INTRODUCTION

As the manuscript for this book was nearing completion, after Jim Turrell and I had spent many hours talking on many previous occasions, we had one of our most satisfying conversations. The interview had touched on a number of important issues concerning light and space and the way he used them in creating an art of direct perception. We had gotten around to a discussion of what he thought were the primary sources for his work and were talking about the relationships between art and science. Turrell seemed to feel that it was important to separate his artistic work from the kinds of activities a scientist might undertake, whereas to me, his work had always seemed resonant with scientific knowledge—indeed, that quality was one of the things that had originally drawn me to it—but for him, there were important distinctions:

> My works don't illustrate scientific principles, but I want them to express a certain consciousness, a certain knowing. My spaces must be sensitive to events outside themselves. They must bring external events into themselves. I think of my works as being important in terms of what they have to do with us and our relationship to the universe, but not necessarily in scientific terms. I'm concerned with what my spaces direct their seeing to, and hence what they direct our seeing to. At the same time, I'm interested in the expression of time. Because, even though you may have expressions of our particular historical moment in, say, the art of Andy Warhol, there are also expressions that go through time, beyond time, and have a sense of themselves that transcends any specific period. That's the part of art I'm interested in. This said, however, I do want to be involved with the here and now. I want my art to function in contemporary terms.[1]

At this point in our conversation, I asked Turrell about his attitudes concerning objects. We were sitting in his Flagstaff studio surrounded by sophisticated surveying equipment and various aeronautical paraphernalia—instruments that included theodolites, aerial cameras, map-making stereoscopes, flight compasses, and high-altitude pressure suits. All of these devices spoke to me in scientific terms; they implied an approach that was fully engaged with the high technology of the modern world. But, at the same time, I knew that Turrell's art was not

really centered on objects at all, but on experience, a fact that, for me, already implied a certain timelessness. Was there a discrepancy here? I was interested in finding out about how he used science and its associated technologies, and I wanted to know what he meant by "expressions that go beyond time." "When you think of devices," he said, "you think of technology."

> You always think of the physical aspects of our current civilization. But in fact the true expressions of our time are those aspects of our mathematics and our art which are not about devices or things, but are expressions of pure thought. I'm interested in non-image art because I want to create something that directly connects you to a thought that is wordless, a thought that doesn't have a story line. That's where I find significance. It's like a mathematical proof or a problem in set theory. It's an arena of thought that has a kind of loneliness, but also a great beauty.[2]

At this juncture, when I pointed out that few people really understand the aesthetics of mathematics or pure science, Turrell agreed, but he also argued that an equivalent experience could be made available through art, that it was possible to incorporate a similarly rigorous abstract beauty into art. For him, it was a matter of separating applied from nonapplied knowledge: "I don't think that my work is science, but I do think it's expressive of knowing. We tend to see knowledge in objects, to see science in technology, but knowledge can also have no particular use beyond itself."[3]

I wanted Turrell to relate these observations more specifically to his own work, so I asked him about airplanes and the technology of flight. In the mid-1970s, he had lost his studio spaces in the Ocean Park area of Los Angeles and had then turned a substantial amount of his attention to flying. In one of the most radical moves of the period, he had used the money from a Guggenheim Fellowship to buy gasoline for his airplane in order to look for what amounted to a huge alternative outdoor space—a location in the desert of the western United States where he could take his art directly into nature. His search had led to the initiation of the Roden Crater Project. I wanted to know what the instrument of flight, the technological device, had to do with the experience of flying and how the abstract knowledge of flight was brought into his studio practice.

At this point, Turrell told me a story that I would have liked to have heard at the beginning of my research, although, at that earlier moment, I might not have been able to understand its implications. I think the story explains a great deal about him as an artist and as a person and, in many ways, can be taken as a metaphorical explanation of both the sources and the deeper purposes of his art:

> Among the most interesting aspects of this period was that each of the places I saw from the air generated thoughts for pieces. It was a process that could have gone on forever. It was like the time during the late 1960s when I was working on my first studio. My experiences flying and looking for Roden Crater during the early 1970s were extremely rich. Even now, I often come back to what I saw then. It was also an important time because I was moving out into territory where I didn't feel too comfortable. In the desert, the work gets lost; it just disappears.

I think that's one of the problems with the Earthwork Movement. When I found Roden Crater and decided it was the site I wanted to work with, I was still faced with the problem of finding ways of taking the art to it.

One event that occurred during this period, around 1974 I think, is particularly relevant to finding the qualities of light and space that I want to incorporate into my work. John McCracken had asked me to talk to one of his classes at the University of California at Santa Barbara. At this time, I was very interested in making off-airport landings. I liked to land my plane out in the desert, in open fields, in dry-lake beds, in all kinds of remote areas. At the reception after my lecture, I was talking about this kind of flying, and a couple from the university expressed an interest. So I said, "Tonight I'm going to fly out somewhere, land, and spend the night. Why don't you come along?" They went home to get their camping equipment and, a little later, joined me at the airport.

I had decided to fly over to one of the islands off the coast. I had landed out there many times before, particularly on this one island called Santa Rosa. There's a shipwreck near the place where I liked to land. I'd come in and set down in this little meadow right near the top of a cliff that's several hundred feet high and hangs out over the ocean. The landing area was just barely big enough, and it looked pretty dramatic. I could time the approach and come in right on the spot. I'd fly over the surf line, get a glimpse of this one cove near the shipwreck, and then drop down for the landing. Also, I had set up these abalone shells to act as reflectors along the top of the cliff. I'd count the number of coves as I flew along the ocean, pull up when I saw this last cove, and turn on my lights. Then I'd see the reflections on the abalone shells and use them for landing markers.

This kind of landing was like settling down into virtual blackness, but I knew the field was there. On this occasion, we made a nice landing and then taxied over to this hummock, which was the only place where you could get any protection at all from the wind. There was no place up there to tie down, and even with these anchors that you screw into the ground, the soil was so soft they'd just pull out. I used this little hill to get the back wheel up, because when the tail is low, the plane is configured very near the angle that gives you maximum lift. I tried to diminish that problem since I didn't want the plane to blow off the island. By the time we had parked, it was around 11 P.M. On earlier visits, I had built this little dugout in the side of the cliff. I had even brought over an old sofa and a wood-burning stove from the mainland. The shelter was primitive, but it looked out over the sea with the surf right there. It was a very beautiful spot. We were only forty miles from Santa Barbara, but it was like being in a total wilderness. All you had for company out there were seals and abalone.

We made a fire and had some pleasant conversation, and then, after a while, they unrolled their sleeping bags and went to bed, and I did the same. Then, a couple of hours later, I woke up and noticed that the wind was really beginning to kick up. I listened to it for a while and realized that it was blowing so hard that I had better get up and see to the plane. I was flying a Helio Courier, an aircraft that has short field performance by virtue of getting lift at very slow speeds. When I got up to the plane, I could hear the slots blowing in. The slots are these devices on the leading edges of the wings that give extra lift to the airfoils, and they were blowing in by themselves. I thought to myself: "I've got to get in this plane right now. It's about to take off." I managed to get inside and look at the air speed indicator: it said fifty miles per hour. Now, at a low angle of attack, this plane will actually fly at thirty miles per hour. It must have been around two o'clock in

the morning, maybe 2:30. I rolled the yoke, and one wheel lifted up. There was no doubt about it, the plane was in flight. I could roll the yoke and roll the plane.

At this point, I knew that I had to stay inside because it was actually necessary to sit there and fly the plane to keep it on the ground. The wind speed was steadily increasing. "This is amazing," I thought. "I can't get out of the plane." What I really wanted to do was just get out of there, but these people were with me. They were still sleeping down by the fire all snug in their sleeping bags. If I fired up the engine and took off, it would be something of a shock to them. I mean, this place really seems like it's out in the middle of nowhere. So, rather than abandon them, what I did was turn on the weather channel to find out about conditions along the coast. This particular station just gives the weather, a standard litany, and it sounds like you're talking to the tower.

So, here I am listening to this radio report, and the problem is, I'm really getting sleepy. I don't know what to do. I don't want to leave these people stranded, but neither do I want to lose my plane, I really don't. I turn the volume up on the radio, partly to keep myself awake, but also because I want to hear about Santa Barbara. I may have to do an instrument landing back at the airport, and sure enough, when the report comes by, everything at Santa Barbara is completely fogged in. The visibility is zero, zero, zero. I get out the approach plate and start planning the landing. It's clipped to the yoke right in front of me, and I'm listening to the weather report. Also, for instrument landings you have this little alarm that allows you to time your approach; it lets you know when you reach different points along the route of your descent. Now, the alarm gives me an idea: I attach it to the arm of the seat and set the timer to go off every ten minutes. I think to myself: "If I'm going to have to make an instrument landing, I'll just sit here and think about it a little more. Maybe the fog will lift. Any increase in the visibility will make the approach easier, and, at any rate, I have to stay with the plane."

By this time, I was really getting sleepy, but I thought that, if I did nod off, the alarm would wake me. The wind was up to sixty miles per hour, and I had to have some forward pressure on the stick all the time in order to hold the plane on the ground. Well, damned if I don't nod off to sleep. When the alarm goes off, I'm startled awake, and I can't believe it. I'm in the air, but I don't know what's going on. I look down at the air speed indicator. Someone is talking to me on the radio. I'm looking out into pitch blackness. I hear this thundering noise. From the sound of it, I must be really moving, but according to the air speed indicator, I'm only doing sixty miles per hour. I look at the approach plate on the yoke. I look at the instruments, but there's no indication of where I am. This guy on the radio is talking to me about the weather. My heart is going like mad, and I have no idea what's happening. I try a roll to the right, a roll to the left, and sure enough, I'm flying. I'm okay. Then, bam, the tail wheel hits, and I think, "I've got to get out of here." I push the power to the plane, but there's only this sinking feeling and nothing happens. At this point, it occurs to me, "I hit the ground. I should have stayed there. When I touched the ground, I should have stayed there."

Now, I can't see a thing, but it's slowly beginning to dawn on me what's going on. I had awakened into reality, and being awake was worse than any dream, any nightmare, I had ever had. I had no way of figuring out the reality of being awake. I begin to realize that I haven't gone anywhere, but I don't know that for sure. So, I ease the stick back and, bump, the tail wheel hits gently. I open the door, and there's the grass. All the noise is the surf from below the cliff. The guy on the

radio goes on to the next airport talking about the weather, and I'm sitting there sweating. I'm completely drenched. This was the most frightening experience I had ever had flying, and I hadn't left the ground.

At this point, there was no way I was going back to sleep, and I still had to stay in the plane, operating the controls to keep it from taking off. Then around four o'clock, the wind died down, and I turned off everything, climbed down, and went back to the camp site. Here was this couple sleeping away. When they woke up around six o'clock, they were ready to go, all rested, and I had just been through hell. The experience had been so extraordinary and personal that I didn't tell them about it, and we flew back to Santa Barbara without really talking. For me, the most interesting aspect of what had happened was the fighting to get it sorted out. When I woke up in those horrible circumstances, I had wanted the reality to be the dream, because the actual situation was so bad. But more than this, there was something there that was important, and I tried to hang onto it, that place between the awake and the dream state. That special quality of consciousness is what I'm really interested in. It's what I want to get into my art.[4]

After I had heard Turrell relate this experience, I think I understood a little better what the instruments sitting on the shelves of his studio were all about. They were expressions of a "certain knowing." The devices were beautiful in themselves, and many of the older instruments had been painstakingly restored. They were also indicative of Turrell's attitudes about what they could reveal. They were metaphors for those aspects of knowledge—such things as intuition and creative insight—that are inexpressible. In such terms, the devices now spoke to me as much of art as of science. They suggested the care that Turrell puts into his flying and its essential equivalence with what he puts into his art.

At this point in the interview, I remember thinking that it was probably this quality of deep consideration that had drawn my attention to Turrell many years earlier when I first learned of his collaboration with artist Robert Irwin and scientist Edward Wortz during the late 1960s. The thoughtful nature of their work together was what I had taken, and still take, to be as much scientific as artistic. At the end of their collaboration, they felt that it was sufficient to have established a point of view, a way of looking at perception itself; art was essentially a matter of attitude, a "frame of mind," as Turrell expressed it.[5] In the twenty years since that time, he has continued to work with perception and to expand the definition of what art can be, primarily by affecting his viewers' frames of mind. The open-ended nature of his approach accounts, at least in part, for his being selected along with Irwin as one of the first two visual artists to receive a MacArthur Foundation Fellowship in 1984. In his installations, Turrell makes use of the basic interrelationships that exist between light and space. His pieces are perceptual, and they exist in the eyes of their perceivers.

In the history that follows, I have tried to reveal what I see in Turrell's works, and although my intention has been to represent his ideas about what they mean, I have not hesitated to add my own judgments and interpretations. The more descriptive chapters of the book that deal with Turrell's work could not have been written without his cooperation. In the more interpretive sections, particularly those in chapters 2 and 7, I have brought my own areas of interest in the

history of art and the history of science to bear upon the meaning of his art. My discussions of the relationships between art and technology in chapter 3, and geology, astronomy, and archaeoastronomy in chapter 6 reflect my own interests as well as Turrell's. The approach taken to perceptual psychology throughout the book also mirrors my own background (I was fortunate to have been able to participate in the late James J. Gibson's seminars when I was a student at Cornell). In my specific research involving Turrell's biography, matters of fact are based on what he has told me, but whenever possible, I have corroborated his recollections by talking with other people who were involved in any given event. My analyses of individual works are based either on my own experience of them or, in the cases of pieces and installations that I have not seen, on Turrell's descriptions. I have made an effort to double check dates and chronologies, although my basic approach has been to relate Turrell's story as he told it to me. He once remarked to another interviewer, Richard Andrews, that "everyone makes their own history up,"[6] and there may be some of that here, but I believe that, despite any selective editing of memory, this book presents an accurate account of Turrell's development. I hope that it recreates some of the beauty—the aesthetic knowledge—that his works possess.