

Review of The Generative Art Summit

From Camera to Artificial Intelligence 1954–2024

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ABSTRACT

This article describes the Generative Art Summit held at the Akademie der Künste Hanseatenweg, Berlin, in 2024, organized by the Foundation Herbert W. Franke. Franke, a pioneer of art and technology beginning in the early 1950s, was the inspiration for the summit, which brought together 70 invited guests of honor and gathered international participants to consider the origins, current state, and potential future of an art form that is finally achieving wider recognition. Demonstrative of the wide reach of digital art now, more than 350 attendees shared and debated the history and practice of computer and generative art across generations and around the globe.

The reach of digital art now is wide. To use Herbert W. Franke's term—the “Instrumentarium” [1], that unique collection of equipment and instruments for the practice of machine and electronic arts, has expanded massively since the 1950s, as have the numbers of artists working in this field. Just how much so and its resulting impact on the art world were demonstrated by an exceptional event held last year that celebrated seven decades of developments in machine art: the *Generative Art Summit: From Camera to Artificial Intelligence 1954–2024* was held in Berlin 2–6 July 2024 at the Akademie der Künste Hanseatenweg (Academy of Arts) by the art-meets-science Foundation Herbert W. Franke. The foundation was established in 2022 to honor the life's work of the visionary Franke. The summit invited about 70 guests of honor and gathered international participants to consider the origins, current state, and potential future of an art form that many argue is now finally coming into its own. With more than 350 attendees (speakers and delegates) from America, Australia, Europe, and Asia, the foundation's aim of fostering dialogue about the history and practice of generative art across generations and the globe was achieved with great success.

As will be known to *Leonardo* readers, Herbert W. Franke (1927–2022) was one of the great pioneers of an art made with machines and algorithms, striving to find rules that could be applied to aesthetics. A polymath, Franke pursued

a career spanning physics, academia, photography and machine art, algorithmic art, exhibition curation, writing of texts about art, plays and science fiction novels, speleology, and the founding—together with colleagues in 1979—of Ars Electronica in Linz. Additionally, Franke was one of the first to start documenting the history of computer art with his groundbreaking book *Computer Graphics—Computer Art* (first published in English 1971), which helped to define the nascent field. He was an honorary editor and regular contributor to *Leonardo* from its very beginning.

The summit was organized with great finesse by historian of science Susanne Paech, Franke's widow and head of the foundation. Each invited speaker had a connection to Franke—artist friends, colleagues, and people who worked or corresponded with him as researchers. The younger artists met him in the latter years via social media or discovered his (popular and successful) Math Art NFT drop in 2021. Active and curious to the end, Franke was pleased to encounter a community of generative artists on X who were continuing to explore some of the ideas he pioneered seventy years ago. As for myself, I corresponded with Franke about an article I was writing in 2012–2013 and recall his generosity in allowing me to be the first to publish a work from his *Intarsia* series, programmed with the software system *Mathematica* for the Wolfram Demonstrations Project [2]. This was ahead of publication in the journal *Grundlagenstudien aus Kybernetik und Geisteswissenschaften* as “Stetigkeit—ein ästhetisches Ordnungsprinzip” (Continuity—an Aesthetic Principle of Order). I was honored to participate in the Summit, helping to recover some of the forgotten work of British pioneers of creative computation, specifically George Mallen's early work with the Computer Arts Society from 1968 to 1973 [3].

Enormously productive from a networking perspective, the Generative Arts Summit was also valuable for encountering new art and hearing from the wide range of people working with it. Drawing together artists; theorists; historians; curators; collectors; representatives from museums and galleries; specialists in AI art, NFTs and crypto art, moving images, interac-

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tive art, dance and performance, poetry and visual text, as well as historic computer art, the five-day event demonstrated the wide range of practices coming under the banner of generative art today. Rather than making futile attempts to pin down a single definition, this summit embraced the sheer exuberance, vitality, and diversity of approaches, processes, methods, and techniques that involve machines, systems, and digital computing from its origins to the present day.

Perhaps the summit's greatest achievement was how it fostered debate and exchange of information between participants from different sectors. Particularly interesting was the mix of generations, facilitated by Paech, who were able to meet and inspire each other. Younger artists presented their innovative artworks and performances in reference to the history of computer art. They were noticeably thrilled to engage with the more senior members of the community included in the summit: pioneers of the medium from the 1960s and 1970s, with Hein Gravenhorst, Frieder Nake, Hans Dehlinger, and Joan Truckenbrod among them. The older generation was excited to find the younger demographic's enthusiasm for an art form, now over half a century old, that in its infancy had barely registered in the wider art world. Ernest Edmonds, a British first-generation pioneer of this field since 1969, said, "One of the best things about the Summit was talking with younger artists, saying how much I admired their work and them saying how much they agreed with what I had said. A true coming together of the generations." This view was echoed by Truckenbrod, who, working with the digital medium since the early 1970s, called the Summit an "insightful synthesis of diverse perspectives." She continued, "Particularly exciting for pioneering digital artists was discussions by younger artists—stating 'they were standing on the shoulder of these pioneers'; I was [especially] honored to hear this during the presentation of the dancers [Ania Catherine and Dejha Ti, known as Operator]."

It was appropriate that Frieder Nake, seen in Fig. 1, as probably the most senior pioneer in attendance at the summit, started the presentations with a rousing lecture in which he pointed out that "art is always generative, or it is not at all." Another of the first founders of computer art, the American

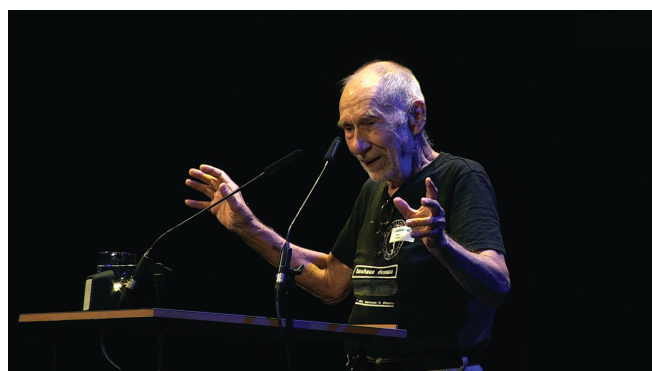


Fig. 1. Generative Art Summit, Berlin, 2–6 July 2024: Frieder Nake, presenting on stage at Akademie der Künste Hanseatenweg (Academy of Arts), organized by Art Meets Science, Foundation Herbert W. Franke. (© Art Meets Science—Foundation Herbert W. Franke)

A. Michael Noll, thrilled conference-goers with a video presentation from his home in New York. This was a valuable opportunity to hear firsthand about his experiences creating some of the first computer art at Bell Labs in 1963. He said this unofficial work took place part-time "because it was fun!"

Throughout the duration of the gathering, artists talked about their work, practices, and influences. Additionally, several art historians put developments into historic context, and panels regularly convened on stage for discussions. Under the title "Hall of Fame," the first day focused on the pioneers of the 20th century, who laid the foundations for following generations. As contemporary witnesses, they reported on the beginnings of an art form that for decades developed largely outside the mainstream of traditional art. All of them through their work opened up completely new techniques and avenues for art, and some have even helped to develop them. The second day was dedicated to the 21st century, with focus on generative art exploring blockchain, Web3, and AI. There were many memorable moments among the 32 presentations—too numerous to go into detail about here. The intention with this review is to give a flavor of the event's extent. Several strands were brought together, including a recognition of the history and legacy of pioneers, as well as a celebration of emerging practices and the art world's new interest in generative art.

It is emblematic of the time we live in that this sort of work now has far greater reach and broader acceptance. Edmonds highlighted this change in attitude that became clearer as the Summit progressed when he said, "One of the big differences between the experiences of the 'pioneers' and the younger artists is that we had to operate outside the established art world, and now everything connected to NFTs or AI is big news. In the early days, apart from important exceptions . . . we made our own opportunities to show and discuss our work." The summit included many examples of historic work that was going on outside the system from the late 1960s through to the 1980s. In the past five years or so, there has been a serious shift toward rectifying some of this underrepresentation; this change would have been unimaginable to people working back in the 1970s—many of whom felt overlooked by galleries and excluded from the art market.

On the historical side, Margit Rosen of ZKM gave a talk about electric analog computers and how one of Franke's early inspirations was Ben Laposky's specially modified oscilloscopes, as seen in Fig. 2. Art historian Grant D. Taylor's presentation pointed out the burden of the future on these digital artists that is not felt by those working with other mediums—oil painters are not continually asked to justify the latest polymer acrylics, for example.

Caroline Csuri, daughter of pioneer Charles (known as Chuck) Csuri, worked closely with her father throughout his career and gave some historical insights into his work (see Fig. 3). At Ohio State University in 1966, Csuri sought the collaboration of programmer James Shaffer to create his first computer image. Csuri was also the first artist to be awarded a National Science Foundation grant; however, he was told to keep it quiet due to the controversy of linking science with



Fig. 2. Generative Art Summit, Berlin, 2–6 July 2024: art historian Margit Rosen on stage at Akademie der Künste Hanseatenweg (Academy of Arts), organized by Art Meets Science, Foundation Herbert W. Franke. (© Art Meets Science—Foundation Herbert W. Franke)

art in those days. It was pioneers like Nake, Noll, and Csuri who pushed open resistant doors for the current generation's expansion upon their groundbreaking work.

The Croatian Tomislav Mikulic reported how he started to produce computer art movies in the early 1970s. William (Bill) Kolomyjec spoke about accessing computer systems at Michigan State University in 1973 and recounted meeting Franke in 1974.



Fig. 3. Generative Art Summit, Berlin, 2–6 July 2024: (L-R) Caroline Csuri representing the estate of Charles Csuri, art historian Grant D. Taylor, artist Reiner Schneeberger (with his work showing on the screen), Benjamin Heidersberger representing the estate of Heinrich Heidersberger, and artist Hans Dehlinger, discuss their practice on stage at Akademie der Künste Hanseatenweg (Academy of Arts), organized by Art Meets Science, Foundation Herbert W. Franke. (© Art Meets Science—Foundation Herbert W. Franke)



Fig. 4. Generative Art Summit, Berlin, 2–6 July 2024: artist duo Christa Sommerer and Laurent Mignonneau present at Akademie der Künste Hanseatenweg (Academy of Arts), organized by Art Meets Science, Foundation Herbert W. Franke. (© Art Meets Science—Foundation Herbert W. Franke)

Artist duo Monika Fleischmann and Wolfgang Strauss talked about their multimedia work beginning in the 1980s, which involves self-developed interfaces—tools (mechanical or literal) that they use to make connections between people and machines. As seen in Fig. 4, another media artist duo, Christa Sommerer and Laurent Mignonneau, shared their recent interactive work inspired by biology, which included portraits produced with their code of hundreds of digital flies that, like a living system, move around as pixels before settling to form an image.

The personal computers of the 1980s were covered by Geoff Davis, in his talk “Small but Beautiful: 1980s Micro Computers as a Tool for Artists.” William Latham, who also started working in the 1980s with a-life (artificial life) and generative evolution in an interdisciplinary British think tank, expounded on his artist-as-gardener approach. Latham also joined in a discussion with Paech and Eric de Giuli, assistant professor of physics at Toronto Metropolitan University, to talk about “Being a Scientist and/or an Artist?” and how aesthetics can coexist with the rationality of science, with which generative art is intrinsically entwined.

Of note was work that incorporated the body with the performative nature of digital and virtual artwork, such as Operator's energy-infused presentation. Artist and AI technologist specializing in voice Reeps One (Harry Yeff) gave an amazing cross-modal performance of his signature beat-box vocal percussion technique. Poet Sasha Stiles read aloud from her 10-part generated poem *The Orchid Cage*, which forms part of the *Tribute to Herbert W. Franke Collection* commissioned by the foundation. Written and visualized in conjunction with Stiles's AI-powered alter ego, *Technelegy*, the poem honors and tests Franke's often-mentioned assertion that the computer is a universal art machine, but using them to create poetry is undoubtedly the most difficult task of computer use in art. The poem had the entire audience on the edge of their seats, and Stiles's words together with her powerful delivery certainly made hairs stand on end. Poetry was also performed by Ana Marie Caballero, who read *Pome* as a contribution to the *Tribute to Herbert W. Franke*. This was another emotive experience, reminding the audience that, in Caballero's words, “Poetry generates visceral



Fig. 5. Generative Art Summit, Berlin, 2–6 July 2024: (L-R) organizer Susane Paech, artist Sougwen Chung, artist Mario Klingemann, and curator Sabine Himmelsbach discuss their practice on stage at Akademie der Künste Hanseatenweg (Academy of Arts), organized by Art Meets Science, Foundation Herbert W. Franke. (© Art Meets Science—Foundation Herbert W. Franke)

introspection, which grows in importance in our increasingly outward-facing worlds” [4]. A panel with Caballero, Edmonds, and artist Aaron Penne discussed the importance of communities in the reception of this art, including historic ones like the Computer Arts Society and contemporary ones found in social media and Web3.

In a panel moderated by me, “Woman in a Man’s World,” Truckenbrod and Mechthild Schmidt-Feist discussed the insight and persistence necessary to create artwork in a realm historically dominated by the male perspective. Julia Staudach, the co-founder of CryptoWiener pixel art; Rosen; and Sabine Himmelsbach, director of HEK, Basel, discussed issues of preservation and conservation: particularly pertinent concerns for an artform that can be ephemeral or realized on equipment that dates rapidly. Paech led a panel about AI art, in which Himmelsbach provided some historical background to AI art, including Harold Cohen’s work with AARON, before Paech and Himmelsbach discussed contemporary artists’ use of AI with artists Sougwen Chung and Mario Klingemann, as seen in Fig. 5.

The commercial aspect of generative art today in the form of NFTs was considered by curator Anika Meier of Expanded Art, who brought her extensive knowledge of the contemporary art market to two panels. She explained that the invention of the blockchain solved problems many artists had with physical artworks by allowing more transparency, giving them a secure space to exhibit and a new mechanism for sales and collection while avoiding expensive costs like shipping. Meier conversed with artists Stefano Contiero, Marcel Schwittlick, Travess Smalley, and Zancan about the shifting borders of art today. Artists Ivona Tau, Wassim Alsindi, Ciphrrd, and Seth Goldstein, who all work with NFTs, gave opinions about the future of NFTs in art. The possibilities afforded artists by Web3 was discussed by artist and commentator Julia Schicker with artists Aleksandra Jovanic, Sarah Ridgley, and Jeff Davis. Schicker pointed out that it is now almost impossible to imagine contemporary generative art without blockchain. Further perspectives on the diversity of practices to be found in generative art today were provided by artist Jonas Lund, Pixelboy, and a panel held by Clara Herrmann of the Akademie der Künste, who talked with art-

ists Anna Lucia, Alexander Grasser, and Bernhard Nissler, co-creator of CryptoWiener.

Le Random’s presentation unfolded from the point of view of an organization that collects, exhibits, and contextualizes generative art, including pioneers such as Nake and Analivia Cordeiro, as well as that of younger artists who built upon their legacies. Attention was drawn to their ongoing Generative Art Timeline edited by Perer Bauman, which explores a 70,000-year history of generative art through hundreds of milestones.

Another important highlight was the conversation between Paech and the collectors Michael and Anne Spalter. This was a rare personal view into their extensive collection (over 2,000 works) of historic and contemporary digital art. Anne Spalter, herself a significant artist, is represented in the *Tribute to Herbert W. Franke Collection* and has been an advocate of digital art for 30 years. From a time when no one cared about or wanted to collect this work—initially, the Spalters themselves were even met with derision—they are now favorably impressed by the growth in curators and scholars. Indicative of the change in status of digital art is the fact that works from their collection are now regularly loaned to major museums and exhibitions internationally. Michael Spalter said that getting to hear the range of people speak at the summit was “beyond a treat” and “miraculous for people who follow this field.”

An evening film program, beautifully curated by Larry Cuba, pioneer of computer-generated film, included 39 films by 33 artists. It opened with Franke’s *Tanz der Elektronen* (Dance of the Electrons) from 1958 and included early animations by Stan VanDerBeek, Ken Knowlton, and John Whitney Sr., as well as two from 1967: Charles Csuri’s *Hummingbird* (Fig. 6) and Tony Pritchett’s *Flexipede*—the first full computer animation made in Britain. Accompanied by excellent commentary from Cuba, the program featured marvelous films by Jane Veeder, Barbara Sykes, Ed Emshwiller, Rebecca Allen, John Lasseter, Chris Wedge, and Paul Debevec—to name just a few—presented on a large theater screen, where they looked outstanding. Several audience members mentioned there were films they had never encountered before

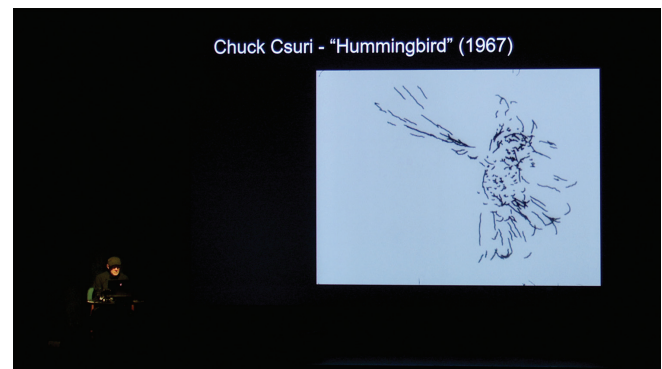


Fig. 6. Generative Art Summit, Berlin, 2–6 July 2024: Larry Cuba’s film night at Akademie der Künste Hanseatenweg (Academy of Arts) organized by Art Meets Science, Foundation Herbert W. Franke. (© Art Meets Science—Foundation Herbert W. Franke)



Fig. 7. Generative Art Summit, Berlin, 2–6 July 2024: scene from *Sandfiction 4K: The Orchid Cage*, performed by Kaleidolux, at Akademie der Künste Hanseatenweg (Academy of Arts), organized by Art Meets Science, Foundation Herbert W. Franke. (© Art Meets Science—Foundation Herbert W. Franke)

or only as clips on YouTube. The inclusion in the program of Cuba's own work (*Two Space*, for example) was also very well received. "Incredible," posted Aaron Penne on X, "I had the great fortune to watch it in a theatre presented by Larry himself at the Generative Art Summit" [5].

The film night was rounded off with a presentation of Yoichiro Kawaguchi's *Wonderworlds* in 3D. Computer animation pioneer Kawaguchi presented a selection of his spectacular work based on upon his GROWTH Model, a self-organizing approach to developing a formative algorithm of a complex life form in development since 1982.

On the final evening of the summit, a stage performance "Sandfiction 4K: The Orchid Cage," based on Franke's sci-fi novel *The Orchid Cage*, was performed for the first time in English by artist group Kaleidolux, as shown in Fig. 7. The imagery created by the sand painter and projected behind the performers on a large screen corresponded with the rhythm and velocity of the sound, as well as the density of the performance. Several attendees called this the highlight of the summit and a powerful culmination of ideas raised during the five days. Paech explained,

The event at the end of the summit takes today's controversial debate about whether AI can support artists even further in the future. Herbert's parable raises the question of whether humans can create an artificial intelligence that

will be a moral and all-encompassing happiness machine that fulfils people's every wish and thus leads them into an evolutionary horror scenario.

This multimedia theater production incorporated an actor, two musicians, and a sand painter who interpreted Franke's classic text about the evolution of mankind in a high-tech entertainment cyberworld. Dealing with issues of AI that are still being debated today, Franke's 1961 novel asked, "What are the machines supposed to do? What they are programmed to do . . . but what if they determine themselves?" A new English translation of *The Orchid Cage* was published by Springer to coincide with this event. For Truckenbrod, "The ephemeral and fleeting nature of the sand paintings reflected the multiple realms of digital artworks presented at the Summit, from artificial virtual realities to artworks with a materiality and a physical presence."

The conference program was concluded with a day excursion to the Institut Heidersberger in Wolfsburg Castle and a viewing of the *Code—Kunst—Konstruktionen* exhibition at the Städtische Galerie Wolfsburg, seen in Fig. 8. A tour of the studio of photographer Heinrich Heidersberger and a demonstration of his "Rhythmograph" from 1953 was given by his son, the artist Benjamin Heidersberger, founder and CEO of the institute, who had given a presentation at the summit two days before. Physical and digital art works were on view in the gallery. Truckenbrod commented on the importance of "changing the context of generative art from the academic setting to the art gallery and experiencing the trajectory of this artwork." Physical works from the *Franke & Friends Collection* included artists Frank Malina, Vera Molnar, Frieder Nake, Casey Reas, Sylvia Roubaud, and others from a collection built up by Franke and Paech from their global network of these artists from the 1950s onward. Digital works came from the extensive *Tribute to Herbert W. Franke Collection*. In 2022, around 80 generative artists, photographers, poets, and virtual world builders working today were invited by the foundation to honor Franke's life and work. Artists included Kevin Abosh, Christian Bök, and Sophia Crespo, to name only a few. The proceeds from the *Tribute to Herbert W. Franke* support the development, preservation, and public



Fig. 8. Generative Art Summit, Berlin, 2–6 July 2024: view of the *Code—Kunst—Konstruktionen* exhibition at the Städtische Galerie, Wolfsburg. (© Art Meets Science—Foundation Herbert W. Franke, Photo: Jasmina Matzke.)

access to Franke's art. These digital works were displayed on a screen in the lobby of the Akademie der Künste, and many of the artists represented in the collections participated in the summit.

Franke believed that with the invention of the computer, a dialogue was made possible that opened "completely new forms of artistic expression by allowing the audience to intervene in the aesthetic structure" [6]. The summit excelled in demonstrating some of these new forms and the joys and challenges of working with them. The fact that it did this in the real world was a delight. As an audience member, art and technology researcher Linda Candy, said, "the power of direct communication, the warmth and immediacy of human-to-human communication, cannot be underestimated." The Herbert W. Franke Foundation is to be commended for facilitating the important recovery of an underrepresented art form, making it accessible to the growing community of thousands of

artists working in generative art today while continuing its legacy into the future. As Caroline Csurí shared with me, "All artists learn from art history. The Foundation's program of cross-generation exchange is pivotal in the educational understanding of current and future generations." Young artist Licia He echoed the thoughts of many when she posted on X: "Many thanks to the organizers for bringing us together. I hope there are more like this!" [7]

More information about the Generative Art Summit, the *Franke & Friends Collection*, and the *Tribute to Herbert W. Franke Collection* is available on the Foundation's websites: <https://art-meets-science.io/en/> and <https://www.tribute-hwf.com/>.

The recordings of the Generative Art Summit and additional artists' statements are available to watch on YouTube: <https://www.youtube.com/playlist?list=PL2wu3n5K2D6ypn3x6MvosUco3rIx6rZRt>

References and Notes

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