one pictured, is of the X-Box variety, the conversion to HI is not too difficult. Start by scraping the solder off on the X-Box connection point. Once you have that fully removed check the PC connection point. If it's covered with a veneer of plastic, take a razor blade and shave it off until you get to the metal, being careful not to affect any other part of the board. Next, apply a dab of solder connecting the PC connection points.

Lastly, hook the USB cable into your computer and check that the HID is working. I used the HI Device Tester in MaxMSP to do this step. If it's working properly it should start spitting out numbers. If it's not, double check the solder

as well as the wire connectors. They may have become disconnected when you took the board off.

For another take on getting your Gametrak to spit-out HI, try exploring this node (<http://cnmat.berkeley.edu/node/5710>) on the website for the Center for New Music and Audio Technology (CNMAT) (<http://cnmat.berkeley.edu/>), at the University of California, Berkeley (<http://berkeley.edu/>), where I made this controller as an independent-study project.

Step 7: Taking Out the Necessary Parts



Next you'll have to unscrew and remove the joysticks, one of the pulleys, and the two spools, complete with the electrical board. All of these are simply held in with screws and are fairly easy to remove. The joysticks can be removed by taking out the four screws visible in the joystick electrical board. The pulley is kept in by a pair of screws underneath this board. The spool casings are each kept in by three screws. When removing the spool casings make sure that you are removing the screws which connect the casing to the base, not those which keep the casing together. (See the pictures for specifics.)

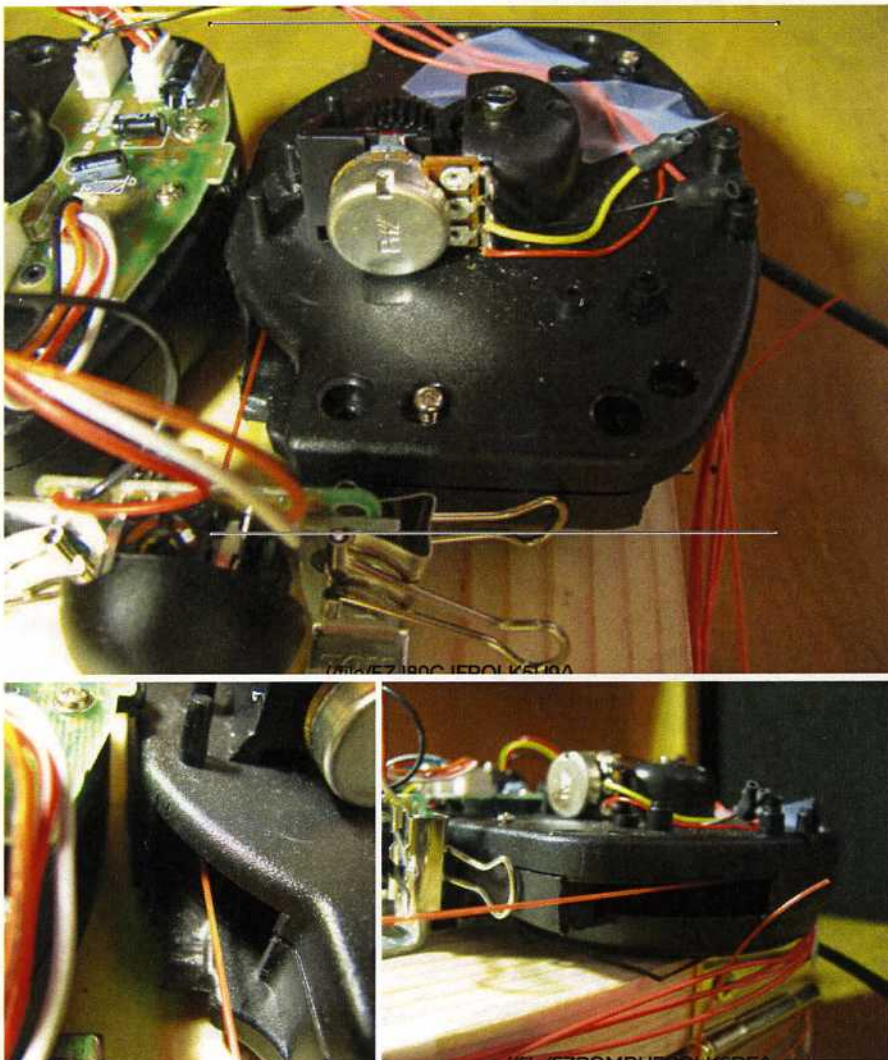
It may be a little tricky to remove all of these components considering that the wires are still under tension. Eventually you'll have to remove those plastic connectors to remove the joysticks, so you may as well go ahead and do so now. Just be careful not to lose a grip on the wires and let them snap back into the spool. Go ahead and cut the wire just below the connectors. Once you

have the wires unretracted from the joysticks I suggest putting the connectors back on before rethreading them and tying a strong knot to keep it from pulling through again. These connectors should keep the wire from fully retracting.

You'll also find that the two joysticks and the two spools will become a little unwieldy since they're all connected with rather short wires to the electrical board. These are connected to the board with small plastic connectors and you could just disconnect these, but I found them difficult to pull out without damaging the wires since they are glued in place. Overall, I found it easier to just snip each wire approximately half way, leaving enough space to strip and solder later on. You shouldn't have to disconnect the wires leading to the spool on which the board sits nor the output USB chord.

When all is thoroughly torn apart you should have been able to salvage two spools with their wires retracted (one with the board connected), two joysticks, and one pulley (you don't need the other.) These five components will form the core of the Ondestrak.

Step 8: Altering One of the Spools



Of the two spools that you removed from the Gametrak one has the electrical board on it and one does not. For this next step we'll be altering the spool without the board. I'll refer to this as the secondary spool. The goal for this step will be to turn the secondary spool into a contained pulley by removing it's