

Decentering Human Control: A Dialogue on Social Robotics in New Media Art with Japanese Artist Kanno So

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Abstract: The article presents an interview with Japanese new media artist Kanno So. Kanno's artworks engage extensively with robotics, positioning robots as interlocutors of multi-media practice which traces cross-cultural topologies in between Japan and Europe. The conversation on 11th of September 2023 navigates through Kanno's core projects, such as "Senseless Drawing Bot," "Lasermice Dyad," and "Kazokutchi Robots," which collectively exhibit the nuanced interplay of human-robot interaction (HRI). In these works, Kanno's works become sites of experimentation and resilience, delving into the liminal space in between machines' self-organization and human control, inscribing a cross-cultural journey into uncharted territories of human-robot relationship.

Keywords: New media art, social robotics, human-robot interaction (HRI), cross-cultural robotic art.

人間のコントロールの非中心化：日本のアーティスト菅野創と のメディアアート におけるソーシャルロボットについての対話

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要旨: 本記事では、日本のメディアアーティストである菅野創氏に関するインタビューを紹介しています。菅野創氏の作品は、ロボットとの多岐にわたる関わりを通じて、日本とヨーロッパの間の異文化間トポロジーを辿るマルチメディア実践の対話者としてロボットを位置づけています。2023年9月11日の会話では、「Senseless Drawing Bot (センスレス ドローイング ボット)」、「Lasermice Dyad (レーザーマウス ダイアド)」、及び「かぞくっち」など、菅野創氏の主要プロジェクトを通じて、人間とロボットのインタラクションの繊細な相互作用を示しています。これらの作品で、菅野創氏の作品は実験と回復力の場となり、機械の自己組織化と人間のコントロールの間の境界領域に深く潜り込み、人間とロボットの関係の未知の領域への異文化間の旅を記録しています。

キーワード: メディアアート、ソーシャルロボティクス、ヒューマンロボットインタラクション(HRI: Human-Robot Interaction)、異文化間ロボティック アート。

Kanno So (菅野 創, born 1984) is a distinguished Japanese media artist based in both Berlin (Germany) and Aichi (Japan). Kanno is celebrated for his innovative works exhibited in prestigious international art venues, including Miraikan, Museum of Contemporary Art Tokyo, and Grand Palais in Paris. Kanno experiments with robotics and autonomous systems, his works exploring the evolving dynamics of human-machine interaction have gained worldwide recognition with multiple art awards, such as 21st and 22nd Japan Media Art Festival Excellence Award, among others.

"Senseless Drawing Bot" (2011) (Figure 1), a collaboration with artist Yamaguchi Takahiro, stands out as one of Kanno's most acclaimed art installations. The piece features a double pendulum graffiti arm mounted on a skateboard. The chaotic movements generate spontaneous graffiti on a white wall, on which the robotic painter creates impromptus of colorful strokes with random trajectories. The work raises questions to the role of the autonomous machine as a creator through its random and "senseless" actions.

During the pandemic, Kanno created "Lasermice Dyad" (2020) (Figure 2), an ensemble of over a hundred units of "lasermice" – small robots that emit and detect red and green light. The furry animal-like robots change their color when illuminated by laser rays of the different color: when a robot with red light shoots its laser ray on a robot with green light, the robot with green light changes into red. The complex dynamics of shifting colors mirrors the virus infection and the surge in protests that are characteristic of the period.

In 2022, collaborating with Kato Akihiro and Watanuki Takemi, Kanno created the new piece "Kazokutchi" (Figure 3), in which diminutive mobile robots simulate hosting organisms, or "houses." When in proximity, two robots have the chance of mating and giving birth to a new "egg" in the form of a NFT (non-fungible token), which can be traded and tracked on the blockchain. As an "artificial life," the egg or the NFT is also subject to the cycle of life and death, suggesting a financialized iteration of the iconic toy Tamagotchi – the legendary digital pet that gained global popularity in the 1990s. However, amid the NFT hype, in contrast to the much cherished digital Tamagotchi pets, Kanno's Kazokutchi eggs are treated by buyers more as an investment product, rather than creatures warranting care. Kanno prompts critical reflections on how the blockchain technology facilitates the monetarization and traceability of virtual care and affect.

I had the opportunity to interview Kanno So on 11th of September, 2023, having a conversation about his practice within the cultural contexts of both Japan and Europe. In the interview, Kanno So shares his experience in robotics and discusses how he navigates and integrates the diverse cultural milieus in Japan and Europe. The dialogue spontaneously touches upon a range of topics,

including social robotics in Japan, Kanno's latest project, decentered human–robot interaction (HRI) design, swarm robotics, and the integration of NFTs. My reflection on Kanno's works leads to a comparative analysis of the cultural contexts of robotic art in both Japan and Europe, opening ways for broader discourse on the evolving narratives in robotics and new media art.

Xu: It's a pleasure to interview you and discuss your journey and practice in the realm of robotic art. As an artist in the new media field, who regularly engages with robotics and autonomous systems, could you share your perspective on how robotic art intersects with social robotics?

Kanno: Pepper, invented by a telecom company as a companion robot, was designed to socialize in public scenarios such as shops and offices. However, in the end, it was a failure, and they were not as commonly used as originally thought. Many people captured images of these robots when they malfunctioned or were stored in the storage area. When obsolete and out of use, they "rest" in a position with their heads down, appearing depressed. (Robertson 2018)

Within the social robotics industry, only cleaning robots have become a part of the everyday life of Japanese people. Vacuum cleaner robots are among the few robot products available for purchase in the digital media market. The world of social robotics is characterized by numerous failed or aborted startup projects. For instance, startups such as Jibo robot had a brief moment of success but ultimately failed spectacularly. A significant challenge these companion robot startups faced was natural language processing: should robots communicate like humans? The general consensus seems to suggest "no." Once a robot begins to speak like a human, users develop high expectations for its ability to communicate in human languages, imagining these robots to be highly intelligent. However, these small startups didn't have the resources to make their robots communicate as efficiently as devices like Google Home or Amazon Echo. In this arena, it's impossible for startups to compete with tech giants. For a company, merely having a cute design wasn't enough, and many of them failed. Interestingly, while many humanoid robots didn't succeed, others like Para, the robot seal, became popular. Recently, a company in San Francisco that uses robots for delivery caught my attention. There's a TikTok account that humorously critiques them. When several robots gather, the account jokes about them conspiring against humans. Even though the content creator had strong emotions and dislike for the robots, after posting about them so frequently on TikTok, it seems he might started to like them. The dynamics of changing perception regarding robots intrigues me a lot.

I came across an interview with Hirata Oriza where theatre directors expressed their wish for actors to emulate robots, because of their flawless performance. However, when it comes to improvisation, robots typically fall short, making them less captivating. In my view, a short video

is much like a reality show. Without elaborate planning and scripted productions, creators of these videos don't have the luxury for extensive staging. Instead, they capture reality, and that's a fascinating dimension for me.

For the upcoming project I'm collaborating with other artists on the Kazokutchi robots. We find this concept almost comedic, yet we chose to pursue it. In Japan, children's TV programs often feature fighter rangers in colorful suits. We've decided to utilize retired or second-hand cleaner robots to act as rangers (or "Crangers"). Interestingly, in Japan, vacuum cleaners were the only robot product that gained popularity. As consumers purchase the latest models from various manufacturers, older versions get discarded. In this performance, these discarded robots convene, starting a new life together. They share the sentiment that although being accused of stealing jobs, they now find themselves being replaced by newer generations. In this scenario, without any "unemployment benefits" or "medical care", the robots are pushed to freelancing and other work opportunities. While this narrative is fictional, it draws from tangible realities. Currently, we're sourcing old robots from eBay and other secondhand platforms. It's interesting that some of these robots come with modifications; for example, a robot with a malfunctioning wheel was put up for sale. This defect, however, becomes a special character in our robot play. When it comes to these vacuum cleaner robots, in most cases, only the original manufacturer can undertake repairs, but different from thirty years ago, nowadays companies are driven by sales, tending to deny the warranty of after-sales repairs.

Xu: The story is very humorous, nonetheless, it touches upon how late capitalism has encouraged the production and consumption of unsustainable electronic products, the concept of your work links this fact to the right to repair. It's a common practice for companies to intentionally reduce the life expectancy of electronic products to promote the frequent replacement of outdated and easily-broken products. It's an increasingly pressing problem to dispose electric waste, a large part of which is non-recyclable and pollutive. Apple has been advertising the recycling robots that take apart and categorize old phone parts for recycle. However, the extent of repurposing of the waste remains unclear. In addition to the questionable consistency in the extraction of lithium and the labor conditions and devastation for natural environment, personally I'm very skeptical about the efficacy of robotizing phone recycling. This needs much deeper investigation to determine whether similar acts of repurposing electronic waste are truly more than corporate social responsibility campaigns. (Laser and Stowell 2020)

In another light, could you talk about how you embarked on the field of robotic art? How did your practice lead to robotic works such as "Senseless Drawing Machine" (Figure 1)? As early as 2011 and 2012, you created the iconic piece "Senseless Drawing Machine," which features the

autonomized graffiti robot. The rough looking machine, utilizing the kinetic momentum of the double pendulum, sprays paint when it reaches certain motion threshold. Can you share more about how you arrived at this concept? Can you detail the mechanism of control and automation in this work?



Figure 1. Installation "Senseless Drawing Bot" exhibited at 15th Japan Media Art Festival, 2012. Photo by Yamakami Yohei.

Kanno: I began collaborating with my friend, Yamaguchi Takahiro, on the drawing robot; we were working on our individual projects before embarking on this new work. I was interested in incorporating a double pendulum, while he brought his experience with graffiti to the project, we combined our interests. The story was also interesting: as human arms are basically a double pendulum, the random trajectories of the graffiti pendulum is like the human act of creating graffiti on the streets. Traditional graffiti is finished with the artist's "tag," however, this robot was created only to draw with randomly beautiful trajectories without tagging its artist name. It doesn't make any political statement or serve as an extension of an artist's ego, the sole purpose was to make beautiful lines, and that was the concept and the storyline we were weaving into the art of the drawing machine. Interestingly, the programming behind the robot's movements was using the same code, alternating from seconds to the left to seconds to the right, then reading the pendulum's direction to enhance its movement, so the skate can go to the other side. The double pendulum introduces chaos, as even a slight variance can lead to a completely different outcome. At that

time, there was also a trend in media art towards highly controlled robotic art, which we found less interesting. We don't like control, although it can be convenient at times but it's not always interesting. The beauty of control is apparent, but it lacks the fascinating unpredictability that we value in art. This preference for chaos led to an interesting conversation when a curator asked if the robot was controllable, and we were clearly opposed to this concept, diving into the unpredictable chaos. Over several years, we continued to work on this theme, combining randomness with intuition, and technically, we try to explore random combinations of things to discover interesting possibilities.

We made another work following the exact same philosophy. We constructed a remote-controlled robot known as "avatar." I had the idea of using wheels and iPads—a now popular method for navigating company meeting remotely. We thought about buying twenty of these models (with screens on wheels) to make a space where only this kind of robot could enter — an environment with no human, filled only with robots. My partner and I experimented with animating everyday objects, such as chairs, to create mobility. We made everyday objects move and turn, and we reached a point where we tried to robotize everything. We used readymade devices and everyday objects, this approach was very different from the tendency in robotic industry or robotic artworks to build robots from scratch, which are often under the fixed impression of creating humanoids. Designing human-like robots is not only challenging but often results in an uncanny appearance. Instead, by using familiar existing objects whose movements already appear lifelike, we can create the impression of aliveness, making them seem alive without imitating human. It's not necessary for a robot to imitate the human form to be perceived as lifelike. We naturally pay close attention to objects that begin to move, and viewers often start to feel some level of liveliness, assigning pronouns such as "he" or "she" instead of "it" to these animated objects.

During an exhibition, we connected all these everyday objects to the internet. The exhibition space allows visitors to walk in and interact with these moving objects, which are remote-controlled from somewhere else in the world. This work earned some recognition although we struggled with making this enormous and complicated project. We titled the project "Avatar" also because the word sounds familiar and plain. The visitors, unaware of what they were controlling, had to figure it out by testing the possibilities of movements. This concept of gradually figuring out what one is was inspired by Franz Kafka's *"The Metamorphosis,"* where the protagonist takes time to adjust to his transformation into a beetle. For example, in a gaming environment, adapting to different viewpoints can also require some time for the gamers to reorient themselves. And we wanted visitors to take their time in figuring out which objects they are operating. The experience of observation can vary across different devices, for example, among many objects, the telephone, which is something you can make calls with, is stereotypical of the modern communication

technology. In another scenario, the user can discover that they are represented as a moving stone. Moreover, we equipped a vacuum cleaner robot with a camera, it gives a unique view often dominated by the sight of children's feet, playfully obstructing its path when interacting with the robot. As an operator of the vacuum cleaning robot, wherever you assign the robot to move, kids will be blocking in the exact direction with their feet. This viewpoint emphasized how perspective is important in our perception of life and interaction, seeing so many naughty children from the vacuum cleaner's perspective can be quite frustrating [laughter].

Through these experiences, we learned that the slightest movement could blur the line between the animate and inanimate.

Xu: I'm really interested in the interactive dimension of your artwork, which transcends human-centric perspectives. For instance, one can witness spontaneous interactions between the gravity-driven kinetic pendulum and the reactive forces of the paint being sprayed onto the wall. The way you "choreograph" these movements is captivating, even though it does not involve direct human control. The simple mechanism consistently generates different movements, highlighting the artwork's materiality. It functions as a cybernetic system that continuously recalibrates, subtly incorporating the nuances and marginal differences it encounters, to consistently perform beyond expectations with the same code.

Kanno: Feedback is a beautiful thing to me, especially within swarm systems. These mostly arise from the inevitability of natural system interactions. In the context of robotic arms, replicating the exact conditions of the real world within a calibrated 3D model is challenging; this difficulty is often why robots tend to fail outside of factories and laboratories. For example, in autonomous driving, robots rely on pre-programmed simulations rather than engaging with a real-time feedback system. However, swarm robots are different; they are interaction-based. I believe that for an accurate adaptation to reality, a feedback mechanism is essential. The movements generated by such systems are remarkably lifelike, and these lifelike qualities depend on the feedback mechanism.

Xu: Currently, there is a significant trend towards "human-centric interaction" in the realm of robotic design. However, you have chosen to focus on the interaction itself, adopting an interaction-centered design approach where elements like light, sound, gravity, and noise are integral participants. I find this approach to be a more engaging form of interaction than merely programming robots to serve human needs. Regarding the drawing robot, I'm curious about the choice of the name "senseless," because the robot displays a lively, impromptu presence to the audience. It seems to suggest that the machine operates without an artistic ego or the intention to

convey any political statement. Could you explain the reason behind this naming?

Your website offers an interpretation of the artwork in which the "senselessness" of the machine relates to the absence of human intention behind the graffiti. The spontaneous movement of the machine seems to represent a form of "freedom," because human control is decentralized and removed. To me, this resembles the rebellious and anarchistic ethos of graffiti art. Was decentralizing human control part of your considerations when making this art piece?

Kanno: Tagging is a name, but this robot doesn't assign a name to the work. The entire piece is our statement, as it is not meant to be entirely meaningless. Based on the context of graffiti art and tagging, several title options occurred to us, like "nonsense" or "nameless" drawing robot, but in the end we chose "senseless" to technically address the removal of this important part of graffiti. The most radical artists can even write on trains. I didn't have a graffiti background, but I combined digital media art with my friend's graffiti background.

Ten years ago, drawing machines were not as popular, but a few artists were experimenting with them. For instance, there was a drawing machine equipped with a pen, and a company created a product called "AxiDraw," which uses a plotter to draw patterns. The history of drawing machines and plotters provided inspiration for some artists. Before the invention of ink printer, Japanese and German companies manufactured plotters, but these were mostly phased out after printers became widespread. Now, there's a reinvented version of the classic plotter, and quite some artists are using plotters to create computer-generated graphics, which is becoming quite popular. Since it's a common product now, there's no need to build one's own machine from scratch. However, when we were creating our drawing machine, we had to build it from scratch. There was an exhibition in Paris in 2011 where my work was showcased alongside Nam June Paik and Jean Tinguely. Seventy pieces by Tinguely were presented, but at that time, there wasn't much recognition for other artists doing similar works.

Xu: Let's talk about your recent work on the "Lasermice" series (Figure 2). The Lasermice series made its debut in 2020, a turbulent period marked by the pandemic and the deepening social divisions exacerbated by social media. Could you share how your personal experiences during the pandemic influenced the creation of this project? I'm also very curious about the initial steps you took to embark on such a complicated project involving a large number of robots. I had the privilege to visit this exhibition during its very first days of display at Miraikan in Tokyo. The installation is set in a forest-like environment, with a screen visualizing the dynamic shift between red and green Lasermice proportions during robot interactions. Could you elaborate on how this proportion varies and the algorithm that underlies it? Since the work is exhibited remotely in Japan, and as the artist, you were

not physically present, and it raises interesting questions on artist's role in this piece, especially when compared to other works that are predominantly co-created by robots themselves.

During the pandemic, you also collaborated with child psychiatrist Ozawa Ibuki for the Lasermice workshop, children had the opportunity to decorate their own Lasermice and gather these robots for a performance, where a sense of physical presence is enacted by these robots during lockdown. This was a remarkable and meaningful endeavor. How did you manage to organize the workshop amidst the lockdown restrictions, and what are your reflections on this unique experience?



Figure 2. Installation "Lasermice Dyad." Photo by Kuroha Masashi.

Kanno: Before the pandemic, back in 2008, I had the idea to update it with two different colors with the ability to detect two colors. That was when I learnt about the scandal of Cambridge Analytica, who manipulated social media during the US elections. They targeted the population they labeled as "persuadable," using a binary color change to represent shifts in opinion and voting decision. That was the inspiration; the polarized idea simplifies reality, creating gaps between people that cause social conflicts and distrust. I also thought it was interesting to think beyond metaphors of opinion modification or virus spread; I only created a system with possibilities of two colors, and the algorithm simply acts like this: when the robot "sees" the red light, it becomes red by emitting the red light, and the same for green. I also made immediate relations when colors were first used to simulate viral infections.

But in all, the behaviors these robots demonstrate are fundamental, mirroring societal interactions where opposing opinions or disease can spread from one to the others, possibly also the other way around, sometimes beyond control. And for the time being, it's happening spontaneously. I wanted to show these dynamics, whether it's social media, virus simulation, or civil unrest, all are forms of positive feedbacks, where more input leads to a dominant community. I did a simulation where minimal variation led to rapid color change: When all robots start with the same parameter and there's enough density, it takes two seconds for the robots to end up in one color. I thought to myself, this is not ok. In most cases, I dislike manipulation and control, but for this one time, I allowed myself the liberty to introduce negative feedback to the simulation. Negative feedback, similar to our bodies' adjustment of hormone levels, for example, the mechanism that prevents excessive eating, it acts as a regulator that spontaneously balances the system. Negative feedback is always at work in biological organisms. I wanted to incorporate negative feedbacks to create a seesaw battle or a tug-of-war game between the red and green. Negative feedbacks have the connotations of altruism to me, whereas positive feedback bears the associations of relentless drive of capitalism in the neoliberal free market, likening insatiable desire for accumulation. So I attempted elements of the negative feedback to withhold the positive feedback in the swarm robot project. As coronavirus was spreading fast, the human attempts of lockdowns and vaccinations represented this negative feedback, striving to restore an original balance.

During the exhibition, three-quarters of the robots gathered in the corner and stopped, posing a challenge to me. I intended for them to move around, however, visitors had a totally different interpretation, assuming that the robots got along well, or they were in a discussion or gathering. I was shocked that this kind of interpretation was possible. I started to prefer the way it was and began to embrace this kind of failures as a part of the work, leading to conceptual improvements which also made engineering easier. Nothing can work perfectly, and visitors find these imperfections rather engaging.

Xu: I also noticed that the robots are programmed to "rest" with intervals of inactivity. Their rhythms respond to the change in lighting between brightness and darkness. This rhythmic pattern of activity and repose reflects the natural cycles of the Earth itself. The performance is infused with a rhythmic dimension, interweaving diversity and variation that resembles the planetary cycle of life — a parallel that visitors, including myself, find deeply moving. The nuanced choreography between technology and nature's tempo is, to me, profoundly captivating.

Kanno: Yes, maybe as humans we naturally empathize better based on these commonalities.

Xu: Yes, it's beautiful that the work breaks up with the common notion imposed on robots, that they are always working. Your work envisions them as rhythmic creatures that also take time for themselves to recover from activities and sociality, with a variation of their beaming frequency.

This is particularly poignant against the backdrop of historical narratives where robots are often equated with servitude—a reflection of human societal issues both in the history of slavery and the status quo of labor exploitation, where parallels to human servitude were, and remain, all too familiar. (Chude–Sokei 2016; Atanasoski and Vora 2019) The term "robot" itself, originating from the 1920 Czech theatre play R.U.R., translates as "forced labor," underscoring this deep-rooted connection and problematic master–slave dynamics of human–robot interaction that still continue today.

Kanno: Some robot characters from *Star Wars* are also designed to be less humanlike, that they communicate in a unique "language," which we as viewers are not meant to understand. There is an interesting contrast with domestic robot vacuum cleaners, for instance, they only "speak" when malfunction occurs. For example, I noticed my vacuum cleaner works quietly until it gets stuck somewhere and can't move anymore. At that point, it sounds an alarm and vocally calls for help in German, saying something like "please move the robot."

Xu: Speaking of malfunction and incomprehensibility of social robots, I noticed an emerging trend in Japan known as "weak robotics." The principle is to engineer robots to appear vulnerable, naturally invoking the human desire to care for the robot. (Okada 2012; 2023)

Kanno: Yes, I had the opportunity to meet the pioneering researcher of "weak robotics," Okada Michio. His work is truly interesting, and himself a wonderful person. I tried inviting him to speak at a gallery talk, but he was too modest to give a speech at the art exhibition, so I had the pleasure to visit him personally. He is a Japanese gentleman who only opens at a bar [chuckles]. He explores the alternative of designing imperfect social robots, ones that even beg for help. He also contributed an article to an elementary school textbook, an impressive achievement that benefits children by teaching them about care. In Japan, the caregiving industry is increasingly reliant on robots, it's clear that we need new societal frameworks, beyond traditional family care or nursing homes, and robots are believed to be important in this paradigm shift. Big companies are already testing possibilities of robotic care, for example, the Paro seal robot gained wide recognition. Professor Okada's research on "weak robotics" offers many insights on alternative caregiving models.

Xu: The next question regards your new artworks of the "kazokutchi" robots, which you mention on the website as exploring the "NFT dynamism." NFT has been a heated topic in contemporary art, many digital art museums operate with NFTs and curate NFT artworks. What's your point on NFTs' relation to what you call "artificial life?" and the "artificial death"?

One of the fascinating aspects of this work is the ephemeral nature of the digital eggs, each with

a certain life expectancy. What determines their life span? Upon "death", the artificial life or NFT vanishes, but its existence remains traceable on the blockchain. It introduces the elements of uncertainty and ephemerality to the notion of ownership. Knowing that the NFTs might increase in value but will surely vanish, is it possible to lose all the NFTs you own? What are your thoughts on weaving the narrative of the ephemeral NFTs?

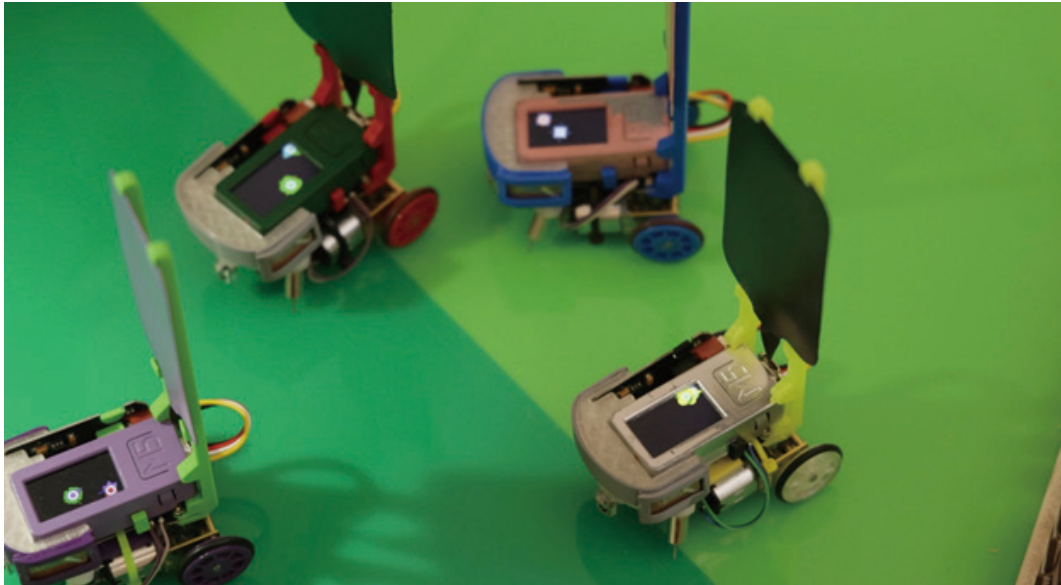


Figure 3. Installation "Kazokutchi." Photo by Yamaguchi Ioto.

Kanno: I'm intrigued by the "permanent" aspect of NFTs; even if the artificial creature represented by the NFT "dies," its history remains. Initially, I engaged with children in a workshop where I introduced swarm robots, each with a number for its identification information for maintenance reasons. However, after the workshop, all children came up with unique names for the robots based on their different appearances. These two workshops were made possible during the pandemic thanks to my psychiatrist friend Ozawa Ibuki, who had funding to organize remote workshops. I sent all the robots to families, they decorated the robots and sent them back to me. There we had a remote performance. I still remember many names of these robots, and behind these decorated robots, I remember the faces of children I never met. It was interesting that the robots developed double identities, both individual and collective, even though they were mere numbers within a computer system. This was inspired by my online shopping experience with Amazon that the website recommends products to users based on the behaviors of other consumers who are classified in the same group.

Then, my attitude towards NFTs, particularly influenced by Cultural Studies, has become more critical. A Japanese friend who had been working with NFTs before they were widely known was

surprised at my critical perspective. He reached out to me and asked if I wanted to learn about the positive views he holds. During our conversation, we had the idea of making an artificial life simulation and combining it with NFTs, a common concept of a simulation system in media art, but in these practices, it's typically that the reset button will erase everything because of its nature as a simulation.

Then, I took inspiration from the legendary toy, Tamagotchi, which I'm very fond of. I was also influenced by Sherry Turkle's book *Alone Together* on technology and communication (Turkle 2017). Turkle conducted an experiment with her daughter and other children, that during the life span of Tamagotchis, children were responsible for caring for them, and parents took notes every day on their interactions. After about two weeks, upon the virtual "death" of Tamagotchis, digital graveyard burials were held, because the only way to continue playing with the digital toy was by resetting, which would erase the history and time spent together with the digital pet. If they were recorded online, the history would be preserved. This intrigued me especially in the context of NFTs, which preserve a form of history online.

A year ago, when NFTs were still relatively new, we weren't focused on selling large amounts but rather on using NFTs in a unique way. Although not entirely convinced about NFTs, I find it worthwhile to explore this medium with others who are more technically proficient with blockchain technologies, and combining our options can be interesting. We've had several series exploring the "death": The first series assigned an "age" to the Kazokutchi robots, similar to a human lifespan. They only age when they are exhibited, otherwise they are in a frozen status which stops their clocks of aging. However, we were challenged by issues of ownership and engagement from those who purchased them. When we were exhibiting Kazokutchis and selling these NFTs at Artfair Tokyo, even when the robots were not functioning, seven or eight people were drawn to the stories of the robot and purchased the NFTs. After the purchase, we sent out email notices about Kazokutchis giving birth to eggs, which needed to be named by their owners to be activated, but not everyone responded. The pricing of each Kazokutchi was initially set at 200 euros. With the concept that they are "mating", a larger Kazokutchi population would increase the chances of "mating" and, consequently, the more buyers, the higher chance for the value to rise—a concept not unlike the NFT schemes, which I view critically now. For an upcoming exhibition, we are revising the concept, including the design, which will be shaped like the table of Tokyo, new rules will be made for this version of Kazokutchi.

Xu: It's quite intriguing that in the midst of the blockchain and NFT frenzy, despite the substantial cost and the dysfunctioning devices, many are willing to invest in such assets but didn't even care to activate the product. This phenomenon is a compelling social experiment.

Kanno: Yes, we're still learning a lot. Apparently, when swarming robots are emitting lasers and making sound, they capture the audience's full attention. However, when the focus shifts to stories and conceptual elements, the audience cares less about the robots' performance. This observation leads me to question the value of spending time developing the technical aspect. Perhaps, rather than presenting the technical display, we need to concentrate more on storytelling.

Xu: As a Japanese artist predominantly active in Europe, your artwork resonates with aspects of Japanese culture. For instance, "Kazokutchi" seems to reflect the strong tradition of family-oriented social relations prevalent in Japan and other East Asian societies. The theme of ecologically interconnected artificial beings in your work appears to align with the animistic elements of Shinto yorishiro, suggesting a connection to a broader, more-than-human cosmos. Could you share your perspectives on the relationship between your work and Japanese cultural and social context?

In the context of Japanese media art and robot performing arts, your approach to robotic art shows distinctive qualities from the common narratives, which often center on humanoid robots, as seen in the works of Hirata Oriza, Keiichiro Shibuya, and Ichihara Etsuko. On the other hand, you tend to explore the artistic potential of non-humanlike robots within ecological settings. What do you think of this difference? How do you view the prevalence of humanoid robots in the Japanese art scene?

Additionally, this distinction in artistic focus is apparent at the Miraikan's exhibition space, where your zoological creations are displayed alongside humanoids made by Professor Ishiguro Hiroshi and Professor Ikegami Takashi. Miraikan, or the National Museum of Emerging Science and Innovation, is known for showcasing Japan's future technology, and your work is evidently recognized as emblematic of such advancements. How did Miraikan approach you regarding the exhibition of your work? Moreover, how do you perceive your work's integration into the evolving technological narratives of contemporary Japan?

Kanno: Twenty years ago, when I was in university, I started with programming and electronic devices, creating interactive art projects. These projects, like digital instruments, were recognized and led to exhibition invitations. They were interactive; for example, through movement capture, the dance in front of a camera generates music. It was a nice project for a university graduate, but during the exhibition, I noticed people reacting the same way to the machine. Even though the first experience was interesting but then there's nothing more. I craved complexity and didn't want to be bored, so I pursued more complex projects. My graduate school project was a music machine that was interactive, but the setup of the composition makes it unpredictable. I started to wonder

if removing the human control would be more interesting, leading me to develop autonomous systems — robots that were not humanoid but had their own functions. It feels alive when it starts to move around. In this context, I don't consider myself creating robots in the typical Japanese way.

Some European exhibitions would specifically request Japanese artists or robots, due to the cultural relationship between France and Japan, especially in the context of new media art. But my focus wasn't to emphasize "Japaneseness"; it was inherently there without labeling. I prefer flexibility over strict plans and enjoy learning from my projects. My relations with robots and machines are different from the European perspectives, and now I'm consciously using this difference, which is interesting to explore at this moment.

Xu: In fact, I have come across European artists whose works resonate with your theme of the "vulnerable but unpredictable robot." For example, Dutch artist Bram Ellens creates a collective of broken robots in the performance installation "Robot in captivity," imagining "wild robots" as endangered or injured beasts (Xu 2021). Meanwhile, Flemish artist Ugo Dehaes created a theatrical satire by "growing" robotic dancers that evolve from baby cocoons to fluffy robot arms. The mechanic creations of Ugo's imagination are wildly alive and partially unknowable, telling stories about birth, love, nature, and of course, fantasies beyond human controls. These artists incorporate traditional European motifs from cabaret and puppetry, infusing their mechanical theatre of erratic robots with festive energy and mysterious spectacles. However, in their works, a key distinction lies in the relationship between the creator and robots, as European robotic art more broadly attends to the ownership and control, which often plays out in both critical and entertaining ways. In contrast, Japanese artists tend to work beyond the owner–robot divide, which may stem from the traditional cosmological perspective that acknowledges more integrated ecologies in the more–than–human world. I hesitate to attribute this solely to Shinto beliefs, as it's often oversimplifies Japanese art and technology as essentially based on animism, falling into the trap of techno–Orientalism. (Ueno 2001)

Can you also share how your works are received in the institutional contexts of Miraikan and the Modern Art Museum of Tokyo?

Kanno: Museum of Contemporary Art Tokyo (MOT) proposed the exhibition. One curator there is taking a fresh approach to media art, incorporating humor instead of sticking to the abstract and experimental style typical of mainstream Japanese media art, such as works by Ikeda Ryoji and Dumb Type, whose style is characterized by the immersive inorganic experience of data space. My work contrasts this style. The curator of the Art Museum of Tokyo wants to curate something else with humor and comedic effect, to show the diversity of media art in the contemporary time.

Miraikan's art department, which is unique within the institute, started hosting art recently. My work was shown in the space where there used to be their art gallery, following a small-scale installation of seven segment numbers by artist Miyajima Tatsuo. The curatorial team underwent changes, and after the pandemic, the director invited me to exhibit my work on swarm behavior robots. My work is slightly different from Miraikan's general theme, standing alone like an island within the museum. It was also meant to be family friendly. Miraikan's audience is more family-oriented, and following children's workshops, I've become more invested in sparking children's imagination. My tendency is to keep changing things, even within the same artwork, keeping it from becoming boring. When the swarm robots were first created, they looked more industrial and abstract, similar to the mainstream new media art aesthetics in Japan. However, I made the robots fluffy with more individual touch. We hope to make a difference by creating a relatable experience. The stage was structured into night and day, making it seem like the robots have their own lives and emotions. The installation ended up being more of a theatrical piece with a ten-minute cycle. Surprisingly, children spent quite a long time – around thirty minutes – watching, and this engagement was a great accomplishment for me. If this was made in a random sequence that never repeats, audience would leave after two to three minutes.

Xu: When people walk into this entirely new experience, the repetitive sequences in the installation might help audience grasp the story better.

Kanno: Right, the second time people see it, they catch different aspects and understand more. The perspective changes whether you're close or far to the robots, and the outcome was quite successful. I was so happy with the result.

Xu: Thank you very much for this discussion and for sharing your thoughts!

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