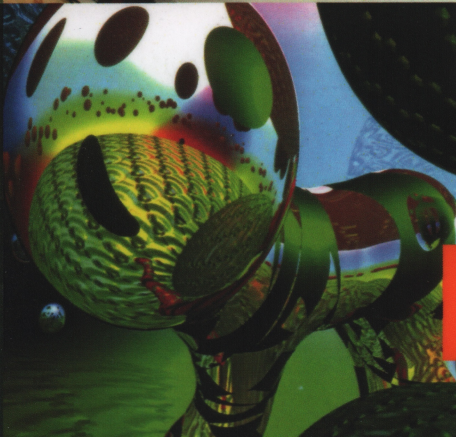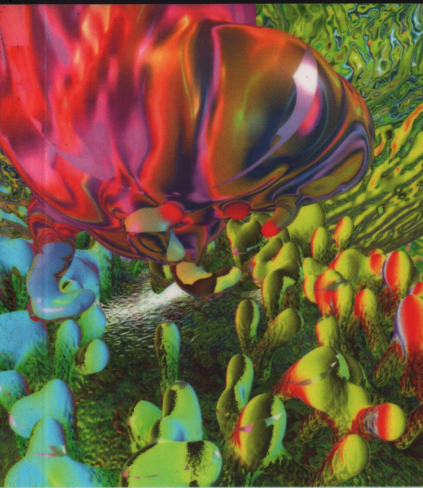# The Search for New Media

Late 20th Century Art and Technology in Japan

JEAN M. IPPOLITO

COMMON GROUND

The Arts in Society

matrices, etc.) clearly has no meaning for most people. The heart of this 'black box' is the destiny of technology."[41] People click things with the mouse to discover what happens on the monitor, and the result is a mystery to them. They wonder what the computer is.

Fujihata attempted to answer the question "What is the computer?" through his own work. He explored the medium of the computer conceptually. He began with the concept in mind and created a series of work with that as its basis. Each series was different from the next, because each concept had a unique result. Different output methods also influenced variations in his style – for example animations, stills, stereo-lithographic sculptures, etc. Fujihata's work could be very philosophical, with undercurrents of meaning, or it could simply be an expression of his personal reaction to something. Much of his work was a pun, a joke, or a comment on the state of the arts. He created a computer algorithm with which to express his concept visually. The algorithm was the expression, and the output the result. In the latter half of the 1980s, Fujihata's work became intricately and complexly interactive, allowing him to carry on his exploration through dialogue with the machine [see chapter 8].

FROM ANALOG TO DIGITAL: NAOKO TOSA

Naoko Tosa is unique as an artist. As a female artist in Japan, her assertiveness and firm commitment to her profession were also unique. She was influenced by Yoichiro Kawaguchi, the preeminent pioneer computer graphic artist in Japan, but not so much by his art as the way he conducted himself as an artist. Like Kawaguchi, Tosa created works of art by coordinating or collaborating with other artists or scientists, and her ability to direct was an art in itself.

Tosa began as a video artist, but incorporated computer graphic effects into her work from early on. For each of her video works, Tosa pursued what she called a "theme" that was based on feelings, emotions, or psychological states. Her themes concerned things that cannot be seen by the eyes – things that were "invisible." She simulated familiar feelings through vaguely related symbols and abstracted images. In the early part of her career, she was not afraid to experiment with new technologies and techniques to visualize the invisible. Her ideas were exciting and new as she combined concept with technique in simple, but innovative ways.

Tosa's work can be found in many exhibition catalogues concerning video or electronic art. Two of these catalogues are of curated exhibitions at the O Art Museum, a cutting-edge contemporary museum in Tokyo. The first of these catalogues is *Arts On Computer 1987,* which concerns experimental computer related artwork (and also includes Fujihata's work). Several stills from Tosa's video works *Trip, Energy* and *Ecstasy* are found in the catalogue along with the artist's comments about the theme and construction of her work. The second catalogue is *Anime Shinkaron (Theoretical Evolution of Animation)* 1988, and contains sequential still images from two of Tosa's early experimental films, *Mediti* 1982 and *Ishiki ka no Kodou (Beat Under Consciousness)* 1983. An important catalogue containing Tosa's work with a brief analytical essay in English is *Private Visions: Japanese Video Art in the 1980s*, published by the Japan foundation in 1990.

Tosa was born in Fukuoka City, Kyushu in 1961. Her interest in video and in Surrealism began during her college years. For about five years, Tosa worked in production and research before she began teaching. She was employed at the Broadcast Cinema Production Corporation Image System Division from 1983 to 1985, and from 1985 to 1988, she worked for the Computer Graphics Study Research Center. She learned about computers and basic programming during her employment experience with these two companies.[42]

41.Fujihata Masaki, "SIGGRAPH '89 の思考　no Shikou [Thoughts on SIGGRAPH '89]," PIXEL (Tokyo: 86. November, 1989): 93.

42.Tosa Naoko, Personal interview, Machida, 24 August 1993.

In 1988 she took a position as a lecturer at Universal Electronic Media Education Institute in Machida (a suburb of Tokyo) where she taught computer graphics techniques that included fundamental programming exercises. In 1990 she was also given an adjunct lecturer position at Musashino Fine Arts University's Image Department. While holding these two teaching positions, she attended classes at Keio University in Tokyo in order to get her bachelor's degree. Tosa majored in philosophy since she was interested more in studying psychology and philosophy to cultivate the conceptual aspects of her art, rather than simply developing technical skills.

Tosa actually began her artistic career doing performance art. She participated in a play entitled *Dead Body* by Minoru Bessho in Fukuoka City in 1981. From 1984 to 1986, she participated in and produced computer graphic effects for a series of performances as a member of the group Troupe Noise, under the direction of playwright Koharu Kisaragi in Tokyo. Tosa worked with experimental film, photographic animation and video from 1982. She has exhibited her award winning work throughout Japan and abroad in film festivals, video art shows and electronic art exhibitions in Yugoslavia, Switzerland, Austria, France, Canada and the United States.

Tosa summarized the circumstances in which she gradually introduced computer graphic effects into her work in an unpublished manuscript entitled "Technology Art Creativity" in March of 1993:

> When looking back on the past, my initiation into the field of art began as an actress in a small performance group. The peculiarity of the group as a whole was a softness uncharacteristic of reality, and this was converted into modern art. At that time I was making flat, two-dimensional relief work influenced by Man Ray, Max Ernst, Georgio Di Chirico and Yves Klein. I had adhered to flat surfaces gouged deep with shape, composition, color and texture, but I felt the stiffness of expression in the methods of that era, and I became interested in moving constructions (film). I began to produce eight millimeter films of animation, and experimental films of Surrealism (writing mental images, the contents of the mind, and things seen in dreams) which can be seen in Salvadore Dali and Luis Buñuel's collaborative work *An Andalusian Dog.*[43]

Tosa's experimental films were mild in comparison to the bizarre scenes of Dali and Bunuel's *An Andalusion Dog* in which a woman's eyeball is sliced by a razor, and bloody animal carcasses are shown draped over pianos.[44] Two of Tosa's early films were illustrated in the catalogue *Anime Shinkaron (Theoretical Evolution of Animation):* the 1982 *Mediti* shows a classical portrait bust in motion, and the 1983 *Beat Under Consciousness* shows a tumbling nude male entangled in swirling special effects.[45] These works appear to be studies in movement without the shock value of Dali's work.

Tosa moved from film to video when it first became an option because she felt it would be more conducive to her own working methods:

> About the time I was laboriously hand editing and waiting for the film to develop, splicing film together, and watching the film spinning in the projector, a procedure that seemed far away from the outcome, the new media of video appeared. That was when the first home video came about. Video of that time was inferior to film, but it was attractive since real time documentation could not be done by film. I could layer images interactively with my own creative sense. I could also

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43. Author's translation of an excerpt from: Tosa Naoko, "Technology Art Creativity," Unpublished Manuscript, 14 March 1993.

44. *An Andalusian Dog* is a 1929 Surrealist film by Salvador Dali and Luis Buñuel, which includes bizarre scenes such as "a close up of a woman's eyeball sliced by a razor" and "a man struggling at the end of a rope attached to two grand pianos draped by the bloody carcasses of two dead donkeys." Calvin Tomkins, *The World of Marcel Duchamp* (Alexandra, Virginia: Time-Life Books, 1977): 125.

45. Amano Kazuo, ed. 「アニメ進化論：日本の実験アニメの現在 *Anime Shinkaron: Nihon no Jiken Anime no Genzai] Evolutionary Theory of Animation: Contemporary Japanese Experimental Animation* (Tokyo: O Bijutsukan. Shinagawa Bunka Shinkou Jigyou Dan, 1988), 30 - 31.

directly fix images magnetically which are changing moment by moment within myself. I produced work in this media for five years after that.[46]

The video medium's ease of use and flexibility, however, was not enough to satisfy Tosa's desire for the special effects needed to visualize what she calls the invisible themes of her work, and she gradually introduced computer graphic effects into her art:

> The style of my artwork was gradually becoming enhanced by computer graphics: 'Techno-Surrealism' or Surrealism using technology. Since I was working with themes involving deep psychological scenes, actual photographs alone were no longer enough, and I started tinting my work with computer graphics. About this time, when I entered my work at SIGGRAPH, I created a variety of hyper-universes utilizing computer graphics in my work.[47]

Tosa's video work was usually given a one word title that describes an emotion or state of mind, like *Ecstacy* or *Trance*. [see figure 4.7]

Figure 4.7: Naoko Tosa, Video Still. (© Naoko Tosa)

The work itself may have been an illustration of that emotion, but its purpose was to conjure up the feeling in the viewer. She explained her approach to video art and the influence of Surrealism in "Art and Technology," a report for the Information Management Society of Japan in 1991 in which she also mentions the importance of the computer's randomness or unexpected quality to her work:

> I am interested in the world of the profound mental state – conscious, or unconscious – as an object of expression. Recently I have been involved in the process of the conscious generation of such things as love and emotion. Fundamentally, I am heavily influenced by Surrealism, and I am (similarly) pursuing the idea of visualizing things our eyes cannot see by using my own kind of methodology.

46. Author's translation of an excerpt from: Tosa Naoko, "Technology Art Creativity," Unpublished Manuscript, 14 March 1993.

47. Author's translation of an excerpt from: Tosa Naoko, "Technology Art Creativity," Unpublished Manuscript, 14 March 1993.

The characteristics of techniques utilized by the Surrealists for expressing the subconscious: dripping and decalcomania, marbling, frottage, and such, are dramatically renewed (through the use of new technology). With this influence, I have established my own level of thought, and these techniques have the effect of bringing out the subconscious. I am interested in the evolution of an effect which is more random than expected, because it is the result of the extended system created for it. The more analogical the condition, the greater the variation. Digital media extends my work structurally.

By the indirect brush painting of technology, I want to find out whether or not I can express some of the inner aspects of human beings.[48]

Tosa made the nine-minute video *An Expression* in 1985, using digital video effects. It is an experimental film in which she uses an optical sensor to measure the brightness of the screen, and integrated that with sound variation. She describes *An Expression* as:

A work in which I experimented with a light sensor applied to video to generate sound according to the degree of light in an image. The video is not just constructed of visual images exposed by the system sequentially. Actually, when the degree of light coming from the video falls, a high sound is generated, when the degree of light rises, a low sound is generated. By collaborating with the musician Tatsuo Kondo, five types of sound waves were used along with Roland's SYSTEM 100, and were controlled by an analog sensor. The experiment was successful in producing some violent sounds as a result.[49]

She used a collage of seemingly unrelated images that inundate the senses: a woman's face, a bodhisattva, a Daruma doll, Godzilla, a zebra, a skeleton, a robot, an ape, a human face and an alien face. The only commonality about these faces was the eyes staring straight out at us. The electronic sounds were intense and disturbing while the images flashed from one to another.

Trip, created in 1985, and *Ecstasy* 1986, also contained Surrealistic images that flashed on and off, and floated in and out. *Island-Image* 1986 had more political or social commentary to the content with President Reagan and Gorbachev shown shaking hands and waving to an unseen audience. Small glimpses of Japan briefly appeared as interruptions among the more important worldly affairs between the two superpowers. Tosa's commentary was about the isolated character of Japan and the way the world views it. *Island-Image* was produced as a part of performance written and directed by Koharu Kisaragi for the Troup Noise of which Tosa was a member. Tosa explained: "The theme is about the aggressive, and ready to explode, information society of modern Japan."[50]

Gush (1989) was Tosa's last video work and was a transition between her video art and interactive media. It had some of the same characteristics and computer effects as her earlier work, except that the artist had become intrigued with a new concept that she calls "Video Cubism." In the following excerpt from Tosa's unpublished manuscript, one can see how she moved from this concept to the idea of working with interactive media:

I expanded my scope of expression by making work utilizing a time axis. The output on videotape was all right, but there was only one directional path for the time to progress. While making a work, at the video editing level, I was suddenly inspired with an idea about various time axes. Indeed, if I could present various viewpoints of the work, and a viewer could selectively look at something he or she wants to see, and if this idea were incorporated into an art work . . . I thought, that would be like returning to the way we see in the world of painting and sculpture . . .[51]

48. Author's translation of an excerpt from: Tosa Naoko, 「芸術とテクノロジ Geijutsu to Tekunorojii] "Art and Technology," 「情報修理学会研究報告 Jouhou Shuuri Gakkai Kenkyuu Hokoku] *Information Processing Society of Japan Research Report* 91.89 (October 14, 1991): 2.

49. Author's translation of an excerpt from: Tosa, 「芸術とテクノロジ Geijutsu to Tekunorojii] "Art and Technology," 5.

50. Author's translation of an excerpt from: Tosa, 「芸術とテクノロジ Geijutsu to Tekunorojii] "Art and Technology," 4.

51. Author's translation of an excerpt from: Tosa Naoko, "Technology Art Creativity," Unpublished Manuscript, 14 March 1993.

Tosa said that the inspiration for *Gush* was a work by David Hockney in the Tokyo National Museum of Modern Art. The Hockney work is a collage of photographs that were taken of a single individual during a lively discussion with a counterpart. The numerous photographs captured the subject at various angles, in various positions and with various expressions in his hands and face. The work is an extremely animated still portrait that shows the character of the individual over a short period of time. Tosa acknowledged that she borrowed Hockney's idea of capturing a single individual from various perspectives and then collaging the results together in her finished composition. Instead of using numerous still photographs, Tosa used a number of video cameras that filmed the subject at different angles simultaneously. Using video editing techniques, she inserted the many facets of the performer along the same time axis, so that the viewer could see the various angles collaged into one work. The performer appeared to grow an extra head, and additional arms and legs at times. The upper part of the performer would become a heavy mass of cubes in which body parts were moving with the music.

Gush was Tosa's final video work before moving on to interactive media. It was a transitional piece in that she attempted to offer the viewer optional views of her subject matter in the work. The next step, in Tosa's mind, was to create a work in which the viewer can actively take part.

When Tosa changed to interactive media, she felt that she had become more interested in process than product. She still wanted to express emotions and concepts that were "invisible," but she felt that people should be able to interact with the pieces to be aware of the process that expresses the concept. In "Technology Art and Creativity" she explained her preliminary experimentations with interactive computer interfaces:

> I began to create equipment with interactive interfaces. The thing that was always on my mind was to trigger the natural behaviors of people. A work with an ultra wave sound sensor that reacts to a person that comes close to it, an image robot (which I exhibited at the O Art Museum), and *Neuro Face*, a work which generates images and expressions in reaction to rhythms and the level of sound when electronic instruments play (the prototype for *Neuro Baby*) etc., all indicate the establishment of a new vision.[52]

The image robot that Tosa was referring to in the above quote was the installation RS-705 which she exhibited at the O Art Museum in Tokyo as part of the *Anime Shinkaron (Theoretical Evolution of Animation)* show in 1988. The installation used a NEC PC9801 personal computer with a MIDI system for sound input along with various amplifiers, mixers and distributors connected to a number of monitors. Sound output was integrated with images on the monitors representing laughter, crying, anger, sneezing, gargling, and the greetings "hello" and "goodbye." The images used to express these were metaphoric and abstract – for example, "hello" was represented by a tipping hat, "goodbye" was shown by feet walking into the distance, a sneeze was a flash of light with rays, and anger was depicted by angular lines.

In RS-705, the concept of displaying an emotional reaction to sound input was illustrated, but the actual interactive interface connecting human input with emotional output was not yet complete. Tosa wrote a proposal and presented it to the human interface research laboratory of Fujitsu Corporation in 1990 and procured the collaboration of Koichi Murakami, whose research was in the area of new human interfaces. Tosa's artistic sense was complemented by Murakami's technological innovations to bring about *Neuro Baby*. [see figure 4.8] One of the major fascinations of Tosa's *Neuro* project, in the world of computer graphics, was the use of the neural network for the interactive interface. The neural network was a different approach to computer processing that is closer to the natural functions of human reasoning. A conventional computer had four basic functions at its lowest level: addition, subtraction, multiplication, and division. These limitations make for a very limited and rigid algorithmic style in computer programming. The neural network has the name neural because it is patterned

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52. Author's translation of an excerpt from: Tosa, "Technology Art Creativity," Unpublished Manuscript, 14 March 1993.

after the way neurons function in the human brain. Instead of limited options, it has many nodes that allow for many options, and sometimes gives results that are not easily predictable. In *Neuro Baby*, when sound is input, the size and length of the sound waves are measured and filtered through the various nodes that assign it a set of variables. The variables indicate a location on the "emotional mapping plane." The emotional mapping plane is a grid composed of an "x" and "y" axis that divide it into four quadrants. Various possible outputs are mapped out on this plane beforehand, so that the location of the variables determines the type of result. When a second set of variables is given, the computer interpolates between the two results. In the case of *Neuro Baby,* there are four possible outcomes for the baby's face. Tosa designed sad, cheerful, angry and happy faces, and the computer interpolated between the images so that the baby appeared to change naturally from one emotion to the next.

Figure 4.8: Naoko Tosa, *Neuro-baby*, 1993, installation at Machine Culture, SIGGRAPH 1993. (© Naoko Tosa)

For the first exhibition in which the neural network creation was displayed, Tosa designed three types of output images: a baby's face, a simplified human figure, and vague abstractions resembling an adult face. The first version, the baby's face, was a cartoon-like image of a toddler's face with large inquisitive eyes. It reacted to sound input by cooing, laughing, or turning red with anger. The second version, the simplified human figure, consisted of six twisted primitive shapes depicting a head, torso, two arms and two legs. The parts rotated, twisted, shrunk and grew in response to sound input while the body as a whole expanded, contracted and buoyantly floated in a blue background. The third version, the vague abstractions, were actually made up of a number of 3-D solids which twisted, expanded, contracted, and occasionally moved into appropriate positions to take the form of a face, with eyes, nose, lips and hair. The forms were lightly colored on a black background so that when they were shown on a black monitor in a darkened room they appeared to be suspended in space.

The initial exhibition for *Neuro Baby*, entitled *Neuro-Baby's Birthday*, was at the Gurdean-Gurden Gallery in Tokyo. The exhibition included seventeen video monitors of various sizes and shapes. All of the monitors were set face-up on the gallery floor resembling a pool in which all three of the original versions of *Neuro Baby* output were displayed. There were four of the baby face versions, nine human figure versions and four of the vague abstractions; the latter appeared to be ghostlike forms suspended between the other monitors in the dark room of the gallery. Tosa found that this was too complicated for her audience to understand. For successive exhibitions she selected the simplest output version to focus on for a while.

In 1992, Tosa chose the first version, the cartoon-like image of a baby's face as the sole output for an interactive work that would react to human voice input through a microphone. Her reason for choosing the baby's face was that it was easy for anyone to understand, because a baby in the real world reacts instantly to outside stimuli. This simplicity was completely contrary to the obliqueness of contemporary art, but the vagueness of art was not necessarily good. She wanted *Neuro Baby* to be easy to communicate with, something even children would understand.[53] In an explanatory manuscript, entitled "Talking to Neuro Baby," Tosa wrote that she wanted it to be like a companion or a "pet" for people to enjoy:

> I created a new creature or an artwork that can live and meaningfully communicate with modern, urban people like ourselves: people who are overwhelmed, if not tortured by the relentless flow of information, and whose peace of mind can only be found in momentary human pleasures. *Neuro Baby* was born to offer such pleasures. The name *Neuro Baby* implies the 'birth' of a virtual creature made possible by the recent development of neurally based computer architecture.[54]

In the same manuscript, Tosa described the "basic characteristics of *Neuro Baby* and its interaction with the external world;"

> *Neuro Baby* is a totally new type of interactive performance system which responds to human voice input with a computer generated baby's face and sound effects. If the speaker's tone is gentle and soothing, the baby in the monitor smiles and responds with a pre-recorded laughing voice. If the speaker's voice is low or threatening, the baby responds with a sad or angry expression and voice. If you try to chastise it with a loud cough or disapproving sound, it becomes needy and starts crying. The baby also sometimes responds to special events with a yawn, a hiccup, or a cry. If the baby is ignored, it passes time by whistling, and responds with a cheerful 'Hi' once spoken to.[55]

For the Artificial Life exhibition at Ars Electronica '93 in Austria, Tosa wrapped the computer monitors in white sheets and placed them comfortably in baby cribs. The face of the monitor was the only part exposed to reveal the cartoon-like *Neuro Baby*. Tosa arranged the monitors in a similar manner for the 1993 SIGGRAPH Machine Culture exhibition in Anaheim, California where she videotaped her audience's interaction with *Neuro Baby*. The tape shows people cooing, scolding or growling into the microphone. Children talked to the baby. A woman sang a lullaby. One individual produced a kazoo and bleated into the microphone, at which point *Neuro Baby* became red with anger.[56]

After exposing her audience to the simplicity of the cartoon-face in *Neuro Baby,* Tosa wanted to branch out into more complex ideas based on the same technology. In *Neuro Baby 2,* the technology was the same, but the monitor was set into the abdomen of a plastic sculptural form of a female torso. [see figure 4.9]

53. Tosa Naoko, Personal interview, Machida, 24 August 1993.

54. Tosa and Murakami, "Talking to Neuro-Baby," Unpublished Manuscript, 2-3.

55. Tosa, Naoko, Neuro Baby Demo Tape, 1993, NTSC video recording.

56. Tosa Naoko, Personal communication, New York, 17 February 1994.
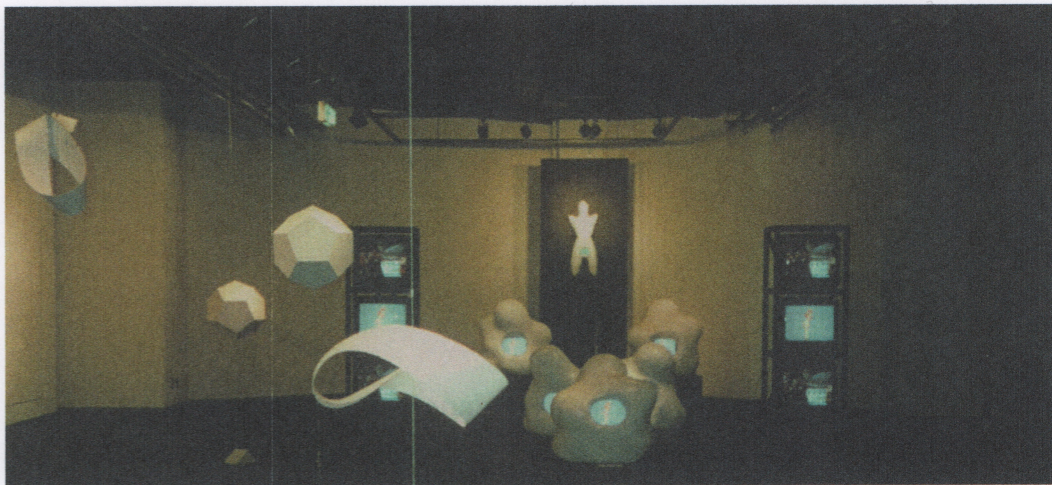
Figure 4.9: Naoko Tosa, installation view of *Neuro-baby II*, 1993.
(© Naoko Tosa. Photograph by author.)

The computer graphic of the abstracted human figure that was used in the first version of *Neuro Baby* appeared in the monitor. Tosa said that the form that she chose for *Neuro Baby 2* is conceptual. It is almost adult like, but it is neither male nor female. It is a symbol with a surrealistic quality. The installation was displayed interactively at Tokyo International Art Museum at Tama City in Tokyo. When a person would speak into the microphone, the human form, made up of simplified computer graphic shapes, responded by twisting, rotating, expanding and contracting, while it continued to float buoyantly as though suspended in amniotic fluid.

Tosa was hesitant to acknowledge possible social implications of her choice of display. Could this torso represent a pregnant woman, with the monitor in her abdomen showing the affect of outer stimuli on the unborn child? Could this work have profound messages about the reality of life before birth? Could we even stretch the meaning to include a pro-life argument? These issues would be hotly debated in the United States. Tosa acknowledged only that she wanted the computer monitor in the abdomen of a woman's torso to be symbolic of the birth of a new life form. She had not consciously intended to make any stronger social statements. But in her own open-minded way, she said that she could well have such an intent buried deep in her subconscious mind, since her Catholic upbringing has resulted in her mixed feelings about abortion.[57]

Tosa was pleased with her audience's enthusiasm about *Neuro Baby*. She was inspired, from her observations of people's interaction with her project, to experiment further with the concept:

> When I watched people who came to see the work, I noticed that different generations responded in different ways. I also understood that people were not exactly watching *Neuro Baby*. They were watching, through the work, the visual images (application and context) that, from their perspective, they anticipated to appear in the near future. In that sense, the work goes beyond the present confines of art and draws attention as an initiator.

In the last decade of the twentieth century, Tosa continued to work with neural networks and emotion in interactive installations, and not until the turn of the millennium did she begin to apply the random characteristics of the algorithm to Zen and traditional ideas of Japanese ink painting [see chapter 9].

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57. Tosa and Murakami, "Talking to Neuro-Baby," Unpublished Manuscript, 8.

There has been burgeoning interest in documenting the history of digital media within the international art and technology movement so prevalent today. What once was referred to as "computer art" has earned the new title "digital media" in the art world. In the field of art history it dissolves into the larger art category called "New Media" which includes performance, installation, environmental art, and other venues that do not necessarily include technology. This book makes parallels between the process of production in traditional media and the reiterative algorithm in digital media within Japan's avant-garde of the 1970s. Looking even further back in time reveals that the avant-garde attitude to the exploration of materials and processes of the 1960s in Japan may have provided the impetus to search for new types of media, an attitude which naturally led to experiments with technology and eventually opened the way toward the digital realm and the use of computer algorithms and interactivity in the fine arts. An exploratory attitude toward the abstract concept of the computer's virtual environment, and the inclination to see the algorithm as the process of art, may have its roots in these early experimental currents. This also gives insight into the nature of non-narrative interactive and performance art in the today's digital media realm of Japan.

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