Flash Force: A Visual History of Might, Right and Light

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*Flash Force:*
*A Visual History of Might, Right and Light*

Perhaps the greatest achievement of civilization has been the creation of a realm of culture which is not dominated by brute force—a place where might does not make right. Science is typically seen as the clearest fulfillment of this ideal, where truth is neither bent by the multitude of opinion nor distorted through the use of brute force. “One of the strongest, if still unwritten, rules of scientific life is the prohibition of appeals to heads of state or to the populace at large in matters scientific,” explained the historian and philosopher Thomas Kuhn.1

How and when was the separation between might and right achieved in modern culture? A key moment of transformation occurred in spaces where “matters of fact” were “made visible.” In the Royal Society of London, where Robert Boyle and Thomas Hobbes debated about the existence of the vacuum, neither of them disputed the matters of fact at hand. “Mr. Hobbes,” claimed Boyle, “does not deny the truth of any of the matters of fact I have delivered.”2 Since then, armies of facts have continued to leave scientific settings to reach much more remote areas, travelling first through expanding networks of print and later of electricity. The problem of seeing matters of fact, that is, of visibility, soon became as important as that of matters of fact themselves. Hence, recently, the philosopher and historian Hans-Jörg Rheinberger firmly asserted that making visible, rather than making facts, constituted the foundational task of modern science: “It is probably not too far-fetched to postulate that making visible something that does not manifest itself directly and therefore is not immediately evident – that is, does not lie before our eyes – is the foundation and at the same time the foundational gesture of the modern sciences.”3

The development of clean sources of illumination, and particular of flash, was essential for making facts visible. The history of the flash belongs to the century-long quest of finding pure sources of light and divorcing these from the potent explosions that initially produced them. It is a history that continued the Enlightenment project that associated light with reason and pure observation and dissociated both from destruction. This process enabled light to become, in the words of Jacques Derrida, “the founding metaphor of Western philosophy.”4 Or, in the words of Marshall McLuhan, it permitted “electric light” to become “pure information”—the ultimate “medium without a message.”5

Light was not always as pure as it turned out to be. Fire, light and smoke were all deeply connected until modern times. Even some of the first flash technologies, such as those based on magnesium flash-powder, were dangerous, at times inflicting “untold damage to the nervous system of unsuspecting subjects.”

The first use of flash is usually attributed to Henry Fox Talbot, one of the inventors of photography. In 1851, in front of a large audience at the Royal Institution, he used a spark flash to photograph a page of The Times newspaper pinned on a rapidly rotating wheel—the resulting photograph was readable. Flash spark techniques were subsequently improved by many other scientists. But they were difficult to control, and their field of illumination extended only to a couple of inches. With the invention of light bulbs, scientists started detonating electric sparks within gas-filled glass tubes rendering them captive and, for the most part, harmless. A clear improvement came with the development of the electronic flash, or strobe, in which the burst of light was incredibly quick and which could be used serially, not having to be discarded after each use. These new flash technologies emitted their “powerful light in a fraction of a second, quietly and without smoke or danger of fire.” Subjects did not even blink, and although more brilliant than sunlight, “the eye seeing it is unaware of unusual brightness.”6 How could such an
intense source of illumination not even cause an observer to blink? Scientists underlined this particular aspect of the new technology after a scandalous incident in which the figure skater Sonja Henie fell while performing and injured herself because of old flash systems. Philosophically and practically, flash technologies were an important step in the gradual production of a visual system which did not disturb the surrounding environment by being safe, harmless and clearly different from violent, explosive technologies.

The transformation of flash (from that given off by natural lightning bolts, to dirty and dangerous flash powder technologies, to clean sources of illumination) marked a stark change in modern visual culture. Sight could be extended into previously hard to reach places, from the interior of private homes it could now travel to caves, catacombs and ocean’s depths. Photojournalism, as a practical medium and a sociopolitical force, increasingly divorced from flashy, colloquial cinematography and instead stared directly into a stroboscope, became a valuable source of information. This stood in sharp contrast with Edgerton’s methods. Even when Edgerton aimed his machine at a person’s eye, such as to measure the time of a wink or to capture a delay in the iris’s adjustment to light, the subject’s experience was different. In 1946 Walter published a number of influential articles detailing the effects of strobe light on the brain.

The controversial neurophysiologist and art and science. For a few years in the late 1950s, a handful of radical scientists at the Psychiatric Unit of St. George’s Hospital. With his coauthor, Smythies continued the research program inaugurated by Walter by studying the effects of strobe on normal individuals. He “borrowed and scrounged the simple equipment” which was now readily available from EEG labs. From 1957 to 1958 Smythies worked intensively in the Laboratory of Psychology in Cambridge to study stroboscopic patterns. He used an Aldis 500 watt projector covered by an episclerotic (a slit screen) and a “Standard E.M.I Electric Stroboscope.” He, along with his students, staff and subjects, would stare at it and record their observations while changing the strobe’s frequency and varying other conditions. The more Smythies worked with the strobe the more complicated the patterns became. Some patterns seemed like “pond life”, “bacteria”, “germs”, “plankton”, and “lovely tropical fish in a blue tank”. Victorian wall paper” and “a terrific modern design for a wall-paper” also made appearances. Others were described as “streets and houses” swirling around and looking like “aerial photo of a city.” A number of subjects “reported a continual stream of images of fully formed scenes, usually of commonplace objects and events such as trains, cars, street scenes, harbours, animals, people, etc.” Nevertheless certain patterns (such as alphabetical symbols) never appeared, enabling Smythies to classify them into seven main types. Smythies came to work on the strobe after studying the effects of mescaline with the famous neurophysiologist Humphrey Osmond at the Psychiatric Unit of St. George’s Hospital. With his coauthor, Smythies developed the first biochemical theory of
Jimena Canales

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physiological mechanisms mediating visual perception. His interest on the stroboscopes was largely philosophical. One of his earliest publications on the topic used it as evidence to fight against a realist view of perception. The change in analogizing the visual mechanisms in the brain as televisal instead of as cinematigraphic brought with it important changes in philosophy. Smythies established a distinct philosophy of mind connected to his research. Just as a television set does not “give us a direct view of the events televised” the televisal system in the brain also did not provide a direct view of reality. He fought ardently against the view “in which it is believed that the physiological processes of perception mediate a direct view of the physical world.” He disparagingly tagged this position as “naïve realism” and called his own philosophy the “Representative Theory of Perception.” In subsequent publications Smythies extended Walter’s research. He developed a system for finding out details about the inside of a television set without opening it up. The type of patterns on the television screen that appeared when a studio was illuminated by stroboscopy depended on the type of raster mechanism inside the television. Amazingly, Smythies speculated that the patterns which a person saw when staring into a stroboscope could “give us information as to details of operation of the mechanisms responsible for their production.” In this way, even if scientists treated the brain “essentially as a ‘black box’” where “the input is a temporally intermittent and spatially uniform light stimulus of the retina” and the “output is a report by the organism of the perception of geometrical patterns,” stroboscopy research could help reveal the contents of the cerebral black box. Support for these studies soon came from the noted scientist Heinrich Klüver, who made a connection between mescaline hallucinations and those “induced by simply looking at disks with black, white or coloured sectors rotating at certain speeds.” Since these effects also appeared in hypnagogic hallucinations, visualizations of entoptic phenomena, and in the visible phenomena of insulin hypoglycemia, both Klüver and Smythies believed that the “form constants of hallucinations represents a worthwhile field of study.” nieuwe physical science for studying “how large numbers of neurons” is recorded by electroencephalography, suffered from the opposite problem, it “will only record summated activity of vast populations of neurons.” In contrast to both of these approaches, stroboscopic patterns could be valuable images displaying the intimate workings of the brain: It is possible that the stroboscopic patterns, with their many constant and consistent features, and their complexity and geometrical nature, and their consistent response to the change of a number of parameters, can serve as a basis of deductions about the necessary features of the visual mechanisms responsible for them.

Because “the individual features of the patterns could correlate with personality tests or electroencephalograph patterns,” it was necessary to establish their “natural history.” Smythies encouraged his subjects to draw the patterns in pastel colors, and included numerous images in his articles. C.D. Broad, Professor of Moral Philosophy, was one of his subjects. Smythies forcefully backed Walter’s assertion “that television uses the same mechanical principles as are used in the

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famous punk rocker Genesis P-Orridge of him being “a Dreamachine [in] human form.

The famous psychologist Carl G. Jung became interested in Smythies’s work. He invited him to his home, where they delighted in some harmless Freud bashing. Intrigued by Smythies assertion that mesacine visions have “nothing to do with the personality having them,” Jung saw in the work of Smythies and Osmond a corroboration of some of his work on the collective unconscious. Some of these experimenters not only advocated a new relation between science and art, and between health and disease, but even asked that observations be considered sometimes as wholly “disconnected” from the person experiencing them. But most researchers continued to simply look away...

10 ———, “Papa Flash and His Magic Lamp,” 6.
12 “If Money Could Be Stretch’d Like That,” The Electric Journal 28, no. 9 (1931).
15 Walter, Dovey, and Shipton, Analysis of the Electrical Response of the Human Cortex to Photic Stimulation, “106-70.
16 Killian Jr., Two Coins in the Fountain: A Love Story (BookSurge, 2005), 41.
22 Ibid., 33A. Italicizes original.
28 Ibid., 55.