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The Act of Seeing Expands into the World of Elementary Particles

It all began when Max Planck boldly theorized that the absorption and discharge of energy occurred in discrete units which he called quanta. Quantum mechanics was born, a theory showing aspects of uncertainty in nature of elementary particles to replace the beautifully harmonious picture of the world given by classical mechanics. This theory is now fully developed and accepted.

In the world of elementary particles, light moves in the form of a wave but at times suddenly turns into matter and behaves like a small bullet. Strange transformations occur through quantum shift. This double aspect of things is always harmonious and unified. Just as the definition of a mammal changed when it was found that the platypus is a mammal but lays eggs, the sense of irrationality which hung about quantum mechanics has faded and has been almost entirely wiped away by later researchers. Physics is the branch of science which determines the laws of nature and ascertains what exists. Its role is to understand and recognize the forms of what is. There is no way to prove the physical existence of the quantum world by the conventional scientific methods of measurement and proof. The role of physics is to find rational explanations for the natural world, but it seems to have gone beyond the realm which is subject to proof.

It has been a long time since scientist thought that the atom operated in an orderly, classical fashion like the solar system. It took a certain amount of time to accept things not accessible to the senses or common sense. Almost one hundred years have passed since the birth of quantum mechanics, but it is still confusing for the layman.

Now we come to quantum art. An introduction like that given above is necessary to begin understanding quantum art. The word quantum is weighty; the idea is revolutionary. This leap of imagination which fuses matter and energy and makes them one, unthinkable under the classical view of the physical world, has become an accepted idea. Yutaka Matsuzawa has applied quantum theory in art. What sort of world is he trying to reveal?

There are two important points to consider. One is that that visible objects are reflected by rays of visible light. These rays are within a range of relatively long wave lengths which is only a small fraction of existing electromagnetic waves. It is necessary to renew our awareness of the huge realm of things which are invisible, even if this a matter of common knowledge. Until now, art has used visible things to embody its concepts. Matsuzawa is attempting to expand the range of art to include the world of elementary particles which cannot be observed with visible light. This is equivalent to expanding into new spatial dimensions, from lines to planes or from cube to hyper cube.

The other point is that elementary particles, while being forms of matter, can change to waves of energy. They can change their form temporarily. A vacuum is a state of emptiness, but we now know that it is full of invisible matter packed tightly in a balanced state. If this balance is disturbed even slightly, matter will suddenly be produced. We must understand that this quantum world has features entirely different from the world of visible matter.

In his *Quantum Art Manifesto* Matsuzawa refers to the research of the electrical engineer and physicist, Dr. Shuji Inomata, an attempt to establish a relationship between consciousness, energy, and matter. He explains that the stage has been reached where the existence of "imaginary energy" has been proved by a thermodynamics which is a complex thermodynamics, a form of consciousness engineering which is not connected to the current physical state of affairs. In other words, now that

the relationship between matter and energy has been explained by quantum mechanics, the relationship between world of human consciousness and the world of matter has been explained by the intervention of imaginary energy. This is the view presented here. If this is proved, it would be an important advance which would make the present quantum theory even more fruitful.

By creating a mental image of the actual existence of imaginary energy or the super string theory in which elementary particles are actually parts of very minute vibrating strings, matter is exchanged for energy and this energy reacts reciprocally with consciousness producing vibrations of the super strings. The traces of these vibrations are developed into a kind of art never seen before.

This is the idea behind quantum art, and Matsuzawa says that the time will come when many people will be able to perceive this kind of expansion of the world as "the ultimate form of conceptual art." It is the final form of art resulting from a paradigm shift. The works of quantum art use words to point to events closely related to the probability of the extinction of the future. This is the final section of the Quantum Art Manifesto, *memento mori* or "remembering death."

It is commonly known that current studies in particle physics are providing an explanation of the creation and history of the universe. The day will probably come when a unified, comprehensive theory will emerge, and the origin of matter and everything in the universe can be recorded in simple form. When this kind of theory becomes common knowledge, quantum art may become a fundamental branch of knowledge which deals comprehensively with physics, mathematics, and metaphysics. It can be expected to stimulate the mind to a tremendous extent and make an important contribution to creative thinking.

Works of Art Born from Overlapping Conditions and the Fluctuations of Quantum Uncertainty

Schödinger's wave function Ψ uses wave amplitude to calculate probability. In terms of classical mechanics, the Schrödinger equation is puzzling because it deals with randomly overlapping, complex phenomena, and results cannot be obtained from a single viewpoint for any state of affairs. For example, if there is a probability that something is dead there is also a probability that it is alive, an overlapping condition of two possibilities. The famous Schrödinger cat is an example in which cause and effect cannot be definitely connected. This uncertainty becomes the "fluctuation" in the quantum world, and it has been tolerantly accepted by physicists although they would prefer greater precision. From here on out, physics is likely to move closer and closer to the oriental view that matter is void.

Matsuzawa's admonition, "All human beings! Let's vanish!" presents the overlapping views of anti-matter opposed to matter and anti-civilization opposed to civilization. It was also inspired by the wave function. If there is a slight possibility of proton destruction and a quantum shift in the energy in matter takes place, it is fully possible that the matter of the universe will suddenly revert to nothingness.

Unfortunately, human beings will eventually vanish. This may happen in an astronomical number of years from now, expressed with hundreds of zeros, so there may be no call for anxiety at present. It is a matter of probability, however, so it could conceivably occur tomorrow. In terms of epistemology, beings with awareness of this universe will disappear, so the universe itself will vanish. Matsuzawa is suggesting that we take the initiative, exercising our brains to the fullest possible extent and using the latest findings of physics to experience this great event, the sudden transformation of matter into nothingness, as the "last art." When everyone is in a position to see quantum art directly, all human beings will be in a state of extinction. Since it will be impossible at that time to have an "ordinary" experience of appreciating art through objects, logically, this event will not occur. There will be a kind of tension in the quantum uncertainty at that time, and this high potential energy will constitute the value of quantum art.

The name quantum art comes from this "observation of the scene created by quantum shift." It is not limited to the quantum world of matter. For example, the experience of mathematical propositions as structures with real existence, using a kind of "mathematical sense," might be described as an appreciation of quantum art. A person contemplating a straight line containing an infinite number of points who is left speechless by the beauty and profundity this condition might be described as experiencing the line's presence as a work of quantum art. Anything which can be presented as a proposition in some form, not just in physics or mathematics, is in a category which could be appreciated as quantum art.

The Uncertainty of Proving the Existence of UFOs

Recently, large geometric patterns began appearing in grain fields in rural areas of Great Britain, the controversial "mystery circles." It seemed impossible that they had been created by a human being, and many people thought they were marks left by the landing and departure of alien space ships, UFOs. It turned out that this supposed proof of UFOs was an art work made by a man who entered the fields at night and bent over the stalks of grain with a piece of wood. The morning after each work was made, it was reported as a mystery throughout the world. To me, this was a brilliant and surprising form of art.

Still, what are we to think about UFOs? Will they ever be tied down with ropes like Gulliver so that their existence is absolutely confirmed? They are probably made of substances different from what we generally regard as matter. There are too many mysterious things about them to prove positively without further advances in physics. With our present knowledge, even the Big Bang theory of the universe is no more than a guess.

It is, however, possible to verify one important fact about UFOs. They are literally defined as *unidentified* flying objects. If their existence as objects were to be sufficiently confirmed in a way which would command general agreement, they would become *identified* flying objects. They would no longer be unidentified flying objects. It is precisely because their existence cannot be proved at present that they are unidentified flying objects. Whatever the nature of the actual objects may be, the proof of existence of things denoted by this word, as long as the word is used, can never be carried out. This is the conclusion. A UFO is something uncertain which varies with the definition. If we recognize the term UFO, it exists. If not, it does not.

I have used this example because it is easy to understand. Mathematics boasts a history of more than 2000 years, but the great mathematical systems of today were built by human beings by defining certain words, making a system of axioms, and deriving a variety of useful theorems from them. In recent years, Gödel proved that in a consistent system of axioms, the consistency of the system itself cannot be proved using the language of the system. The manner in which the foundations of mathematics are constituted is a major issue of set theory, originated by Cantor. A new system of axioms may be developed or, in the words of quantum art, a "imaginary" system of axioms may be used to effect a major revolution in the nature of mathematics. As these strange developments interact, many heretofore insoluble problems may suddenly be seen from a new perspective.

Quantum art is a form of art created with human thought and information processed within the human brain. It uses words, taken in a broad sense, as its medium. Mathematics is a structure of symbols, a kind of language, governed by certain rules, and it is closely related to human thought. Quantum art requires images of phenomena occurring in the physics of elementary particles and the universe as well as a world view comprised of words and symbols which can give direction to human thought. It has a potential for bringing together the previously separate and specialized fields of science, art, and mathematics and creating a new value system. At the very least, quantum art can act as a forerunner to such a development.

The entire truth about UFOs will be revealed when the shadow world

which coincides with visible reality is proved in an easily understandable way. The proof will be based on a simple idea like super string theory. When theories explaining matter and its origin are no longer speculative, the obscure movements of UFOs will be readily verified as physical phenomena. These flying objects will be recognized and explained, no longer unidentified. Just as the obscure behavior of elementary particles on the order of 10^{-15} m is explained at least to some extent by quantum mechanics and is becoming more understandable although the particles are invisible to the naked eye.

The Shift from Conceptual Art to Quantum Art

When Matsuzawa realized that objects were no longer needed in his art, he attempted to change its description from conceptual to quantum art. Practitioners in all creative fields face the problem of "retaining the preferential rights to new work." Matsuzawa has again and again taken the position of an innovator in art with nirvana art, catastrophe art, and now quantum art. In each instance he has established preferential rights to these new art forms.

Each of these innovations has held a solid place in art history, but ever since the Quantum Manifesto, all Matsuzawa's previous art has been pulled into the stream of quantum art — just as all the matter around a black hole is sucked into it.

Quantum art can be seen unhesitatingly as a large black hole. It involves so many things which cannot be understood from the perspective of a peaceful, fertile planet like the Earth. First of all, a black hole cannot be seen. It has enough gravity to bend light. The matter it contains is very dense, and it is exceedingly difficult to imagine its contents. It blows off high-temperature gases which cannot be observed, and light moves about in it faster than the speed of light due to gravitational acceleration. Inside it, time and space are continually changing in unimaginable ways, and it cannot possibly be perceived by our limited powers. Right now, quantum art is something like this description of a black hole. Thinking about its contests at whatever point of access its available can lead to an encounter with this new art form.

Quantum art has declared its separation from ordinary, everyday reality, and it will likely come to occupy a central place through a paradigm shift in art which will occur with further developments in physics.