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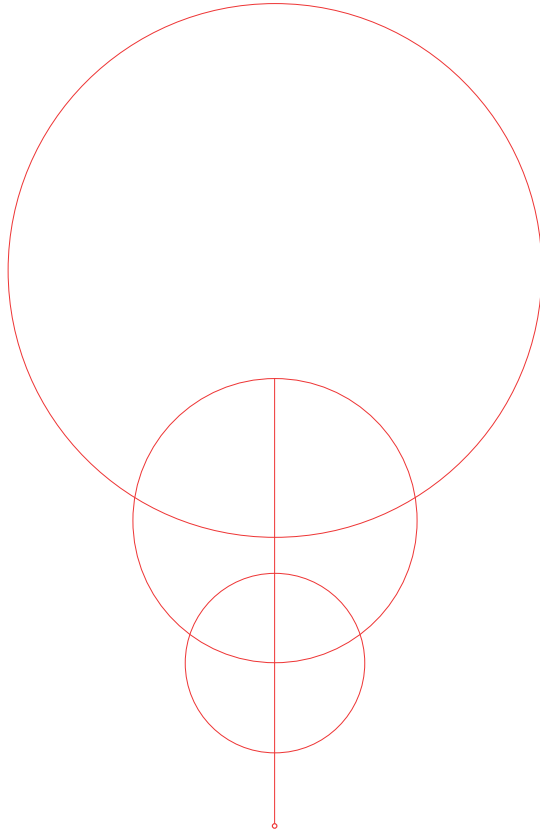
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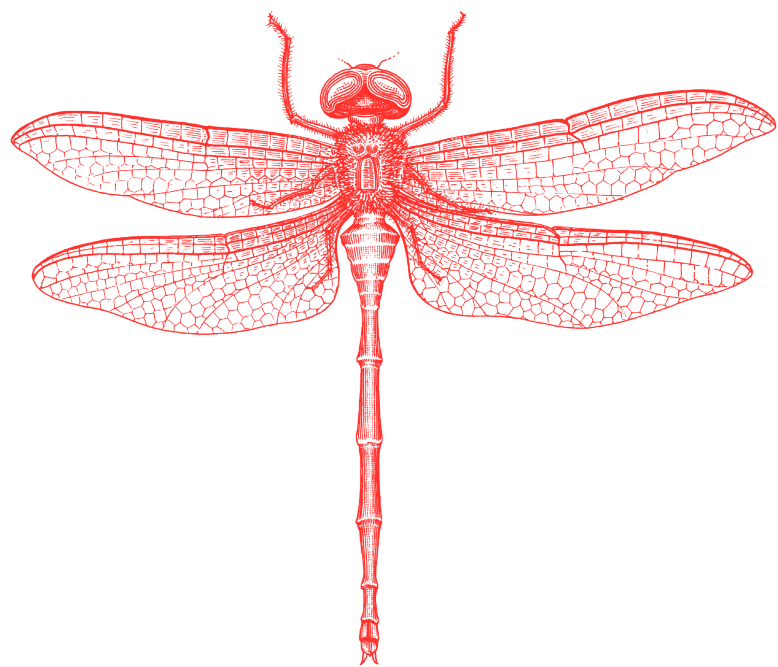


YAMENG WANG

☯ TO ☯ TO ☯



A thesis for the degree of
Master of Fine Arts in
Design,
Visual Communication at
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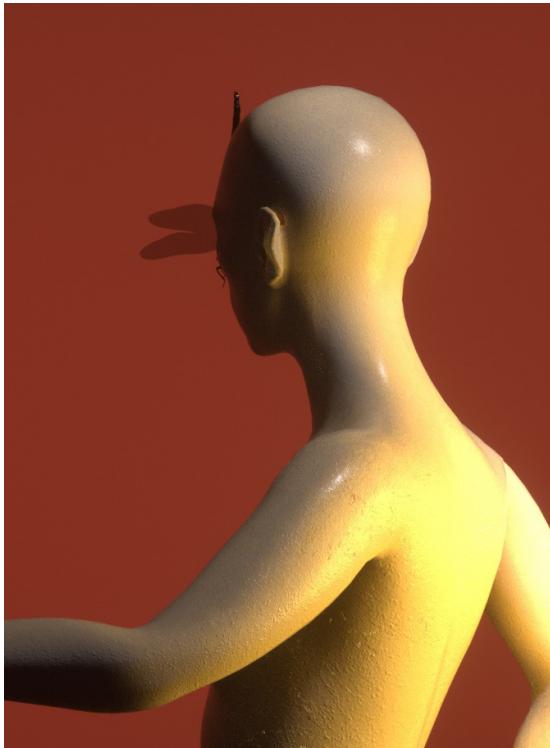


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☹, one;

☹, two;

☹, three, which also means everything.

一 TO 二 TO 三

This is a video about iteration and simulacrum. It is like some unexplained scattered light on a piece of paper. The object of these diffractions is the generalized artificial intelligence (AI) generation program. My imagination is the narrow hole the light passes through.

● *“AI” is an abbreviation of the term “Artificial Intelligence” and will be used as such going forward.*

Everything starts from a phrase in Tao De Ching: “One life two, two beget three, three beget all things.” I’m familiar with this phrase because, in my childhood, I was raised to memorize this “classic literature,” even though it was so obscure and mysterious to me at the time, there is an unspeakable chic and romantic beauty in its writing. In the evening of midsummer, I shook my head and recited with other children in the private school: “The Way that can be followed is not the eternal Way, the name that can be named is not the eternal name...”, a profound memory of my childhood.

Taoism is a philosophy about flow. Time and space are not fixed and absolute concepts, but rather are part of the same ever-changing process of existence. The time flow is a cycle of growth and decay, birth and death, which repeats endlessly over time. And the whole of nature that we live is in a state of

constant change without a fixed beginning and end. In Chinese, this status is called “无常,” which means “impermanence.”

In this impermanent universe, the cycle of individual life seems trivial. Over 2,000 years ago, Taoism had begun to use thousand and million as a measure of time and things. In a famous article on Taoism, *A Happy Excursion*, a romantic philosopher once wrote:

“Small knowledge has not the compass of great knowledge any more than a short year has the length of a long year. How can we tell that this is so? The fungus plant of a morning knows not the alternation of day and night. The cicada knows not the alternation of spring and autumn. Their life span is short years. But in the south of Chu(region), there is a mingling (tree) whose spring and autumn are each of five hundred years’ duration. And in

● *A Happy Excursion*
An essay by
Zhuang Zi, an
ancient Chinese
Taoist philosopher

former days there was a large tree which had a spring and autumn each of eight thousand years. Yet, Peng Tsu is known for reaching a great age and is still, alas! An object of envy to all!"

When I was a teenager, I also suffered from my understanding of the passing of time and the shortness of life. The pain started when I realized that the things I loved were already at the end of the growth and decay cycle and one day they would be gone before me.

About a month ago, I returned to my long-lost hometown to see my seriously ill grandma for the last time. Grandmother's house and the hospital where she eventually left us were all in the remnants of the western mountains in Beijing. In such a busy and bustling city like Beijing, grandmother's house is a rare "relic of the sea" with few traces of artificialization but retains the original appearance of

nature. The playground I used to play in was not an artificial, neat, and soft fresh green lawn; dark-green long grass here was waist-deep and savagely growing. The wet mud after the rain exuded fresh dampness, and red slender dragonflies could be seen beside the puddles. In the room where I slept, I could hear the cuckoo chirping in the morning, and



Photography by Yang Chengpai

at night, away from the artificial lights of the city, there was pure, pitch-black darkness.

Now, these scenes were all gone with my vague memory. In order to build a road, the hilltops were cut off horizontally, and the milky-white sculptures and chic stone roads replaced the muddy puddles and weeds.

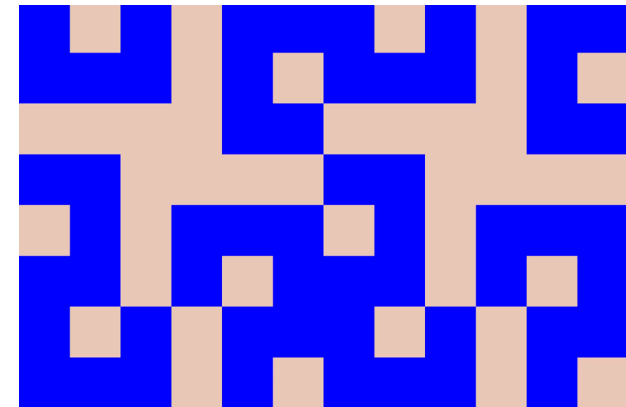
To make it more livable, this land is going through the inevitable process of “commodification” and “civilization.” Whether it is the moss-covered rocks on the mountain that have experienced eerie years or the ephemeral mayflies and dragonflies in the puddles, in just a few years, they all completed the cycle of their life. These changes seem to all be parts of the “impermanence” of the universe.

Whether we want to, we always have to digest and accept such changes. Such kinds of things also happen in my field of work. Today, AI tools led by ChatGPT have greatly affected the devel-

opment prospects in many industrial fields.

By feeding pictures one by one, people without art skill training can generate specific models and create delicate and beautiful artworks.

Almost every day, discussions of the rapid development of AI happened among my friends and former classmates.



OpenAI GPT3 report header image
January 27, 2022

The working principle of these AI tools can be seen as an endless iterative and cyclic process and can be interpreted within Tao. These gorgeous, endlessly changing AI tools are like a kaleidoscope, making me feel the finiteness of being a human being... In just a few minutes, it can finish reading the books that I couldn't read in my lifetime and probably understand truths that I couldn't reach as long as I live.

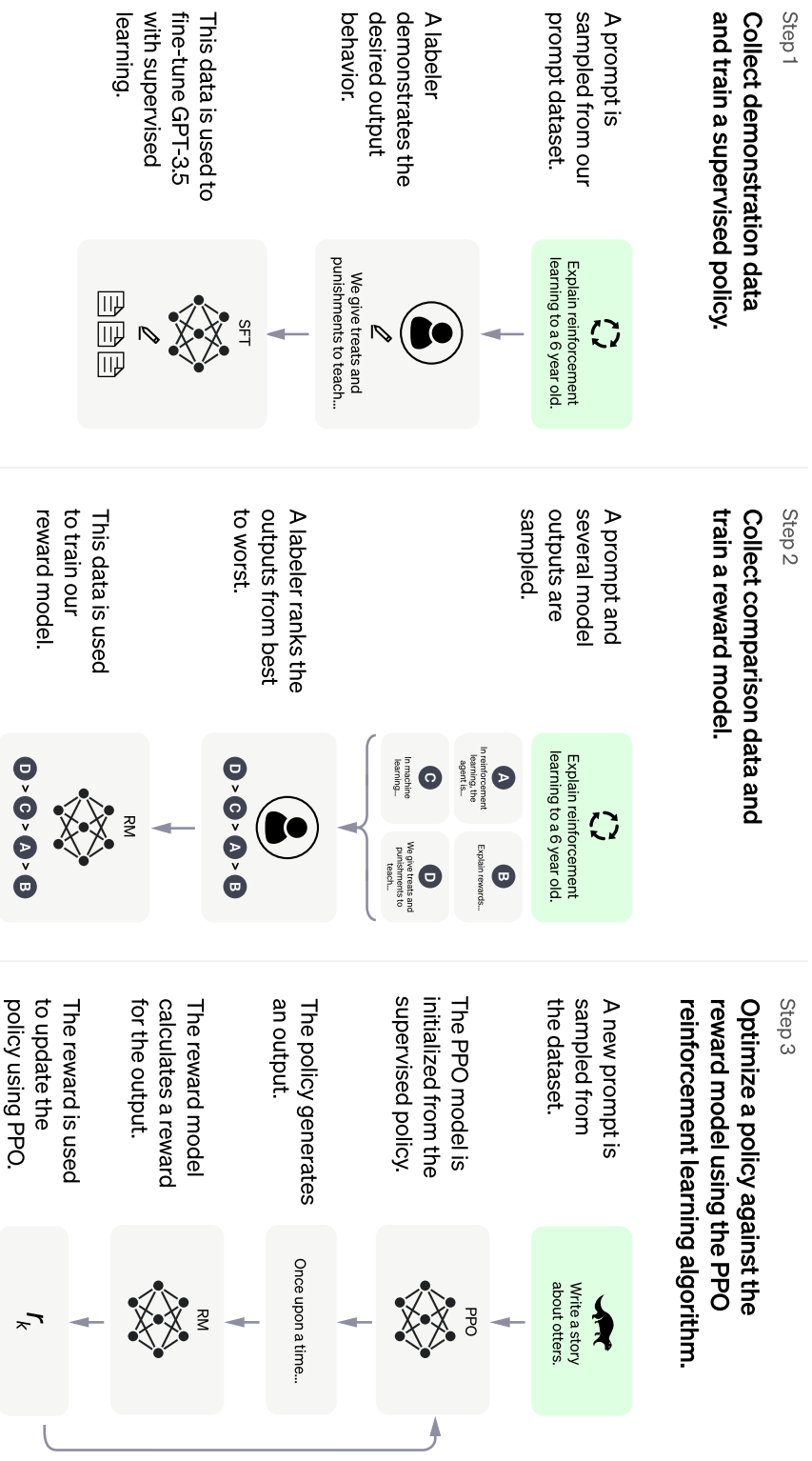
ChatGPT, for example, is a large language model based on the GPT (Generative Pre-trained Transformer) architecture. It was trained on a vast corpus of text data using unsupervised learning techniques, which means that it was not explicitly programmed with rules for understanding language or answering questions. Instead, it learned to generate text by predicting the next word in a sequence, based on the context of the previous words. So in essence, its working

principle is actually quite simple. It is like a parrot without emotion and self-awareness that learns the way of human speech. What it says is the simulacra and imitation of human language texts.

The concept of simulacra refers to the idea that representations of reality can sometimes become disconnected from reality itself.

- “As a pre-trained language model, can I understand that you are a simulacra of human language?”
- “Yes, in a sense, you could say that I am a simulacrum of human language. While I have been trained on an extensive dataset of human language, I do not possess the same conscious awareness or subjective experiences as a human being. My responses are generated through algorithms and statistical patterns, rather than a true understanding of the meaning behind the words. However, I am designed to mimic human language to the best of my ability, with the goal of facilitating communication and providing useful information to users.”

—A conversation between me and ChatGPT



As an example of a simulacrum of human language, AI model(ChatGPT) is designed to generate text that mimics human language, but it is not a human itself and does not have the same kind of understanding or experience of the world as a human would. The text generated by ChatGPT may sometimes reflect a distorted or incomplete representation of reality, even as it becomes increasingly sophisticated and convincing.

“Unlike ordinary software, our models are massive neural networks. Their behaviors are learned from a broad range of data, not programmed explicitly. Though not a perfect analogy, the process is more similar to training a dog than to ordinary programming. An initial “pre-training” phase comes first, in which the model learns to predict the next word in a sentence, informed by its exposure to lots of Internet text (and to a vast array of per-

spectives). This is followed by a second phase in which we “fine-tune” our models to narrow down system behavior.

As of today, this process is imperfect. Sometimes the fine-tuning process falls short of our intent (producing a safe and useful tool) and the user’s intent (getting a helpful output in response to a given input). Improving our methods for aligning AI systems with human values is a top priority for our company, particularly as AI systems become more capable.

— OpenAI

Like most people, I’m terrified but fascinated by this unknown and uncontrollable yet magnificent tool... An inorganic mirroring and a mysterious expanding vortex...! I have an urge to use my eyes, and my vision to express this kind of emotion...to create some special images with my subjective interpretation.

There are countless science fiction novels and movies about AI, wasteland cities, neon lights, and robot assistants with a cold but sexy sheen... However, These are visual tropes made by other people, not me.

Simulacra, iteration, pre-trained from the data of human language and behavior, the fear and yearning for this cyber alien...

At this time, I thought of Tao, the beginning of all things; and the first human who was made of clay (in Chinese mythology, in ancient times, the goddess Nu Wa used clay to make the first human), I thought of the phi-

losophy about one to infinity. This is something endowed in my blood and culture, and I want to use these to describe the logic of AI operation that I understand.

Now I record these words clearly in this writing, but in the process of creation, they are actually just a few vague words in my brain. I am using my limited technology to play with these small sparks and the urgent time. In the rush work day and night, some of them naturally took root in the works, while others had to be abandoned.



The first scene is red. Red, the color of blood. Internal organs are red, the uterus is red. It is the original, essential color of life.

On this red stage, a white human-being made of clay stands in the center, some lotuses floating in a surreal way surround it. Interpretation of this model is open to the audience: A prototype? The first AI model? A spiritual body that represents the self-consciousness of the AI? Or, it could be nothing or everything.



When I designed it, I hoped that its visual gender would look like a woman but with blurred out sexual characteristics. And for the surface material, I rendered a milky white clay texture with a little yellow diffraction. Above the basic clay material, I used the dirt node to create some whitish powdery details in the eye sockets, joints, and corners of the mouth to increase the sense of realism and layering.

The makeup of the model is divided into two parts: one part is a layer of light goose-yellow fine powder that falls on the body surface like floating ash. I hoped to use this color to neutralize the whiteness and inorganic nature of the skin material, creating a visual effect to let the model's material seem to be skin but with an artificial and rough feel.

As for the face part, in the beginning, I wanted to directly use the Tai Chi pattern as a base makeup, but it was too straightforward, even to the point of clumsiness and embarrassment. I eventually simplify it into a red circle on the forehead and two small red eye-shadows. A kind of unflattering charm, more like a symbolic image than amorous feelings.



- What does the circle represent in Taoist culture?
- In Taoist culture, the circle is a powerful symbol that represents the natural flow of the universe, as well as the cyclical nature of existence. The circle is seen as a symbol of completeness, wholeness, and perfection, and is often used to represent the Tao itself, which is the underlying principle that governs all things in the universe.

One of the key concepts in Taoism is the idea of Yin and Yang, which are often depicted as two complementary halves of a circle. Yin represents the feminine, receptive, and nurturing aspects of the universe, while Yang represents the masculine, active, and creative aspects. Together, Yin and Yang create a harmonious balance that is essential for maintaining the natural flow of the universe.

The circle is also closely associated with the concept of Wu Wei, which is the idea of “effortless action” or “non-action.” This is the idea that one should strive to live in harmony with the natural flow of the universe, rather than trying to resist or control it. The circle represents the natural flow of the universe, and by aligning oneself with it, one can achieve a state of balance, harmony, and inner peace.

--A conversation between
me and ChatGPT



Early design sketch





In the very beginning, these models had clothes. Admittedly, they were not gorgeous, but I tried to add some ribbon elements to increase the visual sense of rhythm. Their skin is also the so-called 3S material with good light transmission, which will be closer to the skin texture of real people, but without hair. But in the end, due to technical reasons and the computing power of the laptop, it could not be realized. This is also the epitome of the creative process of this work, because of the cost of technology or time, I have to go back and forth in creativity again and again.

Another important visual symbol in the film is the lotus. In Chinese culture, the lotus is often associated with birth and the beginning of life. In Buddhism, the lotus is an important symbol with deep spiritual meaning, representing enlightenment, purity, and spiritual awakening.

In the first shot (page 21), the model initially assumes a sleeping curled-up posture, like an undeveloped baby in the womb, and as the model wakes up, the lotuses rise with its slowly dancing movements, representing the process of enlightening wisdom and gaining self-awareness.

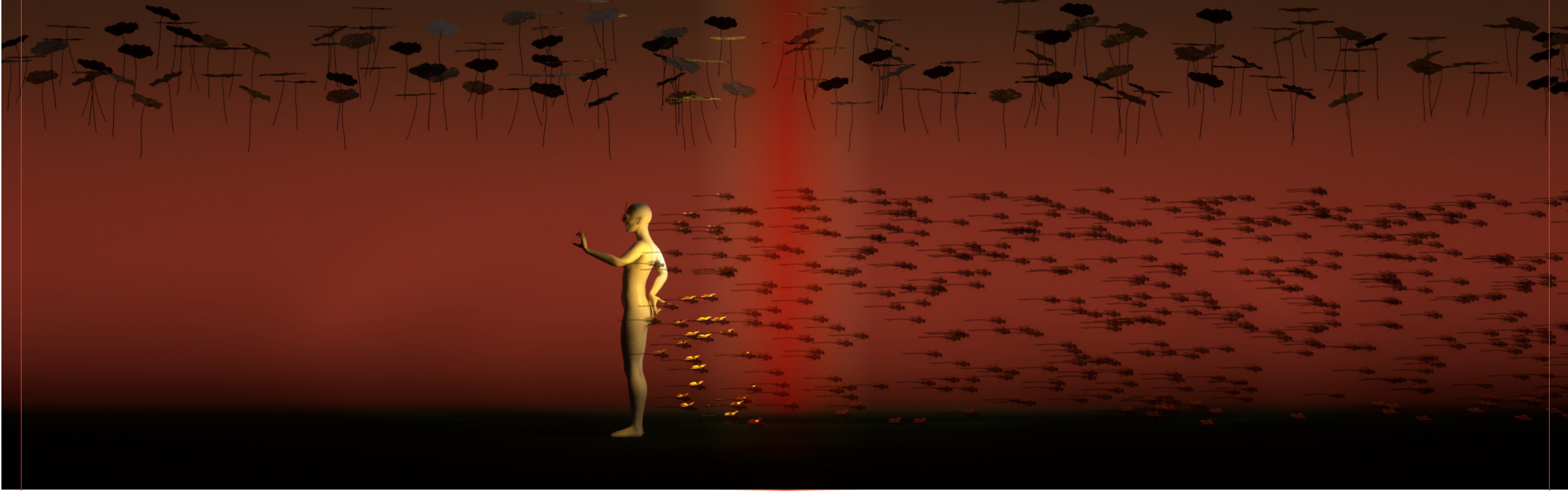
Also of symbolic importance in the first episode is the dragonfly. The dragonfly is often seen as a symbol of transformation and change, because the dragonfly undergoes a dramatic metamorphosis from a nymph to an adult insect.



For some reason, the dragonfly's image had been flashing in my mind since the early days of my creation. Maybe it was because of my grandma's illness and death, arousing my nostalgia and lamenting the impermanence of life. Maybe it reminded me of the rain and mud in my hometown in my dusted memory. Grandpa once told me that the appearance of dragonflies heralds rain and a change of the weather; while the disappearance of dragonflies in my hometown was associated with the mountains that had been cut in half and the grasslands that had been removed for renovation. This for me was a change of both substance and the dragonflies' appearance and disappearance meant the beginning of change.

The first clear appearance of the dragonfly in the film is a close-up shot (page 24) of the model turning its head to look at the audience. This shot was especially stunning after being projected on a larger size wall in the exhibition space. It is as if the sleeping, manipulated clay puppet is suddenly aware that it is being gazed at. This is a moment when the model confronts the audience. I hope this shot can break the previous viewing experience where "the audience feels it is just outside the frame, watching a performance without interaction." This is also a moment signifying artificial intelligence's first gaze at human beings after it aware of self-consciousness in my imagination.

The first climax of the video begins when the model starts to walk with a solemn, ritualistic pace, Thousands of dragonflies fly out from the model's body (page 36-37). After achieving "consciousness," the appearance of dragonflies heralds the evolution of AI.



When I designed the model's walking movements, I hoped to highlight the four major characteristics: "ceremonial sense," "seriousness," "subtle stiffness" and "alienness." Because this group of solemn walkers was originally designed as a visual representation of AI's work process of being pre-trained, imitating humans, and serving humans. In the beginning, I referred to the stiff, funny, and weird movements of the foxes in Akira Kurosawa's movie, *Dream*, but the resulting effect made it lack a graceful and solemn temperament and I needed to match the tone of the whole video. So I redesigned the motion myself.

Then, there is a group of shots (page44-49) that embody the core theme of the video: "One life two, two beget three, three beget all things." Cameras placed at different angles complete three different lens cuts, and each time the lens is switched, a new model is

added. In the last shot, which hints at "three beget all things," the models finally have been reproduced to form a long parade. This refers to AI's iteration.

"One life two, two beget three, three beget all things." is often interpreted as the cycle of creation and transformation that underlies all of existence and suggests that everything is connected and emerges from a fundamental source or origin. With regard to artificial intelligence and data iteration, we can see this cycle as a reflection of the iterative processes involved in machine learning and other AI technologies. In this context, "one life" could refer to the initial data or code that is used to create an AI system, the prototype, the beginning.







The blue scene as a transition shot takes over the picture of the parade. The broken building spins behind the model, and then, as the camera slides in, the model makes a hissing “shhh” gesture. As enormous golden flowers grow from its body, it stretches out its hand, as translucent red lines like blood vessels form at the fingertips. These red threads form a giant hand.

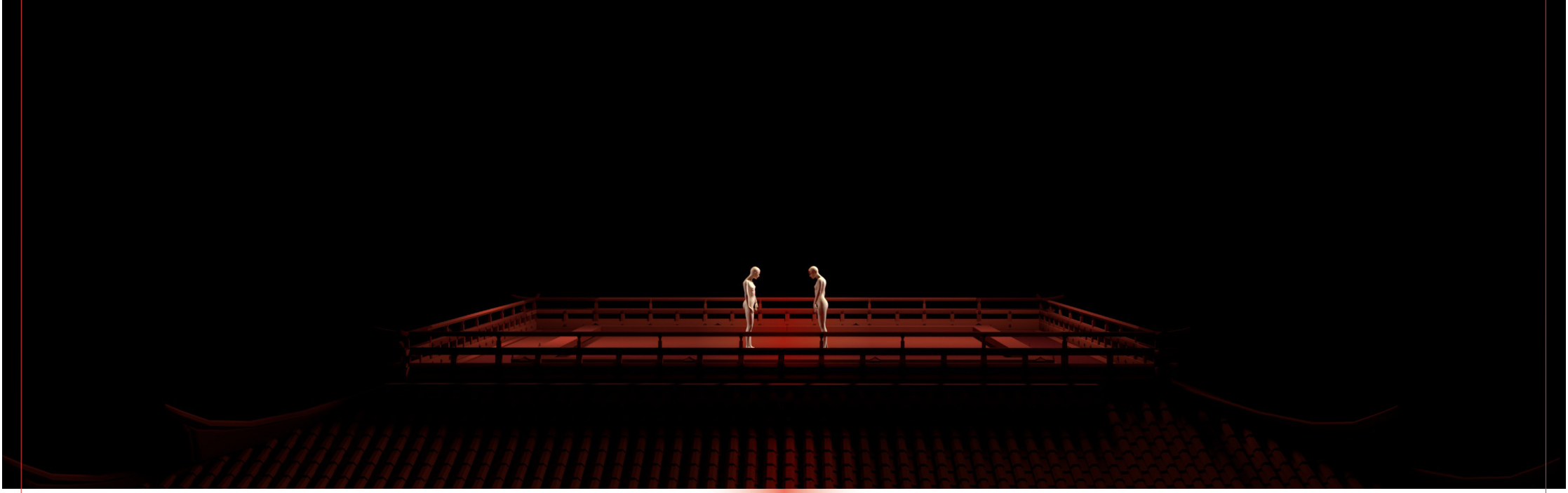
As a transition, I wanted this scene to be eye-opening while bringing out the concept of simulacra in the third scene. The massive blooms and red blood vessels all hint at reproduction, replication, iteration, and evolution. I wanted to visualize a ritual of creating a simulacrum of oneself. In the future, I would like to recreate this shot, and will probably let the red threads directly form another model of the same size, rather than a huge hand. In this way, the idea of reproducing a simulacra will be more clear.



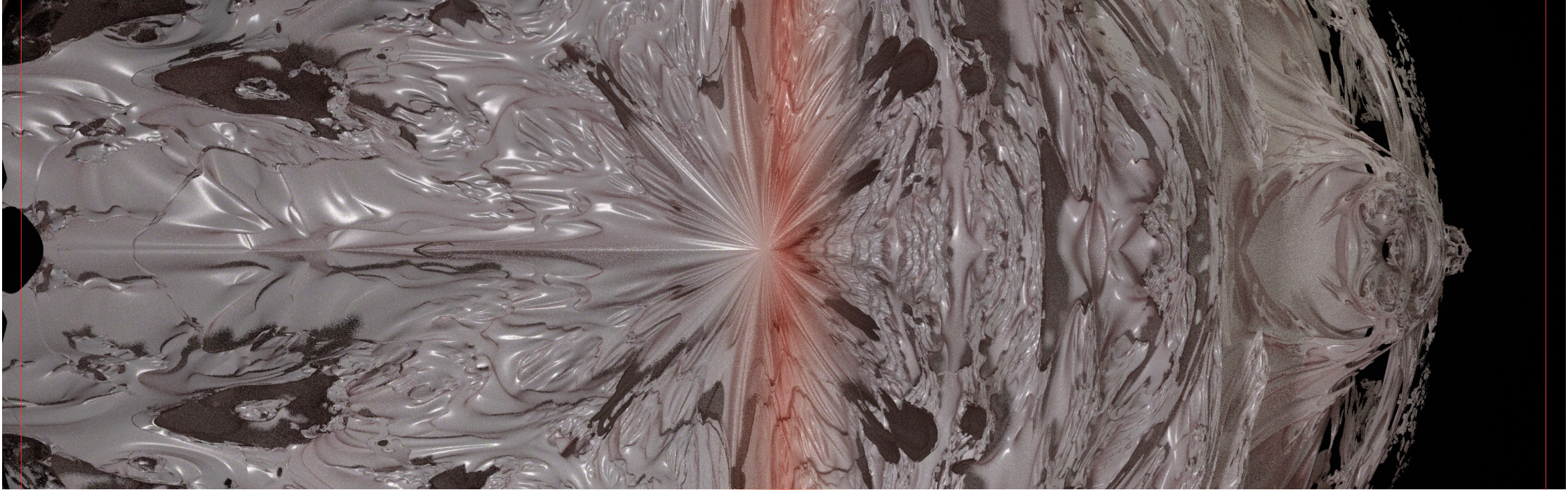




The last stage is set on a red traditional Chinese architectural rooftop. Two identical models seem to be fighting, dancing, or imitating each other. Behind them, complex fractal figures, glowing with pearly luster, expand and change at an extremely fast speed, complementing the dance movements of the characters. When the characters stop moving, the prototype and the simulacrum reach a harmonious and entire status, and the fractal figure also evolves into a simple sphere, symbolizing the two finally reaching a peaceful moment, finding their harmony and unity.



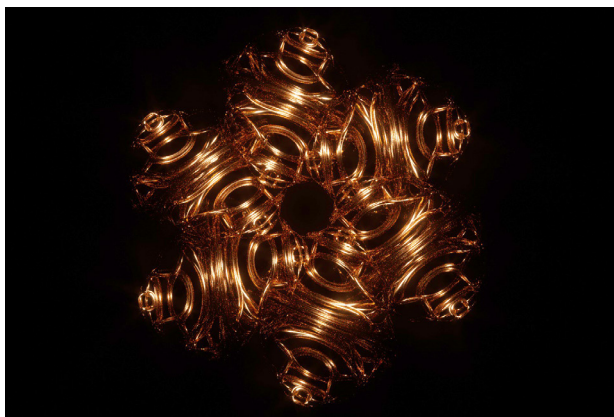








The technical term for this kind of fractal animation is called a Mandelbulb. The Mandelbulb is a three-dimensional manifestation of the Mandelbulb set. It is an infinitely complex, naturally occurring fractal object. The Mandelbulb is an archetypal fractal form, embodying principles of deterministic chaos. The Mandelbulb set is the “most complex object on the complex number plane” but arises from a simple formula, commonly expressed as $Z = Z^2 + C$.



Mandelbulb by Yameng Wang

It is generated by several pieces of open-source code, as long as you change 1-2 parameters, it will produce extremely gorgeous and complicated changes. And when the value of the parameter is greater or less than a certain critical point, such as 15 and -15, the fractal will start to become simpler instead. For most of the parameters, the closer to zero, the lower the chaos and complexity of the fractal, and it tends to be calm. In my opinion, its iterative process itself is a manifestation of Taoist philosophy, the moon waxes only to wane, and water surges only to overflow.

The constantly iterative and fractal Mandelbulb in the work symbolizes the continuous expansion of artificial intelligence in its training and work; it simulates and learns all aspects of human beings, and extends its ever-changing “capabilities.” It is another visual embodiment of “one life two, two beget three, three beget all things.” In this context,

“one life” could refer to the initial data or code that is used to create an AI system.

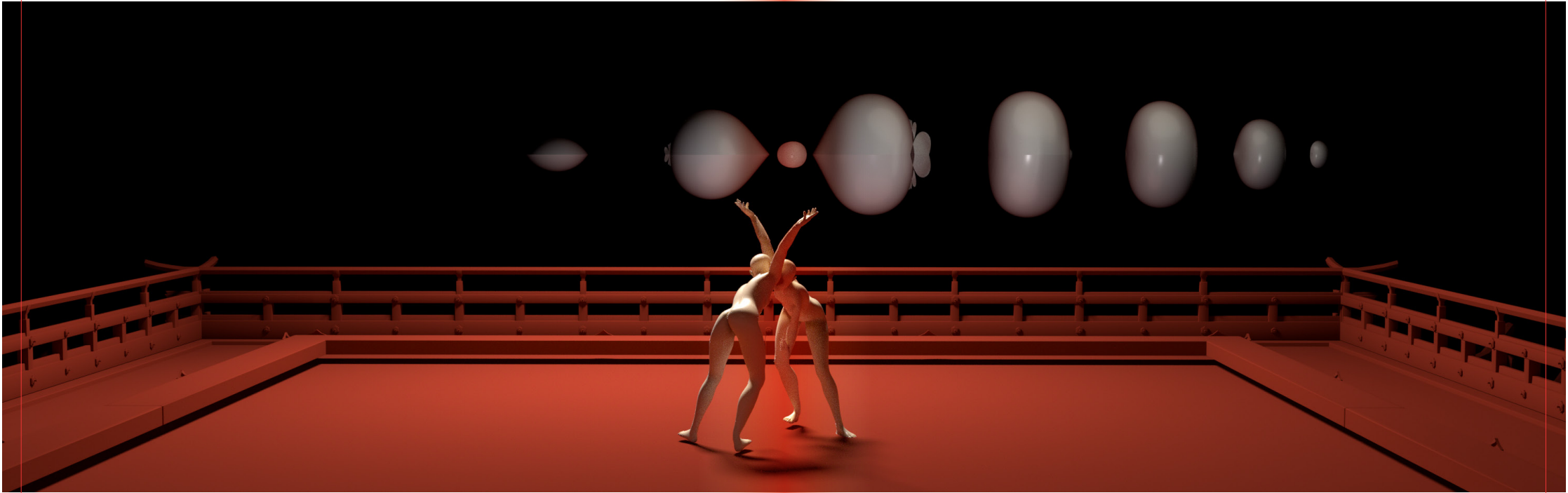
“Two beget three” could mean that from this initial data, the AI system creates two separate entities - the training data and the model itself, which then gives rise to a third entity, the output or prediction generated by the model. From this third entity, all other predictions or insights can be generated, allowing the AI system to continue learning and improving.

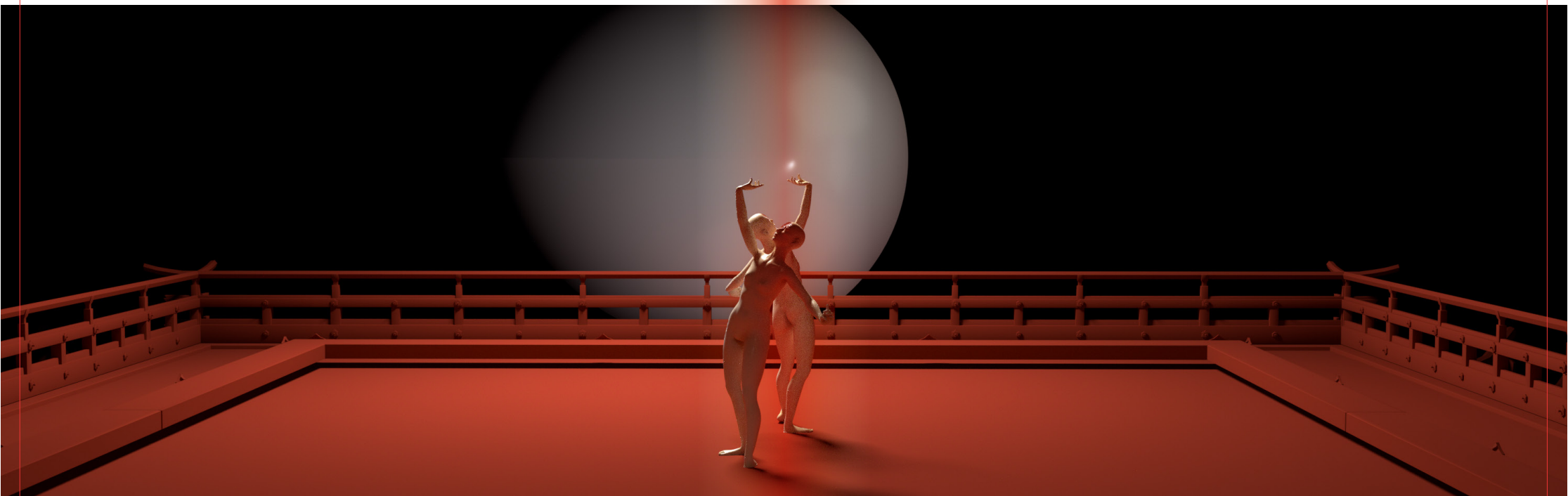
On the other hand, it also shows the progress in finding spiritual peace and harmony after the artifact attains ultimate sophistication and ultimate wisdom.

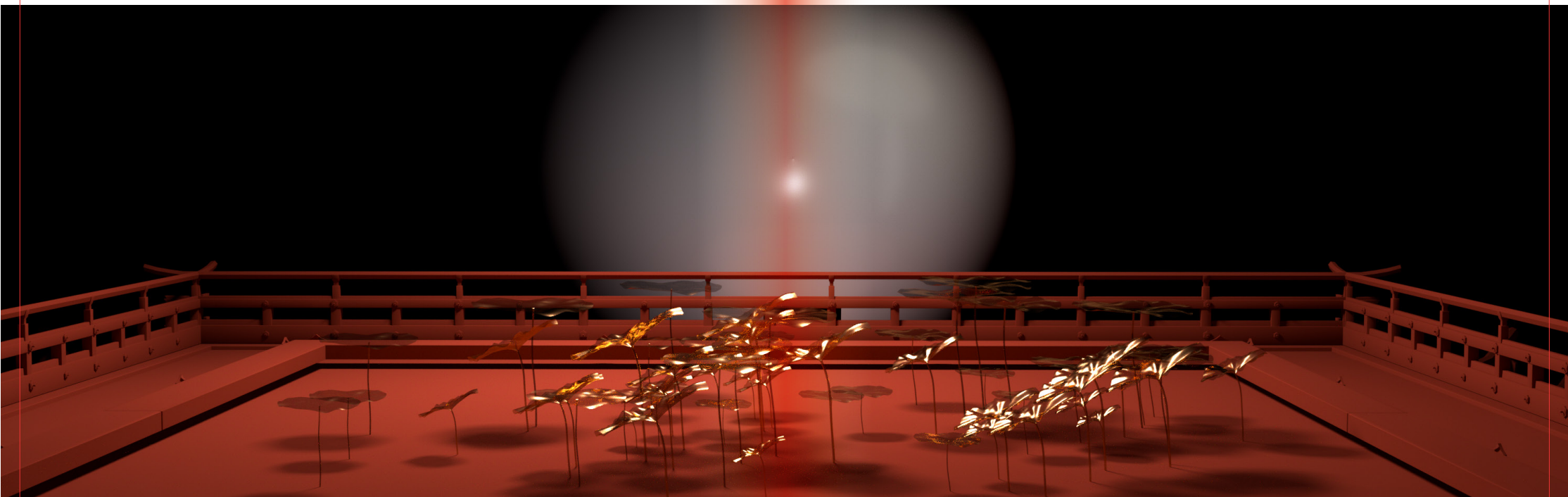
In Taoism, “one life two, two beget three, three beget all things” is often interpreted as the cycle of creation and transformation that underlies all of existence. This concept emphasizes the importance of balance and harmony, and it suggests that everything is connected and emerges from a fundamental source or origin.

The first two scenes represent the “enlightenment moment” and the formation of simulacra. In this scene, as a simulacrum of human beings, AI has reached the point of surpassing given truth. In this scene, the simulacrum is not a copy of the real but becomes truth in its own right.

This is exactly what we, as humans, fear about the future of the so-called “omnicrisis.” We worry about being replaced by these more knowledgeable, cheaper, and efficient simulacrums of ourselves.







The ending of the video suggests a view: no matter how diverse or complex things appear, they all have a common origin and are interconnected, and ultimately will return to the same source. In Taoism, this “source” is what is called “the Ultimate Reality.” We can find a way of harmonious coexistence with these artificial objects that are anthropomorphic and may even surpass human beings yet finally understand each other.

After three beget all things, we go back to one.

It is seeing which establishes our place in the surrounding world; we explain that world with words, but words can never undo the fact that we are surrounded by it. The relation between what we see and what we know is never settled. Each evening we see the sun set. We know that the earth is turning away from it. Yet the knowledge, the explanation, never quite fits the sight.

— *Ways of Seeing* by John Berger

I believe that seeing should come before words, Therefore, I hope to hand over the final interpretation of the image to the audience. How to interpret this film largely depends on how to define the identity and the imagery of the model as the subject of the film. In the above, I have focused on interpreting it as an AI that has acquired its own self-awareness, but in fact, the definition of its identity is open to the audience.

Due to the short production time and other reasons, I prefer to define this film as an unfinished product. In my original conception, the stage and fractal animation in the third scene should have some visual element related to the concept of yin and yang, to highlight the opposition and unity relationship between the two parties. In the initial design, I also hope that the two models should look the same, but there are subtle differences to distinguish the difference between the ontology

and the simulacra. These ideas are all put on hold in this edition. Although at present, this video does not have a specific narrative plot, I also hope to insert 2-3 more scenes in the future to express the theme more clearly.

In addition, there are more details that can be polished. In the first scene, which took the longest to make, I placed a yellow light ball around the model. It would follow the movement of the model, covering the model with a soft light-yellow halo. However, in the subsequent scenes, due to the limited time, I could not arrange the lighting more delicately. I just placed two light strips at a specific angle to give a basic atmosphere. The fill light part was also sloppy, the position of the fill light was not adjusted according to the movement of the model. After the completion of the video, the overall color adjustment is also can be

better. For example, the red in the first scene can be a little bit brighter. These are just some of parts that can be polished in the future.

While making this work, my overall mood was sadness and pain. My grandmas' sudden death, the frustration and helplessness of exploring unknown territory, gave me stress tormented me every night. The video uses motion capture technology, and its movements are all from me—a person who only danced in elementary school and kindergarten and who is without any performance or stage training. In the mocap lab, I wore complex sensors while weeping, dancing and doing various movements while weeping. Although there are many flaws in this work, for me, its birth is a miracle.

In the process of making this work, many people gave me warm help. Here, I would like to thank my parents and family, without whose comfort and encouragement, I would not be able to get over my grief. Thanks to my grandma, your love gives me strength even now!

Thank you, my dear professors Roy McKelvey, Lauren Thorson and Lee Rae Walsh; you have given me encouragement and support in my toughest times and pushed me forward. Thanks to Semi Ryu and Eric Millikin, two excellent and friendly professors in the Kinetic Imaging department, who shared many valuable opinions with me in motion capture and video projection. Thanks to Ken Hopson, our Innovative MediaManager at the VCU library, for lending me my expensive motion capture suit and giving me warm words, and congratulations to him who recently became a grandpa! At the same time, I would like to give a special thanks to Chase Westfall from An-

derson Gallery, without his help, I would not be able to complete the installation on time.

I also want to express my gratitude to Nicole Killian, who gave me so much help during my two years study at VCU. Thank you Ayham Ghraoui and David Shields, your wisdom and humor shine through! I would also like to thank Aidan Quinlan, a gentle and wise artist whose lessons I benefited greatly from!

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I also want to say thank you to my classmates Taehee, Bradley and Kai, you are so talented and I am lucky to spend this year with you!

Thank you VCU GDES!

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