

# INSIGHTS

BOOKS *et al.*

## FILM FESTIVAL

### Science at Sundance

An entrepreneur's ambitious health care start-up ends in indictment. A teenager in Malawi saves his village with a brilliant feat of engineering. A community works around the clock to save a tiny porpoise inching ever closer to extinction. From a Holocaust survivor's candid sex advice to a Cambridge Analytica insider's shocking congressional testimony, the science and technology stories told at this year's Sundance Film Festival were as riveting as they were timely. The festival, held in January and February in the snowy ski town of Park City, Utah, is now in its 34th year. The 2019 theme—"Risk Independence"—emphasized the organization's commitment to provocative themes and experimental storytelling. "Art can't spark conversation if it's playing it safe," summarized the Sundance Institute's executive director, Keri Putnam. Read on to see what our reviewers thought of 10 featured films sure to spark conversation in scientific circles. —Valerie Thompson

### The Great Hack

Reviewed by **Robert S. Krauss**<sup>1</sup>

Under what circumstances should your personal information on social media be shared, and who should be the gatekeeper? These are among the most important questions facing society and are the focus of *The*

*Great Hack*, Karim Amer and Jehane Noujaim's documentary about the Facebook-Cambridge Analytica scandal.

Cambridge Analytica, the British political consulting firm founded by American far-right players Robert Mercer and Stephen Bannon, started its quest to gain access to personal data with an online survey taken by 300,000 consenting Facebook users. From

there, it gained unauthorized access to the personal information of 87 million networked profiles. The company used this information to collect voter data on behalf of Ted Cruz's and Donald Trump's presidential campaigns, with the goal of influencing the 2016 election through devious targeted advertising. A combination of investigative journalism, lawsuits, and whistleblowers broke the story, leading in 2018 to Cambridge Analytica's demise and Facebook founder Mark Zuckerberg's stonewalling testimony before the U.S. Congress.

*The Great Hack* follows Parsons School of Design professor David Carroll, who sued Cambridge Analytica to find out what information the company had about him. Carroll serves as a champion of individual data protection, appearing thoughtful and determined. Followed at much greater length is Brittany Kaiser, Cambridge Analytica business director turned whistleblower. A problem for the film is that Kaiser comes across as unlikable—her motivation opaque and her politics opportunistic. As the pressure on her mounts, however, details emerge that humanize some of her choices and suggest that she is more sympathetic than she first appears.

*The Great Hack* is complex and suspenseful. It also has some terrific CGI animation. The film screened at Sundance was too long





at well over 2 hours and would benefit from editing before its appearance on Netflix. The issues it explores will not have been solved by then.

**The Great Hack**, Karim Amer, Jehane Noujaim, directors, Netflix, 2019, 139 minutes.

## The Inventor

Reviewed by **Robert S. Krauss**<sup>1</sup>

"I don't have many secrets," says Elizabeth Holmes at the outset of *The Inventor*, which tells the story of the rise and fall of her company, Theranos. In 2003 at the age of 19, Holmes set out to transform the health care industry, promising a technology that could conduct a large number of tests by using small blood samples derived from a fingerstick. But, contrary to her claim, Holmes had an immense secret: Despite raising Theranos to a \$9 billion valuation, the technological ability to achieve her ambition never existed.

Directed by Alex Gibney, *The Inventor* tells this now well-known story, emphasizing Holmes's embrace of a "fake it till you make it" ethos and her ability to get powerful, but nonmedical, establishment figures to believe in her unquestioningly. Holmes's

relentless promotion of the company led to a video trail that the film capitalizes on, offering viewers a chronicle of her mendacity. It is remarkable to watch the evolution and increasing brazenness of her lies.

*The Inventor* makes good use of interviews with journalists who were taken in by Holmes, as well as *Wall Street Journal* reporter John Carreyrou, who first broke the story of her deception. Much-deserved screen time is also given to two young Theranos employees who went public with their doubts at great personal risk. Tyler Shultz (grandson of Theranos board member George Shultz) and Erika Cheung faced down Theranos's legal team, led by the formidable David Boies, and helped unravel the fraud.

The film makes the case that Holmes was a true believer, unable to admit, even to herself, that she had lied. Although this rings true, it's hard to imagine that at some point during the crumbling of her fantasy world she did not grasp reality. Slightly overlong at 2 hours, *The Inventor* still awaits a coda: Holmes has been indicted on federal charges of defrauding investors, doctors, and patients. She faces up to 20 years in prison.

**The Inventor: Out for Blood in Silicon Valley**, Alex Gibney, director, Jigsaw Productions, 2018, 119 minutes.

## The Elephant Queen

Reviewed by **Michael D. Shapiro**<sup>2</sup>

In the visually stunning documentary *The Elephant Queen*, a violent thunderstorm brings renewed life to a watering hole in what narrator Chiwetel Ejiofor refers to as "the Kingdom" region of Kenya's Tsavo National Park. The area is home to an elephant herd led by 50-year-old matriarch Athena, one of the last of the massive tuskers. When drought seizes the Kingdom and the watering hole dries up, most animals flee or burrow underground. However, Athena must choose whether to embark on a perilous trek to another refuge or delay migration to allow a weakened family member to recover. *The Elephant Queen* appeared in the Sundance Kids program, but the film unflinchingly confronts the herd's struggle for life and the devastation triggered by the arid savannah.

Interwoven with the story of Athena's family are fascinating vignettes about the biology of other animals that live at "toe-nail level" to the elephants. Dung beetles battle for the elephant-processed remains of the Kingdom's plant life and inspire some whimsical fight scenes. Meanwhile, seeds lodged in other dung piles germinate and





Led by a charismatic matriarch, an elephant family embarks on a harrowing journey in *The Elephant Queen*.

produce food for turtles; everything is interconnected. *The Elephant Queen* is not explicitly a conservation film, but it conveys an unmistakable message that all species thrive in collaboration, and disruption of this balance could have catastrophic effects on local ecosystems.

*The Elephant Queen* feels unique among nature documentaries for its extraordinary, intimate footage of Athena's family and impossibly close-up shots of smaller animals on the move. Cinematographer Mark Deeble, who codirected with Victoria Stone, captured some of the film's most spectacular scenes from an underground box, creating rare perspectives at and below eye level of the animals. Together, Stone and Deeble craft a richly textured insider's view of elephant family dynamics—and the activity that surrounds it—that is infused with personality, emotion, and empathy.

**The Elephant Queen**, Victoria Stone, Mark Deeble, directors, Apple, 2018, 96 minutes.

## Bedlam

Reviewed by **Paul L. Koch**<sup>3</sup>

The public health statistics presented in *Bedlam*, the new film by director Kenneth Paul Rosenberg, are horrifying: 350,000 people with mental illness sleep on U.S. streets each night, the nation's three largest prisons are its three largest psychiatric facilities, and half the people killed in

confrontations with police are mentally ill. The causes explored in the film range from the shuttering of asylums beginning in the 1950s (which led to an order of magnitude fewer inpatient beds) to the Reagan administration's defunding of community health efforts to underfunding of brain research and a failure on the part of the pharmaceutical industry to develop better therapeutics. We can debate the primacy of these causes, but the misery and chaos generated in their wake are undeniable.

*Bedlam* is most powerful in its depiction of the suffering of people left adrift by our system of care. We meet them at their sickest, in the Los Angeles County–University of Southern California psychiatric emergency room, then follow their lives for several years. Their outcomes vary in relation to the social networks that support them. The film also tells the story of Rosenberg's sister Merle, who suffered from schizophrenia. Her illness motivated him to become a psychiatrist and a filmmaker.

Shame is a powerful part of *Bedlam*'s story. It prevents some families from seeking the help they need. Fear is another driver. Monte, a young African-American man, mourns that people view him as a monster. Like many people with mental illness, he cycles in and out of jail for relatively petty crimes. His loving sister Patrisse laments that communities haven't risen up in outrage over the treatment of people with mental illness and sparks a social movement demanding better health care and a halt to the use of jails and prisons as our society's main treatment centers for men-

tal illness. *Bedlam* makes clear that change is long overdue for a nation neglecting its most vulnerable citizens.

**Bedlam**, Kenneth Paul Rosenberg, director, Upper East Films, 2019, 84 minutes.

## Sea of Shadows

Reviewed by **Paul L. Koch**<sup>3</sup>

The vaquita, a tiny porpoise of Disneyesque cuteness, is hurtling toward extinction; fewer than 15 individuals remain in Mexico's Sea of Cortez. *Sea of Shadows*, a new documentary by director Richard Ladkani (*The Ivory Game*), hammers home how greed drives this catastrophe.

The Chinese mafia and Mexican drug cartels make millions shipping the swim bladders of the endangered totoaba fish to Asia, where they are valued for their purported medicinal properties. Local fishermen, increasingly impoverished by restrictions made to save marine life in the Sea of Cortez and then ensnared by loans from cartels, have become totoaba poachers, crisscrossing the ocean with gill nets that kill huge numbers of creatures as collateral damage, including the vaquita.

*Sea of Shadows* highlights the people trying to stop this slaughter: journalists who spotlight the cartels and pressure the Mexican government for action, undercover agents working to unravel and expose the criminal syndicate, scientists trying to corral the last vaquitas and bring them into safe

harbor, and the gutsy crew of the *Sea Shepherd* who track poachers with drones and pull their nets from the sea—all of whom face daunting odds, great dangers, and heartbreaking setbacks. As the film unfolds, their work sparks civil unrest among the fishing community but also spurs the arrest of a murderous cartel head and the first serious disruption of the totoaba supply chain in China.

This war continues—the *Sea Shepherd* was attacked with fire bombs in January of this year—and the stakes are high not only for the vaquita but also for the communities that have depended on the sea for centuries. *Sea of Shadows* is a thrilling crime story, a hauntingly beautiful paean to the Sea of Cortez, and an urgent call for international law enforcement action to end its destruction.

**Sea of Shadows**, Richard Ladkani, director, Terra Mater Factual Studios, 2018, 105 minutes.

## The Boy Who Harnessed the Wind

Reviewed by **Gabrielle Kardon**\*

Most of us take electricity and running water for granted, but in rural Malawi, electricity is still a rarity, and water often comes from buckets hauled by hand out of wells. The new film *The Boy Who Harnessed the Wind*, directed by Chiwetel Ejiofor, is inspired by the true story of William Kamkwamba's remarkable ingenuity and resourcefulness, which brought electricity and irrigation to his village.

In 2001, Malawi was plagued by periods of drought and flooding that led to a poor maize harvest, the country's major crop, and widespread famine. Kamkwamba was 14 years old, and families in his village, Wimbe—including his own—were starving.

Kamkwamba had always been a tinkerer. Drawing inspiration from some textbooks that he discovered in the small library of his former school (which he could no longer afford to attend), he dreamt of building a wind turbine to power a pump that would generate a stable supply of water to irrigate the village's crops. Amid political instability, increasingly dire circumstances, and his father's skepticism, Kamkwamba builds a small prototype that is able to power a radio. Gradually, he scrounges batteries, PVC pipe, bicycle parts, a tractor fan, and various other bits from the local scrapyard. With help from his friends and eventually his father, Kamkwamba builds a wind turbine that pumps well water to the surface, providing consistent irrigation to the fields

and saving his community from starvation. Filmed on location in Malawi, Ejiofor's film brings to life the country's landscape and culture, tenderly portrays the tension and love that define William and his father's relationship, and illuminates the process of invention.

Bring your family and your lab to this film, the winner of the Alfred P. Sloan Foundation Feature Film Prize, to find out how one person—armed with scientific knowledge, determination, ingenuity, and a passion for tinkering—can create solutions that transform a community.

**The Boy Who Harnessed the Wind**, Chiwetel Ejiofor, director, Netflix, 2018, 113 minutes.



A teen's engineering ingenuity saves the day in *The Boy Who Harnessed the Wind*.

## Apollo 11

Reviewed by **DDW Cornelison**\*

*Apollo 11* distills a trove of recently discovered archival materials to provide an unprecedented view of the first-ever attempt to send humans to the Moon and bring them back again. More than 300 reels of large-format film were converted by using a one-of-a-kind digital scanner, and ~11,000 hours of audiotape, featuring the audio feed of more than 60 individuals, were scanned and processed. The choice to exclude any narration or contemporary voiceovers may make you forget that it's a documentary; I found myself leaning forward anxiously when command module pilot Michael Collins had to make a last-minute change to the lunar landing site and as "Buzz" Aldrin precisely docked the lander back with the capsule for the trip home.

For the billions of people around the world who watched as the event unfolded, and the nearly 1 million people who parked their cars, campers, and tents across the bay from Cape Canaveral, the Moon launch was a fascinating and unifying event, possibly the last time that science and technology so captivated the hearts and minds of the public.

Revisiting the event 50 years later, the film underscores the audacity of the endeavor: There was no guarantee that the mission could even begin successfully, much less safely return the astronauts to Earth. (Unmentioned in the documentary is the speech we now know had been prepared for President Nixon to deliver if the mission ended in catastrophe.) We see engineers making calculations with pencil and paper to adjust the trajectory of the rocket "on the fly," wait with Mission Control for communications with the capsule to resume as it rounds the dark side of the Moon, and feel the unexpected texture of the lunar surface as Neil Armstrong takes that "small step." Reliving this adventure through the sights and sounds recorded as it happened is an experience that will hopefully bring the excitement of space exploration to a new generation.

**Apollo 11**, Todd Douglas Miller, director, NEON, 2018, 93 minutes.

## Moonlight Sonata

Reviewed by **DDW Cornelison**\*

Director Irene Taylor Brodsky's award-winning 2007 documentary *Hear and Now* told the story of her deaf parents' decision to get cochlear implants late in life. Her new film, *Moonlight Sonata*, contrasts her father's lifelong experience of deafness with that of her son Jonas.

Deaf since birth, Brodsky's father, Paul Taylor, was taught to speak by mimicking sounds he sensed by touching a speaker's throat. As a young man, a key victory was securing a driver's license—a source of independence that had not been permitted for deaf people only shortly before and with which Taylor's family is forced to reckon in the film. He went on to invent the TTY machine, a device that allows deaf people to communicate in real time with people at a distance. When Paul got his cochlear implants in his 60s, the technology didn't fully restore his hearing because his neural connections were habituated to silence.

Brodsky's son Jonas, who lost his hearing as a baby, has had a dramatically different experience. Jonas had cochlear implant



surgery as a young child, and it was so successful that it can be hard to remember that he is deaf. As anyone who has ever had to get tech support from a teenager will relate to, the technology that is nearly magical to his grandparents is no big deal to Jonas. A scene in which they are trying to give him advice on how to live as a deaf person while he plays with his phone and nods his head—an act intended to communicate that he is listening that instead makes them feel as though he is ignoring them—highlights this generational difference.

As Jonas struggles to learn Beethoven's *Moonlight Sonata*—a piece written while the composer himself was losing his hearing—his grandfather also faces a new challenge. The movie paints a beautiful and moving picture of a family taking what comes in life, together, with love and grace.

**Moonlight Sonata: Deafness in Three Movements,** Irene Taylor Brodsky, director, Vermilion Films, 2019, 90 minutes.

## I Am Mother

Reviewed by **Michael D. Shapiro**<sup>2</sup>

*I Am Mother* envisions a near future in which an intelligent machine controls the fate of the human species after a major extinction event. The droid “Mother” presides over a repopulation facility housing 63,000 human embryos in a state of arrested development. It has a soothing female voice (Rose Byrne), but its mechanical facial expressions and body language can be si-

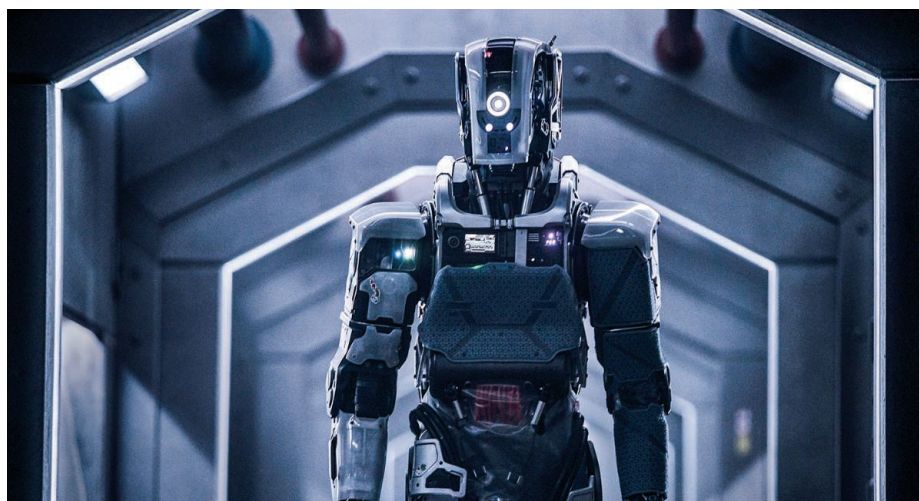
multaneously nurturing and threatening. The film opens on Mother popping an embryo pod into an artificial womb with the ease of brewing a cup of hotel-room coffee. Twenty-four hours later, a baby girl is born.

“Daughter” (Clara Rugaard) becomes the ultimate high-achieving young adult: She’s a talented dancer, mechanic, and surgeon who watches Johnny Carson reruns in her downtime. Mother challenges her with ethical dilemmas in preparation for an important exam, which in turn raises critical questions about Mother’s own moral code. Most importantly, what does it mean to be good? The droid seems to value human life above all else, but its principles sometimes conflict with the morality of the species it’s trying to “improve,” and the consequences can be abhorrent by human standards.

Tension disrupts Daughter’s predictable existence when her budding curiosity about the world beyond the facility collides with an outsider’s (Hilary Swank) cry for help. The outsider’s take on the extinction event is decidedly different from Mother’s, and détente turns to chaos as Daughter must reconcile her allegiance to Mother with several disturbing discoveries.

Director Grant Sputore and screenwriter Michael Lloyd Green sprinkle hints throughout the film that foreshadow several plot twists. With a compelling and creative story, and superb performances by the tiny cast, *I Am Mother* is worth a second viewing with a pause button to unlock the clutch of Easter eggs.

**I Am Mother,** Grant Sputore, director, The Penguin Empire, 2018, 114 minutes.



A young woman raised by a robot realizes that all is not what it seems when an outsider arrives in *I Am Mother*.

## Ask Dr. Ruth

Reviewed by **Gabrielle Kardon**<sup>4</sup>

“Size does not matter” is the famous sex advice uttered by the legendary therapist Ruth Westheimer, known to the world as “Dr. Ruth.” But there is more to the diminutive, upbeat therapist with the thick German accent than provocative catchphrases. Through skillful interweaving of interviews, archival footage, and watercolor animations, Ryan White’s new documentary reveals her colorful life.

Westheimer was born in 1928 in Germany as Karola Ruth Siegel. Her parents were killed in the Holocaust but saved their daughter by sending her via kindertransport to Switzerland, where she was raised in an orphanage. After the war, she joined a kibbutz in Palestine, worked as a sharpshooter for a Jewish paramilitary organization, earned a degree at the Sorbonne in Paris, and eventually landed in New York City. There, her passion for helping people with family, relationship, and sexual issues blossomed.

As part of her work for Planned Parenthood in East Harlem, she interviewed women about their contraceptive and abortion history, and this work ultimately became the basis for her doctoral studies at Columbia University. Realizing that she had a hard time answering the myriad questions about sexuality that she encountered during her research, she chose to pursue her postdoctoral studies with Helen Singer Kaplan, a noted sex therapist at New York Medical College.

Westheimer’s life changed dramatically in 1981 when she started hosting a late-night call-in show about sex at a local radio station. *Sexually Speaking* was a pioneering program in which she discussed questions about sex openly, compassionately, and knowledgeably. The show was an immediate success that led to appearances on late-night talk shows, book deals, and the birth of the iconic “Dr. Ruth.”

Watch this film not only to learn more about Westheimer’s remarkable life on the forefront of the sexual revolution but also to be uplifted by her tireless advocacy for human connections and love.

**Ask Dr. Ruth,** Ryan White, director, Delirio Films, 2018, 100 minutes.

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## Science at Sundance

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