= Harry Glicken =

Harry Glicken ( March 7 , 1958 ? June 3 , 1991 ) was an American volcanologist . He researched Mount St. Helens in the United States before and after its famous 1980 eruption , and blamed himself for the death of fellow volcanologist David A. Johnston , who had switched shifts with Glicken so that the latter could attend an interview . In 1991 , while conducting avalanche research on Mount Unzen in Japan , Glicken and fellow volcanologists Katia and Maurice Krafft were killed by a pyroclastic flow . His remains were found four days later , and were cremated in accordance with his parents ' request . Glicken and Johnston remain the only American volcanologists known to have died in volcanic eruptions .

Despite a long @-@ term interest in working for the United States Geological Survey , Glicken never received a permanent post there because employees found him eccentric . Conducting independent research from sponsorships granted by the National Science Foundation and other organizations , Glicken accrued expertise in the field of volcanic debris avalanches . He also wrote several major publications on the topic , including his doctoral dissertation based on his research at St. Helens titled " Rockslide @-@ debris Avalanche of May 18 , 1980 , Mount St. Helens Volcano , Washington " that initiated widespread interest in the phenomenon . Since being published posthumously by Glicken 's colleagues in 1996 , the report has been acknowledged by many other publications on debris avalanches . Following his death , Glicken was praised by associates for his love of volcanoes and commitment to his field .

= = Life and career = =

= = = Early work = = =

Glicken was born in 1958 to Milton and Ida Glicken . He graduated from Stanford University in 1980 . Later that year , while a graduate student at the University of California , Santa Barbara , he was temporarily hired by the United States Geological Survey ( USGS ) to help monitor the volcano Mount St. Helens in Washington state . St. Helens , dormant since the 1840s and 1850s , resumed activity in March 1980 .

As seismic and volcanic activity increased , volcanologists working for the USGS in its Vancouver branch prepared to observe any impending eruption . Geologist Don Swanson and others placed reflectors on and around the growing lava domes , and , on May 1 , 1980 , established the Coldwater I and II observation posts to use laser ranging to measure how the distances to these reflectors changed over time as the domes deformed . Glicken monitored the volcano for two weeks , taking shelter in a trailer at the Coldwater II site located a little more than 5 miles ( 8 km ) northwest of the volcano . On May 18 , 1980 , after working for six days straight , Glicken took the day off to attend an interview for his graduate work with his professor , Richard V. Fisher , in Mammoth , California . His research adviser and mentor David A. Johnston replaced him at his post , despite expressing concerns about its safety given indications of mobile magma within the volcano . After a magnitude 5 @.@ 1 earthquake centered directly below the north slope triggered that part of the volcano to slide at 8 : 32 a.m. , Mount St. Helens erupted . Johnston was killed after he was enveloped by swift pyroclastic flows that traveled down the mountain 's flanks at near supersonic speeds .

After the eruption , Glicken went to Toutle High School , the center for relief efforts , where he joined Air Force Reserve Rescue Squadron officials in a helicopter to look for Johnston or any sign of his post . Despite searching with three separate crews over a span of nearly six hours , Glicken found no trace . He attempted to enlist a fourth helicopter crew to aid his search , but they declined , fearing dangerous conditions . In his distraught state , Glicken refused to accept Johnston 's death , and had to be comforted by Swanson before calming down .

In mid @-@ 1980 , after the May eruption , USGS Survey scientists decided to establish the David A. Johnston Cascades Volcano Observatory ( CVO ) in Vancouver , intending to closely monitor

volcanoes in Oregon , Washington , and Idaho . Glicken returned to St. Helens to analyze the remains of the volcano 's lateral blast . However , as other CVO employees had already commenced their research at the mountain , Glicken 's offer to help USGS on his own was declined by senior scientists . Instead , he found work with newly appointed Survey employee Barry Voight , a specialist in landslides . Under Voight 's guidance , Glicken absorbed himself in his work , motivated to earn a job at the Survey , and to relieve some of his anguish over Johnston 's death . Glicken and a team of geologists mapped the debris field left over from St. Helens 's structural collapse , which consisted of roughly a quarter of the mass of the volcano . Through extensive , meticulous analysis , the team traced the origins and the means of movement of each piece of debris , ranging from blocks 100 yards ( 91 m ) in width to mere fragments .

With his group , Glicken compiled a landmark study in the field of volcanic landslides , establishing the principle that tall volcanoes have a tendency to collapse . The study garnered praise for its unique conclusions and attention to detail , inspiring volcanologists to identify similar deposit mounds at volcanoes around the world . After the findings from his dissertation were published in several shorter articles throughout the 1980s , Glicken earned recognition as the first geologist to explain the creation of hummock fields near tall volcanoes .

= = = Research after St. Helens and death = = =

In the years following the eruption , despite earning rapid fame and opportunities to research internationally in Japan , New Zealand , and Guadeloupe , Glicken still failed to obtain a job at USGS . Senior employees at the Survey found his behavioral oddities unsettling . Activity at Mount St. Helens diminished , prompting USGS to reduce CVO 's budget and contemplate closing the station . He continued helping the Survey until 1989 , also serving as an assistant researcher at the University of California at Santa Barbara .

From 1989 to 1991 , Glicken continued his volcanological studies in Japan as a postdoctoral fellow at the Earthquake Research Institute of the University of Tokyo , supported by grants from the U.S. National Science Foundation . Later , while a research professor and translator at Tokyo Metropolitan University , Glicken became involved with research at Mount Unzen . The volcano had recently resumed eruptive activity in November 1990 , after being dormant for 198 years . In the months after its first activity , it erupted sporadically , and the government evacuated its vicinity near the end of May 1991 . On June 2 , 1991 , Glicken visited the mountain with Katia and Maurice Krafft . The three entered a danger zone near the base of the volcano the following day , assuming that any potentially hazardous pyroclastic flows would follow a turn in the landscape and safely bypass them . Later that day , a lava dome collapsed , sending a large flow down the valley at 60 miles per hour ( 97 km / h ) . The current reached the turn before separating into two parts , and the upper , hotter part swiftly overcame the volcanologists ' post , killing them upon impact . In total , 41 or 42 people died in the incident , including press members who had been watching the volcanologists . The volcano burned down 390 houses , and the remains of the flow extended 2 @.@ 5 miles ( 4 km ) in length . Glicken 's remains were found four days later , and were cremated according to his parents ' wishes . To date , Glicken and Johnston are the only American volcanologists known to have been killed by a volcanic eruption .

= = = Posthumous report = = =

At the time of his death , Glicken had been seeking to publish his doctoral dissertation in one piece , having earlier published elements as shorter articles . He had already defined the criteria for debris avalanches on the slopes of volcanoes , and authored several publications on the subject ; Swanson named him one of the foremost experts in the field . After the 1980 eruption of Mount St. Helens , research in the niche grew as more studies identified debris at well @-@ known volcanoes . His work on flows at Mount St. Helens is considered the most complete in the field to date . It was later published in 1996 as a single report by his acquaintances Carol Ostengren , John Costa , Dan Dzurisin , and Jon Major , among others , at the United States Geological Survey . In his preface to

Glicken 's publication , Major comments that " the Mount St. Helens deposit will never be mapped in such detail again . "

Glicken 's report is titled " Rockslide @-@ debris Avalanche of May 18 , 1980 , Mount St. Helens Volcano , Washington " . It comprises his extensive laboratory and field work , supplemented by photographs of the eruption , writings that describe St. Helens before the eruption , and references to previous publications , including Voight 's work . In the report , Glicken constructed a map of the landslide deposit at a scale of 1 : 24000 , followed by a lithogic map describing rock varieties at a scale of 1 : 12000 . The report also provides a conclusion for the movement of each slide block , using photographs and other data to estimate the velocity of each landslide , describing the composition of each , and recounting the interactions between blocks .

= = Tributes and legacy = =

Despite their appreciation of his work , many of Glicken 's associates considered him eccentric and highly disorganized . Chatty , noted for being extremely sensitive , and often considered a " nut " by his peers , Glicken also paid meticulous attention to detail . One of his friends writes , " Harry was a character his whole life . ... Everyone who knew him was amazed he was such a good scientist . " Regarding Glicken 's driving habits , the same acquaintance describes him as " a cartoon character " who " would drive at full speed down the road , talking about whatever was important to him , and ... come to a four @-@ way stoplight and he 'd sail through it , never knowing he 'd just gone through " .

Glicken 's father said in 1991 that his son died pursuing his passion , and that he was " totally absorbed " with volcanology . United States Geological Survey co @-@ worker Don Peterson adds that Glicken was keen in his enthusiastic approach to observation , and praises his accomplishments throughout his career and as a graduate student . Speaking about Glicken 's personal passion for his field , his mentor and professor Richard V. Fisher writes , " What happened at St. Helens is something that troubled [ Glicken ] deeply for a very long time , and , in a way , I think it made him even more dedicated than he was before . " Associate Robin Holcomb remarks that " Harry was very enthusiastic , very bright , and very ambitious , ambitious to do something worthwhile on volcanoes . " Many studies have utilized Glicken 's criteria for volcanic landslide recognition , and many subsequent papers on avalanches have acknowledged or referenced Glicken 's 1996 report . Reflecting on Glicken 's body of work , USGS employee Don Swanson names him as " a world leader in studies of volcanic debris avalanches " .

Glicken was closely connected to the University of California , Santa Barbara , where he earned his doctorate and conducted research . To remember his association with the university , each year the Department of Earth Science awards an outstanding graduate geology student the " Harry Glicken Memorial Graduate Fellowship " , established by the Harry Glicken Fund , which aims to support students " who will pursue research relating to the understanding of volcanic processes " .

= = Selected publications = =

Most of Glicken 's published work centers around the 1980 eruption of Mount St. Helens . He also coauthored works with other volcanologists that focused on debris avalanches . Colleague Jon Major writes that " The full scope of Harry 's work ... has never been published . "

" The 1980 eruptions of Mount St. Helens , Washington . USGS Professional Paper No. 1250 " . United States Geological Survey . 1981 : pgs . 347 ? 377 .

" The effects of ground water , slope stability , and seismic hazards on the stability of the South Fork Castle Creek blockage in the Mount St. Helens area , Washington . USGS Professional Paper No. 1345 " . United States Geological Survey . 1981 .

" The effects of ground water , slope stability , and seismic hazard on the stability of the South Fork Castle Creek blockage in the Mount St. Helens area , Washington . USGS Open File No. 84 ? 624 " . United States Geological Survey . 1984 .

" Geology and ground @-@ water hydrology of Spirit Lake blockage , Mount St. Helens ,

Washington , with implications for lake retention . USGS Bulletin No. 1789 " . United States Geological Survey . 1989 .
" Rockslide @-@ debris avalanche of May 18 , 1980 , Mount St. Helens Volcano , Washington . USGS Open File No. 96 @-@ 677 " . United States Geological Survey . 1996 .