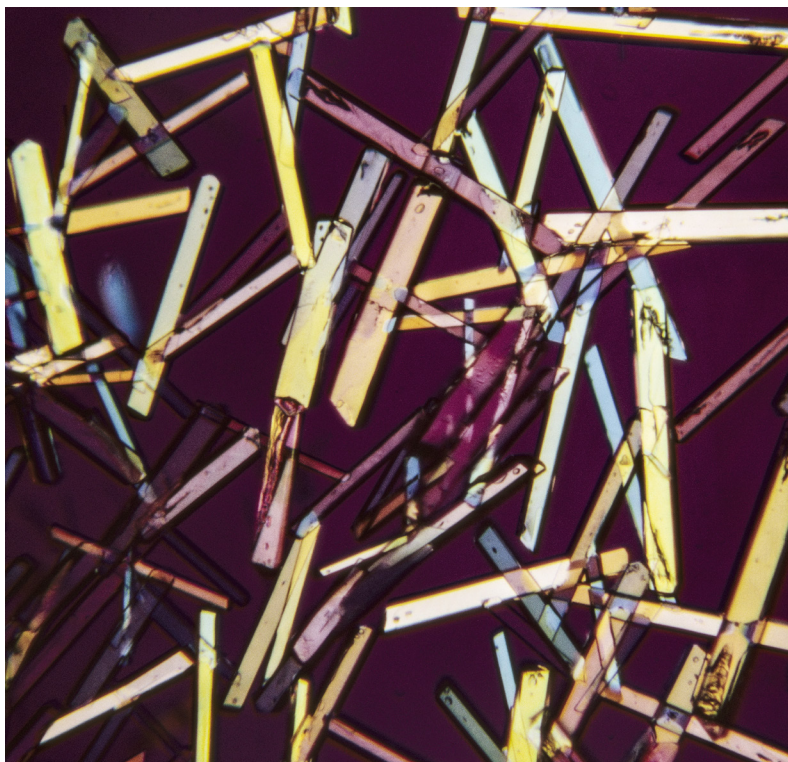


Super Sight

A World Viewed Through Technology



English



Västerbottens
museum

Super Sight

A World Viewed Through Technology

Curated by Kerstin Hamilton and Alexandra A. Ellis, at Sune Jonsson Center for Documentary Photography.

Participants

Berenice Abbott | Lennart Nilsson | Forensic Architecture
Albert Sten | Craig Ames | Kate Crawford & Vladan Joles
Krister Hägglund | Stephanie Dinkins | Tyrone Martinsson

By visiting different times in history – from the 1950's documentary photographic images of magnetic fields and sound waves, to today's artificial intelligence (AI) – this exhibition turns its attention towards how technological development allows for various ways to approach reality.

The exhibition starts with images of scientific phenomena in the late 1950s and early 1960s by documentary photographer Berenice Abbott. Abbott was motivated by a desire to portray and elucidate her present time. She staged photographic experiments and in the images presented in the exhibition we can partake in innovative scientific environments and material of that time.

Two decades on, Swedish photographer Lennart Nilsson worked on his photographic journey into the human body. His images were groundbreaking and had a large international impact. Nilsson's visionary ambition gave people an opportunity to, for the very first time, study something that had not been possible to see earlier, such as the development of a fetus before birth.

The interdisciplinary research collective Forensic Architecture represents the present time in the exhibition. By exposing crimes against

human rights by using new techniques and methods, in a time of "alternative facts", fact-gathering becomes crucial as a counterweight to the falsehoods in circulation.

In the work of Abbot, Nilsson and Forensic Architecture, reality is in focus, by finding ways to make the invisible visible. The exhibition's "project room" presents a number of contemporary ways to use visual techniques to portray both what exists and what has been digitally constructed by using AI. The perspectives introduced calls for a critical perspective on some of our time's innovative techniques and the images that are generated today. What comes into view are both opportunities and dilemmas brought about by technological development, and questions that arise in its wake.

Berenice Abbott

Berenice Abbott (1898–1991) began her photographic journey in the 1920's. For many years she pursued an almost sociological photographic study in her native country, USA, where she directed her camera towards a changing New York. It is as a documentary photographer with an inclination towards "straight photography" – a form of photography that embraces sharp, realistic, detailed images – that Abbott has received the most attention and appreciation. Her desire was to use the camera to record what took place without allowing individual expression to dominate: The image should be as faithful to the original as possible.

In the exhibition we gaze towards Abbott's images of scientific phenomena made towards the end of the 1950's during her years at the Massachusetts Institute of Technology (MIT) in Cambridge, Massachusetts. It was Abbott's interest in technology and societal development that led her to MIT where she came to develop techniques to visualize science.

The same year as the second world war came to an end – and around one decade before Abbott arrived at MIT – the engineer and scientific administrator Vannevar Bush wrote the report "Science, The Endless Frontier" (1945). In the report, Bush emphasises that increased support for scientific research in the USA is crucial for the country's economic growth, national security, and overall societal improvement. A strong belief in science emerges and it is in the light of this zeitgeist that we can observe Abbott's enthusiastic approach to science, and to photography's role in communicating it to people.

Abbott also expressed herself through text to convey her vision of photography, for instance in "A Guide to Better Photography" (1941) and the manifest "Photography and Science" (1939), which is reproduced in the exhibition.

We Live in A World Made by Science

In 1939, Abbott authored a text that was originally a letter addressed to a friend in the field of natural sciences, but which she later considered as a kind of manifesto. In the text, Abbott argues that photography is indispensable as a means to convey scientific concepts to the general public. An example of a new and complex theory in physics, developed during the first half of the 20th century, is quantum mechanics. In this context, Abbott contended that photography was needed to assist the “layperson” in interpreting science.

Abbott acted in accordance with her own calls in the manifesto, and from the late 1930s to the early 1960s, she dedicated herself to portraying the natural sciences through photography. This effort was formalized through her association with MIT from 1958 to 1961. She also served as a picture editor for the magazine *Science Illustrated* during the mid-1940s.

At MIT, she conducted experiments with the camera and various instruments. She also developed new photographic techniques, and in 1942, she began working on a camera for advanced macrophotography. “Super Sight” relied on magnifying the reflection of the subject even before the exposure occurred. The camera contained a photo-sensitive paper — negative with — a surface as large as 16x20 inches. This resulted in highly detailed images.

Super Sight was not a commercial success, but Abbott herself was delighted with her invention. This demonstrates her curiosity and desire to experiment and her pursuit to grasp the world through the camera. Super Sight came into existence as a result of Abbott recognizing the necessity for techniques that had not yet been developed. In her role as an artist, she led the way in creating novel methods for depicting reality.

Abbott’s time at the Massachusetts Institute of Technology

Her position at the Massachusetts Institute of Technology provided Abbott with a stable source of income for the first time. Here, she could

collaborate with researchers, and the Physical Science Study Committee at MIT offered plenty of room for experimentation. She was tasked with creating images for a group of physicists and, along with assistants, she conducted experiments in the laboratory. The images had a specific purpose: To expand human understanding of the world and encourage the younger generation to pursue the natural sciences.

Through her position at MIT, Abbott found herself outside the mainstream of documentary photography. Her images were widely disseminated through textbooks but did not reach the traditional art and photography audience. She was incorporated into educational contexts at the expense of making an impact in artistic institutions. After being embraced by the male-dominated photographic elite during the 1920s and 30s, she ended up in the photographic periphery. Likewise, at MIT, she found herself in an environment dominated by men. As a woman, she often had to fight an uphill battle, and she saw photography as a political tool to help break down barriers.

Abbott was attracted by the possibility of finding, within the natural science, subjects that had not been portrayed before. In this way, photography could free itself from classical subjects in the visual arts, such as portraits and landscapes. She believed that photography needed to expand its expression with new images — photographs of motion and time.

Abbott and realism

Abbott has stated that the most “real” thing she could photograph was science, and the pursuit of the real was central to her artistic vision. Photography, she argued, offers a realistic, fact-based, and objective view of the world. Abbott’s approach to photography should be considered in the context of her era, given that she progressed her photographic practice during a period when photographic movements such as pictorialism and surrealism were in vogue. These styles did not appeal to her, and in “straight” photography she identified contrasting approaches to what in her mind was a sentimental visual language. She claimed, “Straight photography is a clean breath of good, fresh air.”

Why this interest in images that are able to convey facts? Because Abbott saw in photography a unique potential to communicate important knowledges to the general public. In *A Guide to Better Photography*, she describes a new phase of photography, where its role as a communicative medium is set to be strengthened. Clearly, this is the direction that Abbott herself wanted to steer the conversation about photography.

However, her images of science are often abstract, and the question arises: What facts are actually being conveyed? How can her images of quantum mechanical phenomena, such as interference patterns, communicate knowledge and be considered essentially realistic?

Today, in the proclaimed post-truth era, Abbott's approach to photography and realism serves as a reminder that the objectivity of photography has never been a given. Her stance also reminds us that photographic realism and the option to trust images, matters in a free and open society.

The apparatus and experiment

Already before her appointment at MIT, Abbott's studio had started to take on the characteristics of a laboratory. She conducted test and did retakes, and often started out with a hypothesis. Sometimes, her images were intended to demonstrate, while at other times, they were meant to prove, and the artistic process resembled the process of scientific experimentation.

Subjectivity and objectivity are entangled. Despite Abbott's images being marked by her reluctance to make herself visible in them, she is still present to some extent. When we look at her images of physical phenomena, we not only see just see the phenomenon itself; the image also carries traces of the experiment.

The subjective process that leads to the image did not deter Abbott from holding a strong belief in photography's capacity to convey essential truths about the world: "I believe in nature and truth, common

sense and the pursuit of knowledge.” She wanted to educate people, inform them about the true nature of science, and the image’s strong connection to reality was of utmost importance, even if the reality was staged in a laboratory setting.

Abbott and Arendt

Abbott’s self-imposed mission to illustrate science corresponds to a question first evoked by the philosopher Hannah Arendt in *The Human Condition* (1958): Is human stature increased or diminished with scientific representations? How is the image of humanity impacted when seen from the vantage point of space, or through the lens of a microscope? How do scientific outlooks influence our own experience of what it means to be human?

Abbott’s images make natural phenomena studied in science visible and may lead to some sort of intelligibility. However, the images may also contribute to the feeling that we actually understand very little, or the sense that we are insignificant. Arendt argued that natural science risks of leading us away from humanistic thinking: Through its claims to reveal abstract truths, science may undermine common sense and the human experience of the world.

This is where photographic studies of science can be significant, as they not only illustrate science but also communicate and make it public. Despite their relatively abstract nature, Abbott’s photographs — often accompanied by text in textbooks — have contributed to conceptualizing and conveying what scientific phenomena look like. Without the image, the level of abstraction would be even higher, and by looking at something, we are given the opportunity to formulate our thoughts in relation to what we see. In this way, images can serve as the basis for interpersonal communication about the abstract.

Documentary photography as folkbildning

Abbott held a belief in the educational potential of photography and has said about photography that it is "a great democratic medium." Historian Terri Weissman describes Abbott's approach to photography:

The purpose of photography is to provide the public with realistic images of a changing world, with the aim of promoting historical understanding that is essential to active, democratic citizenship.

The commitment of Abbott to the educational potential of photography was shared with her longtime partner, art critic Elizabeth McCausland. McCausland was a radical social critic who aimed her sharp critique at both the commodification of art and the notion of the artist as a bohemian individualist. Together they advocated for art that served a social function. In this spirit, Abbott employed photography to provide space for the viewer to reflect and engage in society.

Her faith in photography's ability to convey important truths was strong: "I believe in nature and truth, common sense, and the pursuit of knowledge." Photography's realistic relationship to reality was paramount—even when reality was staged in a laboratory environment. Today, in the post-truth era, Abbott's strong commitment to photography and realism in the mid-20th century is a reminder that the relationship between images and truth has long been a subject of debate.

Lennart Nilsson

The exhibition shows a selection of Nilsson's photographs with focus on the time period 1952–1975. The selection does not only illustrate a movement in time, it also illuminates different techniques and how the scale in his images change over time. By experimenting, Nilsson found various ways to see the world through technology. Access to technical resources and competent workers was a condition to make this possible and gave Nilsson the opportunity to set up a laboratory at Karolinska institutet.

Despite his many years at Karolinska institutet Nilsson did not have an employment there. He remained a freelance photographer with a unique access to the material prerequisites necessary to make his photographs. In order to finance his practice he made a deal with other players such as the magazine *Life*, Bonniers förlag and the German pharmaceutical company Boehringer Ingelheim.

The fact that Nilsson moved within different fields and that his images appeared in commercial as well as scientific contexts contributed to the attention his project was given. Particularly, his images of the human body had a significant impact, not least in the years following the successful landing of Apollo 11 on the moon. There was an interest in expanding the understanding of the world through photographs of the astronomically big and the microscopically small. The moon-landing in 1969 represents the desire to both see, discover and conquer parts of the universe that previously had been unachievable. In Nilsson's case, the gaze turned inward, towards the small world that had previously been unknown to the public.

Just as within documentary photography, storytelling was a central concern for Nilsson. His long experience as a press photographer also characterized the images of the inside of humans. But unlike the documentary photographer who habitually moves around in society with the camera, photographing what they see, Nilsson's photographs

in the exhibition reveal what is not visible to the naked eye, depicted in a laboratory setting. Technology and people interacting

Technology and people interacting

Visualization techniques underwent dramatic developments during Nilsson's active years, pushing the boundaries of what was possible to depict in images. Nilsson was a part of this development, and his vision, to communicate complex science in an understandable way to the general public, pushed him to work with new methods for imaging. In the finished images, there is little visible evidence of the laboratories, equipment, collaborations, and experimentation that led to the result. The smooth surface seems to erase the laborious process, and when the image is finally presented to the public, there is a significant distance to the laboratory.

When it comes to Nilsson's images, it is interesting to remind ourselves of the processes that preceded the image. Here are clues to how he went about becoming one of Sweden's internationally most renowned photographers, and it becomes clear that the interaction between people and materials is crucial for his success.

Nilsson was a well-known figure in scientific circles. This fact gave him the opportunity to photograph things that would otherwise be difficult to access. In his work, he depended on the assistance of researchers, doctors, laboratory assistants, and others. The long-standing collaborations he entered into were crucial for the creation of the images.

Due to the great attention Nilsson's images received nationally and internationally, he was allowed to install instruments at the Department of Forensic Medicine towards the end of the 1960s. The material conditions made it possible for Nilsson to realize his ideas, in collaboration with technicians and researchers. The laboratory became the hub for the exchange Nilsson had with researchers for many years. Here, he learned enough about the instruments he used to depict the body's inner landscape at the micro level.

Lennart Nilsson and objectivity

Similar to many contemporary documentary projects, it is not always clear where the line between the authentic and staged lies in Nilsson's images. The realities presented to the audience have elements of fiction, for instance where a fetus appears to be floating in space. Researcher Solveig Jülich describes that Nilsson's images are not so much about faithfulness to nature — being objective — but rather they were developed to educate and engage the viewer. However, Nilsson himself emphasized, in relation to his images created with scanning electron microscopy, that he was objective, and that subjectivity did not play a role in his image making.

In science, the ideals of objectivity have evolved, and objectivity and subjectivity are no longer necessarily in opposition. In the past, objectivity indicated a representation shaped without human influence. Today, greater emphasis is placed on objectivity that is legitimized through the expertise of knowledgeable professionals. The objectivity of images depends on the context in which they are presented, and Nilsson's images were both created and published in well-established and credible contexts, which contributed to them being perceived as reliable. His iconic images have been part of a knowledge apparatus with significant impact since they were first published. Whether they are objective or not, they have an aura of credibility and have convinced people since the 1960s that the early development of a fetus looks as in *A Child is Born*.

Ethical issues and controversies

When Nilsson's images circulated in magazines and other contexts, they became part of a narrative, such as the story of human life. There are also important narratives about Nilsson's working method and how the images have been used outside of the scientific realm, particularly the images of fetuses. They have been used in the reformation of sexual education, where Nilsson's close-up images of embryonic development inspired educational materials that could replace drawings and specimens. They have also been used in the anti-abortion movement — without Nilsson's consent — to generate public opinion against abortion.

The media coverage surrounding the abortion law in the 1950s, where Nilsson's photographs were presented, underwent changes over the decades, transitioning from strong opposition to acceptance of the legislation. This evolution is also reflected in Nilsson himself, who initially did not have an entirely progressive view, but later in life shifted towards a more positive stance on abortion, emphasizing personal choice and women's control over their own lives. As researcher Solveig Jülich observes: "Various interests and motivations were interlaced in the publication of Nilsson's early photographs of embryos and fetuses in Sweden: personal, commercial, political, and professional."

Although Nilsson managed to photograph a live fetus inside the womb as early as 1965, the majority of fetal images from the 1950s and 1960s were made in a tank filled with saline solution. These images depict fetuses from miscarriages, ectopic pregnancies, and legal abortions. What appears to be a starry sky is actually small particles from the placenta and bubbles in the water. Today, it would be difficult, if not impossible, to carry out a similar project. In January 2004 the Ethical Review Act of Research was passed, which requires all research involving the human body to undergo ethical review and approval. The different regulations in place during Nilsson's time allowed for entirely different possibilities than today.

Imaging technique: Scanning Electron Microscopy

In 1974, the cover of the Swedish Medical Journal (*Läkartidningen*) featured an image created by Nilsson using scanning electron microscopy. Through a collaboration with a Japanese manufacturer of scientific instruments, JEOL, Nilsson was able to rent advanced medical visualization equipment from the company, which could generate the most high-resolution images in the market. This method supplemented Nilsson's previous use of light microscopy and endoscopy.

Scanning electron microscopy, unlike conventional photography, does not rely on light being reflected. Instead, it employs an electron beam that is directed at the sample to scan it. In this method, electrons, not light, create the image. To generate an image, the sample needs to be

prepared with a thin metal coating, which creates a voltage difference between the emitted electrons and the sample. The interaction between the electrons and the atoms on the sample results in an image that depicts the sample's topography through bright and dark areas. Scanning electron microscopy portrays the world in black and white.

In dialogue with scientists, Nilsson reviewed the images and made a selection. Once the black and white scanning electron microscopic image was made, Nilsson photographed the image displayed on the screen. This was accomplished using a Hasselblad camera equipped with a special lens for capturing images at short distances, mounted in front of the microscope's screen. The biological material, the scientific instrument, the human element, and the camera all played an intricate role in the process of creating these images.

Subjectivity reveals itself

Something that unites Nilsson's works with more contemporary photography-based works is that the artist's presence is sometimes noticeable. Although self-portraiture was not a priority for Nilsson, he occasionally appears, as if to remind the viewer that there is an "author" behind the camera. Like in the image where he portrays himself through a fly's eye. The stereotypical idea of an old-school documentary photographer as a fly on the wall — perceived to believe he could neutrally record what played out in front of the camera — is evoked associatively in a picture from 1959. Here, a smiling Nilsson is seen holding a flyswatter as if to challenge the notion of a "fly-on-the-wall" perspective. The numerous images of eyes, both those of humans and other animals, also draw attention to the eye and the act of seeing.

Coloring of images

The black and white images created by Nilsson using the scanning electron microscope were then colored by the photographer and copyist Gillis Häagg. Their collaboration began in 1969 and continued for over three decades until their last work on *A Child is Born* in 2003.

However, most of the images produced with the scanning electron microscope remain black and white, as the process was very costly.

Häägg developed a complex coloring technique based on mathematical calculations to determine which tones to use. After Häägg and Nilsson had jointly decided on the color scheme, Häägg manually colored the negatives in a laboratory, a process that could take weeks for a single image.

Since Nilsson aimed to reach a broad audience with his images, the ability to color them was essential in attracting people's interest. The colors contribute to the sense of authenticity, at the same time as the complicated coloring process testifies to a complex artistic endeavor where aesthetic considerations hold as much weight as fact-based decisions.

Color photography was gaining ground in advertising and private photography during this time. However, despite its increasing popularity in some contexts, there was also skepticism, partly because color images were seen as too similar to reality. In scientific contexts, color images were far from uncontroversial. Some argued that scientific objectivity was compromised with color, as the detailed grayscale in the original image contained more information, and color provided an inaccurate representation of reality. Despite these reservations, Nilsson's images were also appreciated in the scientific community because his enthusiasm for medical images, combined with his interest in aesthetics, led to images that had not previously been seen.

Solveig Jülich has described this process in "Colouring the human landscapes: Lennart Nilsson and the spectacular world of scanning electron micrographs."

Forensic Architecture

Forensic Architecture's work demonstrates how photography, as the expanded field it is today, can be used to draw attention to urgent issues. Photography, which encompasses moving images and digital visualizations, enables the viewer to see what would otherwise remain hidden. Their work deals with human rights violations in cases where truths about the abuse have been distorted or kept secret from the public. Through extensive research, Forensic Architecture compile evidence which can be used to bring offenders to justice.

Unlike much other art, Forensic Architecture's projects serve instrumental purposes. The material they assemble is intended to be used as evidence to prove that crimes have been committed. Their research, or cases, are presented in both art institutions and court rooms. They work together with international organizations such as the United Nations (UN) and the human rights organization Amnesty International. The fact that they appear in such different contexts is linked to their aim: To support those who suffer from governmental violence and persecution.

Their methods demonstrate that art can at times resemble detective work. Using forensic procedures, which are scientific approaches to investigating criminal acts, Forensic Architecture investigates traces of crime. The evidence that is presented often has a material connection to architecture. While testimonies are formulated by humans, evidence is here connected to the existence of objects. For this reason, Forensic Architecture investigates and maps buildings and urban environments in detail to discern signs of violent acts. Traces that are almost imperceptible are exposed and contextualized.

With Goldsmiths College in London as the base, Forensic Architecture describes themselves as a research agency. The interdisciplinary team consists of architects, artists, filmmakers, software developers, scientific researchers and lawyers, who in turn collaborates with international organizations and other non-governmental organizations. The fact

that their works are deeply rooted in research can also be seen in how they are communicated. By introducing distinct concepts, that with precision describes why and how they work, Forensic Architecture takes control over the narrative. When they present their cases, they do so convincingly through well-crafted visual and verbal arguments.

Novel methods for establishing trust in images

Evaluating images in the same way as before the digital era is futile. When an image created by artificial intelligence looks just as realistic as a traditional photograph, new methods are required to assess the credibility of an image. How can we trust images when authentic images are side by side with Ai-generated images? How does the role of photography in society change when the majority of today's images no longer follow the same logic as traditional photography? And how can photography serve as credible evidence in an era where technology allows fabricated narratives to be formulated, materialized, and disseminated within seconds?

Maria Ressa, a Filipino journalist and Nobel laureate, has articulated the concerns of our times regarding the undermining of facts. Ressa argues that without facts, there is no truth; without truth, there is no trust, and trust is essential to solve the challenges facing the world. Photography is not automatically a proof of anything, but it has a crucial role to play in conveying truths. When the credibility of images is significantly undermined, there's a risk that photographs of historical and contemporary violations and abuses will no longer serve as evidence that something has happened.

Hence, new ways to trust images are required. Forensic Architecture has developed a procedure to address precisely the question of the credibility of an image. On their website, which plays a central role in Forensic Architecture's work, detailed descriptions of their process are recounted. A form of scientific transparency and openness is crucial in how they convey their work. By presenting the methods and techniques they have employed, they provide the audience with the opportunity to assess the credibility of the material themselves.

The engaged objectivity

In the realm of art, the concept of objectivity has faced severe criticism, particularly since the postmodern critique of objective truths in the 1980s. Objectivity has been linked to oppression and power, and has been viewed as both impossible and undesirable. How could objectivity be perceived, if not as an impartial, unbiased ideal? Eyal Weizman, the founder of Forensic Architecture, argues that a non-neutral objectivity can be seen as an important strategy in the pursuit of truths. He refers to this as "engaged objectivity," which indicates an objectivity that acknowledges that political motivations and subjective decisions impact the outcome.

Forensic Architecture's cases are based on what they consider important, and those personal motivations are a fundamental prerequisite for engaged objectivity. The engaged objectivity involves rigorous research standards but operates on the premise that objectivity is never entirely neutral.

Techniques for gathering evidence

Forensic Architecture's visual expression is distinctly contemporary. The techniques they use are far from those employed by the traditional documentary photographer. However, there are still documentary elements in Forensic Architecture's work. Their point of departure is in real events, and their work undoubtedly serves as a contribution to public debate. In contemporary photography, the presence of a camera operated by a human is not a prerequisite for the image. Forensic Architecture employs a range of various techniques in their work. They utilize surveillance images, 3D modelling, LIDAR scanning, photogrammetry, ground-penetrating radar, audio analysis, and lists categories like machine learning, simulation, and virtual reality on their website.

In *Situated Testimonies* in the exhibition, Forensic Architecture presents some of their methods for working with witnesses. By utilizing visual material, oral testimonies, and other techniques, they reconstruct events. In this process, memories play a crucial role. Peoples'

memories are often incomplete and hard to access, but by digitally recreating a sequence of events, a witness can be aided in remembering, and the reality is found within the digital reconstruction.

Forensic Architecture's technologically elaborate multimedia installations are developed to assist the dissemination of new knowledge. They compile, articulate, and display information. But the presentations and their working methods also seem to declare that complex questions demand advanced answers. In times of post-truth, the absence of reliable facts enables the dissemination of falsehoods. Forensic Architecture provides counter-images. Truth, Weizman argues, should be considered a resource that must be made public and shared to be effective.

**Albert Sten
Craig Ames
Kate Crawford & Vladan Joler
Krister Hägglund
Stephanie Dinkins
Tyrone Martinsson**

In the exhibition's project room space for reflection and contemplation in relation to new technology is created. Contemporary perspectives focused on how information and disinformation are introduced. The visitor partakes in examples of the digital visual technology's capacity to portray what actually exists but also digitally created images that lack a physical connection to what is portrayed. Based on the photo book *Evidence* from 1977 Craig Ames used text -and image generating AI-algorithms to create a digital whispering game in the series *Evidental*. The simulated photographs show the enormous progress made in a short amount of time to achieve photorealistic images, as well as showing the flaws and limitations of contemporary machine learning and AI-depiction. Unlike Craig Ames, Tyrone Martinsson bases his work on existing places that he visited. In his research about the Arctic he uses a number of different photographic methods in interdisciplinary research concerning climate, environment and historical descriptions of the polar landscape. In large-scale collaborative projects Martinsson builds on "rephotography" and digital visual techniques and practices using visual communication, in order to depict the human relationship to nature and bring attention to urgent topics on environment and climate.

Technology makes it possible to visualize and conceptualize our time's important challenges and threats but with artificial intelligence (AI) comes significant risks. In *Anatomy of an AI System* Kate Crawford and Vladan Joler map out the human work, data and planetary resources it takes to build and run one single unit of the voice-controlled speaker Amazon Echo. It's a systematic but incalculable description of human work and material resources that points to the actual costs – social, environmental, economical and political – of AI and machine learning. Except for the extensive human and material resources necessary for new technology there are problems linked to the information that is conveyed. The belief and hope that might have been tied to an epoch-making technology like AI being impartial have during the last few years been proven wrong. As a matter of fact AI continues to sustain unequal systems and structural discrimination is reproduced with the help of technology.

Stephanie Dinkins wants to contribute to greater knowledge about maintaining prejudices through algorithms and artificial intelligence. In *Conversations with Bina84* the relationship between human and machine is explored through a conversation between Dinkins and a humanoid robot with the capacity to express thoughts, feelings and facial expressions. The many years of conversation is a philosophical, humorous and at times frustrating dialogue about future, family, racism, gender, lack of diversity and social justice. It raises many questions about what it means to be human and how the bias that is built into technology is a result of human behavior.

Almost 200 years ago the first cameras were introduced. Today we find ourselves in a technological process of development that, similar to the groundbreaking power of early photography, gives humans the possibility to see and understand the world in new ways. In the piece *Mörkerseende*, Albert Sten uses a family photo album and explores what happens when the low-resolution, older pictures in the album are AI-generated into moving pictures. The returning eyes turn into a meeting with archive material, artificial memories and relatives but also invites the audience to examine how real the generated eyes are

perceived to be. In the project Stordiket, Krister Hägglund has returned to the same place for a number of years to document the shift of the place. The work, which began as a fascination for an archive image of a boy in a ditch, has over the years developed from a traditional rephotography to being infinitely recreated by using an AI-algorithm.

The expansion of technology calls for reflection: What images are being created and how is knowledge formulated and communicated during different time periods? What depictions are based on facts and which ones are made up? The perspectives that are introduced in the project room encourage a critical view on some of our time's innovative techniques and the images that are distributed today. Both possibilities and dilemmas that are brought on by technological development are in view, as well as the questions that appear in the wake of it.



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