

Art Installation of Farmer's Plant Guardian

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ABSTRACT

The rice farmers have been facing various troubles in their efforts to boost their production. Some causes of their problem are pests, such as rats, bugs, and birds. These pests, which exist amongst the rice plant, are part of the food chain within the farm. Their emergence is the result of population inequalities in the community of natural enemies, predators and pests. Farmers have been practicing the usage of various pesticides or predators as pest control, but that is an ineffective method. This phenomenon inspires the creation of the art installation of the Farmer's Plant Guardian as an alternative to repel pests. This art installation is created by utilizing Kuswarno's theory of phenomenology from a subjectivism point of view approach. This theory is employed to see the Indonesian farmer tradition to use scarecrows as a pest repeller. This art installation is also utilizing Rhode's theory of creativity which states that creativity is a form of a phenomenon and is assembled in the "Four P's Creativity," the connection between the Person, Process, Press, and Product. This art installation is produced by utilizing a practice-based research method, which, in its practice, was conducting the process of exploration, experiment, and execution. The outcome of this exploration is the creation of an art installation of a deformed three-headed dog. It is different from the general kinetic art as the movement of this installation is through mechanical and electrical mechanisms. Sensors are installed to respond to the pest movement around it to move the deformed dog scarecrow. Art connoisseurs could also directly interact with it as the sensors also respond to them. This art installation uses metal-based material to make it sturdy, while the form of a deformed three-headed dog is of an aesthetic value. This is a 2x2 meters width and 1.8 meters height art installation of a deformed four-legged three-headed dog, with each of its moveable heads according to the sensors.

Keywords: *Art Installation, Experimental Art, Technology, Farm, Pest.*

1. INTRODUCTION

The effort to increase the production of rice in Indonesia has faced various problems and obstacles in terms of ecosystem control in the farming area. The problems are the pests such as rats, bugs, and birds which exist amongst the population of the rice plant, yet it is also a part of the ecosystem within the farming area. The farming ecosystem in Indonesia is unstable due to the difference in the population between the predators and pests. The stability of farms are not only determined by the diversity of the community structure, but also by the habitude of the components. An unbalanced ecosystem will make the population of pests increase so it creates a threat to the farmer and the decrease of the rice production. However, there is a possibility that the farm ecosystem could be changed into a stable condition.

Pests and diseases that attack rice plants become one of the threats for some farmers. Not only inflicting financial loss, but pests and disease attacks could result in failed harvest. The case of the damaged rice plant that was caused by the attacks of the rat happens to all growing phases of the rice plant, starting from the seedbed up towards the harvest period. Rats are a pest that are relatively hard to control because they have rapid adaptation ability, mobility and breeding ability and can also cause an eminent rate of destruction. Other than rats, pests that can cause harm for farmers are birds. Birds are also hard to control as they have quite flexible mobility. Birds could fly and eat the rice seed that can cause damage to the plant and also reduce the harvest production. The attacks of pests in farms are the results of the inequality of the food chain within the farm's ecosystem, as the decreasing population of predators makes the population of the pests increase.

If the interaction of the components can be arranged correctly, then the stability of the farming ecosystem can be reached. In order to maintain a stable farming ecosystem, pest management can be applied by using insecticide or pesticide. But using insecticide to control pests has a bad risk in rice production. Thus, harnessing a non-chemical method can be an alternative to control pests in rice plants. The use of a natural enemy can be an alternative way for farmers. The predators are used to decrease the population of rats and birds. The use of natural predators is judged as a rather safe way as they are not creating new pests for the plant, they could look for their own prey, and they breed and spread on their own. However, the use of natural predators can also be a threat for the farmers if their population is exceeding the population of the pests. The handling of pests using the traditional way can also be done by using scarecrows. The scarecrows are shaped to resemble a farmer then was placed among the plants to scare the rats and birds away. Scarecrows are a symbolic interaction to convey the message from farmers to the pests to not approach their plants. Scarecrows are a universal product from worldwide farmers because it is utilized in almost all worldwide farming civilization with different specifications according to the farmers' creativity.

This phenomenon is an effort of the farmers' hard work to maintain the products of their hard work. Farmers work hard to look for a solution to stop the pests that keep stealing their plants.

It is not easy for farmers to expel those pests, so they need various strategies to deal with them, just like a group of crop thieves. Repelling pests is like banishing a group of invaders that forces farmers to keep producing foods so that the pest could also enjoy the product of the farmers' hard work. This phenomenon became the idea in creating an artwork. Starting from seeing the farmers' struggle in repelling the pests in the surrounding farming area. Then carrying this phenomenon as the main problem plaguing the stability of rice product, up to the social and economical impact that happens if the pests keep taking the harvested product could impact the farmers well-being and even the country's food stock. Thus, to deliver sympathy for the farmers' efforts in the form of an idea of an art installation titled "Farmer's Plant Guardian" in the shape of a deformed three headed dog that can help farmers in repelling pests that have been eating their plant.

2. PREVIOUS STUDIES

The source of the creation of this artwork is taking some reference related to an animal predator, the enemy of pests and documentation of kinetic artwork. Choosing predatory animals is dominated by the tendency to look for a solution of the farmers problems in the farm. From that explanation, the author wanted to create an installation art with the object of the predator that can interact with the visitors as well. To make sure that the intended result can be achieved, the author will be using some reference for the source of inspiration for his works.

Predators are usually a carnivores that eat the rats and birds that eat the farmers' plants. These pest predators are able to help farmers in resolving the ever increasing pest population. The use of predators in solving pests, especially rats and birds around the farm is one of the biological control methods. Biological control exploiting natural enemies of pests which hoped to be able to repress the spread of pests in the farm. The predator animal the farmers use are dogs and owls to prey on rats and birds. Farmers also utilize spiders to prey on insects like planthoppers and grasshoppers.

Farmers utilize dogs as the predators because they can be domesticated. Dogs are widely used as a house guard, blind guide, police helper for their sharp smelling ability, there are even some sports for dogs to showcase their natural ability such as hunting. Farmers trained dogs to be predators of the rats, by training them since they are two month old to get them used to eating rats everyday. Dogs are also trained to track down the holes where the rats nest and dismantle them. One of the dog breeds that are widely used to hunt and train is the mongrel dog, this is because these



dogs are easy to get and to take care of.

Figure 1. The painting of Cerberus in Vas ca 330-310 B.C. Source : <https://www.theoi.com/Gallery/T16.2.html>

The representation of dogs as a guard has been spotted in the greece mythology. Dogs were depicted as a three headed animal, the pet of Hades, the god of

the underworld in Greece story. Pluto's house, wide-gated, thronged with guests, has a janitor Kerberos, sometimes friendly, sometimes snarling when new guests arrive, but always hostile to those who would depart.[1] The depiction of the three headed dog in Greece mythology was named Cerberus and was portrayed as a three headed dog with venomous saliva and flaming mouth.

Cerberus guarding the underworld. The purpose is so that no soul could escape the underworld. Cerberus also has the ability to track and find the escaping souls, and also in charge to prevent the living from entering the underworld.

Other than the three headed dog shape as the object of the work, the author also inspires to create an art creation by using kinetic art in the process of shaping the artwork. In its process, this artwork is not in the actual form of a dog but its deformed shape. The changes done is a new improvement by reviewing the display by the concept, material, shape, and function. After observing, gathering data, and directly looking at some of the existing dog forms, the author became interested in making it in the form of kinetic art. Psychologically, the artwork is born first as an observation of events. Actually, observation is not a free and stand-alone event because when one observes an object, there is stimulation that makes someone catch the meaning of the object according to their observation.[2] There are an organized term and concept of fine arts, the term of 'kinetic art' (Kinetic art, from Greek 'kinesis' or 'kinetos', means 'to move') are used to explain the works related to movement. Since first presented in the 20th century, the practice of kinetic art has surpassed the definition of mere moving artwork by looking at certain techniques and styles. Generally, this is related to its development from the point of view, response, and the artist's understanding of the 'moving' concept and phenomenon.[3]

The development of technology that causes a cross between art and technology as well as the rapid advancement of the digital computer world makes a complex calculation to be done. As a result, kinetic art has become more complex. In the meantime, information structures, procedural principles, and control feedbacks emphasized in electronic technology also exist in artists' creative thinking, making the cooperative relationship between kinetic art and technology even more important than before.[4] Like in Theo Jansen's work, he managed to fuse art and technology and created an 'artificial intelligence' with a revolutionary approach.

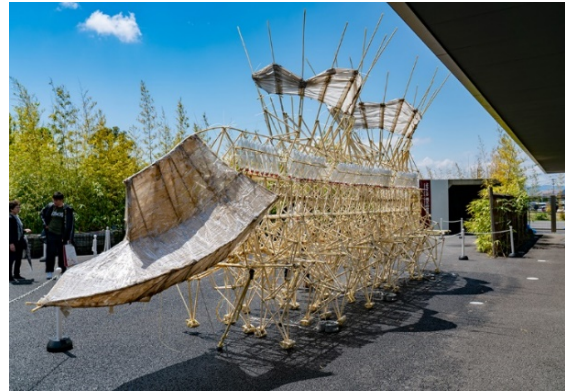


Figure 2. Theo Jansen's work "Strandbeests"

Source:

<https://singaporeguidebook.com/2018/07/09/strandbeests-hasil-karya-theo-jansen-dipamerkan-di-singapura/>, 2021.

As can be seen from one of the famous Dutch artist Theo Jansen, who held his exhibition in Southeast Asia, Singapore to be precise. He showcased the Strandbeests collection through an interactive exhibition titled "Wind Walkers: Theo Jansen's Strandbeests" to the Art Science Museum's visitors. Strandbeests is his artwork of a wind-powered machine. It is a fusion of art, science, and performance. In Dutch, Strandbeests means beach animal, thus making Jansen's artwork to move around a beach and pushing and piling up beach sand which later will protect the coastline.

The term of kinetic art is rather unpopular in Indonesia, even though various aspects of 'moving' could be found in some work, especially in works which are widely known as 'installation'. Kinetic art that grows in Indonesia has its own uniqueness and is different from foreign artists. In the development of kinetic art, most of them are made in the form of installation art, this happens because of the use of local media that then adapted to the themes related to social life and combined with traditional and modern value or technique in use. Like in the work of an artist from Yogyakarta, Jompot Kusdiantoro, in his work "Java: The War of Ghost" exhibited in Biennale Jakarta in 2009. Jompot managed to wrap a cultural issue of the palace soldier with kinetic installation, sound, and electric sensors.

3. FOUNDATION OF CREATION

In the creation of this work, it uses several theories as the foundation of creation, the aesthetic theory and creativity theory. This is done in order to achieve a result that shows off the material, shape, movement,

and aesthetic aspect in this creation. These is the theory that will be uses as the foundation:

3.1 Phenomenology

Kuswarno's 2009 phenomenology approach in Sani, stated that phenomenology is an approach with a subjectivism view, means to see something not only from the phenomenon but to also discover the meaning in it. Awareness is a thinking method that aims at something based on desire and it is the conclusion of consciousness.[5] The author feels the point of view from phenomenology is suitable for his creation. Phenomenology explains perception of point of view. Phenomenology also explains how someone thinks and then realizes the existence of the things they think about. Phenomenology theory helps to explain the authors' view of the phenomenon of pests in farms could disturb the production of rice, thus they needed to be controlled. Pest management in farms is the farmers' attempt to resolve a stable food production and helps maintain economic sustainability. In this creation, the author tries to make this occurrence into an idea of "Farmer's Plant Guardian" as a combined research with the development of technology into an artwork.

3.2 Aesthetic theory

Means that this creation will refer to the form of art that puts the aesthetic and social function as the main function, meanwhile, for the process of creation it uses the method of aesthetic theory and sign theory as the support. The theory in use has a different classification and function but related to each other and implemented in this creation. In the process of creating this work, using kinetic art, later, there will be a deformation on the Cerberus dog. Using the aesthetic theory, it will observe the deliberate deformation and changes in the shape structure for an artistic purpose, by using 4 method, simplification, stylization, distortion, and mixing between them.[6]

The combination of shape, colour and fine arts element creates a harmony that yields an aesthetic structure. Something beautiful is basically consist of main quality consists of unity, harmony, equivalence, balance, and resistance that can be absorbed by the senses.[7]

3.3 Creativity theory

According to Rhodes, in general, creativity formulated in the term of "Four P's Creativity", (1) person, (2) process, (3) press, (4) products. There are

interrelated stages, One of these stands pertains essentially to the person as a human being. Another strand pertains to the mental processes that are operative in creating ideas. A third strand pertains to the influence of the ecological press on the person and upon his mental processes. And the fourth strand pertains to ideas. Ideas are usually expressed in the form of either language or craft and this is what we call a product.[8]

The definition of creativity depends on its emphasis, creativity could be defined in four kinds of dimensions, creativity in "person" dimension, "process" dimension, "press" dimension, and "product" dimension. Creativity consists of four steps, in which it has the ability to reconstruct ideas to solve problems, activity, and to create a creative and innovative work (different from the already existing one) and variative (having an artistic and added value) so it becomes valuable and useful for the creator and other people.

4. METHOD OF CREATION

4.1 Practice based research

The fitting method to be used in this creation is practice based research. This kind of research appeared in the 1980s and highlighted practices in collecting information through practice.[9] Malins, Ure and Grey define the concept of practice-based research as a research that started from practice and doing practice, and practice-based research is an original research that done to obtain a new knowledge through practice and its result, where the result give a potential application as a means to convey the potential that exist to the pure arts practitioners.

Practice based research is the most suitable for designers because the new knowledge gained from the research could be directly applied in their relevant field and the researcher could do their best ability and the already possessed knowledge in the related subject.[9] The creation process of craft art could be done intuitively, but can also be done through scientific methods that are meticulously planned, analytical, and systematic. In a detailed methodological context, as already explained by Malins, Ure and Grey in the scheme of the concept of practice based research below:

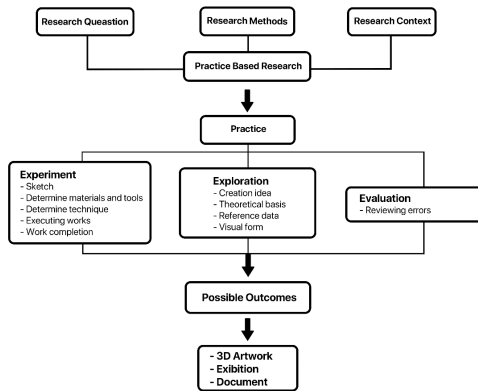


Figure 3. Mind Mapping of Process Of Creation
Source: Practice Based Research, Ramlan Abdullah, Jurnal Inti FSSR, 2021.

In the process of creation, practiced-based research can be used by the author. The existence of feedback to the society from the practice is delivered in the form of the method being used in the creation process, creation result, and research result. Every artist has their own process or method in creating an artwork, using the method from the same expert or not.

4.2 Process of creation

Process of creation is the activity to cultivate feeling and ability according to the experience and knowledge an artist has. Through this process, the idea of a concept and embodiment in the form of three dimension creation that can move and interact with visitors occurs. Choosing the material, equipment and medium have an important role in the process of creation.

5. EXPLORATION

Exploration stage is a process where artists do a period of contemplation and widely reviewing all supporting aspects in the process of creation. The implementation of exploration in this artwork consists of observing a basic preparation in processing the artistic creativity in academia. The steps that the authors' do starts from musing, listening (to see and to hear) and reading (concluding).

5.1 Idea (research context)

Exploration can function and keep going up-to the stages in the experimenting process and execution. Then followed by the starting stages in the process of creation that is very important to be explored first, as this is a ricketing source of ideas. The main idea of

this creation is the exploration of the shape of the Cerberus dog in the installation work. This creation is focused on the visual shape of the Cerberus dog that is reviewed from the shape and creating a work that can move dynamically.

5.2 Research literature

In this process the author will explore the theme of creation based on the observation done through data, such as looking for relevant literature from books, the internet for the Cerberus dog, and observation for pest management using natural enemies. Other than the above exploration, the author also observes the usage of the material chosen as the media to embody the work to get the expected result as the author's hoped to. After doing the observation, the material of aluminium and stainless steel are deemed as strong to support the shape of the installation and weather-resistant.

5.3 Theoretical basis

The search for an approach theory that will be used as the creation concept reference in order to create the shape of the kinetic art. The theories used also could help to dissect the work. The theory used in this creation is the aesthetic theory, theory of creativity and phenomenology. From the authors' experience in processing the phenomenon in the natural environment, social media and personal experience that are materialized into a kinetic art creation.

6. EXPERIMENT

Is the stagers where it is emphasized on the experimentation of the material, technic, and equipment to use, also to organize visual elements that make up the aesthetic value of the work. Authors' experiment and processing the material and idea source into a shape. Planing them into a sketch shape or alternative design.

The main material in this creation process is aluminium and stainless steel. Aluminium chosen because it is light and weather-resistant when placed on the farm. Author also experimenting with the electrical and mechanical element to generate movement and sound that responds to the surrounding movement through sensors, stepper dynamo and servo.



Figure 4. The 3D sketch of “Farmers’ Plant Guardian” Source: Mukhamad Aji Prasetyo, 2021.

The work creation stage started from cutting the steel and aluminium as the installation framework. After that, welding and screwing the steels that have been cutted and arranging them to the basic framework of the installation. The process to make the basic framework has to be precisely calculated so it has a symmetrical legs. After the framework was shaped, the process continued to shape the artistic pattern by making pattern pieces by using papers that will be arranged later on. Then the pieces will be moved to aluminium and then cut accordingly. The purpose of making the pattern is to measure and mapping out the artistic design that will be shaped with the aluminium.

After the artistic shape has been shaped, then the making of the mechanical system is the next. This also needs a precise calculation that includes movement angle, movement amount, and lifting force ratio so it would not damage the electrical system. After assembling the mechanism system, the next step is to assemble the wiring and electrical system and sensors. The installation done according to what the dynamo, servo, sound, arduino needs to be installed in the body of the installation work. The calculation of the command code in the arduino is done after all the parts have been installed because this stage is experimenting the movement code so it can shape a dynamic movement.

In the finishing process, the first thing to do is to sand the aluminium and steel surface, and smoothing the welding joint to remove the remains of oil and dirt so the paint could stick well. Then the installation is painted in silver, this colour was chosen so the works could easily be seen when it is placed in the middle of

a farm and its silver color makes it look modern and strong like a metal.

7. RESULT



Figure 5. The Installation Art of “Farmers’ Plant Guardian” Source: Mukhamad Aji Prasetyo, 2021.

7.1 Work review

This is a 2x2 meters, three-dimensional steel and aluminium artwork combined with of kinetic art. It shaped in a four-legged three-headed dog like the Cerberus, Hades’s guard dog. The movement is produced through mechanical technique with the help of dynamo as the power source. It is equipped with sensors that functions as a support so that the visitors could directly interact with the artwork. This installation has an engine in each head so they can move separately. The head movement is the result of the sensors that caught the surrounding movement. This artwork also produces sound, noisy enough to hear.

This work is titled “Farmer’s Plant Guardian” as to fit it with the placement of the artwork. The basic idea of this work is to respond to the farmers problem with pest management in their rice farm. The author is trying to help give innovation through this artwork so the farmers could also add to their knowledge about other ways to manage pests. This work is shaped as a three-headed deformed Cerberus to show that it is reliable and strong. The silver colouring in this work gives an impression of modern, futuristic, and strong appearance like a metal.

This work urges artists, art connoisseur and lover and general public to directly interacting with it. The response of the people moving close to it will be read as a response to pests, so that the installation will move and produce noisy sound to drive the pests away. Through this work, author wants to urge people to considers and think about the farmers problem.

8. CONCLUSION

The things that the author wants to talk from this creation is the way to represent works with regards to the aesthetics, historic, and philosophic value. The author wants to cover the creative and the shaping process using kinetic art in its creation. The stages of creation starts from the exploration of ideas. The main idea of this art installation is the shape of a three-headed dog. Making the ideas into sketches and design become the starter step of the process from ideas into an artwork. The shaping is the most important step of the creation of a work so that it renders value and meaning.

This creation resulted in a three dimensional artwork, size 2x2 square meters in the form of a deformed four-legged and three-headed Cerberus dog. This generates a new character, the "Farmer's Plant Guardian" as a result of the deformation process and kinetic art by calculating its generated movement.

This research creation could be expanded into an artwork that leads to sustainable economic and creative industry as an innovation for the improvement in farming. With this artwork, the author hopes that it can be a study material, discussion, or criticism.

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