

THE COCOANUT GROVE NIGHTCLUB DISASTER OF 1942: ALEXANDRA ADLER'S WORK ON VISUAL AGNOSIA AND PTSD

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Early Years

Alexandra Adler was born in Vienna on September 14, 1901 and was raised in the vibrant Viennese society that flourished in the years before the Second World War. During this period there was tremendous cross-fertilization of the various scientific disciplines and between the sciences and the arts (1). While Sigmund Freud was advancing his theories of the mind, in which unconscious sexuality and aggression formed a basis for human behavior and psychopathology, artists such as Gustav Klimt, Oskar Kokoshka and Egon Schiele were integrating these theories into portraiture, writers such as Arthur Schnitzler were exploring subconscious motivations of their literary characters, and neurologists such as Otto Pötzl and Joseph Gerstmann were elucidating pre-conscious aspects of sensory perception. Alexandra's father was the famous psychiatrist, Alfred Adler, who broke with Freud by advancing a theory of the mind in which the drive for social acceptance came to the fore. Her mother was Raissa Epstein Adler, a Russian socialist and outspoken feminist who was active in the turbulent politics of the day.

Adler attended medical school at the University of Vienna, graduating in 1926. She then trained in neuropsychiatry at the Neuropsychiatric Hospital of the University of Vienna where she was mentored by Otto Pötzl, a pioneer in the exploration of disorders of higher order visual processing such as cortical blindness, visual agnosia, alexia, color anomia and palinopsia (2). After completing her training, she became director of Neurology at a hospital for women and then in 1934 directed a child guidance center.

In 1935, with the rise of Fascism in Austria, the Adler family was forced to flee the country due to their Jewish background and Raissa's left-wing activities. Alexandra secured a temporary research position at the Harvard Medical School, working at Massachusetts General Hospital and Boston City Hospital. At BCH she worked alongside a veritable Pantheon of neurologists including Tracy Putnam, H. Houston Merritt, Raymond D. Adams, Frederick and Erna Gibbs, Sydney Carter and Derrick Denny-Brown. And yet, even among these luminaries, Adler's unique background would prove pivotal in understanding the neurological and psychological pathologies observed in the survivors of the Coconut disaster.

The Coconut Grove Nightclub Disaster and BCH

On November 28, 1942 a fire began in a basement bar of the popular South End nightclub called the Coconut Grove. The club was packed above capacity with young couples out for a night of entertainment. Many of the attendees were servicemen on leave or about to ship out to overseas. The fire spread rapidly and in a mere 11 minutes engulfed the entire building. Panic and confusion reigned as people tried to find exit doors, which were concealed or locked. The main entrance was a solitary revolving door which became disabled as the crowd pushed on both sides simultaneously. Over 200 dead were found behind this door.

The fire department arrived on the scene and rescued as many as they could by cutting through locked doors and breaking windows. The victims were placed in ambulances, delivery trucks, taxicabs, any conveyance available. The majority of the victims were taken to Boston City Hospital, arriving at the rate of one every 11 seconds. By night's end, 131 injured and over 300 dead were processed.

At the time of the fire, BCH was a federally funded burn center, conducting research for the war effort under the direction of Dr. Charles Lund (immortalized in the Lund-Browder anatomical chart for estimating the surface area of burn injuries). Through the long night, nurses and physicians worked to save lives. The many dead were piled up like cordwood in the corridors and taken to the morgue in the Mallory Building for autopsy and identification by their grieving families. The survivors, most of whom suffered respiratory and surface burn injuries, were treated with sedatives. Many were taken to operating rooms for debridement.

In all, 131 victims were admitted to wards throughout the hospital. Dr. Maxwell Finland, Chief of Medicine of the Harvard Service, joined by Dr. Charles Davidson and Dr. Stanley Levinson, rounded at least once daily on all of the victims, admitted to 31 wards scattered throughout 8 buildings, walking miles of hospital corridor each day. In an attempt to understand the devastating nature of the fire, Finland's team carefully documented the location of each patient when the fire broke out, their direction of escape and whether and where they lost consciousness (3).

Many medical breakthroughs were accomplished by the City Hospital physicians during those difficulty days and weeks including the first use of penicillin in a civilian population, the first use of positive end expiratory pressure for respiratory burns, the first use of serum albumin infusion (which has just been fractionated from plasma at the Mallory Institute at BCH). Perhaps their greatest accomplishment was the salvage of a 22 year Coast Guardsman, Clifford Johnson, who sustained third degree burns over 60% of his body. He had escaped the fire but re-entered the club 3 times, heroically rescuing victims, until he was finally overcome by fumes.

An exhaustive inquiry into the cause of the fire was inconclusive. The most recent theory (4) is that the club was using a highly combustible compound, methyl chloride, as a substitute for Freon (which has been commandeered by the military) in its air conditioning system, which leaked.

Patient H.C. and Visual Agnosia

One of the victims of the fire was a 22 year old newlywed woman H.C. She was seated in the main ballroom when plumes of smoke began emanating from the basement bar and fire raced across the ceiling. Her husband pulled her to the Shawmut Street exit, only to find it locked. She lost consciousness in the burning building and was ultimately rescued by fire fighters. She was taken to BCH where she regained consciousness on the way to the ER. She treated with morphine and admitted.

She had only minor surface burns but complained of the inability to see. As there were no obvious ophthalmological injuries, the opinion of initial Neuropsychiatry consultant was that she was that her blindness was a form of hysteria.

Alexandra Adler met H.C. on her fifth hospital day and soon became convinced that H.C. was suffering from organic brain injury. Adler visited Helen daily until her discharge from Boston City Hospital on December 23, 1942 and continued to follow her on a weekly basis for several months. During this time Adler documented the evolution of Helen's visual impairment as she emerged from cortical blindness to develop a profound visual agnosia.

Initially, H.C. could not recognize any colors except for white, but by two weeks after injury her ability to recognize colors returned. With the return of vision, H.C. was documented as having normal visual fields and acuity. However, she could no longer read letters or mathematical symbols, recognize faces or perform calculations. Her writing was normal except for extra loops added to letters such as *m*, *n*, *y* and *w*. She had finger agnosia and loss of visual content of her dreams.

Helen's visual deficit was most clearly demonstrated by her inability to copy simple figures, such as a hexagon. With more complex shapes, she failed to see the long lines that defined the shape and copied instead small

pieces of the figure, often incorrectly. Failure at simple copying led Adler to classify the disorder as an *apperceptive visual agnosia* based on Lissauer's classification.

Adler filmed the salient features of the patient's persistent visual deficits 6 months after injury in a 16 mm film that is now part of the Denny-Brown Archive. In 1944 she published her seminal paper *Disintegration and Restoration of Optic Recognition in Visual Agnosia* (5). This was the first report of visual agnosia in the United States. Dr. Adler's case study stands as a classic in the neurological literature and is credited by Semir Zeki (6) as one of the earliest studies to show that cognitive visual processing involves integration of several independent streams of visual information. Dr. Adler continued to follow the patient for 5 years and wrote a follow up paper (7) describing little change over time, although the patient improved functionally by using compensatory strategies.

When reexamined 40 years after the fire (8), it was found that H.C. never recovered from her profound visual agnosia but had learned to compensate. For example, she learned to read standard print using a laborious letter by letter technique, although she remained unable to read handwriting, even her own. She raised two children in suburban Boston and remained a source of strength for her husband who suffered from bouts of severe depression after surviving the fire.

Psychiatric Consequences of the Fire

Dr. Adler examined the victims of the fire for evidence of psychiatric dysfunction and published one of the earliest descriptions of post-traumatic stress disorder (9). In her work she found that loss of consciousness during the fire was actually psychologically protective (patient H.C. did not develop psychiatric problems but her husband, who remained conscious throughout, suffered from life-long depression). Adler's work and similar studies at MGH by Drs. Lindemann and Cobb (10), provided a comprehensive portrait of the psychiatric consequences in survivors of disaster.

Later Years: Dr. Adler and H.C.

Following her brilliant work on the neurological and psychiatric consequences of the Coconut Grove fire, Dr. Adler was recommended for a position on the faculty of Neurology by the department chairmen Derek Denny-Brown. As a woman had never been appointed to the permanent faculty before, a faculty meeting was held. At the meeting there was a stormy debate which culminated in the hospital administrator slamming his fist on a table and declaring that Adler would indeed be appointed!

In a personal interview with the author, Adler stated that she realized that she had no future at Harvard given the blatant sexism that she had experienced. She subsequently took a position as Visiting Professor of Psychiatry at Duke in 1944.

In 1946 Adler moved to New York City where she joined the Psychiatry faculty at NYU. There she saw patients, published and taught at Bellevue Hospital and Gracie Square Hospital. She extended the work of her father at the Alfred Adler Mental Hygiene Clinic in Manhattan and founded and served as president of the American Society of Adlerian Psychology.

In 1982 Dr. Adler was struck by a taxicab while crossing the street. She was taken to Bellevue Hospital where she was registered as "unknown white female". She remained in coma for 6 weeks and her family was advised that she may have sustained permanent brain damage. She ultimately regained consciousness and after a 6 month hospitalization for rehabilitation, she returned home. Dr. Adler surprised all by returning to her clinical and teaching activities after her accident. She remained active until her late eighties.

Alexandra Adler and H.C. remained in communication for over 50 years. Each struggled against the limitations imposed, in one case, by institutional sexism and in the other, by neurological impairment. Dr. Adler died on January 1, 2001 at the age of 99 and H.C. died in the same year, at age 81.

Both succeeded in achieving exemplary, productive lives.

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