= Barry Voight =

Barry Voight (born 1937) is an American volcanologist and engineer . He is also the brother of actor Jon Voight and songwriter Chip Taylor , and the uncle of actress Angelina Jolie . After attending a five @-@ year intensive dual @-@ degree program at the University of Notre Dame , Voight became a teaching assistant there while pursuing his Master 's degree . He studied at Cornell University and Columbia University , earning his Ph.D. in geology at the latter in 1965 . He worked as a professor of geology at several universities , including Pennsylvania State University , where he taught from 1964 until his retirement in 2005 . Voight 's publication on avalanches and other mass movements attracted the attention of United States Geological Survey (USGS) employee Rocky Crandell , who asked him to look at an expanding bulge at Mount St. Helens in Washington . Voight foresaw the bulge 's failure , followed by the collapse of the mountain 's north flank as well as a powerful eruption . His predictions came true as St. Helens erupted in 1980 ; Voight was then hired by the USGS to investigate the avalanche that marked the eruption . After his work at St. Helens brought him international recognition , Voight continued researching and guiding monitoring efforts at several active volcanoes throughout his career , including Nevado del Ruiz , Mount Merapi , and Soufrière Hills . For his research , publications , and disaster prevention work as a volcanologist and engineer , Voight has been honored with several awards and citations as a lecturer .

= = Early life and education = =

Voight was born in Yonkers , New York in 1937 . His brothers are actor Jon Voight and songwriter Chip Taylor , and actress Angelina Jolie is his niece .

Voight pursued a 5 @-@ year intensive dual @-@ degree program at the University of Notre Dame , receiving undergraduate degrees in geology (1959) and in civil engineering (1960) . He also received his Master 's degree in civil engineering from Notre Dame in 1961 . Voight attributes his interest in science to his mentors at Notre Dame , professors Ray Gutschick and Erhard Winkler . After spending one year studying at Cornell University , Voight transferred to Columbia University , where he graduated with a Ph.D. in geology in 1965 , studying under Fred Donath . While at Columbia , Voight was named a President 's Fellow .

= = Teaching career = =

Voight began teaching in 1961 , serving as a teaching assistant (TA) at the University of Notre Dame while pursuing his master 's degree in civil engineering . From 1961 ? 1963 , he also served as a TA at Cornell and Columbia . In 1964 , he joined the faculty at Pennsylvania State University (Penn State) as an assistant professor of geology , becoming a regular professor of geology and geotechnical engineering in 1978 . He remained at Penn State for more than four decades , retiring in June 2005 . While working at Penn State , Voight had a joint affiliation with the school 's Department of Mineral Engineering , teaching two courses , " Physical Geology for Engineers " and " Volcanology " . During his career , Voight also taught as a guest professor at the Delft University of Technology in the Netherlands in 1972 . He was a visiting professor at the University of Toronto in 1973 and at the University of California , Santa Barbara in 1981 . As of 2009 , he remains an emeritus professor at Penn State .

= = Volcanological work and research = =

= = = Early assignments = = =

Voight began his career as a geologist in 1971 , working for the United States Bureau of Mines . In 1978 , he published the first volume of a publication on avalanches , titled Rockslides and

Avalanches . After the second volume was released in 1980 , the work became a benchmark in studying avalanches and other forms of mass movement .

Prior to the 1980 eruption of Mount St. Helens , Voight was contacted by Rocky Crandell , a United States Geological Survey (USGS) employee working at the mountain . Crandell sought Voight 's expertise in landslides , hoping Voight would opine on a growing bulge , 270 feet (82 m) in length , which had emerged on the mountain 's north face . In his report to Crandell and his associates , Voight insisted that the bulge could fail and collapse the volcano 's entire north sector . He suggested they begin monitoring the rate of movement of the bulge , worried that the collapse could trigger an eruption . He also advised hiring a local surveyor to take measurements , offending several of the geologists . Shortly after , Voight left the mountain and returned to teaching classes at Penn State . Just before the eruption , he published a paper summarizing his predictions , depicting the failure of the bulge and the collapse of the mountain 's north side followed by a violent eruption , all of which came true . 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. , the volcano erupted , causing USD $ 1 @.@ 1 billion in damage and killing 57 people . After the eruption , Voight accepted a position as a consultant for the USGS . He led the investigation into the volcano debris avalanche which had occurred during the volcano 's eruption , guiding other volcanologists including Harry Glicken , who built upon Voight 's preliminary research to create his report " Rockslide @-@ Debris Avalanche of May 18 , 1980 , Mount St. Helens Volcano , Washington " (1996) . Voight 's work won him international renown , and he later cited his experiences there as " career @-@ changing " . Although Voight already had a growing interest in volcanology , the eruption at Mount St. Helens propelled him to switch careers and dedicate himself to the field . His work helped to reinvigorate widespread interest in landslides and other phenomena at volcanoes which potentially pose a threat to life . After Mount St. Helens , Voight began work analyzing the volcanic hazards from several other active volcanoes .

In 1985 , Voight responded to the Armero tragedy , where more than 23 @,@ 000 died from an eruption from the Nevado del Ruiz volcano , by blaming human error . He felt that while totally accurate predictions of volcanic eruptions were impossible , unpreparedness for the disaster and inaction in preventing it exacerbated the death toll . In January 1986 , Voight visited Nevado del Ruiz responding to concerns from the Colombian government that the northeastern section of the volcano might cave in , causing another eruption . He established a monitoring network of reflectors and used laser ranging to track how the distances to these reflectors changed over time . When one reflector indicated lots of movement and large cracks became visible from the air , Voight began contemplating evacuation , but waited . By March 1986 , he realized the widening cracks were caused by the creep (gradual shifting) of one of the volcano 's glaciers , rather than rocks . After leaving Ruiz , Voight compiled the 14 @-@ page report " Countdown to Catastrophe " (1988) , which analyzed how volcanic hazard management had failed at Armero .

= = = Later studies = = =

When Voight began research at Mount Merapi in Java , Indonesia in 1988 , it was hardly known by volcanologists . It had been omitted in the Smithsonian Institution 's 1981 publication Volcanoes of the World , despite having close to a million people on its slopes as of 1996 . Voight set up meters to record movement within the volcano , and educated local scientists on volcanic monitoring . In July 1989 , he obtained a USD $ 250 @,@ 000 grant from the National Science Foundation 's Division of Natural and Manmade Hazard Mitigation for his proposal to predict eruptions at Merapi . After his funding ran out , he temporarily abandoned his research . An eruption from the volcano in 1994 produced pyroclastic flows that killed 63 people , including guests of a wedding ceremony . 23 people survived the eruption . Returning to Merapi the following year , Voight compared data from the dead and survivors including the extent of their burn areas , clothing worn , and lung damage . He concluded that protective , long @-@ sleeved clothing and masks enhance chances of survival when exposed to eruptive activity .

In April 1989 , Voight returned to Colombia to the volcano Galeras after being contacted by the

United Nations Disaster Relief Organization . People in Pasto , located at the foot of the volcano , became alarmed by noises and shaking from Galeras . While Galeras proved far easier to climb than Nevado del Ruiz , land mines planted to hinder guerrilla forces dotted the slopes of the mountain . With USGS geologist Dick Janda , Voight drew a hazard map which included several populated areas within the danger zone . Before Voight left Galeras , the volcano underwent an unexpected phreatic eruption , which Voight and his team failed to predict . Although Pasto was unaffected , six scientists attending a United Nations workshop for natural disaster relief were killed . After reviewing deformation data from the day before the eruption , Voight discovered that no acceleration in the deformation process had occurred . He surmised that phreatic eruptions do not exhibit an acceleration in deformation before taking place and left after confirming that the volcano 's monitoring system functioned properly .

Voight 's fulfilled prediction that an avalanche at St. Helens could provoke a lateral eruption , an eruption from the volcano 's flank rather than its summit , attracted the attention of the government of Montserrat . Worried about an expanding lava dome at the Soufrière Hills volcano in March 1996 , the island 's government asked Voight to assess its potential for an avalanche that could generate an eruption . Voight thought it was unlikely that the crater would collapse , but expressed concern over a possible pyroclastic flow that could reach the city of Plymouth in approximately three minutes . The city of Plymouth and a village on the mountain were evacuated , and within three years , pyroclastic flows overtook the abandoned sites . Following these eruptions , Voight served as a member of the Risk Assessment Panel that advised Montserrat 's government , and co @-@ established the Caribbean Andesite Lava Island Precision Seismo @-@ geodetic Observatory (CALIPSO) with a team of scientists . Voight continued research at the island with Steven Sparks , a geoscientist at the University of Bristol , establishing SEA @-@ CALIPSO , an attempt to analyze Soufrière Hills utilizing seismic waves and explosions in the ocean . Amongst other findings , this effort detected a major fault trending north ? west under Montserrat 's western side .

With his students , Voight has analyzed pyroclastic flows , volcanically @-@ induced seismicity , volcanic debris avalanches , and volcanic eruption prediction . Voight also served as a consultant geotechnical engineer for dams , tunnels , and nuclear power plants , helping plan engineering projects in France , India , Ireland , Somalia , Papua New Guinea , Canada , and Turkey , as well as the United States . Voight 's research interests in lava dome collapses , stratovolcanoes , monitoring of active volcanoes , and pyroclastic flows have taken him to Iceland , Columbia , Japan , the Kamchatka Peninsula , Indonesia , the West Indies , Italy , and Chile . Combining his knowledge of engineering and geological concepts , Voight developed the widely used anelastic strain recovery (ASR) method for measuring stress on deep rock . With a team of geologists , he also derived the material failure forecast method (FFM) , which predicts eruption times for volcanoes based on changes in the mountain 's surrounding seismic and deformation data . He currently serves as a member of the United States Geological Survey 's Volcano Hazards Response Team , and has responded to potentially eruptive volcanoes in Japan , the Philippines , Indonesia , and Chile .

= = Recognition and legacy = =

Throughout his career , Voight has received multiple accolades and citations , for his research as a professor and for his professional work as a geologist and volcanologist . In 1984 , the Institution of Civil Engineers awarded him the George Stevenson Medal , recognizing one of his articles among " the best work published in [their] journals " . The same year , Voight earned an award for " significant original contribution to research in rock mechanics " from the United States National Committee on Rock Mechanics . For his help monitoring the Mayon Volcano in the Philippines in 1985 , he was granted a key to Legazpi , Albay , which had been threatened by Mayon 's impending eruption . 1989 saw another major year of honors for Voight , as he was named a MacQuarie Research Scholar and again garnered an award from the United States National Committee on Rock Mechanics for his original findings . Voight has appeared as a distinguished lecturer several times , including at the University of Utah 's College of Mining Engineering (1990) , the University of California , Santa Barbara (1992) , and the Association of Environmental & Engineering

Geologists (1992) . For his service as a professor at Penn State , Voight has been given two awards , specifically for his research . In 1991 , he gained a Faculty Scholar Medal for " Outstanding Achievement in the Physical Sciences and Engineering " . In 1990 , he received the Wilson Research Award from the College of Earth and Mineral Sciences for excellence in research . For " his research , teaching and consulting work " , the Engineering Geology Division of the Geological Society of America presented him with their 2010 Distinguished Practice Award . In 2013 he received the Thorarinsson Medal of the International Association of Volcanology and Chemistry of the Earth 's Interior .

Recalling a conference which he attended where Voight appeared , Bill McGuire , Emeritus Professor of Geophysical & Climate Hazards at University College London , describes Voight as " an illustrious expert on volcano instability and landslides " . Citing Voight for his Distinguished Practice Award , colleague Richard Gray names him among his " profession 's brightest and productive members " . When Voight published his prediction mechanism , USGS geologist Robert I. Tilling praised it for being " a significant refinement in the interpretation of monitoring data " .

= = Major publications = =

In addition to many papers , Voight has authored at least 14 books since 1965 , some of his co @-@ authors including W. D. Gunther , R. T. Chase , Mary A. Voight , and George Stephens . His most recent book was published in 2012 .

Belousov , Alexander , Voight , Barry , and Belousova , Marina , 2007 , Directed blasts and blast @-@ generated pyroclastic density currents ? A comparison of the Bezymianny 1956 , Mount St. Helens 1980 , and Soufrière Hills , Montserrat 1997 eruptions and deposits : Bulletin of Volcanology , v. 69 , pp. 701 ? 740 .

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Voight , B. , et al . Magma flow instability and cyclic activity at Soufriere Hills Volcano , Montserrat , B. W. I. Science , 1999 .

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