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INTRODUCTION

In this month's LEA, Leonardo Editorial Board Member Sundar Sarukkai opens the issue with his editorial, "Beauty in the Beast," which explores the question of how we can find deeper terms of engagement between art and technology.

In our main feature, artist Bill Witherspoon describes an intriguing series of artistic projects in which massive geometrical designs made in remote natural settings often seemed to be connected with surprising changes in the environment and its inhabitants. His research and work led to exploration of sacred Indian symbols, or *yantras,* which are said to have a powerful and beneficial influence on consciousness on its deepest levels.

In Leonardo Reviews, Allan Graubard reviews *Jaroslav Roessler: Czech Avant-Garde Photographer,* exploring the photographer's impact on Czech photography and the art world as a whole; Rob Harle reviews the 20th Anniversary edition of the YLEM Journal, considering its influence on and by the art/science/technology community; and again Harle looks at a book on Chinese artist Wenda Gu, whose work explores "transculturalism" through the use of unusual materials (including human hair).

Readers will also find an abstract of a dissertation by Elisa Giaccardi in LABS and an announcement from Leonardo Board Member Michael Joaquin Grey.

EDITORIAL

BEAUTY IN THE BEAST

By Sundar Sarukkai, Leonardo/ISAST International Advisory Board Member

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In this era of the growing presence of technology in art, a trend well exemplified by digital art, how do we find deeper terms of engagement between art and technology?

I want to suggest here that artists can enlarge our understanding of technology, not by becoming technocrats but by enriching the ways in which we talk about technology. One of the essential modes of enrichment is to invoke the idea of beauty and place it within the domain of technology. By bringing beauty to bear upon technology, we can make technology answerable to the call of beauty, thereby taking it away from an excessive preoccupation with functionality, use-value and efficiency.

But why beauty?

Susan Sontag writes that "it is in art that beauty as an idea, an eternal idea, is best embodied" [1]. Art's capacity to invoke the idea of beauty, to give it a place of residence within art's activities, is what makes art unique. Art responds to the question of beauty and as an activity it generates the idea of beauty.

Art and technology are poles apart. Technology is our beast of burden, doing things for us, whether carrying loads, transporting people or even checking our spelling on the computer. A dominant image of technology has been that of machines as subservient to humans, as doing the work of and for humans. In creating this image, we have consistently ignored the possibility of beauty in the beast.

It is not that art has always comfortably co-existed with beauty. Critic Arthur Danto notes the disappearance of beauty from the vocabulary and philosophy of art of the 1960s, but goes on to suggest that "the immense esteem in which art continues to be held today is an inheritance of this exalted view of beauty" [2], a view held in the beginning of the twentieth century. The high expectations from this exalted view of beauty have actually led to the de-privileging of beauty in art. Nevertheless, invoking beauty in the context of technology is useful for at least two reasons.

Beauty, from ancient times and in all cultures, has often been associated with morality. Danto goes to the extent of saying that it "was the moral weight that was assigned to beauty that helps us understand why the first generation of the twentieth-century avant-garde found it so urgent to dislodge beauty from its mistaken place in the philosophy of art" [3]. If modernist and avant-garde movements reacted violently against the notion of beauty, it is, as Danto notes, partly a reaction against the moral weight imposed on art.

The association of beauty with morality is perhaps one reason why technology shies away from seriously considering beauty as part of the discourse of technology. Is the neglect of beauty by technology largely catalyzed by the fear of the moral imperative as a parameter of technological development? Bringing beauty to the forefront of judgments about technology would actually introduce a sense of morality into technology. Note that this argument allows us to differentiate between artisanship and technology. Artisanship, placed within certain cultural practices and engaging with the idea of beauty, carries a moral burden, which modern technology refuses to do.

Also, in the words of Sontag, beauty has always been identified with women. On the flip side, technology has always been identified with the masculine. Everything about technology reflects characteristics of the gendered male. This masculine image of technology has no place for the feminine and thus no place for beauty. For both these reasons of morality and gender, technology consciously constructs itself as having no relation to beauty.

Now we can begin to understand how artists can more effectively engage with technology without becoming technocrats themselves. There are two possible ways. One is to bring the discourse of beauty into that of technology, thereby expanding the vocabulary and image of technology. As we well know by now, the way we talk about something can actually fashion that thing. Two, artists

can consciously avoid using technology merely as a canvas for their artistic expressions and instead explore ways by which they can let technology answer to the call of beauty.

The historical process in which art set aside its obsession with beauty must now be duplicated in reverse as we ask technology to set aside its obsession with functionality and use-value, and in the process add a dose of beauty to the beast.

REFERENCES

1. Susan Sontag, "An Argument about Beauty," in *Daedalus* (Fall 2002) pp. 21-26.
2. Arthur C. Danto, "The Abuse of Beauty," in *Daedalus* (Fall 2002) pp. 35-56.
3. See Danto [2] .

FEATURE

ART AS TECHNOLOGY
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[Ed. Note: This is a shortened version of an article that was submitted to LEA several years ago, but was never finalized for publication. Due to enthusiastic responses from reviewers we have decided, with the author's consent, to publish it as is with very light editing. The longer version of the paper is available by e-mail from: bwith@theskyfactory.com]

ABSTRACT

This article describes a process that began when large numbers of animals were attracted into a geometric design that I made in the high-desert. Observing a similar response by people, I inscribed a quarter-mile *Sri Yantra* in a remote desert location and observed the effects. In the article, I speculate about mechanisms that might explain these observations.

INTRODUCTION

The following pages chronicle a series of experiences and observations that have emerged from several years of exploratory art projects. Necessarily, they are personal. The experiences resulted from events that were intuitively directed or were the response to some environmental stimulus. Because of this, things

were often done without preconceived intellectual rationale. Often I had questions and was seeking answers, but at other times I did not know the questions and seemed to be engaged in activities that were following some barely perceivable thread. It was often months or even years before I "understood" the reasons, purpose and way the projects arranged themselves. Even with a feeling of understanding, it has often been difficult to verbally explain or place actions in the context of a commonly acceptable model of how the world works.

In this chronicle, I have attempted to relate some of the facts and simple observations that accompanied these projects without attempting to describe the delight of the exploratory process.

1989: OREGON DESERT AND THE FIRST DESERT DESIGN

In the summer of 1989 I took my studio, a large converted bus, to a remote part of the high desert in southeast Oregon. I stayed there about four months in a familiar place and made paintings. After being there a few weeks I made a design in my notebook, which I had planned to integrate into a painting of the sky. But for some reason I instead built the design with lines of cairns (small piles of rocks), placing the bus in its center. The design was about 60 yards across, precise and symmetrical. The center of the design was left open, in a sense unfinished, because it lay under the bus, directly beneath the spot where I regularly practiced meditation.

After the design was completed, animals started to come into its boundaries. This was in complete contrast to the previous year, when only a few birds and kangaroo rats came near this spot in a six-month period. As far as I could tell, nothing had changed except that I had made the design. In the next three months, several hundred animals of all kinds appeared inside the design. Many of them had to come some distance from their normal habitat. Others, such as the golden foxes that slept by the door in the late afternoon, were undoubtedly always in the area but because of their shyness had never before come close.

The animals that came behaved in an unusual manner. They did not seem inhibited by my presence and they did not seem to be as territorial or aggressive with each other. For example, one night I watched owls, rabbits and kangaroo rats all within a few feet of each other, without seeing any signs of fear or aggression. Several times I saw 20 or more jack rabbits gathered together, walking upright on their hind legs and, on more than one occasion, antelope walked into camp and stood looking at me attentively.

Later that fall in a gallery in the Midwest, I made the same design from desert rocks mounted in columns of white concrete. The design was more elaborate because it included a vertical dimension and used vertical and horizontal colored chalk lines to enhance its articulation.

During the exhibition, I remained in the gallery and observed the visitors to see how the design might influence their behavior. Classes of school children, who would visit the exhibition in groups of 20 to 30, were the most interesting. They would invariably remain within the boundaries of the design, even though there was far more space outside the design than inside. When their teachers asked them to sit down on the floor for discussion, they would always collect in the center of the design and the youngest ones would pile themselves two and

sometimes three deep on each other's laps, filling the center completely. Adults who visited the exhibition also tended to stay inside the design and many remarked that the place felt good and that they stayed much longer than intended.

At this time, I began researching traditional designs from different parts of the world. I found this particular design almost exactly described in an obscure Sanskrit text called the *Vastu Sutra Upanishad.* According to this text, the design was intended to be placed on stone blocks before carving sacred images. Carving the parts in harmony with the design was said to insure that the image would be "attractive to consciousness" and this in turn would result in the finished image being entered by the consciousness of the deity.

About this time a friend asked if I could make a *sri yantra.* The sri yantra is a traditional design from India that is thought of as an instance or occurrence (rather than a symbol) of the deepest laws and forces of Mother nature or Mother Divine. I spent a few months doing extensive library research on the sri yantra and also spoke with people who had experienced its use in India as part of the spiritual tradition of Sri Vidya. Then I decided it would be consistent with its traditional use to make one from gold leaf and transparent pigments.

The process of research, especially construction of the sri yantra, produced a powerful influence on me. It restructured my awareness and perception. I believed that my sensory experience and understanding of deep laws and forces of nature was rapidly unfolded.

I had been understanding reality as being hierarchically structured in interpenetrating layers, with successively deeper layers being more simple, more comprehensive and more powerful. The activity of these deep laws creates the surface of life that we experience as everyday reality. ("Laws," used in this sense, contains the notion of an ordering principle or intelligence combined with force or energy.) It may not be common to give our attention to the direct perception or experience of these deep laws, due to our absorption in the surface events of the world. However, for those who are drawn to exploration of reality's deeper layers, the refinement of perception resulting from a restructuring of awareness emerges as an extremely attractive and useful tool. Therefore, this experience of more refined perception coming from my encounter with the sri yantra led me to wonder what more I might do to amplify its effect.

1990: OREGON DESERT SRI YANTRA

In the summer of 1990, a group of friends, one of my sons and I went to a remote alkali lake bed in the high desert of southeast Oregon to inscribe a large sri yantra in the earth. It was to contain a central point large enough to live in. The site was chosen because of its beauty and remoteness. Almost no one, except a few ranchers, ever went there. Inscribing lines in the alkali surface would not disturb any vegetation and it would be a transitory event, eventually disappearing back into the surface through the natural action of wind and the occasional water that floods the lake bed every few years.

The design was made without machines or modern tools, except binoculars and a simple hand plow. We used only ancient principles of geometry and long wires and sharpened poles as

tools. When completed, it was 1/4 mile across, covered over 40 acres and contained over 13 miles of lines. The lines, plowed with an old fashioned garden cultivator pulled by three crew members and steered by the fourth, were about four inches deep with the hard alkali crusted dirt cast to both sides of the furrow.

During construction, we were careful to minimize the disturbances to the land. We chose to walk several miles daily from camp to the site rather than use vehicles, and refrained from using other motorized devices, such as a tiller. We did not want to leave tracks or other marks, not to preserve anonymity, but out of respect for the purity of the process.

The sri yantra took ten days to complete. As soon as the last line of the design was plowed, heavy clouds began to collect in the south. Within an hour, our valley was filled with high winds, intense lightning strikes and about 1/2 inch of rain. The result of this storm was that all traces and tracks from our working were dissolved. Like a finished painting, it was as if the surface had been varnished. Remarkably, the lightning and the rain were limited only to the small valley where we were working, a fact that was the source of much speculation by a nearby rancher who wanted the rain on his land.

In the three weeks that followed, I lived in the 9-foot central circle of the sri yantra. During that period and on several occasions during the following years, other people and I observed remarkable changes in the workings of nature within the design and in the valley where it was situated.

One of the more interesting subjective changes was a modification of the "feeling" within the valley. While a difficult parameter to describe or measure, this change in feeling was noted by ranchers and other people who have known the area for a long time. People reported experiencing qualities of energetic peacefulness, harmony with nature and enhanced intuition when they were in the design and valley. Another influence was a radical change in the quality of meditation that would repeatedly occur if individuals moved a few feet out of the central circle into the innermost triangle of the design or vice versa.

Changes in the environment were also observed. Within the design, which had been inscribed in a highly alkaline silt, incapable of supporting any kind of vegetation, there were remarkable changes in the direction of increased fertility.

Two years after construction, even though the lines were disappearing, the structure of the soil had changed from a highly compacted mixture of silt and salts to a loose, crumbly soil that smelled and tasted more like normal soil. The surface of the soil was also significantly changed. Instead of the flat, layered and often cracked surface that had characterized the lake bed before inscribing the sri yantra, the surface became "rumpled;" formed into a three-dimensional configuration of regular ridges and valleys that arranged themselves in the pattern of hexagonal close packing, much like an egg carton. The pattern was caused by modification of the surface soil into a physically expanded, more adhesive and resilient material.

Both of the soil changes were due to an extraordinary proliferation of soil microorganisms and the resulting increase in soil organic matter. The soil changes were limited to the 40

or so acres of the design and were most pronounced in its center.

In other respects, the entire 50-square mile valley was different. The ranchers noticed a continued increase in the valley's rainfall. This was accompanied by increased vegetative growth, as well as increased populations of several plants and three animal species that were not previously common in the valley.

Because of these observations, I began to speculate about possible mechanisms by which the geometric structures might bring about change. The most interesting observation was that there appeared to be an inverse correlation between the gradual disappearance of the design as it melted back into the lake bed and the increase in the presence or influence of the enlivened laws of nature. Other analogous situations seem to exist as in homeopathy, where increasing levels of dilution are said to represent or impart increasing levels of strength. An even more striking parallel may exist with the principal of *sangyama.* Sangyama, as described by the Indian Rishi, Patanjali, is a process in which the mind generates an impulse at the deepest level of consciousness and then allows that impulse to settle back into the field of pure undifferentiated consciousness from which it had been drawn. The result of this process is the appearance of a new impulse that has enormous power and direct support of fundamental forces of nature.

The construction of the sri yantra was also accompanied by other events that gave rise to new understandings about how nature might operate. Going into the valley for the first time, I was driving the converted bus and towing a pickup truck. We stopped and I got out to open a barbed wire gate. Sitting on the gate post was an adult golden eagle. The eagle looked at me squarely, swished its tail back and forth several times, dropped a tail feather and flew off. In the next several weeks, I had occasion to go through the same gate many times and there was no eagle. Then, on my homeward trip, as I passed through the gate for the last time, a golden eagle was sitting on the same gate post. It waited for me to get out of the bus, looked at me squarely, swished its tail, dropped another feather and flew off.

Back home, several weeks later, the National Guard discovered the sri yantra and the media, not knowing its origins or implications, created a greatly exaggerated hoopla. I was in a position of deciding to speak publicly about the project or remain anonymous. In order to clarify the rapidly growing misunderstandings, I decided to speak publicly. Immediately upon making that decision, I walked outside my rural Iowa home and looked up into the sky. Directly above the house were 14 circling bald eagles.

A year later, I had occasion to tell this story to a Vedic scholar. He told me of a traditional yagya, or ceremony, infrequently performed in India to honor the Divine Mother which is considered to have been successful only if it results in the appearance of an eagle. Finally, these events, related to several Native American elders and medicine people, elicited explanations of the ways nature communicates.

1990: HIDDEN DESIGN

Later that fall, I continued by making a series of paintings that incorporated geometric elements. Up until that point, I had

thought of my paintings as windows for seeing into nature. The process of making paintings was a way to gain familiarity with the deep laws and forces of nature. It seemed that a painting was essentially the record of an experience, not only of the surface experiences of the artist, what is seen by the eyes or the mind's eye but also, and more importantly, a record of the consciousness present in the artist at the time of creation.

Consciousness in this context has two distinct meanings. First is the "conscious of" aspect, i.e. all the elements, both inner and outer, that might be lively in the artist's mind or awareness. The second aspect is that of "pure consciousness," the pure undifferentiated awareness or "Being" that is the foundation for "being conscious of" all things. This pure consciousness is the basic fabric from which are woven all the events of life. It seems that both the specific limited and universal unbounded values of consciousness present in the artist, as well as their respective intensities, are stored or embedded in the forms and materials of a painting.

It also seems that observing a painting is the reciprocal of the creative process. That is, when we give attention to a painting, not only the information but also the consciousness embedded in that painting is recreated in the observer's awareness. This occurs through resonance or entrainment. Therefore, the more that Being is lively in the experience of the artist, the greater the experience of Being will be in the observer, and because of the universal character of Being, the more It is present, the greater the likelihood that a wide range of observers will find that the painting provides a meaningful and beautiful experience.

>From the point of view of the artist and the observer, a painting can be used as a device to structure consciousness, modify physiology and transmit information.

My idea now was to see if a painting might be something more than a "window." Could a painting encourage some specific influence of nature to be amplified in the environment?

To this end, I made two paintings that were window-like, similar in that a gold leaf design draws the attention to a blue sky. Behind one of the two paintings I placed a traditional geometric design (the sri yantra) and a handwritten transliteration and translation of an ancient Sanskrit text (*Lalita Sahasranama*) that describes the most fundamental laws or principles through which Mother nature is said to express herself. These two paintings were placed on opposite gallery walls along with about 20 others.

I then invited a group of sightless people to visit the exhibition. They spent a day in the gallery and concluded that the feeling inside the exhibition space was very different from the feeling outside, and that the peacefulness and happiness that they identified seemed to come from one painting - the one that had the design and text hidden behind it. In addition, during the exhibition, 42 people spontaneously remarked to me that one painting in the show seemed to attract them most strongly. 39 of the 42 referred to that same painting. In another case, about 25 grammar school children who were milling about in the exhibition were asked by their teacher to select their favorite painting. They spread their choices among the 22 paintings. They were then informed about the experience of the sightless people, without being told which of the 22 paintings

had been selected, and asked to sit on the floor quietly and close their eyes for a few minutes. Afterwards, they again selected their favorite based on what they felt rather than what they saw. The group unanimously rearranged their choices to the painting that was hiding the geometry and text. On three different occasions I noticed people standing in front of the same painting, apparently crying. When I asked about their experience, they indicated that they were overwhelmed with feelings of happiness that did not seem to have any specific cause.

>From these events, I realized that it was possible to make paintings that need not be seen in order to produce an influence, paintings whose purpose is simply to Be.

MEDIA CRITICISM AND RESPONSE

Publicity about the 1991 design brought some criticism from Oregon environmentalists. The principle question from media critics was "How do you know you are doing something that has universal value and are not just defacing nature with egoism?" This is not an unreasonable question to pose to artists who work in public art. To begin with, there is no authority to which one can appeal for approval of such actions. We have no current tradition for such art forms. However, if nature is not simply an unresponsive mechanical system but rather a sympathetic, living ecology, one should be able to look directly to nature for an answer.

Generally speaking, there are three possibilities for how one's actions might interact with nature. First, if one is opposed to nature, in conflict with natural laws, one could expect to perform action only with great difficulty; nature would hinder progress. To move ahead would require great pressure from one's individuality and ego. Second, if one were in harmony with nature and natural law, action could be expected to progress smoothly. Third, if one's actions were positively pleasing to nature, in support of evolution on all levels and scales, then one could expect nature to marshal her resources in support of that action. Such support from nature would provide unexpected resources and change the quality and outcome of the action in ways that might not have been originally expected, generating the feeling that the action does not even belong to oneself but is being carried out and propelled by the agencies of nature. By being alert to nature's participation and monitoring the progress of the project, the appropriateness of an action can be evaluated.

In the desert design projects, many potential problems were solved by unexpected solutions, long before they ever became difficulties. Furthermore, solutions came without any asking on our part. In short, those of us who were involved in the planning and construction of the desert design felt a strong and continuous wave of support from nature, a tremendous sense of freedom and joy underlying every stage of the project. One such example came out of our interaction with the local ranchers.

Locating a proper site for the 1991 design had become a major project. I drove through Utah, New Mexico, Arizona and parts of Nevada before returning to Harney County in Oregon. Because of the previous publicity from the large sri yantra project (it had first been hailed as evidence of extra-terrestrial activity and then I had later been fined by the United States Bureau of Land Management for defacing the land without a permit), local

ranchers were curious about this next project. When I approached Ed Davis of the Alvord Ranch, it took him about three minutes to warm up to the idea of doing the project on his land out in the Alvord Desert. We climbed in a pickup and located a square mile of deeded land without so much as a blade of grass on it. To Ed it was a wasted resource, land he had never been able to use. An hour after that meeting, I was on my way back to Iowa to get things organized.

About two months later, I returned. The evening I returned, about 70,000 pounds of red volcanic cinders were dumped in a long pile near where we had set up camp at the edge of the design site. I had not had time even to stop at the ranch to let Ed and his family know I was back and going ahead with the project. When I saw the pile of cinders, for the first time I had a sense of the magnitude of work required to put these cinders into 9 1/2 miles of plowed lines. Were we going to do it with wheel barrows, or what? What was I dreaming of? I really had no plan.

The next morning I went to the shop at Ed's ranch to see if they remembered who I was and what I was doing. Ed was not there but Paul, one of his sons, was. Fortunately, he remembered me and I felt relieved that everything was still on track, that we were still welcome to do the project. While in the shop, I noticed a huge machine that was up on blocks with all its wheels off and under some kind of construction. I asked what it was and Paul replied "It's a fertilizer spreader we're converting to spread the cinders. Dad got to thinking you'd need something like this." I was speechless. When I had visited with Ed two months ago, the use of cinders had only been a faint idea whose possibility I wanted to pass by Ed for possible objections. It was after I got home that the cinders became a certain part of the design. Now that aspect of the project was taken care of, not only by the right piece of equipment but also by the loan of the new Ford tractor. Mike, the middle son, was freed up from his usual work to operate it for whatever time was necessary.

To respond to the media and environmentalists, I gave a series of public lectures in Portland to air the issues and allow critics to interact with me directly rather than let the media act as filter for my ideas and communications.

Response of the public to these lectures and discussion was positive and the dialog established between the public, press and myself became an added incentive and encouragement to carry out a fourth design.

1994 IOWA CAPITOL DESIGN

Early in 1994, I began the Iowa Capitol Design Project with a \$5000 grant from the Iowa Arts Council. The principal notion of this project was to bring the quality of thinking, decision-making and legislation of the Iowa State Government more into harmony with nature by building a design about 150 miles in diameter that would situate the Iowa State Capitol building in its center. A secondary issue was exploration of the practicalities of building a large geometric structure without physically articulating all of its lines.

The project used a design or yantra that corresponds to the Sanskrit word "Durga." In the Vedic tradition, Durga is said to be the life-impelling force of nature that simultaneously drives forth and nourishes all of creation. Durga is the unseen,

unchanging support of life, as well as the complete range of all expressions that flow from creation. Durga is the Mother, the divine creative layer of life at the root of existence.

The core of the Durga yantra is made with two circles, an outer in which the design is contained and an inner or "bindu" which is at the very center. Within the large circle are nine chord lines that intersect at eighteen points to create a balanced bilaterally symmetrical network of triangles. To construct the design without actually inscribing all the lines, the nine points where the chords intersect the outer circle were to be used. A simple example may serve to illustrate the concept.

If one were to construct an equilateral triangle with 100-mile sides, one might locate the three apexes and place a marker on the ground at each apex. This would establish the presence of a triangle. To make its presence somewhat stronger, one might place more information at each point. For example, instead of a single marker one could position several markers to form two lines, 60 degrees apart, each of which pointed to an adjacent apex. Now the position of all three apexes of the triangle would also be located by directional lines from two other points. To still further increase the strength and presence of the triangle one might add to each directional line, additional information about its length. This could be done if the line were made of a series of markers whose precise placements predict an end point 100 miles away. Finally, one might choose to replace markers with more relevant and energetic sculptural objects, perhaps specially made equilateral triangles. This would insure that the parts used to generate the whole are not different from the whole and, in themselves, tend to generate the whole.

The principles involved in the construction of "energetically linked objects" are consistent with the function of certain Buddhist and Vedic temples built as residing places for specific deities, impulses of cosmic intelligence or laws of nature. Even two-dimensional renderings of the ground plans of these temples reveal a resonant, wave-form structure. Such structures were made as physical expressions of precise fields, translated by means of ratio, proportion and rhythm. They are three-dimensional forms that correspond to the sound frequency of the impulse of cosmic intelligence. In fact, the esthetic of these structures is deeply bound to the requirements of translating "name" or sound into form. When the resultant form is that of an oscillating, resonant structure, then the appropriate impulse of intelligence is enlivened or generated by that space. The component of human consciousness, directed through appropriate worship and ritual within that space, further amplifies the field. The stronger the field, the more it fulfills its role, creating balance in the local environment and in the cosmic ecology.

The Capitol Design covers roughly 18,000 square miles. By using USGS 1:2400 topographic maps and Global Positioning System devices, we expanded and contracted the scale of the design, keeping the State Capitol Building in the exact center and maintaining the precise east/west orientation, until all key nine points were located on agricultural land. I still had to design and make the "energetically linked objects" that would be located at the key points and determine a way to integrate those objects into the landscape without their being considered an interference by farmers or others who use the land. These design challenges were taken up in several subsequent projects.

CONCLUSION

What can be concluded from these artistic experiments?

Certain geometric structures enliven and amplify specific laws or forces of nature. When these laws or forces of nature become stronger, they consistently influence the total environment, including human physiology and consciousness.

Art of this kind has the power and role of a technology; it can bring the beauty, balance and wholeness of nature into our day-to-day lives; it can help to create a venue from which nature can speak; it is art that can assist in transforming our world into a fitting expression of the real possibilities inherent in life.

Where should this technology be applied? The range of man-made geometric structures where nature could be made more lively is almost unlimited.

Certainly our cities are filled with flowing streams of energy, be they roads or water or electrical distribution systems that are, even if by default, geometrically arranged. What are the influences that we unwittingly create? What could we accomplish by deliberate design?

What about the architecture of our working and living spaces? Could we reduce the stress and increase the creativity of our environments? How could we better arrange our hospitals and medical facilities? Can we enhance the body's natural healing processes by strengthening its fundamental intelligences? What about the way that we provide and house social services? Could we reduce the stress levels in prisons?

Could our parks be filled with deeper and more powerful silence by virtue of properly designed plantings, gardens, walkways and sculptural elements?

Could we reclaim damaged land? What if Chernobyl were to be placed within an appropriate geometry? What if water reclamation facilities, where enhanced microbial activity is the key to efficiency, were to be designed according to these principles?

Could we develop an agriculture that not only produces food and fiber but also honors the forces of nature that support and enhance such production by including art and ceremony into the process of farming?

Could we use communication systems such as telephone and Internet to create geometric structures that exist electronically? How would they affect the systems from which they are made? Could we develop new kinds of "artificial" intelligence from micro-geometries?

And the Planet. Why not create meaningful designs that encompass the whole, that extend inward and outward into the space of our cosmic environment? Why not honor the cosmic intelligence of nature on a cosmic scale?

There is no shortage of possibilities. Neither is there a shortage of human or financial resources. Perhaps those with a shared vision will join together.

AUTHOR BIOGRAPHY

Bill Witherspoon was born in Rochester, NY in 1941. Throughout his life he has integrated diverse skills and interests - including art, science, teaching and business - into his professional life. After completing his B.A. at Reed College, Bill continued his education at The State Academy of Fine Arts (Amsterdam, Holland) and The Portland Museum of Fine Arts (Portland, Oregon). In 1970 he stopped painting desert skies and began a 6-year career teaching meditation. In 1980, he co-founded Westbridge Research Group, a bio-rational company dedicated to the development of non-toxic natural (now organic) products for agriculture. Having established Westbridge as a public company, he returned to art full time (1987-1997).

Bill is an artist driven by the potential for redefining the value of the art experience. Throughout his life he has focused upon understanding the power of art to influence human experience, consciousness and even the natural environment: "Our sensory experience is a primary factor in determining our mental and emotional well-being. Experiments with art and consciousness - with both the process of making art, and with people experiencing art - lead me to believe that art can affect us at the deepest levels of existence."

In his most current venture, The Sky Factory, Bill continues to explore the value of the art experience in everyday-life environments. The Sky Factory crafts illusory Sky Ceilings to trigger a universal experience of well-being and unity with nature.

LEONARDO REVIEWS 2004.06

Following last month's posting of Sean Cubitt's review article on the work of Flusser, Leonardo Reviews is pleased to draw attention to Czech photographer Jaroslav Roessler in a review by Allan Graubard of the book *Jaroslav Roessler: Czech Avant-Garde Photographer,* edited by Vladimir Birgus and Jan Mlcoch and translated by Derek Paton. Cubitt's essay will appear in *Leonardo* in due course, but for those who cannot wait it is of course online at <http://leonardoreviews.mit.edu>.

The two other extracts copied in full here are from an Australian-based reviewer who has been working with Leonardo Reviews for some time and has become a regular fixture. This month, Rob Harle has filed a review of a journal - *YLEM Journal: Artists Using Science and Technology* - and covered a fascinating book under the title *Wenda Gu: Art from Middle Kingdom to Biological Millennium,* edited by Mark H.C. Bessire.

Harle's contributions over the past year or so have brought new perspectives on many important issues, and this is no exception. Elsewhere, familiar names also appear with their usual solid contributions. Roy Behrens, Michael Mosher, Robert Pepperell and Stefaan van Ryssen are joined by relative newcomer Andrea Dahlberg, writing on *Brecht in LA.* As usual, a rich mix of perspectives on new material joins the established archive at Leonardo Reviews at <http://leonardoreviews.mit.edu> .

Michael Punt
Editor-in-Chief
Leonardo Reviews

Reviews Posted May 2004:

Against Fashion: Clothing as Art, 1850-1930, by Radu Stern
Reviewed by Roy R. Behrens

Arcane Devices: Engines of Myth, by David Lee Myers
Reviewed by Curtis E.A. Karnow

ART MOVES: 2003, Department of Art Faculty Exhibition catalog
Reviewed by Michael R. (Mike) Mosher

Avant-Garde Page Design 1900-1950, by Jaroslav Andel
Reviewed by Roy R. Behrens

Beyond Productivity: Information Technology, Innovation, and Creativity, edited by William J. Mitchell, Allan S. Inouye and Marjory S. Blumenthal
Reviewed by Stefaan Van Ryssen

Brecht in L.A., by Rick Mitchell
Reviewed by Andrea Dahlberg

Deep Gossip, by Henry Abelow
Reviewed by Stefaan Van Ryssen

Drive-By, by The Necks
CD reviewed by Michael R. (Mike) Mosher

Effigies in Cork, by VRIL
CD reviewed by Michael R. (Mike) Mosher

Essential Sources in the Scientific Study of Consciousness,
edited by Bernard J. Baars, William P. Banks, James B. Newman
Reviewed by Robert Pepperell

Jaroslav Roessler: Czech Avant-Garde Photographer, edited by
Vladimir Birgus and Jan Mlcoch, translated by Derek Paton
Reviewed by Allan Graubard

The Moving Image (journal of the Association of Moving Image
Archivists), University of Minnesota Press
Reviewed by Michael R. (Mike) Mosher

Prints. Snapshots, Postcards, Messages and Miniatures 1987-
2001, by Fred Frith
CD reviewed by Stefaan Van Ryssen

Spoors, The Science Group

and
Crashing Icons, Absolute Zero
CDs reviewed by Michael R. (Mike) Mosher

Wenda Gu: Art from Middle Kingdom to Biological Millennium,
edited by Mark H.C. Bessire
Reviewed by Rob Harle

YLEM Journal: Artists Using Science and Technology
Reviewed by Rob Harle

JAROSLAV ROESSLER: CZECH AVANT-GARDE PHOTOGRAPHER

Edited by Vladimir Birgus and Jan Mlcoch; trans. Derek Paton,
MIT Press, Cambridge, MA, U.S.A., 2004, 176 pp., illus. (178
b/w, 8 col.). Trade: \$35.00. ISBN: 0-262-02557-4.

Reviewed by Allan Graubard, 2900 Connecticut Ave., NW,
Washington, DC 20008, U.S.A.
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The formation of the modern spirit in Europe prior to World War II would be much impoverished without the presence of the Czech avant-garde. Seminal movements from constructivism to surrealism mark the debates begun and contributions made in the evolving complex of artistic values, whether revolutionary by design or effect.

Intimate to this evolution are figures in Czech photography, which we in the West are finally encountering, Jaroslav Roessler among them. A creator of first importance to the mid-1930s, Roessler's oeuvre bypasses the usual conventions of type or style without, at the same time, obscuring his interpretation of them. Commonly associated with constructivist, abstract, poetist and informalist tendencies throughout his career, Roessler emerges intact, a sensibility to be reckoned with. This is perhaps because of his verve in sustaining an anxious tone, a critical, if disarming, poignancy in questioning why and how. His touch remains his own, as does his means of envisioning; something that was not lost on Karl Teige (principal theoretician of Devetsil, the leading avant-garde group prior to Czech surrealism), who in 1926 placed Roessler's work above that of Man Ray - when Man Ray held a commanding influence on Czech photography.

Unlike Man Ray, however, Roessler rarely achieved success or popular notice by name, despite his charming cosmetics and other ads during the late 1920s and early 1930s. No, Roessler's path is more erratic. Beginning in 1935 and for more than twenty years, in fact, he endures an eclipse brought on by a failed suicide attempt and an extensive depressive aftermath. His public re-emergence in 1961 in the Prague quarterly **Revue Fotografie**, then in 1966, in Brno, where his work appeared in the "Surrealism and Photography" exhibit with younger colleagues, is a tribute to his uniqueness during a time when cultural liberties in the former Czechoslovakia assumed mounting social importance.

Roessler made his first teenage photos in 1917 as an apprentice in the studio of Frantisek Dritkol, an eminent Czech

photographer. Having learned his trade there, along with a fascination for new mass technologies, such as radio, Roessler cultivated several techniques to provide an image concurrent with the tensions of the era, when photography would soon claim its own space exclusive of other arts. His early use of bromoil (painting by brush on glass negatives) expanded to the complete negative and gelatin silver print, then collage, photo collage, photograms (being, perhaps, the first Czech to make them), and photomontage, all done with great effect in black and white; in his last decades, he created superbly evocative color images.

For viewers today, circa 2004, Roessler's independence remains perhaps his greatest distinction. A poet of the constructed image rather than a constructivist, as Mathew Witkovsky notes in his essay on Roessler; designer of abstractions infected with ambiguity and psychological charge; integral with poetism during its ascendance; celebrated by surrealists; affected by informalism; we would do well to make of our encounter with Roessler a study of the deeper struggles of the imagination and the strategies required of artists in the world we face. In this regard, I do not take Roessler's refusal to sell his major work, for which he gained most recognition (save for what he produced as a "professional photographer" in advertising, which even then brought him irregular compensation), as a symptom of personal conflicts alone.

With Roessler, the photographic image becomes something more than a reflection of, or window into, the reality we face but a reality that reflects what we bring to it, opening up an interaction that rarely leaves us dispassionate. The recent release of the current monograph, with 178 illustrations (134 full-size), six important essays and a chronology, returns to us a world of light, shadow, people and objects, both quotidian and hybrid, whose resonance remains.

Here, then, is Jaroslav Roessler, born 1902, died 1990.

YLEM JOURNAL: ARTISTS USING SCIENCE AND TECHNOLOGY

Vol. 22, No. 2, January/February 2002, P.O. Box 749, Orinda, CA 94563, U.S.A.

<http://www.ylem.org/flash/journal/year02.html>

Reviewed by Rob Harle, Australia
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YLEM (pronounced "eylum") is Greek for "the exploding mass from which the universe emerged." It is both the name of the journal under review and of the "international organization of artists, scientists, authors, curators, educators and art enthusiasts who explore the intersection of the arts and sciences". Their web site, at <http://www.ylem.org>, is a must to visit if you are interested in art and science.

This issue of the *YLEM Journal* celebrates YLEM'S twentieth anniversary, which is somewhat of a revelation in that only in the last few years has the interaction of science, art and technology become a seriously considered field of inquiry and activity. Of course, art has always commented on and investigated our technological achievements, such as space

travel, but recently artists have begun using scientific equipment and processes to produce art that could not be realized in any other way. YLEM's members, it seems, have been doing this for almost twenty years. The image by Grant Elliot (p. 6), entitled *Starburst* (1994), is a wonderful example; it is the "interference contrast illumination of a defect of a semiconductor."

YLEM is acutely aware of the difference between science and technology; many use the terms synonymously and think that if they are creating art using a computer, they are engaging in art and science, which is in most cases incorrect; it is more likely art with technology. As Stephen Wilson explains, "Artists have been much more involved with technology than science" (p. 3). This may be low or high technology and, of course, artists have been using low technologies for centuries.

Wilson further explains that art getting seriously involved in science is not without its detractors: "Many in the sciences and engineering may doubt that 'dabbling' outsiders can be serious contributors [to new knowledge]" (p. 3). However, artists around the world are establishing their own research agendas and labs. With the support of such organizations as Leonardo, ANAT, Arts Catalyst and the Wellcome Trust, they will discover new things and spawn new technological innovations, if for no other reason than bringing a different mindset and creativity to existing problems.

The YLEM journal is illustrated with both good quality color and black and white photographs, and the cover image is simply a stunner. At first glance, I thought it was a holographic image, but the editorial explains that this 3-D imagery is known as "lenticular" printing. This is no Escher-like illusion; things actually move and change as the viewer moves his or her head.

To celebrate YLEM's twentieth anniversary, eighty members exhibited one work each at the SomArts Gallery, examples of which are reproduced in this journal. The works included installations, sculptures, photographs, electronic jewelry, and digital prints.

My only criticism is that the journal is a bit too slim, almost anorexic. I think it could have benefited from one or two decent-length critical essays to go with the terrific graphics. However, I get the feeling from this journal that YLEM is a vibrant, cutting-edge organization interested in establishing links with similar organizations and interested individuals around the world to further the true interaction between science and art.

WENDA GU: ART FROM MIDDLE KINGDOM TO BIOLOGICAL MILLENNIUM

Edited by Mark H.C. Bessire, The MIT Press, Cambridge, MA, U.S.A., 2003, 230 pp., illus. (75 b/w, 50 col.) Trade, \$25.00. ISBN: 0-262-02552-3.

Reviewed by Rob Harle, Australia
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The problem with book reviews is that we are constrained by the

meanings of words. There are many things in this world that words fail to adequately describe, and Wenda Gu's art is one of them. Interestingly, much of Gu's work consists of Chinese-like ideograms that are pseudo-ideograms deliberately created to transcend the traditional content of Chinese "words." As Gu is quoted as saying in *Wenda Gu: Art from Middle Kingdom to Biological Millennium*, "I felt such freedom, leaving behind the content of words" (p. 145). Having only words at my disposal, I will do my best to give readers a feel for this magnificent book.

The book is wonderful just to glance through, but it is much more than a coffee-table presentation. It documents much of Gu's work, both through serious academic discussion and lavish color photographs. It also includes an insightful interview with this most complex, unique artist by David Cateforis, professor of art history at the University of Kansas.

Gu was born in Shanghai and now lives and works in Brooklyn, New York, with studios in Shanghai and X'ian. In the Orient, he is Gu Wenda, in the West, Wenda Gu; this naming convention in a sense sums up Gu's work. He is constantly striving to juxtapose Eastern and Western symbols, not in a unifying sense but in a transcendent third position. Thus we read the following: "Globalism has intensified ethnic difference on a local level while increasing ethnic unity on a global level. This environment . . . is referred to as 'transculturalism' by Gu, whose work tends to parody the role of cultural colonialist from a suspended cultural position as a citizen of a diasporan world" (p. 12).

Gu, like David Suzuki and Isamu Noguchi, constantly deals with this "transculturalism," both on a personal and professional level. Gu has to consider not only minor changes in conventions such as names but also those with fundamental ideological differences on the most profound levels. Not that long ago Gu, born in 1955, was painting large propaganda posters of Mao for the Red Guard in a totalitarian communist state. Now he is a leading avant-garde artist in the most capitalistic society on Earth. The materials he has used in his art in the past - including menstrual blood and placenta powder - are challenging, to say the least, in either culture. He now uses human hair as his main medium and is sometimes known as "the hair artist."

Gu collects human hair from many countries around the world, donated by over a million people so far. He then weaves it, compresses it into bricks, presses it into glue to make translucent hanging panels, and uses it arbitrarily in his massive installations. Most of Gu's work is monumental. His ongoing project, "United Nations," contains hair woven into a braid 5000 meters long. The different hair colors, their origin and the different locations of the "work" all point to Gu's notion of "transculturalism." It also works as a metaphor for "the mixture of races that he [Gu] predicts will eventually unite humanity in a 'brave new racial identity'" (p. 12). Gu usually combines large ink-on-paper calligraphic or ideogram-style painting with the hair components in his work. "United 7561 Kilometres" is a new piece in the exhibition, "Wenda Gu: >From Middle Kingdom to Biological Millennium," and is the twentieth installation of his "United Nations" series (which he began in 1993). This book is an accompaniment to this traveling exhibition.

The book's rather enigmatic subtitle refers to Gu's perception of the traditional Chinese Middle Kingdom (Chou empire, circa

1000BC) and the new millennium of the biological era. The human body materials he uses represent this era and the calligraphic paintings, the former.

As mentioned, this book has an interview with Gu, together with essays by leading Chinese academics, a fascinating exhibition history and bibliography, and an academic essay by Gu himself. This artist's vision is as grand and monumental as his creations; it most certainly could neither be contained nor circumscribed by one culture or country. The greatness of this artist and his work can only be hinted at in words. The best I can hope for with this review is that it encourages readers to buy this book and also to seek out Gu's exhibitions to experience them "in the flesh."

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LANGUAGES FAMILIAR TO THE AUTHOR

Italian, English, Spanish, French

THESIS TITLE

Principles of Metadesign: Processes and Levels of Co-Creation in the New Design Space

ABSTRACT

"Metadesign" is a term that has been used with reference to art, cultural theories and design practices (from graphic design to biotechnological design) since the 1980s. Metadesign is neither an established discipline nor a coherent theory. It is rather the expression of a set of concerns and intentions, calling for an expansion of the creative process in the new design space engendered by information technologies.

This study provides an understanding of metadesign and improves its conceptual framework and methodology, both through a deconstruction of the oscillatory trajectory along which the notion has developed and been applied in the last decades, and through a transdisciplinary dialogue with the aesthetics and practices of interactive art.

Such a study contributes to a new idea of design and to a new design space. Rather than proposing a new "model of design", the work promotes a new "mode of design", a shift from a design culture as planning towards a design culture as seeding (or emergence). It is a belief of the author that such a "mode of design", identified as a set of principles organized in different and complementary planes, might enable people - once embodied in the evolving practices of fluid and interdependent communities - to manage the construction of their environment and their relationships with the world in a more co-creative manner.

In conclusion, the thesis offers: (1) an understanding of metadesign as a design culture emerging from current design and cultural theories; (2) an integration and advance of the conceptual and methodological framework of metadesign in light of the concept of co-creation; and (3) the development of the idea of a multifold design space, and the identification of design principles for each level of metadesign.

KEYWORDS

Metadesign, interactive art, net art, design space, co-creation, emergence, transdisciplinarity, design, art practice, aesthetics, culture.

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Less than a year ago, I joined the Leonardo/ISAST Governing Board of Directors. Previously, I had thought about Leonardo as the print journal and didn't give much thought to all the other Leonardo projects that I enjoy on a regular basis. Along with Leonardo and Leonardo Music Journal (both of which are published simultaneously in print and on line), there's the Leonardo Electronic Almanac, published on line and Distributed via email monthly; Leonardo Reviews of current books and media in our discipline, published on line monthly; Leonardo On Line, giving access to the Leonardo Electronic Directory and recent news; the sister organization in France, Leonardo/OLATS, which has its own Pioneers and Pathbreakers project and SpaceArts database, as well as a wealth of resources on the web. And those are just what's happening on line!

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Best regards,
Michael Joaquin Grey
Member, Governing Board of Directors
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