

THE SX-70 INSTANT CAMERA

Stefan Helmreich

Through photographs, each family constructs a portrait-chronicle of itself—a portable kit of images that bears witness to its connectedness. If hardly matters what activities are photographed so long as photographs get taken and are cherished. Photography becomes a rite of family life just when, in the industrializing countries of Europe and America, the very institution of the family starts undergoing radical surgery. . . . Photography came along to memorialize, to restate symbolically, the imperiled continuity and vanishing extendedness of family life. Those ghostly traces, photographs, supply the token presence of the dispersed relatives. A family's photograph album is generally about the extended family—and, often, is all that remains of it. . . .

The force of a photograph is that it keeps open to scrutiny instants which the normal flow of time immediately replaces.

—Susan Sontag, *On Photography*

From

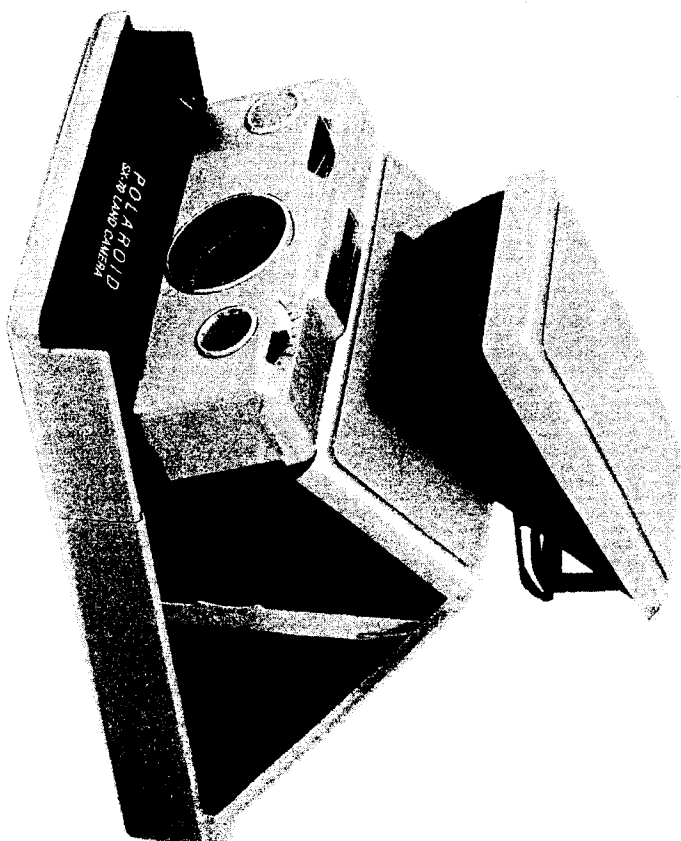
Evocative Objects

Things We Think With

MIT Press

2007

edited by Sherry Turkle



The Polaroid SX-70 camera, introduced during the 1970s, was a folding chrome-and-leather single-lens reflex camera that looked like a cross between a tiny, trapezoidal accordion and a collapsible robot toy. It delivered instant color photos, framed in white plastic borders, in just under 1.5 seconds. Once outside the camera, in the light, the pictures took about a minute to develop fully, ripening from an initial turquoise haze into a creamy colorful lucidity, a process one could watch through the transparent Mylar membrane covering the swirl of chemicals that would constitute the photograph. In the time it took for SX-70 pictures to materialize, experimentally inclined people like myself would sometimes smudge and smear the colors beneath the Mylar—an activity more famously engaged in by the artist Lucas Samaras, who took many Polaroid self-portraits and then mutated his likeness into fantastic shapes.

My grandfather, Howard G. Rogers, a chemist with only a year of college, at Harvard, during the Depression, invented some of the pliable molecules inside Polaroid's instant color film. His key creation was a molecule called a dye-developer, a compound that fused image dyes to photographic developers, allowing instant color film, in effect, to embed its own darkroom chemicals. His dye-developer molecules sat in limbo at the bottom of the photo frame of each unexposed Polaroid photo card and, with the snap of the SX-70 shutter, would be squeezed up into the picture plane by rollers inside the maw of the camera. As pictures emerged from the SX-70's tight mechanical jaws, they made a wonderfully distinctive noise, something like: *Zt-Zzzzt*. For some, the one-minute wait that followed was too much; when the film exited the camera, these impatient folk would wave

the photo in the air to hurry along its development (This gesture—which my grandfather informed me was completely useless—was commemorated in the 2003 hit song “Hey Ya” by the rap duo Outkast, in which one line enjoins people on a dance floor to “Shake it like a Polaroid picture”). Growing up, I was always curious about how SX-70 film worked, and from time to time, my grandfather would narrate me into the microscopic, millisecond world within the layers of a Polaroid picture.

The problem before my grandfather had been this: to get three color dyes—cyan, magenta, and yellow—to express the complementary colors to which they corresponded: red, green, and blue. A primary requirement was that different dyes not bleed into each other. Another was that variable rates of dye formation be controlled. Within the time that an instant color photo came into being, events had to unfold in a tightly compressed time sequence. The problem required understanding events on extremely small spatial and temporal scales.

My grandfather's idea was to fuse dyes and developers into one megamolecule. Effectively joining these ingredients would allow the elements of photography to be squashed into a compact space—and, more, would enable the instantaneity of instant photography itself. This scheme, however, went against a prevailing wisdom that believed it risky to put dyes and developers into close proximity. But Edward Land, my grandfather's boss, was committed to the notion that when confronted with an obstacle, one should consider doing the opposite of the expected.¹ My grandfather took this wisdom to heart. In his Patent #2,983,606, granted on May 9, 1961, dye developers are described as key components of “novel processes for forming monochromatic as well as multicolor

pictures by transfer and reversal practices wherein a single reagent is utilized for the formation of a negative image as well as a positive image of said negative.”²

Reflecting on his invention later in his life, my grandfather said, “When an idea like this comes, that you’re sure is good, it spreads throughout your body. I felt intoxicated, but more ‘all there’ than usual—almost as if I were a giant.”³ This language triggers memories of my grandfather chatting with me over the dinner table, shrinking me down to the size of an atom, so that I could rub shoulders with molecules and then zoom back out to look at a family photo taken with the SX-70.

All of our family pictures were taken with Polaroid film. In-laws sometimes grumbled that the colors were not as vivid as they might be, which always sent my grandfather into a distracted accounting, storing up complaint and commentary for his next visit to the lab. Ours was a kin group wed not just to family photos, but also to a family photo *technology*. It was incumbent upon us to be loyal to my grandfather’s attempts to get his colors right, which meant that we also had to be dedicated to Polaroid products. In a way, the SX-70—a cryptic abbreviation of “special experiment seventy,” a code name Polaroid used for the realization of absolute one-step photography—made of our family an experimental laboratory. And while my grandfather clearly enjoyed his time with his five children and five grandchildren, particularly at the lakeside cabin he and my grandmother purchased in Maine with Polacolor profits, he often seemed preoccupied. Years later, he reflected in print on preoccupation, distraction, and inspiration:

I became more and more impressed with the power of the subconscious. . . . If you put good input into your subconscious, that is, carefully observed results and carefully thought-out analyses, and let some good hard facts into your subconsciousness, along with the need to know the answers to some

problems or the need to invent the way out of some difficulties, then sometimes further focusing and work wasn’t as helpful as just a little time, or a change of scene, or a stimulus of another sort [which] would sometimes bring the answer.⁴

The family, was, I think, for him, “a stimulus of another sort,” a technology for jostling his subconscious. Elements of daily life at home became a playful experiment—from his fascination with engineering tiny poached eggs with fractionated yolks to his proclivity for taking stereoscopic pictures of me and my cousins at moments when we were embarked on some particularly three-dimensional enterprise, such as learning to sail.

In other words, my grandfather’s work became part of the family’s play. My mother—growing into an adult in the psychedelic sixties—modulated my grandfather’s fascination with color into her own stirrings of chemicals in the paints she used in her watercolor paintings. In the mid-1970s, I made birthday gifts for my grandfather that made fun of the sciences of imaging. One present, a favorite, described an imaginary invention that I dubbed “the image inverter.” It turned images upside down so that one could see them the way the eye actually receives them. Another consisted of a manual for a camera with no lens. Always ready for a laugh, and to consider the unexpected, my grandfather found these takes on his professional work hilarious and displayed them prominently.

My cousins and I began smearing Polaroid pictures at around the same time as Lucas Samaras. My grandfather gave us advice on getting the best results and was always eager to watch his invention unfastened from its original aim. As we transformed family photos, our extended family was itself in transformation. In the 1960s and 1970s, our parents’ generation had swerved away from the middle-class Catholic-Protestant model of my grandparents. I was born hours before my parents

were married. One of my mother's sisters sidestepped marriage and Christianity altogether, moved into the Maine woods with a back-to-the-land mountain man, and joined him in raising their kids in the Jewish tradition. My grandfather greeted all these transformations with equanimity. My grandmother grew into a Catholicism that became ever more, well, catholic. The SX-70 pictures from this period reveal traditions morphing and mutating.

Later in life, after retirement, my grandfather would glide into occasional reveries about new inventions he wished to realize. Sometimes, the oxygen he took for his emphysema would intoxicate him, and he would describe such things as edible dyes that, once ingested, could accentuate color perception. In what has become a piece of family folklore, Polaroid scientists were once summoned to his bedside during one of these rhapsodic episodes, to determine whether this now-renowned chemist might be hatching new, counterintuitive, but perhaps effective ideas for color photography. According to these corporate visitors, this was not the case. But rather than seeing this story as one in which my grandfather takes a detour away from himself, I view it as revealing a reversed but true image of my grandfather, much like the image that bounces off the interior mirror of an SX-70 at the last moment before the exposure of a photograph. I see my grandfather's reveries as an attempt to reverse engineer—with the aid of the oxygen tank that he, after all, controlled—the feeling of intoxication he associated with invention; maybe his occasional flights of fancy were a direct sounding of the subconscious he found so intriguing. I like to think that he was taking us on a tour of the kinds of worlds sited within SX-70 film, a domain in which the rules of reality were understood at a higher degree of resolution, where molecules caught up in the representation of familiar people, places, and things revealed themselves at the

most microscopic level to be mirrors of our ever-changing selves, developing and transforming.

Stefan Helmreich is Associate Professor in the Anthropology Department at MIT.

May 9, 1961

PROCESSES AND PRODUCTS FOR FORMING PHOTOGRAPHIC IMAGES IN COLOR

Filed July 14, 1958

3 Sheets-Sheet 3

2,983,606

H. G. ROGERS

FIG. 9

BY *Howard E. Rogers*
Baronway Nichols
Lucy S. Moore
ATTORNEYS

INVENTOR.
Howard E. Rogers

William J. Mitchell | *The Melbourne Train*

1. Mark Twain, *Following the Equator* (Washington: National Geographic Adventure Classics, 2005 [1897]), 134.
2. Henry Lawson, "The Never-Never Land," in *Poetical Works of Henry Lawson* (Sydney: Angus and Robertson, 1984 [1906]), 113.
3. Alexander Pope, "An Essay on Criticism," in *The Poems of Alexander Pope* (London: Penguin, 1985 [1711]), 24.

Henry Jenkins | *Death-Defying Superheroes*

1. Umberto Eco, "The Myth of Superman," *Diacritics* 2, no. 1 (1972): 16.

Stefan Helmreich | *The SX-70 Instant Camera*

1. Victor K. McElheny, *Insisting on the Impossible: The Life of Edwin Land, Inventor of Instant Photography* (Cambridge, Mass.: Perseus Books, 1998), 358.
2. Howard G. Rogers, "Processes and Products for Forming Photographic Images in Color," US Patent # 2,983,606 (filed July 14, 1958; granted May 9, 1961).
3. McElheny, *Insisting*, 233.
4. *Ibid.*, 221-222.

Susan Pollak | *The Rolling Pin*

1. Marcel Proust, *Remembrance of Things Past*, trans. C. K. Scott Moncrieff and Terence Kilmartin (New York: Vintage, 1981 [1913]), vol. 1, 48.
2. *Ibid.*, 51.
3. D. W. Winnicott, "The Fate of the Transitional Object," in *Psychoanalytic Explorations*, ed. Clare Winnicott, Ray Shepherd, and Madeleine Davis (Cambridge, Mass.: Harvard University Press, 1989), 58.
4. Proust, *Remembrance*, vol. 3, 944.

Caroline A. Jones | *The Painting in the Attic*

1. D. W. Winnicott, "Transitional Objects and Transitional Phenomena" (1953) in *Playing and Reality* (New York: Routledge, 1989 [1971]), 10. I use the phrase "primary parent" to avoid the unhelpful fixation on the mother that attends most object-relations theories, including Winnicott's.
2. *Ibid.*, 12.

Nancy Rosenblum | *Chinese Scholars' Rocks*

1. William Blake, "Auguries of Innocence," in *The Portable Romantic Poets*, ed. W. H. Auden and Norman Holmes Pearson (New York: Viking Penguin, 1978), 18.
2. Richard Rosenblum and Valerie Doran, *Art of the Natural World: Resonance of Wild Nature in Chinese Sculptural Art* (Boston: MFA Publications, 2001), 39.
3. <<http://www.Rosenblumcollection.com>> (accessed on January 23, 2007).

Susannah Mandel | *Apples*

1. Anthony Burgess, *A Clockwork Orange* (New York: W. W. Norton, 1987), 21-22.
2. Anthony Burgess, *A Clockwork Orange: A Play With Music*, based on the novella of the same name (London: Hutchinson, 1987), viii.
3. Lewis Thomas, *The Lives of a Cell: Notes of a Biology Watcher* (New York: Penguin, 1974), 45.

Jeffrey Mifflin | *The Mummy*

1. Blaise Pascal, *Pensées*, trans. A. J. Kralishheimer (London: Penguin, 1995 [1670]), 130.

Michael M. J. Fischer | *The Geoid*

1. A longer version of this essay, entitled "The Geoid as Transitional Object," is referenced on <http://web.mit.edu/anthropology/faculty_staff/fischer/publications.html>.