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Uri Geller and Science

Is Uri Geller the world's most gifted psychic, capable of bending metal without touching it and discovering the contents of closed boxes with incredible accuracy? Or is he the biggest hoaxer of our time, able to convince trained scientists that they saw things which never actually happened? This week, Nature publishes the first scientific paper on Geller—a report on tests at the Stanford Research Institute. And in this special issue of New Scientist, Dr Joseph Hanlon reports on both our own investigation and the SRI paper

Geller and New Scientist

Uri Geller was first brought from Israel by a scientist—Dr Andrija Puharich—and has given demonstrations at the Bell Laboratories, New Jersey; the Goddard Space Flight Center, California; Birkbeck College, London; and other research centres. New Scientist first reported on Geller two years ago (vol 56, p 360) and more than a year ago (vol 59, p 95) reported on early results from the Stanford Research Institute (SRI). Geller first came to national attention in Britain on 23 November 1973 when he appeared on the Dimbleby Talk-In on BBC television, where he reproduced a drawing in a sealed envelope, bent a fork, and apparently started a dud watch. Two scientists, Professor John Taylor and Dr Lyall Watson, appeared on the programme with him. Geller stressed that he baffled the scientists—a point supported by both Taylor and Watson—and said he was anxious to participate in research with British scientists.

Geller was a sensation on British television, generating far more interest than he had in appearances on national television in the US. And science was an important part of this—if Geller had simply appeared as a magician, he would have attracted much less attention. Yet Geller had indeed baffled the scientists, and it was at least possible that he had powers previously unknown to science.

For this reason, New Scientist took the unusual step of setting up its own small research panel and on 26 November invited Geller to participate in experiments (New Scientist, vol 60, p 603). We told Geller that the committee would consist of a member of the Society for Psychical Research (SPR), a research psychologist, the editor and one other representative of New Scientist, an independent journalist with a major newspaper, and a professional magician. Geller accepted our invitation quickly, in a letter on 3 December. Although our initial letter to Geller did not actually name the members of the committee, they had already been chosen and were Denys Parsons of the SPR, psychologist Dr Christopher Evans of the National Physical Laboratory (who was responsible for the New Scientist parapsychology questionnaire, vol 57, p 209), the editor of New Scientist Dr Bernard Dixon (a biologist), Dr Joseph Hanlon (a physicist), international magician David Berglas, and Alan Brien of the Sunday Times. We later added a statistician, Professor D. J. Finney of the University of Edinburgh, and a forensic scientist, Dr Julius Grant.

Geller's interest in British science remained high. By

the time Geller accepted our offer, he was back in New York. But we met several times with an associate, Yasha Katz, in December and set up a meeting with Geller for 8 February to discuss the experiments. And on "Seeing is believing", a documentary on Thames Television in London on 15 January, Geller declared "when I am doing enough experiments with scientists, this disbelief will drop off."

But only a few days after they arrived back in Britain, Katz reported that Geller had received a bomb threat and cancelled the New Scientist meeting and some, but not all, of Geller's remaining performances. Time passed, and Geller's attitude clearly changed. Katz said the New Scientist tests would have to be delayed, although he assured us that Geller had not dropped out. By then, however, Geller had already backed out of several other sets of tests. And on 3 May 1974, on the New York television show Mid-Day Live on WNEW-TV, his view of scientists had changed to: "the Stanford Research Institute has validated the work I have done with them for a year." Finally, in June Geller told us on the telephone from New York that "I have changed my mind. . . . Right now I don't have the feeling to work with your people."

In preparation for the New Scientist experiments we studied the Geller phenomenon extensively. Dr Joseph Hanlon went to the US for three weeks in January to talk to the SRI researchers and a large number of other people who had dealt with Geller, in an effort to design effective experiments. This report is based primarily on his investigation, but we have not published it until now because it was felt that in fairness to both SRI and Geller, the SRI team should have a chance first to report on their research in a formal journal.

Nature publishes the SRI report this week despite strong misgivings about both the experimental technique and the results, and that journal is certain to be criticised by some scientists who will argue that publication gives Nature's stamp of approval to the results. But publication does not imply agreement, and Nature should indeed be congratulated for exposing the paper to intelligent discussion by the scientific community.

What follows here is New Scientist's attempt, based on its own investigation and on the only scientific evidence available so far, to draw its own conclusions about Uri Geller.

The author comments

Because this is largely a report of my personal investigation of the Geller phenomenon, it is important to make clear my own attitude and biases. I feel strongly that the next interesting breakthrough in science may well come not from expensive research by huge teams in physics and biology, but from research by individuals and small teams into the interaction of people and themselves and their surroundings.

Through biofeedback, we now have control over our bodies of a sort that not so long ago was almost universally agreed to be impossible. Negative ions in the air seem to affect our attitudes. And so on. In the past few years, these areas and others such as parapsychology have become less the province of hopeful amateurs and more the area of trained scientists. At the same time, big science, particularly my own field of high energy physics, has become corporate and unimaginative. Finally, the continuing squeeze on science funding puts the attention more on the scientist who can work on a shoestring rather than the one who cannot get the money to go to still higher energies looking for the quark.

Thus the appearance of Uri Geller and the interest of two scientists at a primarily military research organisation, SRI, sparked my own interest. I was responsible for securing our first (highly favourable) report on the SRI research on Geller more than a year ago. And I was particularly pleased that New Scientist agreed to conduct tests, and that Geller agreed.

I began to collect material relevant to experiments with Uri, and in January I went to the US so that I would have a background picture before we talked to him in February. I spoke with critics and believers, talked with many scientists and other trained observers who had seen Geller work, spoke with the SRI scientists and saw some of their videotapes, and watched many tapes of Uri's television appearances. Most of the people talked to me as a researcher and not a journalist. But what I found greatly surprised me, and now that Uri has withdrawn from the proposed New Scientist investigation, I think it important to present this material to put the SRI report in context.

Joseph Hanlon

The New Scientist investigation

Like witnesses to a motor accident, people who have seen Uri bend a spoon or do a drawing by telepathy tell widely differing stories about the same event. And explanations range from the obvious to the impossible, depending on just what the observers thought they saw

The believers

Heirloom spoons, expensive jewellery, fancy watches, and even a piece of a meteorite—often among their owners' most prized possessions—are now irreparably broken. But their owners point to them with pride, not anger, because they were destroyed by Uri Geller.

This amazing young Israeli is claimed to have the most phenomenal psychic powers the world has ever seen. Even some scientists say he can break spoons by mental powers without touching them, read minds, and make objects appear and disappear. The man who brought him to the US and UK and wrote the best-selling book about him (this year by W. H. Allen), Dr Andrija Puharich, says Geller has accomplished the task which eluded the alchemists—turned lead to gold—and that he communicates with flying saucers and teleports objects thousands of miles by the power of his mind.

The whole phenomenon is dominated by Geller's own personality. He exudes sincerity and a childlike innocence and desire to please which makes people really want to like and believe in him. This is reinforced by a high failure rate, what seems to be a constant fear that he will not be able to do what he is trying, and genuine pleasure when he does succeed. And he is a consummate showman, having been a male model and a stage performer in Israel. On the other hand, he is superficial and admits that his main goals in life are fame, money, and women and that he can be childish, petulant, and extremely difficult to work with. It is these latter characteristics that caused ex-astronaut Dr Edgar Mitchell, who was Geller's original funding source and a co-experimenter on Geller at SRI, to fall out with Geller last year. Nevertheless, Mitchell and others who have experienced his whims still believe he is one of the most important psychics of our time.

Another aspect of the Geller personality is his hyperactivity and constant motion. In small groups, either of the press or friends, he flits from one task to another, usually giving up the first time and suddenly returning to it later—so that keys and spoons are suddenly [illegible] analyses just what is happening and Geller reads the contents

Uri Geller attempts to bend a journalist's key held by David Dimbleby at a press conference at the BBC Lime Grove (London) studios on 22 November 1973, the day before Geller's appearance on the Dimbleby Talk-In brought him to the attention of the British public

of sealed envelopes which, after he failed to read them before, were left lying around unguarded.

This means that people often disagree on just what they have seen, and no demonstration is totally convincing. The belief of most of Geller's supporters is built on a long series of demonstrations, none of which is watertight, but which together they find give a convincing picture. For most people, there are one or two clinching events, although the clincher for one person may be totally unacceptable to another.

John White, Ed Mitchell's assistant at his Institute of Noetic Sciences, in Palo Alto, California, told me in January of a Geller test at SRI using a bimorph—a brass strip with special coatings which gives a signal in proportion to any bending. The strip was clamped in a vice and Geller was to bend it without touching it. According to White, suddenly one end of the bar began to disappear and reappear on a lower level. Geller had clearly dematerialised part of the bar and rematerialised it elsewhere, White said. But Dr Hal Puthoff, one of the experimenters, found it not particularly convincing and described it somewhat differently. According to Puthoff, Geller had tried to bend the bar unsuccessfully on one day and then returned to try again the next. Early in the test, a piece of the bar suddenly appeared on the table, although the signal from the bar did not change. Puthoff does not take it too seriously because it would have been possible for someone to have broken off a piece between tests and it not be noticed—the equipment was rezeroed in the morning and the film resolution was not good enough to measure the length of the bar. And there is no evidence of it actually disappearing and reappearing —on the film, it is just suddenly there, he said.

Yet Puthoff believes implicitly in Geller. One of the events which convinced him occurred when he was driving down a motorway with Geller in the car. Puthoff said he queried Geller about flying saucers, and Geller said he would prove he got his power from them and promptly stopped the car without touching anything.

Reporting what you see

Another problem is that even experienced reporters tend to misreport just what has happened. Bryan Silcock, the science correspondent of the Sunday Times, reported on Sunday 25 November last year: "In a taxi on the way to London airport yesterday Uri Geller bent the very tough key to my office desk without even touching it. The key was lying flat in the palm of photographer Bryan Wharton's hand at the time."

But the next Sunday, 2 December, Silcock admitted error on the two most critical points: Geller had handled the key, and it was in fact concealed in Wharton's hands when it was supposed [illegible] convinced he is genuine, but after thinking carefully about what happened I am forced to admit to myself that some kind

of trickery would have been possible . . Geller examined the key, then passed to . . . Wharton who held it between th palms of his hands. Geller held hi hands over Wharton's for a few second . . . and sure enough the key turned ov to be bent through an angle of about 1 degrees. . . . Geller might have distracte our attention when he first had the ke bent it, and put it into Bryan Wharton hands already bent."

Journalists are not alone in havin this problem—trained scientists do a well. Geller and Puharich gave a demor stration at Bell Laboratories, New Jerse one of the world's top research centre on 8 June, 1973. Geller did one of hi favourite tests: reproducing a drawin in an envelope. He always stresses tha the envelope is sealed and that he ha never seen the drawing before. The Be report, by Charles Davidson, says "tw sealed envelopes were brought" and goe on to report Geller's accurate reproduc tion of the drawing. But the man wh actually brought the envelopes, I Richard Moore, told me in January tha in fact the drawings were put into larg clasp envelopes which were *not* seale Further, Moore admitted, the drawin were done at short notice, at Geller request, while Geller supposedly was o the telephone in the next office. Thu Geller could have used any of severa magicians' tricks—including surrepti tiously watching the drawings bein made, or opening the envelopes an looking at the drawings. But the Be report implies that neither was possibl

of a magician's technique was on the Mike Douglas show on the CBS TV network in the US on 29 October last year, in which the participants and probably millions of viewers were convinced they saw Geller bend a nail on television. I watched a videotape of the show, and this is what I saw: There were several nails on a table in front of Geller. He picked one up with his right hand and gave it to Mike Douglas, who examined it and showed on close-up that it was, indeed, straight. Next, Geller picked up another nail with his left hand and held it by the bottom. With his right hand he took the nail back from Douglas and held it, as well, by the bottom. Then he turned to guest Tony Curtis and asked him to hold the top of both. Still holding both by the bottom, Geller rubbed the nails. Finally he told Curtis to take the nail from his (Geller's) right hand—the one we saw to be straight on close up—and put it down. Still holding the bottom of the left hand nail, Geller continued to stroke, never showing the bottom. Slowly he lowered his finger to expose a slight bend very close to the tip. Despite all of the show of checking to see that a nail was straight, the audience, Curtis, and Douglas never saw the tip of the nail until Geller said it was bent. Thus, we have no evidence that the nail was not already bent, perhaps before the show began, by non-paranormal means.

Magic sour grapes?

Is the diversion and confusion of observers accidental? Many magicians argue that it is quite intentional, and is precisely what they do all the time when they perform. Magician James Randi, a persistent Geller critic, said he talked to stagehands after the Mike Douglas show and that they told him that Geller specified that they should buy a box of tenpenny nails and that he also asked them to wrap some in a bundle with tape an hour before the show. Geller walks around the studio a lot before the show, Randi said, and it would have been easy for Geller to take his own pre-bent tenpenny nail out of his pocket and put it into the bundle when no one would notice.

But the magic community, with few exceptions, is strongly opposed to Geller, arguing that he is a magician too, but is earning far more money by claiming to be something more. Professional magicians have a vested interest, however, and have earned considerable publicity and money in their own attempts to demonstrate—apparently highly successfully in some cases—that they can do what Geller does. Finally, the magicians note that Geller has failed to perform when large numbers of magicians are watching, or on TV when magicians help set the conditions, and has consistently refused to participate in any scientific experiment (such as New Scientist's) that involves a magician.

Nevertheless, as Geller himself said on Mid-Day Live (WNEW-TV, New York, 3 May, 1974), "everything could be duplicated by conjurers, but that doesn't have to mean that I did it the way they did."

Geller's supporters argue that he is young and simply not yet in full control of his powers, and thus cannot make events happen on command or precisely where he wants. And they point to his high failure rate as being proof of this—if he were a magician, they say, he would always succeed on cue.

Further, they argue that if one believes that the power of the mind can do such things, then the power of other minds should be able to block these events. Thus magicians and others who are working strongly against Geller will always make it impossible for him to perform simply by blocking him. Mitchell is "convinced that the negative thought energies of severe sceptics and critics do interfere with the process you are trying to measure" and thus such people should be banned from the room during scientific tests.

Why assume the paranormal?

One of the early choices someone studying Geller must make is whether to assume a normal or paranormal hypothesis. Geller is extremely personable and most people, including myself, cannot help liking him. And when he performs, he really makes you want to believe in him. Combined with the rampant confusion that surrounds the Geller tornado wherever he works (which can mean no one ever sees an entire event), it is extremely easy to slip without realising it into the acceptance of paranormal explanations. One of my many surprises was how easily some trained scientists are drawn into acceptance, and then how each event adds to what becomes a strong belief in Geller.

But scientists should be guided, at least in formal experiments, by Occam's Razor: that one should not assume a more complex hypothesis until it is absolutely necessary, simpler explanations having failed.

With Geller, this means that scientists must first convince themselves that events cannot be explained by a combination of magic and psychology before they postulate a paranormal explanation. This need not imply fraud—people communicate far more than they realise by subtle looks, gestures, tone of voice, and so on. In the case of recent reports in Britain of children bending forks and spoons, they may exert more pressure than they realise while stroking the object.

I investigated a large number of Geller events with Occam in mind. I found it extremely difficult to go back and find out just what happened in a Geller event, because of the previously mentioned problem of getting accurate descriptions of the event. But I have been able to gain an approximate picture of what happened in many of them. In a surprising number, the normal explanation was actually more plausible than the paranormal, and the paranormal was accepted only because the witness was strongly committed to Geller. In [illegible] event did not even realise that the normal explanation was contained in their own description.

One example is the case of Geller teleporting Puharich's camera case from New York to Israel, which Puharich quotes in his book Uri and which is often cited by Geller supporters. When Puharich explained it to me in January, despite his own belief, a normal explanation became obvious. "I had about 120 kg of equipment that I was taking to Israel so I left all of the excess baggage behind. And one of the things I didn't bring was my camera case for my super 8 camera with which I document a lot of my work. One day Uri and I were at the Dead Sea and I complained to him that one of the dumb things I did was leave this camera case, which is brown, locked in a special closet I have in my house for my equipment. About five hours later he called me up—we'd come back to Tel Aviv and he'd gone to his apartment and I'd gone to my hotel. And he said 'You know you were talking about a camera case—there is something on my bed here—you think it's yours?' So I described it to him and I said 'Look inside, 'cause I've ripped out some of the inside' and sure enough it was my camera case." Puharich then went to Geller's apartment and identified the case as his. "To my knowledge, there is no way it could have gotten there except by teleportation 6000 miles." A sceptic might think it more plausible that Geller simply went to a camera shop, bought a case, and then marked it according to Puharich's own description on the phone.

Another similar description appeared in the 12 June, 1972 issue of the German newspaper Bild-München. Reporters took Geller to a cable car which runs up the Chiemgau mountains, and asked him to stop the car. "At noon the uncanny one [Geller] boarded a cable car gondola for the first time in his life, 'I don't think it can be done', he repeated. The gondola was suspended in the air. Uri Geller noticed a control panel on the door which governed the steering mechanism. Suddenly, he cried out, 'I think I can bring it off!' ". Then Geller bounded around the car doing various tricks, and periodically changed the direction of the cable car.

Bending keys by hand?

Some people, however, have seen and accepted a normal rather than paranormal explanation. Bob McAlister, who produces the programme Wonderama for WNEW-TV in New York, told about one incident when Geller was there. Geller asked for a key, and McAlister gave him one. "We were in an alcove outside the control room and Geller said 'Let's get out of here'. He held the key up so I could see it, then he turned his back and as he opened a door the key went in front of his body right down by the groin and the other hand came to that position as he was walking through the door. He immediately said 'Do you want to hold the key, that's all right, I'll hold it'—[illegible] moment. And he was only showing one corner of the key."

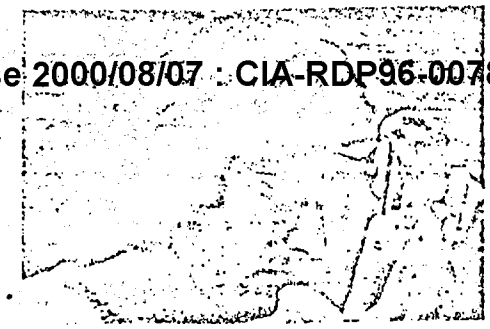
He then went into a room with a lot of people, McAlister said, and bent a key in someone's hand and "bent" it. But presumably, McAlister commented, he had actually bent it while going out the door.

Thames Television Producer Terry Dixon told me about filming Geller in New York in December 1973. Dixon said that each member of the crew did a drawing and that the drawings were sealed, first in a white envelope, then a brown one, in San Francisco two weeks before the crew arrived in New York to talk to Geller. Each crew member had also signed the envelope. In Geller's flat, Uri was given the dozen sealed envelopes and he handled them one at a time, according to Dixon. At this point both cameraman Mike Fash, and assistant cameraman Peter George, however, noted that Fash's envelope had fallen on the floor and both said, independently, that Geller would do that drawing. Eventually, Geller said that he needed a long rest, and Dixon suggested they move to one of the Thames hotel rooms. Geller agreed and suggested they take only three envelopes, which he picked (drawings by Fash, George, and Dixon). Geller suggested that they be sealed together, but there was no Sellotape immediately available, so the envelopes were passed to one of Geller's assistants, Melanie Toyofuku, who had them out of sight of the Thames crew for more than 10 minutes, according to Dixon. She had more than enough time to use any of the magician's tricks to see inside (rubbing alcohol on the envelopes to make them transparent, holding them up to a strong light, opening just a corner so that a small light can be put inside, or even opening and resealing the envelopes, among others). At the hotel room, Geller succeeded in drawing a combination of Dixon's drawing (a three-dimensional box) and Fash's (a dice).

Tightening the conditions

One thing characterises all of these examples: Geller did not do his feat in the simple, immediate way in which it is usually reported. Instead, he succeeded only after unconscious help from a participant or after taking an extra step which could be used by a magician in a similar circumstance. In other words, for whatever reason, Geller worked in such a way as to make the normal explanation seem more likely than the paranormal. Uri's supporters, of course, will say that these are all accidents or coincidences, and that he does not use the opportunities they offer for tricks. To test this theory, it is worth looking at what has happened in those cases where the conditions were made tight enough that Geller could not have resorted to such tricks. Perhaps not surprisingly, he does not perform very well.

One of Geller's standard feats is to have an object put into one of ten light aluminium 35 mm film cans, Geller then selects eight empty cans, one at a time, and finally picks the one with the



object. On the Merv Griffin show on US TV, Geller did the trick successfully, but some people thought they saw Geller jarring the table so that the cans would shake and he could tell which was heaviest. On the Johnny Carson Tonight show on 1 August, 1973, therefore, special precautions were taken and Geller was not permitted to get near enough to the table to jar it or touch the cans. He failed.

On the AM New York show, they went a step further and used heavy film cans that could not be jarred. But Geller went further as well. Magician Felix Greenfield reported that one of the staff rang him shortly before the show was to go on at 7 am to say that when she arrived at 5.50 am Geller was already there, and insisted that he watch while she put the objects in the cans and wrapped tape around them. Greenfield told her that Geller would probably remember how the target can be taped and suggested she retape them. She did and Geller failed.

The Thames TV crew found that Geller could do the film can trick for them when someone was present who knew which can contained the object, but not otherwise, which suggested to them that Geller looked for their reactions.

Bob McAlister of WNEW told of some of the special precautions he took for another Geller event. "Geller said he wanted to try something big like stopping an escalator, and he suggested Bloomingdales [department store]. But our news department suggested Gimbles because they had worked with the public relations department there before. Geller seemed quite upset and disappeared, saying 'I've got to make a 'phone call'. When I got to Gimbles, I talked to a guard who told me that you can throw a switch on any floor to stop an escalator. On my advice they stationed a guard at the switch at each escalator landing. Geller did not stop the escalator."

Did they see Geller cheat?

At least five people claim to have seen Geller actually cheat. This is a difficult area, because if we cannot trust the reports of observers who say Geller does miracles, why should we give any more credence to those who say he cheated? At least some of the examples, however, seem to have supporting evidence.

Perhaps the strongest case is that of Thames sound recorder Sandy McCrae, who said on television on 15 January that he saw Geller bend a large kitchen spoon by hand. The full details of the [illegible] on TV, however, and lend strong support to his comment. Film magazines contain ten minutes of film, but a standard sound tape runs 20 minutes. Thus it is normal practice to leave the sound tape running while the film magazines are reloaded. According to McCrae, while the cameramen were diverted reloading film, Geller attempted to divert everyone else's attention by referring them back to a fork he had already broken. But McCrae did not turn to the broken fork, and said he actually saw Geller bend—by hand, not psychic powers—the large spoon. Geller then called attention to the bent spoon and filming immediately resumed.

Support for McCrae's story comes from producer Terry Dixon, who noted that McCrae had been a strong believer in Geller and before this incident was convinced that Geller was genuine. Dixon also noted that Uri and his associates were "obsessively" interested in the equipment, particularly how long it took to reload a film magazine. "No one ever asked questions like that before."

Ray Hyman, a psychology professor at the University of Oregon, was called in to see Geller at SRI by a government agency to whom Russell Targ and Dr Hal Puthoff had applied for funding. One of Uri's demonstrations for Hyman at SRI in December 1972 was to have someone else in the room write down a number on the pad and then he, Geller, would guess it. "As he wrote, Uri made a show of covering his eyes with his hands. From my side, I could see his eyes through his hands. Also, I could easily see, from George's arm motions, that he had written the number 10."

Hyman also told a story, confirmed to me by one of the others present (who requested not to be identified), about a Geller prediction. At 4 pm Geller decided he was "burned out" and decided to go home. About a half hour later he suddenly reappeared, warning one of those present not to fly back to Washington, DC as planned. He said that during lunch he had had a premonition about a plane crashing. But someone decided to call a newspaper, and found that there had indeed already been a plane crash in Washington around lunch time, and the report would have been on the news stands and radio during the half hour Uri was away.

Finally, three people report that they saw Geller cheat when he performed at the New York offices of Time magazine in March 1973. These are perhaps the weakest cases because Time is strongly opposed to Geller. Charles Reynolds, picture editor of Popular Photography, and magician James Randi, both say they saw Geller bend a key in his hand after having attempted to divert everyone's attention by asking for a beer can opener. And Rita Quinn, a researcher in the picture department who was anxious to believe in Geller, saw him peek between gaps in his fingers during a picture drawing test.

When asked on television (Mid-Day Live, 3 May, 1974) about Randi's statement, Geller replied simply "I am sure he is lying".

Through a lenscap darkly

One of Uri's more dramatic feats is to apparently project his image onto a film even though the camera has a lenscap taped on. Such pictures have appeared in several places, including the News of the World (2 December, 1973). Geller also projected his image through the lenscap of Yale Joel, the ex-Life photographer who took our cover picture. But he may have made a mistake, and the US magazine Popular Photography (June 1974) was able to suggest a distinctly non-paranormal explanation.

The photo (Figure 1) was taken "through the taped on lenscap" of a Pentax equipped with a 17 mm Takumar extreme wide-angle "fisheye" lens. The photo was taken in Geller's New York apartment. Joel admits that Geller had the camera for several minutes while he (Joel) was out of the room, and so Uri might have been able to untape the lenscap.

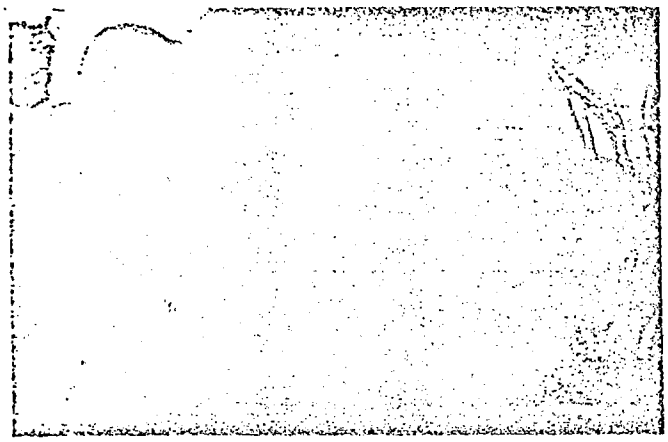


Figure 1 Photo Uri took of himself "through taped-on lenscap" of Yale Joel's Pentax

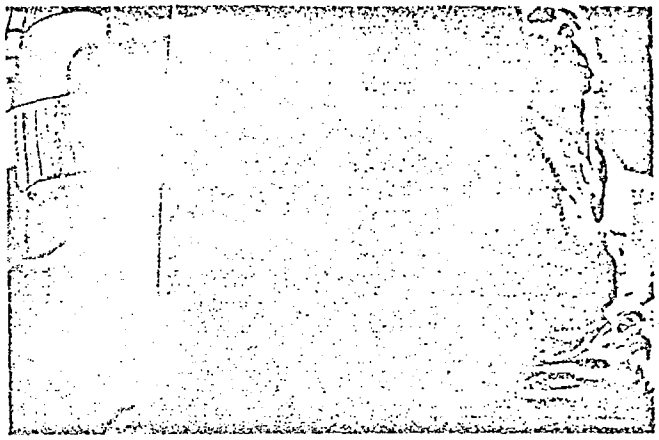


Figure 2 Photo of Seth Joel looks remarkably like Uri's, but . . .

Figure 3 . . . it was taken by holding the lenscap just a bit away from the camera

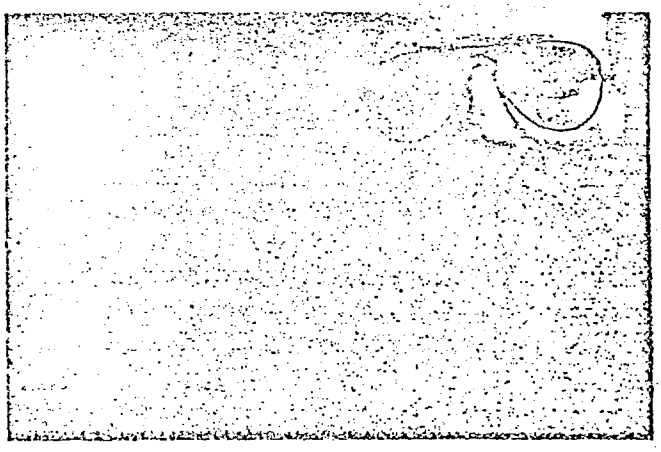


Figure 4 Picture of Seth Joel taken with 50mm lens. Is this what Uri intended?

But it was the sharp circle with the bumps that lead Joel and Popular Photography to their answer. After some experiments, Yale Joel was able to produce a photo of his son Seth (Figure 2) that looks remarkably like Geller's. The sharp circle is the lens cap and the bumps the thumb and finger holding the lenscap. Figure 3 shows how the picture of Seth was taken, although Popular Photography found that one person could do it without help.

Geller apparently knows a lot about cameras, but did he outsmart himself on this one? Popular Photography suggests that what he expected was Figure 4. This is a picture of Seth taken in precisely the same way, only with a 50-mm lens on the Pentax instead of the fisheye. No sharp circle, no fingers.

Transatlantic telepathy

Investigating the Geller phenomenon second-hand is all well and good, but the strongest impressions necessarily come from personal contact with Uri. I have seen Uri work twice, once as part of a transatlantic telepathy experiment conducted by the Sunday Mirror (10 December, 1973) and the other in the Montcalm Hotel, London (19 June, 1974).

In the Mirror test, Geller was in New York, connected to the Mirror office in London by transatlantic telephone. In the Mirror office were Clifford Davis, the Mirror TV editor who arranged the test; Professor Arthur Ellison of City University and chairman of the executive committee of the Society for Psychical Research; Dr Christopher Evans of the New Scientist panel; Ronnie Bedford, Mirror science editor; Patricia O'Flanagan and myself from New Scientist; the Thames TV crew; and about a dozen spectators. Yasha Katz of Geller's staff, and Sidney Young, from the Mirror, were with Geller in New York. The attempt lasted nearly two hours, and covered a variety of tests. Katz listened on the New York end of the telephone and later told New Scientist (during one of his meetings to discuss our experiments) that Geller's biggest success was seeing a photograph of a car.

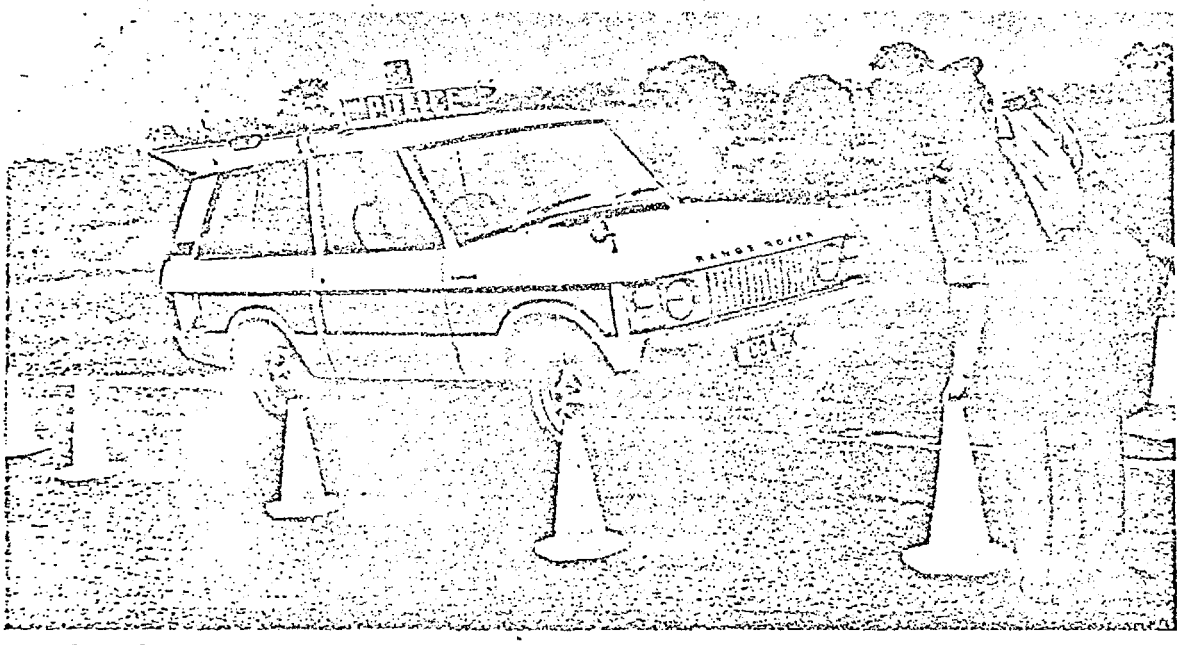


Photo which Uri Geller attempted to see in the Mirror transatlantic telepathy test, 10 December 1973

In fact, the event was not so clear cut. At my request, Patricia O'Flanagan had provided a set of sealed envelopes containing simple photographs which no one but she had seen. When Uri was already on the telephone, she gave me the sealed envelopes and I selected one, which turned out to contain a photo of a police car and a policeman. Professor Ellison was on the London end of the 'phone and concentrated on the photo, attempting to transmit it to Geller. We could all see and hear Ellison and hear Geller.

The photo transmission experiment took 33 minutes—the first half being primarily long silences followed by encouragement from Ellison. After 15 minutes Geller said "I am getting all the time three pictures I cannot draw". "can you tell us what the three are, just in case one of them matches?" Geller declined and more long silences followed. Finally, at 20 minutes Uri said he could not do it. But Ellison said: "Would you like to tell us anything about the patterns you were getting in your mind when we were all concentrating on the picture?"

Geller replied that he had drawn three different sets of things. First, "three people appeared in my mind with something white underneath" Second, "something long". Ellison immediately replied "that sounds likely, it could be described as something long". Then Geller said it was like an animal —a dog or a horse standing sideways. With no further encouragement at this point, he moved on to the third drawing —which he described as something triangular with a semi-circle coming out of the left side—"a mountain, sort of, with something coming out". Finally, he said he had words in his mind: "pattern, horse, animal, dog, dog, dog".

Although this drew no encouragement from Ellison, he continued to press the dog—asking if there was a photo of a dog somewhere in the room. There wasn't. Only the "something long" had drawn a positive response from Ellison.

Next Geller said that of the three impressions the "biggest one" was the second—an "object that was wide, long, and bright in colour". "Very good," replied Ellison. Geller then went through another series of words—table, flower, telephone—which drew no support from Ellison.

Then, 28 minutes into the test, Geller began drawing and Sidney Young came on the 'phone to describe what he was drawing. It could be "a car or a pig", Young said, which drew a favourable response from Ellison. Then Young said it looked "like a child's wooden toy—the sort of thing you get from Czechoslovakia where it is just a semblance of a car or a pig—not wheels, not legs, sort of rounded".

Ellison responded "very good, very good" and Young added "a fat sausage with, at the rear, a part that comes down and looks like, say, an elephant's foot, then goes along toward the front and becomes a sort of a breast". Ellison laughed and gave a negative response. Geller then announced that he was finished, and asked Ellison what the photo was.

Ellison said it was a police car, and Geller then claimed to have written down the word "car" even though he had not mentioned it before with the list of words in his mind. Later, he claimed to have written down the word "car" twice.

To me, at least, this was hardly a success. Guided by Ellison, he drew a shape that could have been an animal, a car, a table, a hill, or almost anything. Later in the nearly two-hour telephone call, however, Geller made remarks like "I am happy I got the drawing".

When I asked him afterwards, Ellison answered immediately that Geller had, indeed, gotten the car. He called the test "remarkable" and noted that Geller "didn't say a cup or a tree or a human being". Actually, of course, Geller did mention people and his drawing could have been a cup—it was Young who said it might be a pig or a car. But most important, Ellison seems to have been totally oblivious to the amount of help he gave Geller during the entire time. He permitted Geller to offer him three basic shapes from which he chose one, then guided Geller to something that was only vaguely right, and finally accepted Geller's statement that it was, indeed, correct. This is a good example of how Geller is able to draw people into helping him and wanting to believe that he has succeeded, even up to the point of reporting an event that did not happen.

Nothing appeared in the Sunday Mirror about the trial, which surprised me as Geller was hot news at the time. Only later did I find that Geller had insisted and Davis accepted that nothing would be published if the test failed.

Uri bends my key—and rips his trousers

My second chance to watch Uri work was 19 June when editor Dr Bernard Dixon and I met with Uri in the lobby of the Montcalm Hotel, London, for more than an hour.

We sat in a secluded corner of the lobby and chatted for a long time. Then Uri offered to try some of his skills for us. He tried to reproduce pictures which Dixon and I drew but eventually "passed" (he said he saw nothing clear on his "mental screen") each time. Next he suggested he try bending metal. I gave Uri my housekey, which he worked with unsuccessfully.

Dixon commented afterwards that he was struck by the extent to which Geller stressed his failures—constantly saying he did not think he could do it and telling us stories about his failures on TV and elsewhere. Indeed, he talked far more about failures than successes. The effect, of course, is to make everyone around Geller exceedingly anxious that he should succeed.

Geller suggested we move to the next room—an empty dining room with a few soft chairs near the door. He continued to attempt to bend my key. Noting that it was often easier to bend an object when it was near other metal, he rubbed the key against an upended metal floor ashtray and other metal objects. Even with just the three of us, a high degree of chaos prevailed—at one point I was sent looking for metal and at another looking for a pad. Hotel staff who passed—who by now seemed used to the events—added comments. But still nothing unusual happened.

Finally Uri suggested we move into the corner and sit down on a sofa behind a low coffee table. Bernard Dixon was sent to fetch Geller's jacket. Geller sat down first and I walked around the table and was just sitting down; Bernard was walking across with Geller's jacket. Thus neither of us was watching Geller closely. Suddenly Geller lurched forward, spreading his legs so rapidly that he split his trousers. His hands were down in front of him.

After joking about the ripped trousers, he held the key from the point end, enclosing most of it in his hand, and continued his efforts to make it bend. Geller's hand was slightly arched, however, and I could see clearly that the key was already slightly bent. Suddenly he said it was bending, and slowly moved his hand down the key to expose the bend. The bend was not large and he put the key on the coffee table to show the bend—carefully holding it in a V position so that both ends were off the table and the bend touching. He repeated many times that it was still bending and to prove this he put it back down on the table, now in an L position, with an entire flat side touching so that the other end was higher off the table than it had been the first time. As far as I could see, however, the key was no more bent than when I [illegible]

I cannot actually say that I saw Uri bend my key by non-paranormal means.

But I can offer an explanation that I find more plausible than previously unidentified mental forces. First, it should be noted that keys are surprisingly easy to bend, particularly for a person like Geller with strong hands. Few of us ever try it, however, and we assume it is difficult.

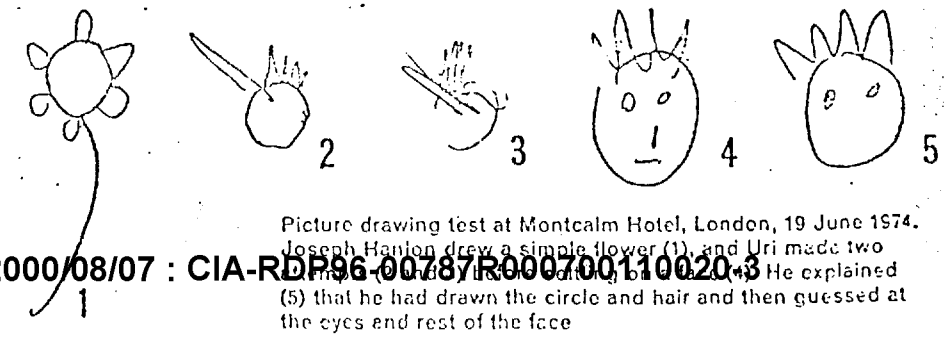
But anyone, including me, can bend a key on the edge of a chair. Sitting in a chair with your legs slightly spread, reach down to the bottom of the chair seat and you will feel part of the chair frame. Holding the head of the key in both hands, put the point on the top of the frame and press down. You will be surprised how easily the key bends. With practice, you can do this with a quick, casual movement in which you pull the chair forward towards a table.

To me, the most plausible hypothesis is that knowing neither Bernard nor I were concentrating at that moment, Uri put the key on the metal rail at the front of the sofa (his hands were in the right place) and then suddenly slid forward. Because the coffee table was too close to the sofa, he had to spread his legs quickly, splitting his trousers.

Faces and flowers

After the key bend, Uri again tried telepathy. After a couple of unsuccessful attempts—as before he always passed, never showing a final drawing despite attempts on his part—he finally did one drawing. I drew a simple flower (1), Uri made two attempts (2 and 3) which he rejected, and then said that I had drawn a face (4). It is, as he noted, not too far off because it does have a basic circle with lines coming out from it. The final drawing (5) is his explanation—that he drew a circle with bumps and then guessed at the eyes and then the rest of the face.

Uri's relative lack of success, his own explanation of how he did the drawing, and some observations by Bernard Dixon allowed us to piece together afterwards a non-paranormal hypothesis for this effort as well. First, it should be noted that in the early attempts which Uri passed, we had time to think and were drawing relatively unusual figures such as a complex fork and an integral sign. But by the time Geller



Picture drawing test at Montcalm Hotel, London, 19 June 1974. Joseph Hanlon drew a simple flower (1), and Uri made two [illegible] (2 and 3) which he rejected, before drawing (4). He explained (5) that he had drawn the circle and hair and then guessed at the eyes and rest of the face

made an attempt we had little time a face with hair. And Uri himself noted left with him and I had to think of that he was sure about the circle and and draw objects quickly—thus the bumps and guessed at the face. Be-simple flower. cause of the haste with which I drew

More important, however, was the picture, he could be sure that it Bernard's observation that after each was one of the common ones. drawing, we would carefully hide the drawing, but then Geller would ask us to draw the picture again in our mind. "I found I was making slight head movements, tracing the shape of the drawing. I tried not to, but found it difficult if I was really concentrating hard and tracing the shape as Uri suggested. Watching Joe Hanlon I noted the same effect."

Looking at my drawing and Geller's efforts and explanations, it seems that Bernard's hypothesis holds up well. The head motions for a flower would be a large circle, several short back and forth motions (petals) and one long curving up and down motion (the stem). This is precisely what Uri drew in his first two attempts (2 and 3) exhibiting the fact that it is difficult to tell from head motions precisely where on the circle the other lines should go. Dropping the long up and down motion, and putting the short motions all on the top, seems to suggest

Not an experiment

My investigation of Geller has been surprising to me in two important ways: first, that every Geller event that I could investigate in detail had a normal explanation that was more probable than the paranormal one; and second, the really strong desire of people to suspend disbelief and accept Geller. On the latter point, I must admit that I, too, was strongly taken with Geller, and that I could not help liking him and being swept up by his enthusiasm—despite the fact that I was looking for tricks.

Many people believe implicitly in Geller—often based on a very few demonstrations of his powers, swept on by their own desire to believe and by the force of Geller's personality. Indeed, some supposedly objective scientists now talk of the "Geller effect" as a fact.

But as Uri himself told me, "a stage demonstration is not an experiment" because "what I do on the stage is under my conditions". Only controlled scientific tests will tell whether Geller actually has paranormal powers.

But we can use our experience with Geller the performer to help develop and evaluate tests with Geller the experimental subject. And if there is any lesson to be learned, it is that Occam's Razor must be our guide—we must reject all normal explanations before we consider the paranormal ones.

In some cases, normal explanations would not mean that Geller is cheating. It is possible, at least, for someone to reproduce drawings watching a nodding head without realising quite how it is happening. But we must also accept the fact—made all the more difficult by Geller's likeability—that a normal explanation for key bending must imply fraud. And on the evidence of Uri's performances, this possibility must be seriously considered.

So far, there is only one published result of scientific tests with Geller. In the next section, I have tried to look at these experiments in the light of what I have found out about Geller as a performer.

The Stanford Research Institute investigation

Did SRI "validate" Uri Geller? After months of experiments, in a paper this week in Nature SRI reports the only two sets of tests it considers successful—one of telepathy and the other of clairvoyance. Although the authors state that Geller bent many pieces of metal, he never did so under experimental conditions. The paper fails to show that many of the same difficulties of Geller's public performances occurred in the lab, too. Nor does the paper note that by using an ingenious device invented by his mentor Dr Andrija Puharich, Geller could have done both successful tests by non-paranormal means

The investigators

Stanford Research Institute, in Menlo Park, California, is the site of the only attempt at controlled scientific tests of Uri Geller. SRI was originally established by Stanford University to do military research. After student protests in the 1960s, it was nominally split off from the university. Since then, military funding has decreased and SRI has done increasing amounts of commercial contract research.

The Geller study has been done by Dr Hal Puthoff and Russell Targ. Both are laser physicists with a continuing interest in psychic phenomena who joined SRI primarily to do psychic research (although when funding is short they do return to laser work). Puthoff is 38 years old and joined SRI in 1971. He is the author of a laser textbook, Fundamentals of Quantum Electronics (John Wiley & Sons, 1969), and holds patents for a tunable Raman laser and other optical devices.

Targ is 40 years old and joined SRI in 1972 after ten years at Sylvania, where he worked on gas lasers and invented a tunable plasma oscillator.

Targ has been president of the Parapsychology Research Group of Palo Alto, and invented an "ESP Teaching Machine". In a paper to the IEEE (Institute of Electrical and Electronic Engineers) International Symposium on Information Theory in January 1972, he [illegible] and biofeedback techniques, it "may be possible to teach and enhance ESP phenomena" (Parapsychology Review, July-August 1972, p 9).

Together, Targ and Puthoff have investigated several subjects in addition to Geller. Initial funding for the project [illegible] report that

they had an $80 000 grant from NASA (National Aeronautics and Space Administration), apparently relating to Targ's ESP teaching machine. But they remain chronically short of money. Funding for the Geller work has come primarily from wealthy individuals—particularly from Judith Skutch, a wealthy Geller supporter in New York, and Dr Edgar Mitchell. Ex-astronaut Mitchell conducted an unauthorised ESP experiment in space in February 1971 and two years ago set up his Institute of Noetic Sciences in Palo Alto to encourage psychic research.

Geller has been to SRI several times over an 18-month period beginning in November 1972. Mitchell and another Geller supporter, Dr Wilbur Franklin of Kent State University, assisted in the first series of tests. The clairvoyance experiment with a die reported in the SRI paper, published this week in Nature (vol 251, p 602), comes from this set of tests. (Copies of the 18 October issue of Nature are available for 45p from Macmillan Journals, 4 Little Essex Street, London WC2.)

The paper

The SRI paper reports on three tests with Geller, as well as several tests with other subjects. In the first in August 1973, Uri was asked to reproduce target pictures drawn by experimenters at other locations. "At the beginning of the experiment either Geller or the experimenters entered a shielded room so that from that time forward Geller was at all times visually, acoustically, and electrically shielded from personnel and material at the target location. Only following Geller's isolation from the experimenters was a target chosen and drawn, a procedure designed to eliminate pre-experiment cueing. Furthermore, to eliminate the possibility of pre-experiment target forcing, Geller was kept ignorant as to the identity of the person selecting the target and as to the method of target selection," Targ and Puthoff report in the paper.

Altogether, 13 trials were conducted (see Table). For virtually every trial, the conditions were changed—often several conditions were changed at the same time—so that it is difficult to correlate his successes and failures with different conditions.

In four cases (1-4) the targets were chosen by putting an index card into a dictionary to pick a page, then opening it and drawing the first word on the upper left that "could be drawn". Three targets (8-10) were chosen from an already prepared target pool. Three (5-7) were targets "blind to experimenters and subject, prepared independently by SRI scientists outside the experimental group following Geller's isolation"—Geller declined to attempt any of these three. Finally, three targets (11-13) were chosen by computer laboratory personnel and drawn on a cathode ray tube display screen. This is primarily a test of telepathy, as in all cases someone knew what the drawing was. In three cases, however (5, 12,

Geller picture drawing test at SRI

Trial	Geller location	Target location	Target	Outcome
		Picture from dictionary		
1	S1	A	Firecracker	poor
2	S1	A	Grapes	good
3	S1	B	Devil	poor
4	C	S1	Solar system	good
		Picture prepared by outsider		
5	C	S1	Rabbit	*pass*
6	S1	A	Tree	*pass*
7	S1	A	Envelope	*pass*
		Picture chosen from target pool		
8	S1	D	Camel	good
9	S1	A	Bridge	fair
10	S1	A	Seagull	good
		Picture drawn on computer crt		
11	S2	E	Kite	good
12	S2	E	Church	poor
13	S2	E	Arrow through heart	fair

Locations:

S1: double walled steel room

S2: double walled copper screen Faraday cage

A: adjacent room 4·1 m from S1

B: office 475 m from S1

C: room just outside S1

D: room 6·75 m from S1

E: computer room 54 m from S2

Outcomes:

Pass means Geller did not do a drawing. Other evaluations are by the author (JH) based on drawings published with the Nature paper. In general, the drawings seem to be based on a verbal description of the target drawing, rather than either the target word or the target drawing.

Good: good pictorial representation of a word or phrase which would describe the entire target picture. Trial 2 is a bunch of 24 grapes (word: grapes) and the Geller drawing precisely fits that description. Trial 4 includes the sun, earth, saturn, two other circles, and the words "solar system". Geller has drawn, in a totally different arrangement, the sun, saturn, several circles, and what appear to be satellites. Both could be described verbally as "solar system" or "sun and planets". Trial 8 is a drawing which could be either a horse or a camel and Geller has drawn a horse. Trial 10 has a large flying bird and a small bird on the ground. Geller's drawing has a large and small bird. The birds do not resemble each other, but both drawings are described well by "large bird with small bird under it". Trial 11 is a kite, which Geller has drawn. The two are about as dissimilar as two line drawings of a kite could be.

Fair: pictorial representation of some of the words which would describe the target picture. Trial 13, for example, is an arrow through a heart. Geller has drawn an arrow inside a box. Again, the target and Geller's drawing are dissimilar, despite the fact that they describe the same word "arrow".

Poor: pictorial representation of a few words which might be used to describe the target picture. In trial 1, the dictionary word was firecracker, and the drawing is a simple firecracker with a lit fuse. Geller's response appears to be to the word "noisemaker" and includes a drum and words like "noise" and "pow".

Special notes:

5—target in shielded room with no one there to view it

6, 7—attempted to make EEG record of Geller, which failed because "he found it difficult to hold adequately still for good EEG records"

11—picture displayed on front of cathode ray tube display screen

12—picture erased from screen and stored in computer memory

13—picture drawn on screen and display intensity turned off so no picture

No metal bending

"It has been widely reported that Geller has demonstrated the ability to bend metal by paranormal means. Although metal bending by Geller has been observed in our laboratory, we have not been able to combine such observations with adequately controlled experiments to obtain data sufficient to support the paranormal hypothesis," Targ and Puthoff declare in the paper published this week in Nature.

Indeed, the SRI team spent most of its time on metal bending—by far the most spectacular Geller feat—and considerably less time on the perception tests finally published.

In one test which I saw the videotape of, Uri was asked to bend a carefully checked metal bar. He was unsuccessful, and asked for something else. The SRI team provided a special checked spoon. Next he asked for more metal round him for inspiration, and that was supplied. Finally he gave up, but the spoon was set up for the next day and all the other metal, including the original bar, just dumped in the corner of the room.

The next day, he started on the spoon, and again asked for more metal. The original bar was among the extra collection, and Uri switched quickly back to that. But as only the spoon had been set up and checked, there was no way to see that Uri or someone else had not taken the bar—or any of the other metal—out of the room overnight, bent it, and brought it back in the morning.

Later Uri moved on to still other pieces of metal in the pile. Finally he selected a pair of tweezers which no one had paid attention to because of the concentration on the spoon and bar. Finally, he broke the tweezers, but even Targ considered it all so suspicious that it was not included in the paper. The possibility of sleight of hand—in this and all other metal tests with Uri—was too great even for SRI.

and 13), the picture was not actually being viewed by anyone at the time of the test.

In all ten cases where Uri did a drawing, it had some connection to the target and in some cases Uri's picture was extremely good—for example, when the target drawing was a bunch of 24 grapes, Uri also drew a bunch of 24 grapes.

Perhaps the most striking factor which runs through all 10 pictures, however, is that Uri seems to be drawing neither the target word nor the target drawing. He appears to base his drawing on the words which would be used to describe the target drawing.

Clairvoyance

The other two tests reported in the SRI paper are of clairvoyance—seeing something in a closed container which no one can know by normal means. Geller succeeded once and failed once.

In the second test reported in the SRI paper, also conducted in August 1973, an SRI artist drew 100 target pictures of everyday objects and other SRI personnel sealed them with black cardboard in envelopes and then sealed the envelopes in other envelopes. Five targets were drawn from the pool each day. Each day Geller attempted drawings of everyday objects, but only rarely came close to the target picture. "The drawings resulting from this experiment do not depart significantly from what would be expected by chance".

In the third test in the SRI paper, conducted before the other two in November or December 1972, Uri succeeded spectacularly well. A ¾ in dice was placed in a steel file card box (3 in × 4 in × 5 in). The box was shaken and put on the table, and Uri drew a picture of the uppermost dice face. Then the box was opened. The experiment was performed 10 times, with Uri being correct eight times and passing twice. Unlike the telepathy test, the conditions were not varied—the dice and the box apparently remained the same.

Targ and Puthoff conclude: "A channel exists whereby information about a remote location can be obtained by means of an as yet unidentified perceptual modality."

In these experiments, they write, "we concentrated on what we considered to be our primary responsibility—to resolve under conditions as unambiguous as possible the basic issue of whether a certain class of paranormal perception phenomena exists." They continue that "at all times we took measures to prevent sensory leakage and to prevent deception."

But were Targ and Puthoff vigilant enough, and have they really shown unambiguously that paranormal perception exists?

Welcome to the circus

A dry scientific paper can never capture the feeling of an experiment. In this case, the Targ-Puthoff paper totally fails to communicate the circus atmosphere that surrounded all of the tests with Geller. As Targ commented to me: "deliberately or accidentally, Geller manipulates the experiments to a degree of chaos where he feels comfortable and we feel uncomfortable. Then he bends something."

SRI has filmed or videotaped many Geller tests. The tapes show that Geller constantly bounces up and down, touching everything in sight and running his hands through his hair. In the middle of a test, he frequently jumps up and flits about the room, stopping the test dead. Just as suddenly, he will go back to the test—or to a different one he abandoned earlier. He frequently asks for objects, often from outside the test room, to give him moral support: press clippings from past triumphs, pieces of metal, coins, etc. And he will discuss at length what objects to choose and where to put them. He draws technicians and other observers into the experiment by asking them to help him concentrate, or to get other objects, or to pick a number.

Geller also tries to convince people that things happened differently than they did. In one tape I watched, he tried to say he had not "passed" when he had, in fact, done so. In another, he said that something was bent when it really wasn't. Also, Geller constantly needs reinforcement. He frequently stops and says "I can't do it", thus putting the experimenters in the position of repeatedly telling him that he really can, and thus possibly convincing themselves in the process.

Mitchell commented that "Hal [Puthoff] and Russ [Targ] were so eager to keep Geller around that they worked themselves into a box by meeting his every whim. If he threatened to walk off they would relent and do what he wanted. Of course, they lost control of the situation and it got worse and worse and worse." Mitchell—a strong believer in Geller's abilities who was present for many of the tests—admitted that during the tests they should have demanded "that he curb his impulsiveness, that he should not touch equipment, that he keep his hands properly in view of the camera at all times, and that he cut down his chatter when we were trying to work. It becomes distracting and he uses it, not consciously to distract, but to create a climate of too much noise and muss and bustle."

There are also long periods when he does nothing but stand and concentrate. A single test can take several hours of alternating excitement and boredom. The vigilance of the experimenters is sure to flag during that time.

Assume he will cheat

The experimenters are conscious of the possibility of dishonesty. "I feel confident that Geller will cheat if given a chance," Targ told me, and he seemed highly sceptical of some of Geller's metal bending attempts. But whether their vigilance against cheating was rigorous enough is open to dispute.

If Geller is cheating, he is probably using sophisticated magic and psychological trickery. But the SRI team has never called in a professional magician. Instead, they relied on two amateur

magicians, an SRI staff member not connected with the project, and Targ himself, who noted he had "done tricks and been paid for it". But Targ has very poor eyesight, holding things just a few inches from his eyes to see detail, so it is not clear how much he could catch. Targ is also sometimes surprisingly trusting: in one instance during a magnetometer experiment he asked Geller about a black mark on his skin and Geller said it was a scar; Targ accepted without checking although he could not have possibly known if Geller was telling the truth.

One outside observer who is highly critical of the controls applied by Targ and Puthoff comes from a US government funding agency. Targ and Puthoff had applied for money and he was sent to SRI to evaluate the work. Thus, one would expect the SRI team to have put on the best possible performance. A reliable source reports that this official is quite interested in psychic phenomena, is anxious to believe, and should have been sympathetic to SRI. By his own admission, he watched whatever the SRI team chose to show him. But he concluded that the "controls are sloppy and inadequate". He also remarked that when he suggested tighter controls, "Targ said 'bullshit' ".

One of the potential difficulties of parapsychological investigation is the sensitivity of the whole phenomenon, and the inability of even "good" subjects to perform under many seemingly reasonable, controlled conditions. If one accepts the existence of parapsychological abilities, this is not surprising. One would, presumably, be dealing with a talent like musical ability, and it would be not unreasonable to find a skilled violinist, for example, being adversely influenced by playing before a group of people he knew to be hostile critics. Also, because we are dealing with "mental energies", it is not unreasonable to suppose that a confirmed critic could use his psychological powers to block those of the sensitive.

Thus, the phenomenon will require somewhat different procedures than other forms of research. Some concessions will have to be made to keep the subject happy and comfortable, for example. The real question is: Has SRI gone too far in this direction?

Screening participants

Typical of the difficulties of this sort of research is that all those who aid the investigators are, to some measure at least, pre-selected for their receptiveness to Geller. "We reached the point that on a particular day, if one of our better but more sceptical investigators was really in a foul mood about the whole thing, we just banned him from the room. And we could get results then, while when he was there we couldn't," according to Mitchell. He

Uri on film

More than a year ago SRI produced a film of Uri Geller's first set of tests there (in November and December 1972). Although more like a seminar report than a formal paper, it gives some insight into the SRI researchers. (The film is entitled "Experiments with Uri Geller" and can be rented only by "universities and scientific research organisations" from Mitchell's Institute of Noetic Sciences, 575 Middlefield Road, Palo Alto). The narrator is Bonnar Cox, executive director of the SRI Information Science and Engineering Division.

The film shows five tests that the SRI team then considered acceptable (but only one of the five was considered acceptable by the time the paper was submitted to Nature). The first test shown is a telepathy (mind reading) experiment using picture drawing. Fifteen simple drawings were made and sealed in envelopes which were themselves sealed in other envelopes (double sealing). The envelopes were locked in a safe and drawn out at random for each test. The researcher then would open the envelope outside the experimental room, look at the picture, reseal the envelope and enter the experimental room. While he thought of the picture Geller would draw it. Each drawing seemed quite close to the target, but perhaps closer to a verbal description of the target than to the target itself.

Next, the film shows a clairvoyance test in which Geller selects the one can out of 10 that contains an object. The cans are [illegible] film cans. Using a cardboard box large enough to hold three rows of four such cans, they are placed with the middle two positions left vacant. In each case, a person referred to as a "randomiser" enters the room, arranges the cans, and leaves before Geller enters. Geller instructs the experimenters to remove empty cans one at a time. In the film, he successfully finds a can containing room temperature water and one containing a steel ball.

In a similar test, a dice is placed in a metal box and shaken. Geller then guesses that the top face is a four, which is correct.

There are also two experiments in psychokinesis (PK). In one, a one gramme weight is placed on an electrical balance and covered by an aluminium film can, and then the apparatus covered by a glass cylinder. A chart is then shown with two peaks, which, according to the film, "are apparently due to Geller's efforts. They are single-sided signals, one corresponding to a 1500 mg weight decrease, the other corresponding to an 800 mg weight increase. . . . We have no ready hypothesis on how these signals might have been produced".

Next, Geller is shown actually "influencing" a Bell magnetometer. Moving his hands around the probe, he apparently causes a full scale deflection of 0·3 gauss.

Finally, the film shows two unsatisfactory events. First, Geller is shown deflecting a compass needle. Next, he is seen apparently bending a stainless steel spoon, but this is also [illegible] in physical contact with the spoon. Also shown are two bent rings "measured to require 150 pounds force to bend them" and which "were in Geller's hand at the time they were bent".

The most striking aspect of the film is that the really dramatic events all happen off camera. The first drawing that Geller does on the film is "the most off-target of the drawings he did". Although the film says that the dice experiment was done successfully eight times, the only test shown in the film is one in which Geller finally "passed"; that is, even though he guessed the number he asked that it not be taken into account because he was not confident. In the test with the one gramme weight, Geller is never actually shown deflecting the scale—all the film shows is Geller working unsuccessfully with the balance, and then a trace of another (apparently unfilmed) successful test. During the spoon bending, there is a break in the film and then the spoon never leaves Geller's hand until it is shown to be bent—as usual, it appears to have bent during a break in filming. If, as the team claims, SRI filmed Geller virtually continuously, why did this film have to contain what seemed the weakest examples of each test?

But it may be the bent rings which make the film most suspect. I have already noted the virtual impossibility of telling just when Geller bends something. Therefore, the dogmatic assertion that "these rings were in Geller's hand at the time they were bent", without any film documentation offered, seems more likely [illegible] observation than especially good observation.

explains it by saying that the [illegible] shows "how important the individual thought process is". The less charitable might suggest that Geller was unwilling to perform before someone who was more watchful than usual.

Another example of this sort of choice came up in a discussion of experiments with Pat Price, also published in the SRI paper. In the test, one of the investigators went to a randomly selected place in the Palo Alto area—a motorway toll booth, a drive-in movie, a marina, etc. Thirty minutes after he started, Price would dictate into a tape recorder a description of where he thought the investigator was. Transcripts of the nine descriptions were given to five judges who were asked to correlate them with personal knowledge of the nine locations but with no knowledge of which descriptions Price said were of which trips. There is a wide diversity, with two judges picking 6 and 7 of Price's descriptions as correct, while two others picked only 3. When asked about the diversity, Targ said that it simply showed that they had to be more careful in picking judges because some judges were not good at doing correlations!

Good observers?

By far the most important component of the validity of the SRI paper is the investigators' abilities as observers. Two incidents suggest that although Targ and Puthoff may be competent laser physicists, they are less successful in this radically different area. In particular, their desire to believe may cloud their discrimination.

Perhaps the most telling event is Hal Puthoff taking Ingo Swann—an experimental subject not described in the Nature paper—to the quark detector at Stanford University early in 1973. The quark detector is a highly sensitive magnetometer which works by looking at the decay of a magnetic field. This is shown on a chart recorder by a periodic function. Puthoff and Swann independently told me roughly similar stories: Puthoff took Swann to the quark detector, where Swann described in some detail the inside of the detector, of which he could not possibly have had any knowledge. Then, without going near any of the equipment, for short times he both increased and decreased the period of the signal.

Dr Arthur Hebard, who designed the equipment, and who suggested that Puthoff bring Swann there, tells a somewhat different story. He dismisses the description of the inside of the detector by saying that Swann was "talking in such poetic terms that he could have been describing anything". The description was "doubletalk" and the sort of thing any poetic layman would use to describe any piece of scientific equipment.

On the perturbation of the detector output, Hebard made two interesting comments. First, just that sort of perturbation often occurs when other people who share the helium supply are also using their [illegible] [illegible] simply by fiddling with the dials on the recorder. Hebard is convinced, however, that Swann did perturb the output without touching the recorder. But as often happens, his version of the story tells more than he realises. He said that there were several people in the room and that they stood talking for about 40 minutes. Swann, he said, stood close to the chart recorder looking at it intently for 20 minutes before anything happened. Hebard is sure that Swann did not touch the recorder, but in a crowded room with people talking, who can concentrate on any single object for 20 minutes and be sure it is not touched? Hebard also added a point that neither Swann nor Puthoff mentioned—they came back the next day with fewer people around and Swann failed to have any effect.

One also has the comment of Ray Hyman—the Oregon University psychology professor, magician, and confirmed sceptic about psychic phenomena. Hyman observed a day of SRI tests on Geller in November 1972 and concluded that "they don't know how to observe. Targ and Puthoff recounted incidents we just saw in completely the reverse order, making them miracles".

Finally, there are two problems that apply to all scientists, Targ and Puthoff included. First, future funding clearly depends on success—there is no money available to prove that subjects of their choice have no psychic ability. Second, the mystique of the hard-headed scientist objectively searching for truth bears little relationship to reality; in the real world of science most people are trying to prove the truth of a hypothesis to which they are already committed. Thus it is hardly surprising to find that Targ and Puthoff are strongly committed to Geller and seem genuinely to believe in his abilities (although Targ seems more cautious about Geller's metal bending). Targ has worked in the parapsychology area on and off for 15 years. Puthoff has gone through encounter groups and other West Coast fads, and is now a Scientologist (as is Ingo Swann). In an area where observation is difficult anyway, have the SRI investigators taken enough precautions to ensure that their natural desire to see Geller succeed does not cause them to unconsciously make errors or misinterpret the data to Geller's benefit?

Omitting a success

One test with Geller that is omitted from the paper throws some interesting light both on Geller and the researchers. Whereas the 13 drawings in the telepathy test are described as the "entire set of consecutive experiments", this is not the case with the clairvoyance test which Geller failed—his attempt to draw the contents of sealed envelopes.

The targets were drawn by an SRI artist at the request of a third SRI researcher who worked with Targ and Puthoff for a short time in August 1973. As Targ and Puthoff report in the paper, Geller was unable during the three days [illegible] to see inside any of the envelopes. [illegible] interesting as he was apparently able to see inside the box containing the die.

But the paper does not report a curious incident which occurred at the end of the third day of the test. After the formal test had been abandoned, it was decided to loosen the precautions and try again with six drawings. This time the drawings were left lying about the room so that it was possible to remove a drawing from the pile without anyone noticing, and Geller was permitted to leave the room, which he did three times. This time, Geller had no trouble with the clairvoyance test, and succeeded in drawing one of the pictures. Commented the third researcher: "I'm convinced he cheated." If he could do this test under loose conditions but not under tight conditions, is this not worth a mention in the paper?

Looking in Uri's mouth

The final question that must be answered is how the SRI paper stacks up against Occam's Razor—is there a plausible normal method by which Geller could have done his two successful tests at SRI? Plausibility is hard to define in this situation, but it must take into account anything that can be done with the assistance of Dr Andrija Puharich.

As the box on the next page shows, Puharich is a medical electronics expert who developed a radio receiver which can be hidden in a tooth. It must therefore be considered plausible that Uri has a miniature radio receiver concealed on his person. Even if it is not hidden in his teeth, it could easily be hidden in his hair or in a wristwatch which he presses against his chin to hear. The possibilities are limitless, especially if Uri is not carefully searched. Because Uri constantly runs his hands through his hair and across his face, no one would notice him listening to his Dick Tracy wrist radio—nor, because of the direct nerve stimulation, would anyone else hear it.

There are two small pieces of evidence that give some credence to this suggestion. The most obvious is that all of Uri's drawings are representations of words which would describe the target drawing, and thus are consistent with radio communication. The second occurred in January when Puharich was telling me that in any test Uri should be "properly examined" for hidden devices. But then he suddenly added: "But I know Uri will not submit to excessive examination like total body X-radiation". In other words, Uri will not permit the only test for a Puharich implanted radio receiver.

To some measure, SRI has protected against radio transmission by working with shielded rooms for the picture drawing tests. But have they succeeded; or is it possible to penetrate the room to a radio?

To answer this question, I consulted Robert King, a senior lecturer at Imperial College, London. King wrote [illegible] three shielded rooms in the College's Electrical Engin-

eering Department. King was dogmatic: "I could get information into any shielded room." The reason, he explained, is that shielded rooms are simply not designed to protect against secretive attempts to get information through.

The SRI paper gives only vague information on the room in which most of the tests were done (S1 in the Table, p 179)—it says only that it is "a double-walled steel room, locked by means of an inner and outer door". The second room (S2 in the Table, p 179) is a "double-walled, copper-screen Faraday cage" which "provides 120 dB attenuation for plane wave radio frequency radiation over a range of 15 KHz to 1 GHz. For magnetic fields the attenuation is 68 dB at 15 KHz and decreases to 3 dB at 60 Hz."

King said that this is typical of screening for shielded rooms, and provides the key to getting data inside in this case. Attenuation drops off very rapidly at the very small wavelengths about 1 GHz, he said, so that microwaves of 10 GHz or more provide a good possibility.

Hearing with a tooth

The dream of spy writers, a radio receiver that can be concealed in a tooth, actually exists and was invented by Andrija Henry Puharich —the man who found Geller in Israel and brought him to the US. Puharich is a wealthy 56-year-old MD who holds 56 patents, primarily in medical electronics. Since 1960 his inventions have related primarily to hearing aids for people with nerve deafness.

But Puharich's hearing aid is a unique device which stimulates certain facial nerves just as the organ of Corti stimulates auditory nerves, and the person can actually hear normally without using his or her ears at all. The facial hearing system will work with nerves on the face and neck, on the tongue, and in the sinuses, Puharich claims. But for cosmetic reasons, the nerves in a living tooth are best.

"The invention comprises an element applied to a viable tooth, for receiving electromagnetic signals at radio frequency, and a transducer element coupled with a receiving element and with live nerve endings of the tooth for converting the electromagnetic signals to electric signals at audio frequency, and imparting the electrical signals to the nerve endings of the tooth for transmission to the brain," according to US Patent 2 995 633 issued 8 August, 1961.

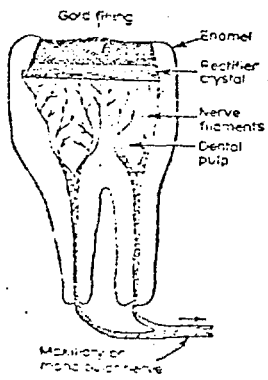


Figure 1 Puharich tooth radio receiver. Signals are received by the gold filling, converted to electric signals in the audio frequency range by the rectifier crystal, and imparted directly to the nerve endings of the live tooth. Drawing from US Patent 2 995 633

Normally, the user would carry a small transmitter in his pocket which would pick up sounds and transmit them to the tooth. But Puharich and co-inventor Joseph Lawrence noted in US Patent 3 267 931, issued 23 August, 1966, that the device "may, of course, be adapted for longer range transmission of radio frequency signals".

Although the device will receive radio signals directly, it works best with an amplifier. In the initial patent, this amplifier is relatively large, concealed in two false teeth next to the viable one with the implant (Figure 2). But by 1964,

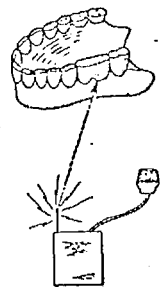


Figure 2 Signals can be transmitted from a radio to a receiver/amplifier hidden in two false teeth, and then passed on to an adjoining viable tooth as in Figure 1. Drawing from US Patent 2 995 663

Puharich had modified the amplifier circuitry (US Patent 3 156 787) to be mounted on the one tooth. The drawing (Figure 3) "is greatly exaggerated in size to facilitate description. . . . The entire assembly . . . advantageously is of wafer-thin construction, so as to be unobtrusively concealed with the cap. . . . It is contemplated that the various components of the system of the invention may be further reduced, to micro-miniature proportions, through the use of so-called 'thin film' circuit fabrication techniques".

The amplification in the 1964 and 1966 patents is provided by a feedback loop within the mouth, using either two different teeth (Figure 4 from the 1966 patent) or the tongue pressed against an exposed terminal on the back of the tooth (left of

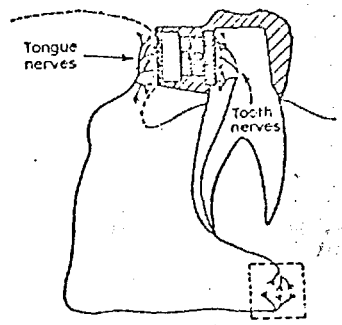


Figure 3 By 1964, Puharich had improved the amplifier so that it could be mounted on the back of the tooth. In this drawing, the amplifier "is greatly exaggerated in size to facilitate description" and would, in fact, be hidden under the tooth cap. The amplifier has a terminal on the left which must be touched with the tongue to complete the circuit. Drawing from US Patent 3 156 787

has the interesting side effect that amplification only works when the tongue is pressed against the tooth, and thus the wearer can listen selectively and be undisturbed by radio signals at other times.

In another version of the device, described in the 1966 patent, an electrode "about the size of a penny which is covered on its operative surface with a thin film of Mylar" could be pressed against the skin in "one of several identifiable areas of the head and neck" to stimulate facial nerves and produce the same effect of hearing. The electrode is connected to a receiver similar to the one mounted in the tooth. The feedback circuit is completed by a connection to any point on the body. For example, a quite small device held in the hand could be pressed against the face.

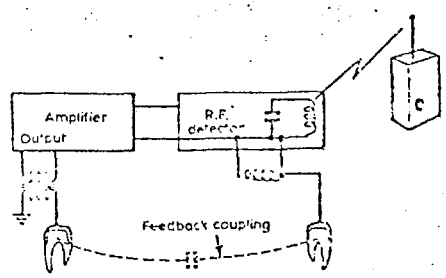


Figure 4 An alternative amplifier system uses two teeth. Based on drawing in US Patent 3 267 931

Geller performs at Birkbeck

Uri Geller has worked with one group of scientists in Britain. On 21 and 22 June, 1974, he did a set of tests in the office of Professor John Hasted at Birkbeck College, London University. Also present were Professor David Bohm, Dr Ted Bastin (a friend of Andrija Puharich and a strong Geller supporter, who first introduced Uri to New Scientist in 1972), Brendon O'Regan (another Geller proponent who wrote the first New Scientist report on Geller at SRI), theoretical physicist Dr Jack Sarfatt, authors Arthur Koestler and Arthur C. Clarke, and several other people.

In an unpublished paper, Hasted reports that Geller bent four keys and a 1 cm molybdenum disc 0·32 mm thick, affected a Geiger counter, and deflected a compass needle while at the same time producing a pulse on a magnetometer. Hasted concludes that "these observations are consistent with the hypothesis that Mr Geller could by concentration produce occasional and rather unpredictable pulses of electromotive force".

As usual, they are also consistent with non-paranormal explanations. Indeed, the whole set of tests seems no better controlled than the typical Geller show.

In a telephone interview last month, Bohm told me that "unfortunately there were a lot of people in the room", and that "as far as the key bending is concerned, we had much better conditions in his hotel room [in February 1974] where it was much quieter".

"I can't assure that there were no tricks, and no one there could," Bohm added. "Geller works in a very high state of excitement which communicates to the experimenters, and that makes it hard to keep your mind on what is happening."

According to the Hasted paper, Geller bent four brass Yale keys through angles of between 10° and 40°. "In all cases the bending took a time of the order of minutes to complete," Hasted noted. With that much time, any good magician could have bent the keys no matter how closely the observers thought they were watching—with the chaos that must have reigned in the office, it should have been trivially easy.

The bent disc was one of ten metal objects. "Mr Geller was not asked specifically to bend this specimen rather than others on the table". As I noted in the box on page 180, SRI observed a similar event and even videotaped it, yet they rejected it because of the possibility of sleight-of-hand.

The Geiger counter was connected to an amplifier and a chart recorder, and "during a total period of about 10 minutes eight pulses of duration of the order of a second were recorded. . . . However, the loudspeaker clicking, which was recorded on magnetic tape, did not always accelerate during the chart recorded pulses, nor did a second Geiger counter record click consistently". To me, this is more consistent with Uri or one of his supporters bumping the chart recorder or fiddling with a knob on the amplifier than with any paranormal event.

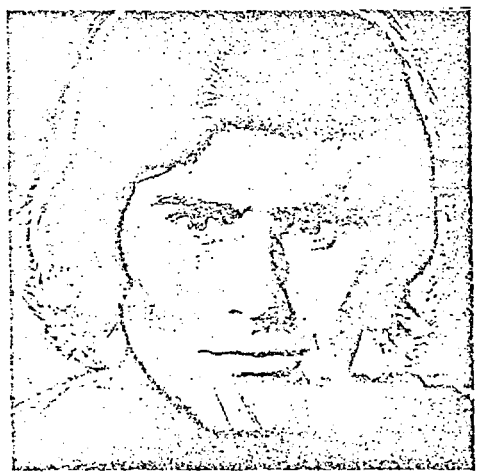
As for deflecting the compass needle, the best comment is that made in the SRI film of Geller: "we found later that these types of [compass needle] deflections could be produced by a small piece of metal, so small in fact that they could not be detected by a magnetometer".

Bohm stresses that to perform, Uri must be in the right state of mind. "My attitude is that whatever he requires, we must accept." For example, "considering the sort of person Geller is, you couldn't search him—it would put him off".

Bohm also noted that Geller "tends to get discouraged by complicated set-ups. We had some set-ups that would have given stronger proof, but he was never in the right state of mind".

Microwaves have one important property: they are reflected by metal. Thus, microwaves are often used with waveguides—long metal boxes which will carry the microwaves virtually without loss around tortuous routes. The air conditioning system probably used in SRI buildings would make an especially good waveguide—a transmitter placed anywhere in the air conditioning would transmit to all linked offices. Naturally, air conditioning ducts entering a shielded room have special baffles to screen out radio waves—but these are highly ineffective in the microwave range. On the other hand, microwave transmitting equipment can be miniaturised and draw very little power. A microwave transmitter for this sort of purpose need be no bigger than a cigarette pack. And even though Puharich in his patents talks about his tooth receiver working in the MHz range, it should work just as well in the GHz range. In the configuration where the tongue is part of the amplifier, Geller would even be able to turn it on and off at will, and thus not be affected by possible continuing transmissions.

How would such a radio be used? Perhaps the simplest way would be to use it to bug the room in which the target picture was being viewed. Targ and Puthoff were so anxious to please Uri that they [illegible] with a request from Uri to describe the



picture out loud after they drew it—after all, as they say in their paper, the shielded room provided "acoustic isolation".

Another choice would involve Shipi Strang, Uri's inseparable companion. According to Puharich in his book Uri, Geller first met Shipi in 1967 when Uri was serving as a counsellor at a summer camp for teenage boys, and one of his charges was Shipi. Uri hit it off well with both Shipi and Shipi's sister Hannah, and Uri and Shipi soon became constant companions. It was Shipi who first convinced Uri to perform, according to Puharich. And Shipi went with Uri to the US. Although Targ and Puthoff do not mention it at all in their paper, Shipi was constantly under foot during the tests—at least sometimes accompanying the experimenters during actual experiments. Shipi could easily have signalled Uri in code with a transmitter hidden in his pocket, for example. The SRI paper also notes that " the picture was drawn and brought near the shielded room" which suggests that Shipi might have had other chances to see it as well. In the chaos of the computer room for tests 11 to 13, Shipi would hardly have been noticed while the picture was being decided on and drawn. The SRI data shows some support for this sort of hypothesis—when the drawings were under the control of an outsider who would be less likely to accede to Geller's requests and the presence of Shipi, Uri failed (Trials 5, 6, and 7).

Even if this particular technique will not work, Puharich could surely find a simple way. Four other possibilities came to mind in discussions with King:

1) Higher frequency microwaves would pass through the cracks between the steel plates and around the door. Indeed, King notes that the space [illegible] would provide a particularly good waveguide. With a transmitter anywhere in the room

directly outside the shielded room, signals would penetrate in this way.

2) To get electricity into a shielded room (for lights) without any radio transients, the normal procedure is to put a steel plate (usually the room wall) between two sides of a transformer. The 60 Hz magnetic field penetrates, whereas radio fields would not (this is supported by the fact that the copper screened room shows only a 3 dB loss to magnetic fields at 60 Hz). Therefore, King suggests low frequency magnetic induction transmission of data. Frequencies of 5-10 Hz should pass through double steel plates without unacceptable losses. The transmitter coil could be concealed in a briefcase left sitting next to the wall of the shielded room. Geller would have a coil of wire (for an aerial) under his belt or even hidden behind his teeth, and would stand close to the inner wall. During a 30 minutes test, large amounts of information could be transmitted by simple code.

3) If SRI has not properly shielded the mains current supply to the room, it would be possible to send radio signals along the mains (just this system is used for internal radio systems in universities, hospitals, and the like). This could be done with a transmitter smaller than a cigarette pack plugged into any outlet in the building. Geller would simply touch an electric wire inside the cage and his body would act as an aerial for the tooth radio.

4) There is an intercom connecting the inside of the cage with the outside. This could be like a telephone and have a filter to cut out everything above 3 KHz. But if it does not, it too could be used to carry radio signals into the room with the transmitter simply clipped onto the communications wire.

The preceding discussion applies only to the extremely difficult problem of the shielded room. The other successful test —guessing the die—can be much more easily solved by radio. Mr Hubert Caddy of the International Magic Studio, London, tells me that for several years it has been possible to buy a dice for about £30 which radios which face is up! It would not have been too difficult for Uri to have given SRI a normal die that looked like the radio die, let them mark the normal die as they wanted, and then simply mark the radio die in the same way and switch.

Naturally, this all depends on the cooperation of Puharich in perpetrating fraud. Why would he do so? In his book Uri, Puharich reports that extra-terrestrial powers called Hoova speak to him through a voice called Spectra, and have done so for longer than he has known Uri. Uri's power, he says, comes from Hoova. To have any hope of having this report accepted, Puharich needs Uri's success. If Uri came to Puharich and said "Andrija, I have known you for a year now and never once have I cheated you. Now they are asking me to do things I may not always be able to do, but if I fail no one will believe in Hoova. You are a great inventor—give me something to help me [illegible] a while." In his book, Puharich tells of often hearing the voice of Spectra, and if Uri's request came via Spectra, Puharich would be sure to obey. Thus, Puharich need not be a party to a widespread and continuing fraud to have helped Uri in this way.

I have no proof that Uri did do his drawings in this way. But it fits the data at least as well as the Targ-Puthoff paranormal explanation. By Occam's Razor it is only necessary to show that plausible normal explanations have not been excluded. To be sure, by what might be considered a reverse Occam's Razor, it must also be shown that the route to the normal explanation is not more complex than simply accepting the paranormal. But Puharich takes the plausible virtually into the realm of science fiction.

Conclusion

The ultimate test of any scientific research, including the SRI work with Uri, is the ability of other scientists to independently reproduce the results. As Uri himself said on a Thames TV documentary on 15 January: "When I am doing enough experiments with scientists, the disbelief will drop off." But there is a real danger this will not happen—that Uri will consider the publication of the SRI paper to be all the scientific validation he needs. Uri has backed out on a written commitment to work with the New Scientist. He backed out on a verbal commitment to work with the Maimonides Medical Centre Division of Parapsychology and Paraphysics in Brooklyn, New York. (The Maimonides team is highly sympathetic to Geller, but it did call in magician James Randi to help set the experimental conditions.) And Mitchell told me that Geller "broke several engagements" at SRI and that he did not seem to want to do any more there even though "we've got funding for it if he will work under conditions acceptable to us." Uri, it seems, will work only with scientists such as those at Birkbeck who seem loth to set any conditions at all.

Thus, it appears that the paper published this week may be the closest to hard scientific evidence we will get, and it must be unusually closely scrutinised. It seems clear that no matter how good they are as laser physicists, Russell Targ and Dr Hal Puthoff are no match for Uri Geller. There is too much evidence that they missed out on important points. And their experiments fail the Occam's Razor test—they did not exclude non-paranormal forms of information transfer that, based on Puharich's background, must be considered highly possible.

I do not question the integrity of the SRI researchers. But science is filled with examples of scientists—often in large numbers—seeing what they want to see rather than what is there. Canals on Mars, polywater, and the supposed double mass peak of the A_2 particle are just three examples. Several magicians have told me that scientists are good audiences because they are so easily fooled. My investigations of the Geller phenomenon support this. The SRI paper simply does not stand up against the mass of circumstantial evidence that Uri Geller is simply a good magician.