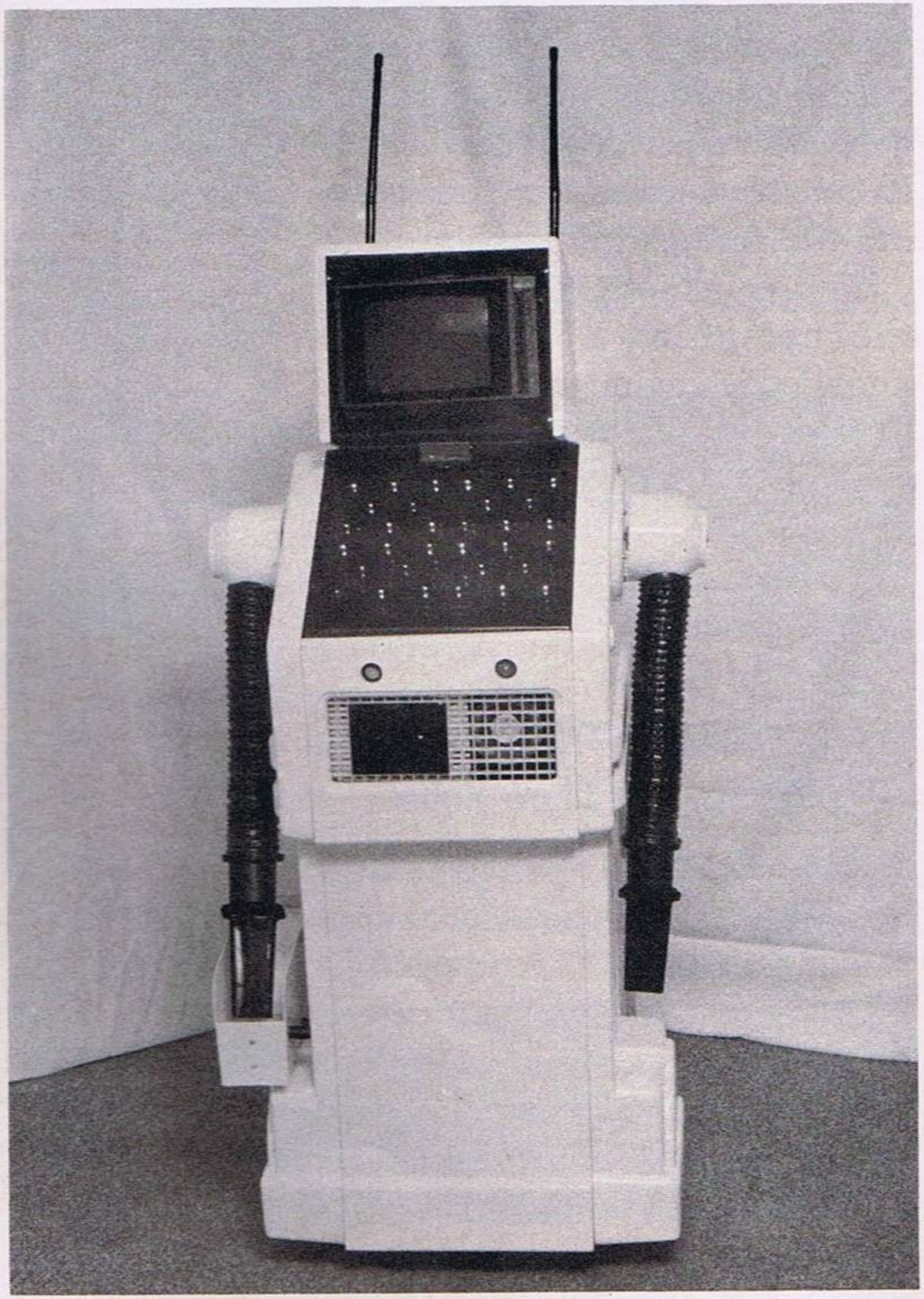

Photo 5. RP-IIIZ pausing for a portrait on a recent visit to *Robotics Age*. This show robot is manufactured by The Robot People Company, One Corporate Center, 15th floor, Hartford, CT 06103.

From the Sublime—To the Limelight: Anatomy of a Show Robot

Artificial intelligence is one aspect of robotics—a research area at the frontiers of knowledge engineering. AI is a field rarely perceived by most people, unlike the field of entertainment "robots." Thanks to Gene Tully, president of The Robot People Company, we recently had the opportunity to take some notes on the anatomy of a different species of robot—the show robot.

The conventional show robot is a robot only to the extent that people perceive it as fitting the mythical model of a mobile mechanism. It is really nothing more than a clever teleoperator system. One or more people are used to remotely control the device at shows, conventions, shopping malls, and other locations at which commerce is carried out between consenting adults.

The RP-IIIZ robot Gene delivered to us for several weeks is a classy, well engineered example of the genre. These systems exist to entertain in a promotional context. In our era, they serve the promotional goal by attracting attention, which in prior eras was served by people sandwiched between large signs.

The show robot's shape should reflect the typical child's image of a big, bulky, friendly creature. Photo 5 shows RP-IIIZ soon after he is unpacked from a large and substantial shipping crate. A prominent display of flashing incandescent lights is found on the robot's chest. Two "arms" are connected to motors. The robot's right arm has a vacuum attachment so that it can pick up promotional literature from a suitably placed bin. The two antennae on the top of the robot's head are decorative; the actual receiving antenna for its radio control is buried inside its case.

A high-quality acoustic suspension speaker unit is used for audio output, from a built-in tape or via an FM wireless channel from the operator's microphone. The head is rather devoid of inherent

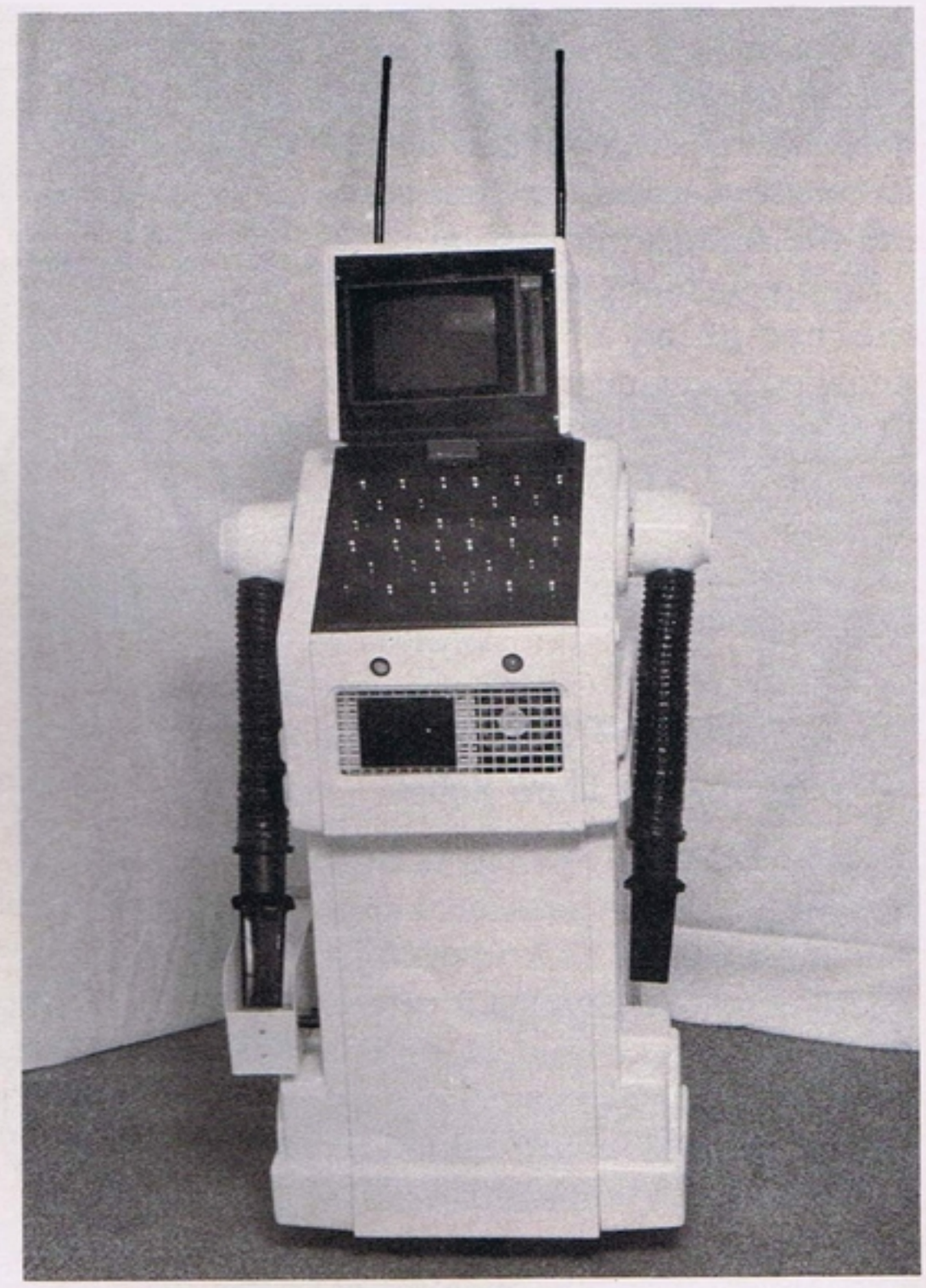

Photo 5. RP-IIIZ pausing for a portrait on a recent visit to *Robotics Age*. This show robot is manufactured by The Robot People Company, One Corporate Center, 15th floor, Hartford, CT 06103.

knowledge; instead it has a portable color television connected to a video tape player. Two forms of prerecorded promotional material can be selectively triggered by the operator, either an audio tape, the video tape, or both.

Functionally, the key phrase in any description of a promotional robot such as RP-IIIZ is "selectively triggered by the operator." There is no intelligence on-board a conventional show robot such as this; the operator is all important. Just as a magician's use of his artifices and tricks puts a premium on skill and technique, the key to a show robot's performance is in the operator.

The forward/backward directions of the joysticks independently control the two DC drive motors. Photo 6 shows the two hefty DC motors used to directly drive RP-IIIZ's wheels. Directional control is accomplished by manipulating joysticks. (A third, castor wheel, provides balance for the unit.) In the RP-IIIZ motion control scheme, the two joysticks are like the motion control levers of a tracked vehicle such as an army tank. Each track is independently controlled in forward and reverse motion, giving the vehicle the ability to rotate in place as well as travel in forward or reverse. In operation, the vehicle is quite maneuverable.

All this maneuverability, of course, requires power. Unlike a robot intended for home use, a show robot requires considerably more power reserves if it is to last through a grueling day of constant motion and crowds. The typical 50-100 amp-hour rating of an automotive battery should keep this robot going for most of a day.

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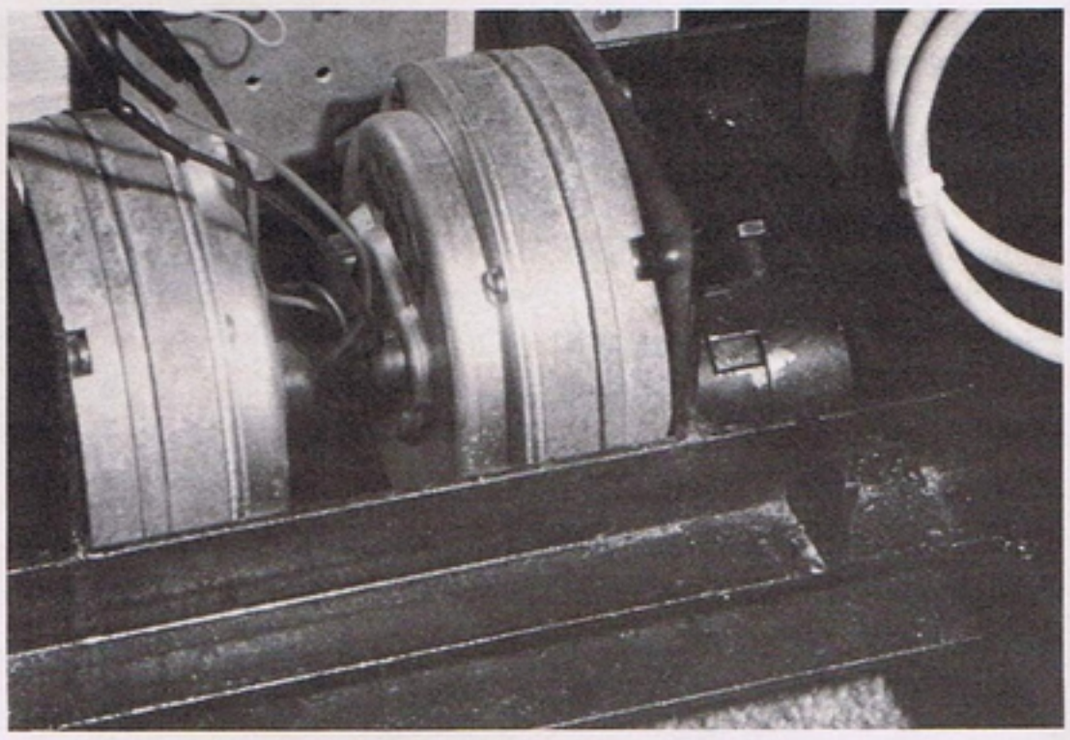

Photo 6. In RP-IIIZ, a three-wheel motion system is employed. Two main wheels are attached to individually controlled DC gear motors shown here. A third castor wheel (out of range of this photo) provides the third contact point needed for stability.

So much for the description. What can we learn about this class of mobile mechanisms? The systems are basically simple adaptations of proven radio-controlled model technology. If RP-IIIZ is any example, the field has yet to discover microcomputer intelligence in any fundamental way. To be sure, RP-IIIZ may involve a microcomputer to decode and process the radio control channels. But 100 percent of the operational guidance and "on-board" intelligence of this creature is provided by its telepathic link to a human operator via radio and joysticks. The operator's eyes, ears, voice, hands, and brain are the intelligence of this device.

For now, operators are needed for safety and for dealing with unexpected situations. But how about additional, partially automated functions too complex for the most skillful operator? The development of show robots, promotional robots, and other forms of robotic entertainments is in its infancy. There is a whole world of advanced robotic systems for this purpose, and numerous entrepreneurial opportunities to fill this specialized market.