

OUTTOWNS

Radio Free Sagittarius

Alone in his basement, surrounded by donated high-tech gear, Bob Gray listens for signs of life in the cosmos.

BY DEIRDRE GUTHRIE

In 1983 Bob Gray found just what he was looking for at a high-tech flea market in the south suburbs: a 12-foot aluminum dish, a surplus part once used by the Andrew Corporation of Orland Park for transmitting phone calls. He forked over \$1,500 and roped the giant white parabola onto the roof of a rented van. As the sun set, he drove the oversize load north onto the Dan Ryan, keeping an eye out for state troopers and big rigs. "I remember I had it upside down and I was afraid it would act like a wing and generate a lift," Gray says with laugh.

that he is not poring over grainy photos of flying saucers or claiming he was abducted by aliens. He is searching the sky for a particular radio signal that science has already documented once before, and if he finds it, he doesn't expect to be able to interpret it, much less send up a reply. Gray is self-taught in astronomy, which he says requires many of the same skills he uses in his day job as a data analyst. His firm, Gray Data Consulting, specializes in research

and conferences sponsored by Sagan's papers on SETI (the Search for Extraterrestrial Intelligence, as the field is known). He attended lectures

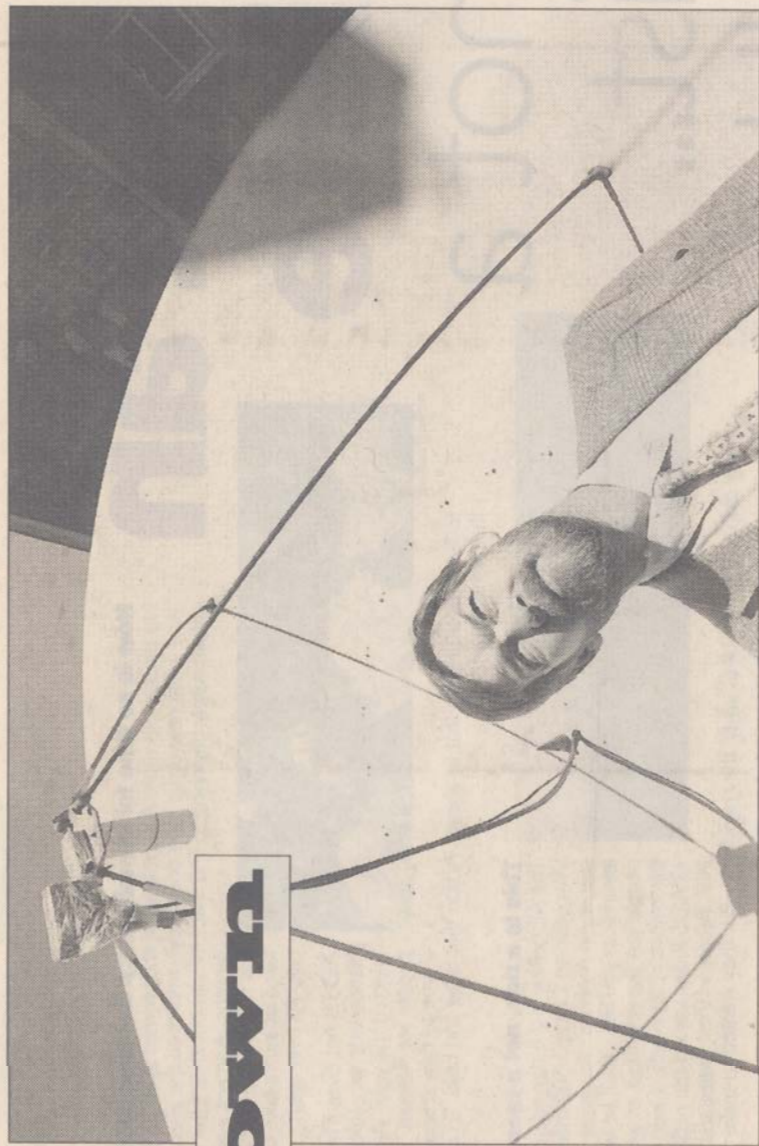
planets, Sagan's arguments for little green men hit home because they were grounded in hard science.

"Sagan's book made a pretty good case that listening to radio signals from the stars might allow us to find other intelligent creatures on other worlds," he says.

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not too far from the center of the galaxy. The narrow bandwidth of the frequency and the intermittence of the pattern suggested that it might have come from an artificial source, as opposed to a "natural" source like a star or a black hole. To this day, says Gray, the Wow signal is the best candidate for an intelligent signal from a celestial source that's ever been recorded. "But it's like a tug on a fishing line," he says. "You've got to reel it in to see what it really is."

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spectrum analyzer separates them by frequency and allows them to be displayed. A graph of the Milky Way's cosmic static, for instance, peaks where the antenna has pointed at clouds of hydrogen gas, which radiate energy as radio waves. "Most of what is received is junk," Gray admits. "After years of hearing nothing but radio noise and interference, many scientists just give up and become cynical, or at least pessimistic."

"Each day I just check the graph on the screen of my personal computer to see if E.T. has called," Gray kids. "If you were to ask me to bet my life that aliens are the source for Wow, I probably wouldn't." But he keeps looking, because hardly anyone else is.

Patrick Palmer, a professor of radio astronomy at the University of Chicago, understands the daunting but seductive quest that Gray's undertaking. From 1976 to 1979, he used radio telescopes in Green Bank, West Virginia, to listen for intelligent signals from 600 nearby stars. But he ended

up scrapping all his findings as inconclusive. Palmer says he began to feel that "the odds were against him," yet he's not convinced he was on a fool's errand. "Wouldn't it be a shame if we were ignoring someone who was trying to make contact with us?" he asks.

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PHOTO/KATRINA WITKAMP

But he made it safely back to Chicago, where he unloaded the dish and rolled it like a hula hoop through the alley and into his Logan Square yard. The neighborhood kids trailed him, ogling what appeared to be the ultimate in TV-pirating technology. "Most people still mistake it for a satellite dish," says Gray. But in fact he uses it as a radio telescope, to listen for transmissions from intelligent life in space.

Next to the dish, now partly overgrown with ivy, is a plaster lawn ornament on which a wide-eyed, cone-headed Martian holds up a sign that says "Welcome Aliens!" Gray's wife bought it as a "wry joke," and is tolerant of his closet obsession with the skies. "She understands it's kind of my 'fishing trip' I need to take alone," he says.

Gray, 49, is a pensive, lanky man with a beard and a voice like a National Geographic narrator. He carefully considers everything he says, pausing between dense technical explanations and trying to level the playing field by referring to complicated scientific devices as "gizmos." He's sensitive about the tabloid appeal of his story, and he wants it known

projects that make sense of huge amounts of information. The type of information he processes varies widely; he has analyzed citywide transit use and bank lending patterns. Data analysis may not sound like much of a hobby for a data analyst. But Gray says it's refreshing to work with scientific data, which aims for accuracy, instead of "social and economic stuff," which tends to amount to a lot of guesswork. "The laws of physics are known," he rumbles. "People are much more complex."

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Gray's father test-launched rockets for the army at White Sands "back when they tended to blow up." He grew up building model rockets, radios, and other gadgets. But he says his interest in outer space evolved out of common curiosity. "People have wondered if we are the only world with intelligent life for thousands of years," he says a little impatiently. "If there are other beings out there, we simply ought to learn about it."

Gray was 25 and in grad school for architecture when he first read Carl Sagan's *Intelligent Life in the Universe*. Though like most people he'd pondered the possibilities of life on other

Planetary Society, and began corresponding with astronomers in the field. He was surprised to discover that although the technology was available, only modest searches had been made. "Scientists were talking and writing about SETI, but few actually did it," Gray says. He even published a SETI paper of his own, "Broadcast Strategies in the Galaxy," in the *Journal of the British Interplanetary Society*, in 1977.

Gray earned his master's in urban planning at the University of Illinois at Chicago and was working as a systems analyst at the Regional Transit Authority when, in 1980, he read an obscure journal called *Cosmic Search*, published by Ohio State University, where people had been listening for "alien" radio signals since 1973. In August 1977, a volunteer researcher named Jerry Ehman had eyeballed a computer printout of radio data—which, like an EKG or a lie detector, spikes when a powerful signal is received—and was so impressed with one particular section of it that he'd scribbled "Wow!" in the margin.

By all indicators, the pattern that intrigued Ehman had come from within the constellation of Sagittarius,

Gray contacted Ohio State and visited its "Big Ear" radio telescope, with its 900-foot dish, outside Delaware, Ohio. Inspired, he bought his own dish. William Lum from Berkeley donated low-noise amplifiers he'd originally built for the 1,000-foot radio telescope in Arecibo, Puerto Rico. Skip Crilly, an electronics designer at Hewlett-Packard, built Gray a custom receiver that could be tuned using his personal computer. Barney Oliver, then head of research and development at Hewlett-Packard and later head of NASA's SETI program, arranged for the donation of a \$10,000 spectrum analyzer that can listen to more than 16,000 frequencies at the same time. Gray continues to upgrade the system as technology improves. The machines take up a good portion of his basement, which looks like a cross between a control tower and a home recording studio.

If unobstructed, radio waves from Chicago cabbies and planetary stars alike travel forever in space and can be picked up billions of light-years away. Gray's dish antenna collects them en masse—as a sort of cosmic static—and feeds them through the amps into the radio receiver. The

in 1993 then reborn as the privately funded Project Phoenix (the fictionalized subject of the recent film *Contact*). "It borrows telescope time a few months out of the year," says Gray. Ohio State's program, which has mapped and cataloged some 20,000 natural radio-wave sources over the years, relies heavily on volunteer labor. And Gray says Harvard's SETI is anchored by an aging 84-foot dish built in the 1950s.

The 27 81-foot Very Large Array telescopes in Socorro, New Mexico, despite their starring role in *Contact*, have in fact never been used by Project Phoenix. Gray's small dish can actually pick up a larger portion of the sky than the VLA, but the VLA is more sensitive and can pick up weaker signals from the slivers of sky it does scan. But it's mainly used for traditional radio astronomy—looking for radio waves from natural sources.

Gray was awarded observing time in Socorro after passing an independent peer review last May, and the resulting images of the Wow area of the sky he mapped show only weak, natural radio waves. "But maybe that only means a transmitting antenna wasn't pointed toward us at the time I happened to look," he points out.

The U. of C.'s Patrick Palmer, too, says it's possible that the signal could cycle around, say, once every 1,000 years, and that humans alive today could be out of luck. But he admires Gray's persistence. "It's a long shot," he says. "But most major discoveries were born from long shots." ■