SIMILARITY IN A DISTANCE Zhuo Ran

Science is beautiful when it makes simple explanations of phenomena or connections between different observations. Examples include the double helix in biology and the fundamental equations of physics.

-Stephen Hawking-

A thesis submitted in partial fulfillment of the requirements for the degree Master of Fine Art in the Department of Digital + Media of the Rhode Island School of Design

> by Ran Zhuo, 2017

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SIMILARITY IN A DISTANCE

BY

Zhuo Ran

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ABSTRACT | PURPOSE

I grew up in an interesting yet contradictory environment. As both of my parents were busy with their jobs, I was raised by my grandparents and I believe that's where the contradiction aspect of my personality came. My grandfather was a professor of physics in a university and my grandmother was a professor of violin. Unconsciously, I was influenced by them and developed a keen interest in cross-disciplinary and cross-media subjects. The two subjects of music and physics represented art and science, emotion and reason, abstraction and concreteness, and invisible and visible to me.

My work is primarily engaged with the combination of science and art. I draw inspiration from art and combine it with scientific foundation. My research includes quantum physics, quantum entanglement and emotive therapy. The focus of my research is not to reveal difficult or avant-garde scientific technologies today, but to achieve creativity—taking artistically designed work as a communication channel with the public to inspire people with the possibility for future communication development. The work I designed can be referred to as the "Human Instrumentality Project"¹, which I think is very challenging.

I'm also attracted to the relation between science and the tales of science. I've heard about many interesting tales of science, some of which originated from the observation and deduction of the ancient people towards the universe, the heaven and the earth. Many surprising inspirations can be acquired if you study in this direction.

For example, the quantum entanglement² playfully referred to as "spooky action at a distance" by Einstein has become the most cutting-edge research subject in physics community. It's a profound subject even for physics professionals. Not many people truly comprehend it. However, quantum entanglement has epoch-making meanings in military, IT and computer sectors. I'm fascinated by quantum entanglement communication because I witnessed the magical telepathy between my mom and her twin sister when I was little and I envied the clean and environmental friendly mental communication method a lot. One speculation of quantum biology is that whether there is a pair of entangled quanta in twins. For this reason, I began to study quantum physics.

1.Cultural references in the science fiction of Cordwainer Smith, the Instrumentality of Mankind refers both to Smith's personal future history and universe and to the central government of humanity.

2.For the anti-pattern in computer science, see Action at a distance (computer programming)

RESEARCH

1 A Ponsiovo is a stone basin used to review memories. https://en.wikipedia.org/wiki/ Magical objects in Harrv Potter

2.The Kybalion: Hermetic Philosophy, originally published in 1908 by a person or persons under the pseudonym of "the Three Initiates", is a book claiming to be the essence of the teachings of Hermes Trismegistus. The Kybalion was first published in 1908 by the Yogi Publication Society and is now in the public domain, as well as circulating the worldwide web. Purportedly based upon ancient Hermeticism, its philosophies, in conjunction with others, have become founding pillars within the New Thought movement of our modern age. The book early on makes the claim that it makes its appearance in one's life when the time is appropriate and includes axioms and insights similar to those found in the book of Proverbs.

Ele-Qin taken by Ran Zhuo 2013

My research began with a daydream in my childhood. When I was little, I was fascinated by the memories described in Harry Porter-the wizard siphoned a cloud-like silver substance, which was his memory by pointing the wand at the temple and stored the memory in the Pensive¹ for browsing from time to time. Invisible memories are converted to visible subjects in the story and I believe the creation of a new browsing method must have attracted readers. Ever since then I have been addicted to the interconversion between visible substance and invisible status such as mentality.

Throughout my academic life, I have always combined my research topics with physics. Through my studies, I understood that both visible and invisible matter are constantly vibrating and the difference is in the frequency. The Kybalion² originating from Ancient Egypt and Greece stated the seven Principles of the Universe, among which the principle of vibration clearly mentioned that "Nothing rests; everything moves; everything vibrates."

As the eye can be taken as the recognizer for optical vibration, the ear for acoustic vibration, the sense of smelling and the sense of tasting are the recognizers for the vibration of odor molecules and of flavor molecules. Throughout the years, my research and works are somehow related to vibration in various aspects.

Gugin impacts people both mentally and physically. Mentally

With today's world being restless, playing Guqin brings your mind to peace

To play Gugin is like to meditate and have a conversation with yourself deep down.

Physically:

Guqin has seven strings that all differ in thickness. Such differences result in different vibration frequencies. The internal organs of human beings have different functions, some responsible for providing energy and some for digestion. These organs also have different frequencies when they move. The greatness of Guqin lies in that ancient Chinese people managed to match the vibration frequencies of the strings with those of the organs. In addition, fingertips are believed to connect to different internal organs through the meridian system. Therefore, playing Guqin with the fingertips will massage the internal organs, which in essence shares the therapeutic basis of the western vibrational therapy. However, the invention of Guqin precedes vibrational therapy by over a thousand years.



Illustration

Ancient Chinese people used to nurse their health by plaving Gugin.

Cat purring

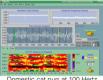
The Secret

Cats create purr vibrations within a range 25-150Hz, known to be medically therapeutic for many illnesses.

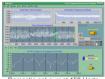


Cat purring frequencies

Every subject in the study generated strong frequencies between 25 and 150 Hz. Purr frequencies correspond to vibrational/electrical frequencies used in treatment for bone growth/fractures, pain, edema, muscle growthyfstrain, joint flexibility, dyspnea, and wounds.



Domestic cat purr at 100 Hertz Spectrograph



Domestic cat purr at 150 Hertz Fourier Transform

If you put a cat and a bunch of broken bones in the same room, the bones will heal.

- OLD VETERINARY ADAGE

Cat purs have some therapeutic effect to people. The vibration frequency of a cat drops within $25 \sim 50$ HZ, equivalent to the frequency of the sound for movement therapy.

Why do cats purr?

The purring cat.It may well be considered the epitome of contentment



From the physical vibration property of sound, I studied one of the most ancient pieces of instrument-Guqin in China. For this purpose, I learnt how to play Guqin and visited Mr. Wang Peng, producer of the Guqin that was used to play a solo tune at the opening ceremony of 2008 Beijing Olympics. By learning from Mr. Wang the method of making a Gugin and the understanding of ancient Chinese towards Yin and Yang of the world that was embodied in Guqin, I found that the vibration of the seven strings of Gugin was in accord with the vibrating frequency of seven organs. Playing the instrument not only helped the ancient people to cultivate their taste, but also regulated their systemic meridian. Therefore, from the perspective of vibration perception, I redesigned and redefined Gupin. In the meantime, I also completed a visualized performing work on the physical vibration of the sound of Gupin.

Under the same topic of the physical vibration property of sound, I also studied the frequencies that cannot be recognized by men apart from the audible frequencies. My subject was the grunting sound of cats. My research found that the special frequency of cats' grunting: 25~50Hz can be used to calm the mood and heal some diseases of old people. For the reason, I designed a therapy, through which

3. CAAS:http://www.caas. cn/en/

The Healing Power of Cat Purrs

Conclution

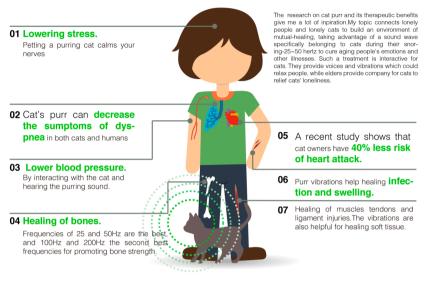


Illustration Cat Social Network taken by Ran Zhuo 2014 cats provided relaxing sound and vibration to men, while the old people provided company to cats and reduced their loneliness.

From the vibration of odor molecule, I studied the sense of smell of men. On one hand, I studied professional olfactory training method from wine tasters and perfume makers. On the other hand, I studied the different ways of smelling of animals in the nature. I went to the Bee Research Institute of the Chinese Academy of Agricultural Sciences³ and studied the olfactory system of the bees.

The 2014 nobel prize winner in Physiology or Medicine proves that entorhinal cortex has a cell helping people to locate and it can be activated and trained. This information is in accordance with the theory that 2014 nobel prize winner finds among the five senses: olfactory is the only one connecting the memory mode and entorhinal cortex inside human brain. Besides, olfactory can also be trained and activated. Through researching materials in different fields, I start to guess the connection between olfactory and GPS and finally design this series themed as olfactory research. My whole design is divided into three directions -- smell GPS, reuse animal olfactory and blind date via smelling to

Rebuild olfactory system Olfactory Studies

The inner workings of the olfactory system was not uncovered until 2004. Comparing to the other senses, the sense of smell was more difficult to study. Unlike other senses, the olfactory system is not located in the thalamencephalon. Instead, it sents impulses directly to the cortical layers. The parts of the brain responsible for higher thinking was evolved from the parts in charge of olfactory system. Simply put, the scents are composed of different oder particles. There are many receptors in the nose to detect these particles. They connect to different cells, and those cells connect to neurotransmitters inside cerebral olfaction cortex. The transmitters are activated by their specific match of oder particle, and all the activated transmitters becomes the scent we smell.

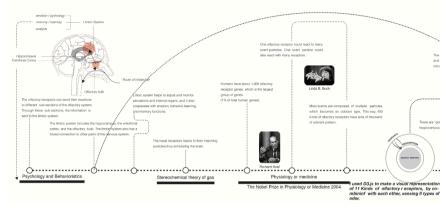
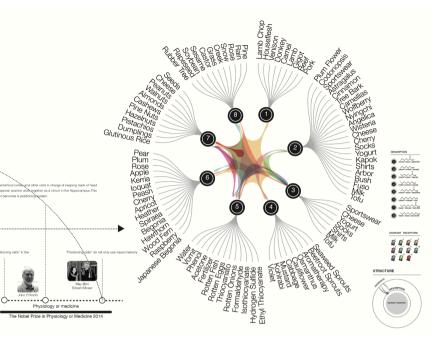


Illustration Rebuild Olfactory taken by Ran Zhuo 2014 explore a new GPS method hidden inside the organism.

After the deconstruction of the five senses, namely the sense of sight, hearing, smelling, taste and touch, my research of vibration headed to a multi-dimesional sphere. Through my researches in the past, I realized that the reality that could have been understood and controlled disappeared owing to the application of science.

The sense of losing control generated the sense of insecurity that came along with the development of the science. Science has reduced or shortened the real operation method of many things to a degree that cannot be noticed by us. The way of communication is the primary change that science has brought to us.

As I mentioned previously, as the extension of our bodies, science help us to communicate at further distance and faster than before. A famous poem says that long distance separates no bosom friends. However with the science development today, the closest people beside us can be as far as people in the distance. Science has separated the human society. Apart from the segmentation of time, there is also



the segmentation of human relations that leads to fewer deep communication and reduced mutual trust. Communication has developed to a stage that people need to redefine it. Powell believed that communication could be divided to five stages, namely cliche conversation,fact reporting, shared personal ideas and judgments, shared feeling, and peak communication. Science has improved the first three types of communication and restricted the latter two.

For this reason, I interviewed people of different backgrounds and professions. Some of them were biology students studying human brain, some were psychology students studying Alzheimer disease and some were from art, philosophy and even music background. By studying art and technology, rationality and sentiments, I hoped to find the conflicting point that scientific development has brought to human society and to discuss how to deal with the ever growing communication problem through experiment, distortion and recombination, so as to help people find their own identity in the future society.

INTERVIEW NO.1

1. Could you please briefly introduce yourself? What's the direction of your research or your work?

My name is Charles Zeng.I have received an education in Biomedical Engineering working on concepts such as neuroprostheses and mind-machine interfaces.

2. Do you think people have started to have problems with interpersonal communication as a result of technology, such as electronic communications or Internet usage? Do you think it has led to any physical or mental degeneration of usual abilities that people have?

Over the internet, many people behave differently than they would in real life, which has led to both positive and negative effects. On the plus side, people are more honest about their positive. On the negative side, people are more honest about their negative feelings. The internet has generally led to a loosening of inhibitions that people usually have when communicating with others in person. Additionally, it has also led to many misunderstandings as has happened many times with Twitter and people misinterpreting what someone else said or not understanding sarcasm, which can be difficult to convey in text.

3. Given your background on your line of research, what are your thoughts about special types of communication like telepathy, crystal therapy, or Gong Bath?

With the development of mind-machine interfaces, it appears that direct communication from the mind will eventually be possible. This will allow people to talk to each other over the internet without having to talk or type out messages. Additionally, it will allow people to control computers with their mind and play games without needing to use a controller or anything else like it, allowing for a truly hands-off experience.

4. It's been reported that even when twins are far apart, it seems that they can communicate with other in some mysterious way. What do you think about this and how do you think this happens?

This is a general effect of feeling empathy, which is somewhat of an instinctual urge. Not just limited to twins, one of the most important functions of humanity is the ability to understand several levels of human interaction, which can only happen if you can have some way of understanding what others are thinking, which can come from what they say, body language, as well as your prior knowledge of what that person has done in the past. Twins, by virtue of having the same DNA, might be more similar to each other than any two random humans, so they would understand each other even more.

5. What are your thoughts on how we all influence each other? Do you have any personal stories from yourself or any friend about when you (or your friend) might have ever had an effect on someone else?

As a result of what is commonly called the "Butterfly Effect," anything, even a small flap of a butterfly's wings, can result in a storm happening or not happening far away. The same is true in human interaction: who knows what might have happened if Otto von Bismarck decided to simply be a family man instead of heading the Prussian government? If there is one thing to be known about huge effects from small consequences though, it is how I've seen that doing things such as translations from one language to another has led to the appreciation of songs and games that people would never have understood otherwise.

6. Bacteria is all around us on Earth and they are everywhere. What do you feel and imagine when you think of the word "bacteria"?

They are first kind of life and all life evolved from them. If there is anything bioengineers are doing with them now, it is using them for all kinds of fancy purposes such as making them light up and spell out words, though of course there are more practical usages too, such as using them to manufacture drugs.

7. After seeing my project "Unshowable Reveries," what are your thoughts?

One good way for people to understand how people view the world and humanity is through their works of fictional stories. On websites such as archiveofourown.org, people write stories of all kinds that reveal their interests and the way they believe the world and social interaction works. In the future, when technology such as the mind-machine interface ever becomes a workable means of transmitting thoughts, perhaps such stories can become even easier to consume so that we can "read" the stories without even reading them by simply transferring the ideas of the story directly into thought without the need for any words, but purely through imaginations instead. In the future, perhaps websites for sharing stories could also have features for these.

Control of emotions through microbes can probably achieved through hormones and other chemical compounds. These things affect all parts of the body as well as gene expression, which would also certainly affect any bacteria involved as well. Stimulating bacteria that influence emotions can also probably be done in a host of other ways.

Quantum entanglement can result in the connection of different entities to lead to connected outcomes if we are going by the multiple worlds interpretation. On the other hand, if we go by the standard Copenhagen interpretation, entangle might possibly be used to synchronize outcomes, for example in people's thoughts.

INTERVIEW NO.2

1. Could you please briefly introduce yourself? What's the direction of your research or your work?

Mingjian He. Psychology - cognitive neuroscience & Alzheimer's Disease.

2. Do you think people have started to have problems with interpersonal communication as a result of technology, such as electronic communications or Internet usage? Do you think it has led to any physical or mental degeneration of usual abilities that people have?

The closest psychological diagnosis in the current DSM-V that resembles the "IICDS" will be socialphobia following the anxiety disorder category. It is very hard to say people start to have problems with interpersonal communication as the result of technology, because no controlled experiments have been done (nor is it realistic) on the subject. Thus scientifically speaking, what we think is an issue with internet might be a perceived "syndrome" that is merely a manifestation of some of the traditional psychological issues such as depressive symptoms or anxiety disorders. That being said, addiction and abuse of internet in the child developmental stage can lead to social isolation and prompt the lack of development of social interaction skills. For example, if children can socialize without the need of physical interaction, the ability to perceive body language or facial expressions might be less well developed compared to the children decades ago who grew up without the abundance of technology. Thus it is not degeneration that we are seeing with the use of technology, at least not in the next 200 years due to the expected time needed for "evolution" to decide one of the traits that human used to have is no longer needed due to the widespread technology.

3. Given your background on your line of research, what are your thoughts about special types of communication like telepathy, crystal therapy, or Gong Bath?

Telepathy can't be demonstrated scientifically.

Crystal therapy and Gong Bath are both perceived "therapies"; they are effective due to psychological factors and can be best understood as internally driven. It has realistic and actual therapeutical effects, except it is not objective but subjective. It might be driven by neurotransmitters released when a particular cognition is adopted. However, in order for the neurotransmitters to actually have an effect, it must be able to interact with the "therapy target" in a scientifically sound manner, such as through immune-system molecules or sympathetic/ parasympathetic systems.

4. It's been reported that even when twins are far apart, it seems that they can communicate with other in some mysterious way. What do you think about this and how do you think this happens?

Twin's studies have to be conducted with two twins raised up in different family conditions, so to speak eliminate "nurture" factors and preserve only the "nature" or genetic factors. The anecdotes we observe are usually based on twins raised under the same household, eating the same food, dressing in similar colors. There is no surprise that they might synchronize at some points because they have similar memories anyways.

5. What are your thoughts on how we all influence each other? Do you have any personal stories from yourself or any friend about when you (or your friend) might have ever had an effect on someone else?

We influence us through the entire social psychology phenomena. For example, the bystander effect is a case where a group of people, by merely standing next to each other, perceive the dilution of social responsibility and therefore less likely to act. Thus, people influence each other in this case through the so-called bystander effect or "group effect".

6. Bacteria is all around us on Earth and they are everywhere. What do you feel and imagine when you think of the word "bacteria"?

It's ubiquitous. But there might be the misconception that bacteria are bad because most people don't know their colons are populated with bacteria. In clinical psychology, obsessive compulsive disorder (OCD) patients sometimes have to wash their hands repeatedly throughout the day due to fear of "bacteria" on their hands. But in this case bacteria is merely a manifestation of the psychological anxiety, and it could have been "viruses" that these patients are afraid of.

7. After seeing my project "Unshowable Reveries," what are your thoughts?

This is an interesting project, and I think it does achieve the goal of materializing emotions. However it might have the drawback of being un-universal: for instance, one individual's angry emotion might produce a different waveform from another way. Consequently the voltage output to bacterial agarose cells will be different, therefore the bacterial cells will look different for different people even though the emotion labels are the same. It could be a great art exhibition if the theme is that different people express the same emotion differently. But it would be very difficult to transform into a "reporting" device to indicate to the users whether the emotion is angry or happy due to lack of consistency.

INTERVIEW NO.3

1. Could you please briefly introduce yourself? What's the direction of your research or your work?

My name is Evan Daniel, and I'm an artist who makes work about memorizing the number π to ten thousand digits. In my work I aim to understand how memorizing π may be made meaningful and what it tells us about our own cognition. In order to test different assumptions about cognition, and to develop different material byproducts, I experiment with different ways of recalling π from memory.

2. Do you think people have started to have problems with interpersonal communication as a result of technology, such as electronic communications or Internet usage? Do you think it has led to any physical or mental degeneration of usual abilities that people have?

My own experience is that spending lots of time doing one activity does change the way I think. I think that spending hours and hours practicing π has changed the way I think; before that, spending hours and hours painting and drawing changed the way I think. So I believe that technology has likely changed the way we think, but not necessarily in the ways we might usually assume. Regularly looking through a vast amount of data for answers likely changes the questions we ask.

3. Given your background on your line of research, what are your thoughts about special types of communication like telepathy, crystal therapy, or Gong Bath?

I don't believe in the efficacy of crystal therapy (but Andy Warhol did). I would have to base my assessment of the gong bath on experience, and I have never tried it. I believe that the colloquial understanding of telepathy is erroneous, and results from a poor understanding of the way we read other people's behaviors. Our brains have incredibly powerful tools for reading other people's thoughts in their faces, movements, and words. People confuse this ability with telepathy. But I do believe that it's possible there exist other physical means by which information might pass between people beyond our current understanding of science.

4. It's been reported that even when twins are far apart, it seems that they can communicate with other in some mysterious way. What do you think about this and how do you think this happens?

As noted directly above, I do believe that it's possible there exist other physical means by which information might pass between people beyond our current understanding of science. I have no speculation of how this might occur. I do

believe that our ability to read other people is almost limitless.

5. What are your thoughts on how we all influence each other? Do you have any personal stories from yourself or any friend about when you (or your friend) might have ever had an effect on someone else?

I believe that we influence people in very subtle ways, far beyond what we usually consider or are aware of. For this reason I think we have a responsibility to others to live our lives in an honest way and to seek out real knowledge and understanding..

6. Bacteria is all around us on Earth and they are everywhere. What do you feel and imagine when you think of the word "bacteria"?

I think bacteria influence how we think in ways beyond what we usually imagine. The bacteria toxoplasma gondii has, in studies, been shown to influence the behavior of rats so as to increase the chances of the survival of the bacteria. Most bacteria that live in our bodies are unidentified. Overall we have a symbiotic relationship with bacteria, though, and they are important for our lives.

7. After seeing my project "Unshowable Reveries," what are your thoughts?

I thought it was a very personal line of inquiry that served to allow you to communicate with a scientific object — the bacteria. In "Give Me a Laboratory and I will Raise the World," Bruno Latour argues that Louis Pasteur made his bacillus into an actor in his own life, and which contributed to the adoption of his theory by the scientific community. He did this by making the bacteria larger, conceptually and physically. I believe you were doing the same thing: by making the bacteria larger, you were able to communicate with it. It became an actor in your work and life that you could communicate with.

INTERVIEW NO.4

1. Could you please briefly introduce yourself? What's the direction of your research or your work?

My name is Ben Aron. I am an interdisciplinary artist who is currently a first year graduate student in the Digital + Media program at the Rhode Island School of Design. In my work, I am interested in exploring the absurdities inherent in economies and other societal structures.

2. Do you think people have started to have problems with interpersonal communication as a result of technology, such as electronic communications or Internet usage? Do you think it has led to any physical or mental degeneration of usual abilities that people have?

It is difficult for me to say. I am not familiar with the research on the subject, so I do not want to feign some sort of understanding. Anecdotally, I have noticed many incidents where people choose to communicate digitally over in person. I am skeptical whether there are any negative physical or mental effects.

3. Given your background on your line of research, what are your thoughts about special types of communication like telepathy, crystal therapy, or Gong Bath?

I think that the "placebo effect" within the human mind is strong. Personally, I do not believe these methods are effective supernaturally.

4. It's been reported that even when twins are far apart, it seems that they can communicate with other in some mysterious way. What do you think about this and how do you think this happens?

I think that the "placebo effect" within the human mind is strong. Personally, I do not believe these methods are effective supernaturally.

5. What are your thoughts on how we all influence each other? Do you have any personal stories from yourself or any friend about when you (or your friend) might have ever had an effect on someone else?

I think human beings influence each other in many ways. From society, to the work and thoughts of individuals, we gain a lot of positive and negative influences. My favorite stories are when you hear of teachers inspiring students to explore a field of study they were previously not passionate about.

6. Bacteria is all around us on Earth and they are everywhere. What do you feel and imagine when you think of the word "bacteria"?

When I hear the word "bacteria", I think of the scale of microorganisms and how fascinating it is that such a microcosm exists.

7. After seeing my project "Unshowable Reveries," what are your thoughts?

It is an interesting project idea to send EEG data to microbes. To attempt communication between beings so different in scale is a fascinating poetic gesture.

INTERVIEW NO.5

1. Could you please briefly introduce yourself? What's the direction of your research or your work?

My name is Ruoyan Wang. I recently graduated from Brown University with a degree in computer science. My research is focused on the applications of AI & machine learning.

2. Do you think people have started to have problems with interpersonal communication as a result of technology, such as electronic communications or Internet usage? Do you think it has led to any physical or mental degeneration of usual abilities that people have?

Yes people nowadays are getting more addicted to electronic devices like computer and cellphones. Those devices typically distract people from their surroundings, consume users' time and energy, and thus discourage face-to-face chatting. Even for social media apps made for communication such as Facebook & Instagram, more conversations are made among strangers (influencers and their follower that never see each other in reality) than among close friends. Another side problem that comes with the Internet is that people may behave more aggressively than they do in reality since they are largely anonymous online. "Trolling" (sarcasm and aggressive comments) is a common issue on websites and forums.

With above said, I do believe people to some degree lose their daily communication ability, though more statistical evidence is necessary to support the claim.

3. Given your background on your line of research, what are your thoughts about special types of communication like telepathy, crystal therapy, or Gong Bath?

I have seen research on applying machine learning techniques to understand people's intension from their EEG (brain waves). I believe telepathy is eventually possible with the advance of technology. Things like crystal therapy and Gong bath though, would need more scientific study to prove their effectiveness.

4. It's been reported that even when twins are far apart, it seems that they can communicate with other in some mysterious way. What do you think about this and how do you think this happens?

If those reports are true and accurate, then they fall into those mysterious physiological phenomena that we still cannot explain nowadays. I can't really come up with a possible explanation for them since biology is not my field of study.

5. What are your thoughts on how we all influence each other? Do you have

any personal stories from yourself or any friend about when you (or your friend) might have ever had an effect on someone else?

Human beings are social animal and everyone has influence on people around him or her. My roommate in college is quite thrifty since he is from underdeveloped rural areas in China. I used to have little control on my budget but during the four years I became more careful in spending partly because I didn't want to embarrass him and partly because I realized the importance of saving after living with him.

6. Bacteria is all around us on Earth and they are everywhere. What do you feel and imagine when you think of the word "bacteria"?

Those "worm-like" little things under microscope. Unlike "virus", the word "bacteria" sounds way more friendly since certain bacterias are helpful and even essential for our body.

7. After seeing my project "Unshowable Reveries," what are your thoughts?

Manipulating the patterns of bacteria sworm by enforcing magnet fields is a very cool idea. Apart from artistic views, it would be interesting to know whether we can control the spread of bacteria using the same technique and bring more medical discoveries. Changing emotions through similar techniques sounds way more complicated and challenging. It is vital to know what chemicals play the key role in affecting people's emotions and how bacteria can produce those chemicals.

INTERVIEW NO.6

1. Could you please briefly introduce yourself? What's the direction of your research or your work?

My name is YUAN TIAN; I'm originally from Shanghai, China. And now I'm studying in SF, directing major, master degree.

2. Do you think people have started to have problems with interpersonal communication as a result of technology, such as electronic communications or Internet usage? Do you think it has led to any physical or mental degeneration of usual abilities that people have?

Absolutely yes. Technologies have affected us in the way that we could not imagine or even notice. For example, people don't like to call people and talk to each other that much like we used to in the past, why? For me it's the result of the development of internet tech, in the past if we want to text people, it cost us a lot by every single text, but now we have internet, we have free Wi-Fi everywhere and we have huge amounts of different chat apps that allow us to communicate without talking. So yes, I do think it has led to degeneration of the ability of using language, and it's in both physical and mental ways, like lots of people feel like they prefer to text people instead of talking to them.

3. Given your background on your line of research, what are your thoughts about special types of communication like telepathy, crystal therapy, or Gong Bath?

I think they are exist but exaggerated in sort of way. I insist there are special types of communication, but I don't think we have the full access of using them just now even some people claim they do.

4. It's been reported that even when twins are far apart, it seems that they can communicate with other in some mysterious way. What do you think about this and how do you think this happens?

Since I've heard that this always happens between the twins that come from the same egg ell. We do have reason to believe this mental connection between the twins has something to do with how similar their genes are. Like everybody has friends, and some of us even call them "soul mates" because they feel like they can understand each other so well, and this not only happens among twins, so again, I do believe the answer is our DNA.

5. What are your thoughts on how we all influence each other? Do you have any personal stories from yourself or any friend about when you (or your friend) might have ever had an effect on someone else?

Every second, we are being influenced and influencing the others. We cannot unseen what we saw, we cannot unheard what we heard. We cannot be the exactly person that who we are right now if even a single tiny fact changed in the past. Every decision we made is a result of the influences from the others from the past, and that's how we create vivid, lively and believable characters in our script. That's the reason why when we are creating characters, we always have to give them a full background.

6. Bacteria is all around us on Earth and they are everywhere. What do you feel and imagine when you think of the word "bacteria"?

Bacteria are the same things as thoughts. They are everywhere, they are infected, they grow on their own, and they can never be eliminated.

HYPOTHESIS

1.John Powell, in his book Why I am Afraid to Tell You Who I Am, describes five levels on which we can communicate, and an understanding of these levels is essential. I found out through my interviews and researches that The way of communication is the primary change that science has brought to us. As I mentioned previously, as the extension of our bodies, science help us to communicate at further distance and faster than before. A famous poem says that long distance separates on bosom friends. However with the science development today, the closest people beside us can be as far as people in the distance. Science has separated the human society. Apart from the segmentation of time, there is also the segmentation of human relations that leads to fewer deep communication and reduced mutual trust. Communication has developed to a stage that people need to redefine it. Powell¹ believed that communication could be divided to five stages, namely cliche conversation, fact reporting, shared personal ideas and judgments, shared feeling, and peak communication. Science has improved the first three types of communication and restricted the latter two. For this reason, I designed two pieces of work-Unshowable Reveries and Mood Treasure to enhance the two high level communications.

EXPERIMENT

My work *Unshowable Reveries* takes root in the attempt of combining the visible physical world and the invisiable space (mentality, energy and feeling) and looking for the converging point between the two worlds. I hope that my work can redefine communication with the help of science. I'm very interested in the telepathy effect between twins and the theory of quantum entanglement that indicating information communication among people don't rely on any media or energy.

I hope people can feel each other more directly with my work and realize real valuable communication like the experiences of other people are yours. I feel deeply that as we are bounded by the three-dimensional world that can be reached by our senses and the linear time concept, we have mistaken the physical substance with an boundary and the constant and vibrating energy field as two different things. The former can be exemplifed by Newton's classical dynamics1 and the latter one by James C. Maxwell's classical electrodynamics². However, as scientists dig deeper to the finest subatom or to the boardest universe, they find out that at the place where people's senses cannot reach, the nature of physical substance and energy are actually the same. Quantom physics and relativism of the 20th century also thoroughly overthrew the mechanical concept towards time and space in classic physics. One of the most famous theories is the E=hv(E—energy, h—a quantom constant, v-frequency of vibration) by German quantom physical scientist Planck³. The equation states that when the constant is the same, the higher the vibration frequency, the stronger the energy.

Feeling is an invisible status. Even at today when the language has much development, it's hard to accurately and directly describe felling, not to mention the language obstacles. Communication and understanding have always been one of the biggest hopes of men. The famous psychiatrist Dr.David R.Hawkins⁴ has brought up an energy scale theory, which conveys the idea that different feeling has different level of energy. The energy level of kindness is high and the level of vice is low. Please see the table below:

1.In physics, classical mechanics is one of the two major sub-fields of mechanics, along with quantum mechanics. Classical mechanics is concerned with the set of physical laws describing the motion of bodies under the influence of a system of forces. https://en.wikipedia.org/wiki/ Classical_mechanics

2. For thermodynamic relations, see Maxwell relations. For the history of the equations, see History of Maxwell's equations. https://en.wikipedia.org/wiki/ Maxwell's_equations

3. Max Karl Ernst Ludwig Planck, was a German theoretical physicist whose work on quantum theory won him the Nobel Prize in Physics in 1918. https://en.wikipedia. org/wiki/Max Planck

4. Sir David R. Hawkins, M.D., Ph.D., is an internationally renowned psychiatrist, http://www.hayhouse.com/ authorbio/david-r-hawkinsm-d-ph-d consciousness researcher, spiritual lecturer, and mystic.

- 1. Enlightenment:700~1000
- 2. Peacefulness:600
- 3. Quietness and joyfulness:540
- 4. Love and respect:500
- 5. Rationality and sense:400
- 6. Tolerance and forgivingness:350
- 7. Hope and optimism:310
- 8. Calmness and trust:250
- 9. Courage and affirmation:200
- 10.Arrogance and contempt:175
- 11.Angor and hate :150
- 12.Craving:125
- 13.Fear and anxiety:100
- 14.Sorrow and regret:75
- 15.Indifference and hopelessness:50
- 16.Sin and punishment:30
- 17.Shame and disgrace:30

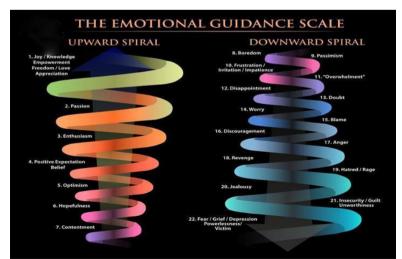
A man whose score is lower than ten is in the status of sub-health, chronicle disease or severe disease.

A man whose score is close to 0 is dying.

A man whose score is lower than ten is in the status of sub-health, chronicle disease or severe disease.

A man whose score is close to 0 is dying.





According to Huang Di's Cannon of Medicine "the five organs of men can generate five feelings, namely joyfulness, anger, sadness, melancholy and fear", we can see feelings are closely related to organs. The basic law is that the heart is the organ for joyfulness, liver for anger, spleen for sadness, lung for melancholy and kidney for fear. Traditional Chinese Medicine discovered that feeling has direct impact to one's physical health and vice versa. Meanwhile, considering the immune system concept in western medicine, when our physical body changes or the immunity is hampered, the bacteria or virus in the body will also change, after all the human body consists of so many kinds of bacterium.

In Kevin Kelly's 2010 publication "What Technology Wants1", he proposed 9 the view that "technology is a form of life".In my newest project, I wish to let people experience quantum entanglement by creating a "twin" of sorts. Since mood is such a difficult thing to pin down and express, I decided to focus on it. For example, when I'm happy, it is ambiguous. I can be happy from reading a good book or eating delicious food, but how to define the finer differences between the two?Our mood is also affected by our physical condition, and vice versa, when I'm exhausted my immune system weakens, and my mood becomes worse.I want to collect data on my mood with EEG, then convert the digital signal into analog signal, in this case into voltage. Then I designed an electric field, and placed the petri dish containing pneumonia bacteria (from Rhode Island Hospital) in the middle. By applying the converted voltage to the electric field, my mood affects the growth of the bacteria.

Meanwhile, as I mentioned before: when our bodies change, the immunity will decrease and the status of bacteria and viruses in the bodies will change accordingly as the human body consist of a lot of bacteria. The number of types of large size species is decreasing year after year. Many species are facing the danger of distinction. In contrast, after 4 million years of evolution, the types of bacteria are becoming more and more diversified. Bacteria are everywhere. They can cling to the dust in the atmosphere or float in the cold and dark deep sea. The number of bacteria cells in human body is ten times of normal cells. Under the control of immune system, most of the bacteria in human body are harmless and are necessary to the normal function of the body's ecosystem. The microorganisms help people to digest food, protect people against viruses and can even influence

1. What Technology Wants is a 2010 nonfiction book by Kevin Kelly focused on technology as an extension of life. the brain activity. Even so, many people think bacteria useless. Why there is a misunderstanding like this and how to appropriately use the growth mechanism of the bacteria has become an idea lingering in my mind.

The possibility of combing quantum entanglement and bacteria has become the source of inspiration for me. Bacteria are everywhere but their nature is misunderstood by people. Quantum entanglement is so obscure and difficult that it is even called a spooky action. These features are the reasons explaining why I think my research interesting. From the aesthesis perspective, it is a question of the nature of knowledge: what we should know and how we can use them. I began to try to comprehend the super micro sphere of quantum physics and the micro sphere of bacteria from the artistic perspective. From then on, I began to study how to cultivate bacteria in the lab and the observation methods using different types of microscopes. It was quite ironic that on one hand people were afraid of bacteria while on the other hand it was very demanding to cultivate pure bacteria-appropriate temperature, humidity and "food" were all strictly required. I used diplococcus pneumoniae from Rhode Island Hospital in my research. Firstly, I cultivated the bacteria collectively for a while and then the following 24 hours was the golden period for my creation. Therefore, I slept in the lab during every test and took observation record every tens of minutes.

I was very lucky to meet the scientists who were rarely seen commonly. By studying after them, I realized an intriguing point that was also the key to my creation: surface is where the bacteria most likely to gather and survive. Bacteria in the human body usually move around in the space separated by all kinds of biomembrane surfaces. The characteristics of bacteria are usually strongly affected by the solid surface, liquid surface and biomembrane surface. The bacteria around the surfaces face a harsh challenge that is how to quickly move and effectively change direction to find the appropriate living environment for themselves in the highly viscous liquid. The specific physical and chemical conditions around the surfaces are advantageous for the aggregation of bacteria. Compared to area afar from the surfaces, local electromagnetic potential close to the surfaces often demonstrate special distribution. These local potential fields can bind most of the large molecules and all kinds of ions, which are the main nutrition source for

microorganisms. Oxygen in the air has the highest density at the critical plane of air and water. Organic molecules like to absorb on the critical plane of air-water or water-solidity. The membrane of bacteria cell has strong Van Der Waals interactions with air, water or solidity critical plane. The comprehensive influence of the above physical and chemical factors enhances the aggregation tendency of bacteria on the surfaces.

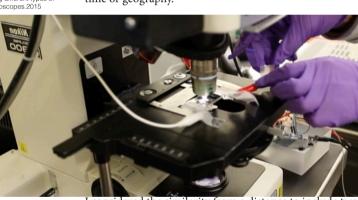
Inspired by the above factors, I designed my work Unshowable Reveries. In the work I collaborated with professors and PhD researchers from the physics lab of Brown University. I described the potential of the application of quantum entanglement in communication through an artistic perspective. On one hand, my research work converted the invisible mentality to visible patterns that were formed by the life track of living bacteria and on the other hand, the work allowed me to control bacteria in other people's bodies with my mentality which was a magical communication like quantum entanglement.

The theory of my work was that firstly I collected my brain waves when I was in different mood and stored them as my mentality brain wave database. Secondly, I made a lot of attempts. I used 3D printing, all kinds of conductive materials and designed different electric fields. And then, I put the culture dish of diplococcus pneumonia from Rhode Island in my electrical field and added a real time fluctuating voltage to the electrical field, with the fluctuating voltage being the digital signals of my different mentalities. During the period, I tried other different cultivation surfaces, observing their influences to the bacteria. My outrageous idea attracted the scientists and I did many experiments that they also wanted to do. We tried to add a 40V voltage



Illustration I began to study how to cultivate bacteria in the lab and the observation methods using different types of microscopes.2015 to the bacteria but as a result they boiled immediately. After the experiment, the visible bacteria by human eyes grew to different patterns because of the electric field of different mentalities. At the same time, I tried to observe the effect of electric "massage" lasting for several days to the moving pattern, vitality and moving direction of the bacteria under electronic microscope.

My first work Unshowable Reveries was micro-dimension oriented. It took the micro world as its media. By amplification, it realized a creative communication method that was the visualization of mentalities. In the next stage, the scale of my research was broadened. I began to include media from the current era and based my research on popular culture. My second experiment was Mood Treasure. Prophase interviews told me that people strongly relied on all kinds of social media. People were addicted to "similarity from a distance". The distance can be understood in the sense of time or geography.



I considered the similarity from a distance to include two layers of meanings. One being things in the universe are all related, the other being that you can suddenly realize that you are not alone.

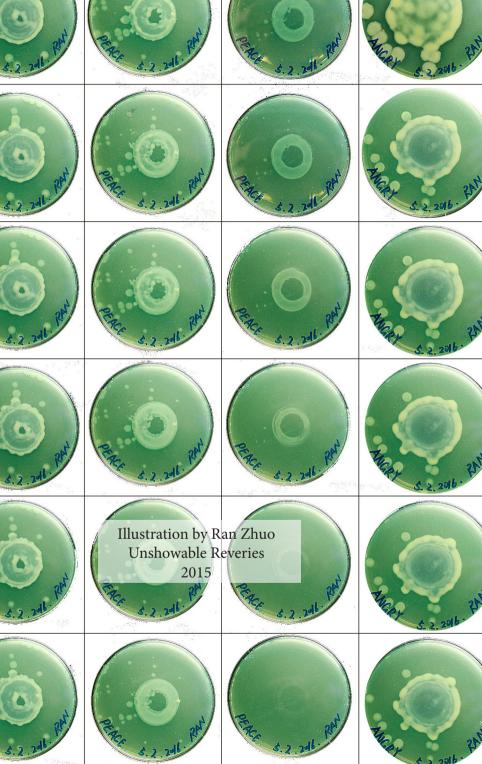
Stephen Hawkin said Science is beautiful when it makes simple explanations of phenomena or connections between different observations. Examples include the double helix in biology and the fundamental equations of physics.

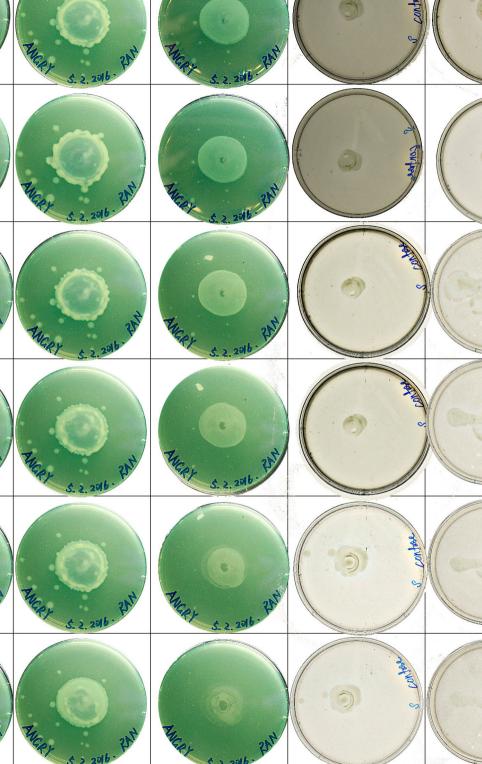
I started a series of researches to find the heartwarming "similarity in a distance" or the empathy therapy. My researches had two directions, one was psychological and the other was physical. First, I observed the people staying

Illustration I began to study how to cultivate bacteria in the lab and the observation methods using different types of microscopes.2015

by themselves in public environment, their posture, facial expression and behavior. I found that people by themselves liked to find a dependent point. When people were alone, they would unconsciously lean against a lighting pole, a wall, bus stop board or just set one foot close to a prominent stone. Secondly, I observed that people liked to sit everywhere. Comparing to chairs, people preferred to sit on the lawn and they invented different postures to make themselves sit comfortably on the lawn. The second step of my research aimed to examine the environment that people were attracted to. I tried to guide people with a marked area. For example, I circled out an area that had the outline of a person and put a comfortable pillow in that area to test whether anyone would lie down in that place. As a result I found out that when the area was not circled out and the pillow was not put there, people would come to lie down there. However, after the setting, nobody came. Another finding of my research was that people didn't like to attract attention in public environment. For example, I put a tall stool among several occupied benches in a park and found that people preferred to sit on the lawn instead of the stool. Meanwhile, I also studied the demand of psychological comfort. I interviewed a student counselor from RISD. During the interview, he told me that young people liked quick therapy yet they were reluctant to tell you their story face to face. He also mentioned that the best psychological therapy was to tell your story because you would both help others to understand you and help yourself to be more clear-minded. RISD even launched a text message psychological therapy service. Later on, I found some exclusive groups on Facebook, such as the group of CS department of Brown University¹. One of the status there from the last semester got really popular, which was from Alex St Laurent "People don't talk about their rejections and hardships enough, and I feel it contributes to unseen negative emotions (especially impostor syndrome). And that sucks. I think it would be healthy to do something about that.

1. https://www.facebook.com/ groups/browncs/search/?query=reject







People don't talk about their rejections and hardships enough, and I feel it contributes to unseen negative emotions (especially impostor syndrome). And that sucks. I think it would be healthy to do something about that.

I'll go first: (a) I've been rejected by every company on the west coast I've applied to; (b) I have SEAS accommodations for reduced course load due to mental illness; (c) I've received no credit on a non-zero number number of courses. But hey, I'm not unhappy.

Your turn!

Update: Christine has taken a first step in the effort to archive these stories. If you'd like your post to be included, please fill out this form giving permission: http://goo.gl/forms/7RAIDsQMIH

Also, thank you Kate Storey-Fisher for writing this piece: http://blognonian.com/2016/04/11/rejectedbrown/

For those of you who feel uncomfortable or unable to share, know that we appreicate you. And hey, you're not alone either: https://www.facebook.com/brownbearsadmirers/posts/17273578808 38278

位 💟 王若岩、 Steven Chengji Yan 和其他 727 位用户 🛛 139条评论 2次分享

Illustration https://www.facebook.com/ groups/browncs/search/?query=reject

> I'll go first: (a) I've been rejected by every company on the west coast I've applied to; (b) I have SEAS accommodations for reduced course load due to mental illness; (c) I've received no credit on a non-zero number number of courses. But hey, I'm not unhappy."

> The status had hundreds of replies, including professors from Brown. People shared their hardships in job hunting and exams. Many people replied that after seeing all these, they realized they were not alone. Through the experiments and researches, I found that people needed a dependent point, which could not only support them physically and make them feel safe, but also support them in the psychological aspect. I also discovered that people could share their feelings and tell their stories the best when they felt safe, were at ease and not noticed by others.

Therefore, my final design was a combination of psychological and physical comfort, which could be seen as a navigator connecting the virtual and the real world, helping people to locate their "similarity in a distance" and be healed. For this purpose, I chose several places in providence city and set hidden gears there according to the features and surrounding environment (construction structure, surrounding people, geographical environment and illumination). Meanwhile, I designed an app platform on portable terminals called Mood Treasure. It was a mood map. Different from common map apps, the user of Mood Treasure can decide to search according to their mood or according to location. If the user chose to search by mood, he or she can choose a type of mood for example loneliness. And then, Mood Treasure would show places had healing functions around the user. The user can also read stories shared by other users in the list under the mood. After unlocking the location, Mood Treasure would provide the user with the location of the hidden area and some hints. The user should find the hidden gears by him of herself. The user can only enable the gears after unlocking the hidden area. The hidden gears could be a seemingly common wall. However after unlocking, there was a suggestion for heating and the user would feel warmth if he or she leaned against the wall. Other people wouldn't know the secret gears. Even if they knew, they were not authorized to enable them. Other gears included inflatable cushion buried under the lawn. The user can unlock gears through the app and the cushion would be inflated and the covering turf would bulge. Another gear was an ear shaped installation on a wall that could be easily overlooked. After unlocking the device,

Illustration Mood Treasure taken by Ran Zhuo 2016

What do people think about empathy therapy

Damion Vania

When people came here they don't want to sharing their story.But they wants to be fix laster. Talking and sharing their story help them be fixed from two direction and the intermediate of the top making them submitted in the top of the state of the story help them and the top making them submitted in the top of the story help the submitted in the story with the story will find more con-

fortable, and then they will more trust you,and the you can give them help. Now RISD provided a message service to help students who don't like face to face talking.

tephanie Musca

(MFA candidate) (How changing theis behavior can lead to changes in how they are feeling. H's not just students coming from abroad who feel ionely sometimes - I think a lot of us are coming from different places and trying to build a new, temporary home.



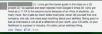
On sunday afternoon, a student in the Brown Computer Science Facebook group posted about their experiences with rejection and imposte syndrome at Brown and in the CS field. The thread quickly took off, gamering over 500 likes, and many commented to share their experiences and provide a supportive space for dialogue.

The original poster, Alex SI Laurent, wanted to share his experiences publicly in order to be an example of someone unatrial to be open about his struggles. Being rejected from jobs and internahips is a topic haft's not free discussed; the success stories of landing postlions are the only ones that you hear about. This can make rejection an isolating experience. SI Laurent said, ' was a bit surprised hearing about some of the experiences of poople i had looked up to for so long and had always assumed were much more expable than me."

Many students wrote about experiences struggling with an obstacle, and then the pain of having other people minimize their struggles. Difficulties with coursework can be isolating, especially with the strict collaboration policies of some of the CS courses. The Math 9/10 cours es wore also a particular point of struggle for many.

> Whenever I tell anybody, they laugh like 70h, mah 1007 bridause I niver look case in high school. Whenever I tell anybody, they laugh like 70h, mah 1007 That's a jaket But Tim not joking when I say that class is genuinely hard!! It makes me feel pretty defeated when everybody else treats my obstacle as easy Like. Denote 47th etc. I her

The majority of the experiences shared were specific to the CS depart ment, especially with respect to the UTA program and the application process for internships and jobs in the tech industry.



about the rejections that they faced on the path through academia, as well as time they struggled with coursework as undergrads.



Prototype+Experiment







Illustration Mood Treasure taken by Ran Zhuo 2016 the user can tell his or her story to the ear and there was a mouth shaped installation at another place where another user could listen to his or her story after unlocking the device.

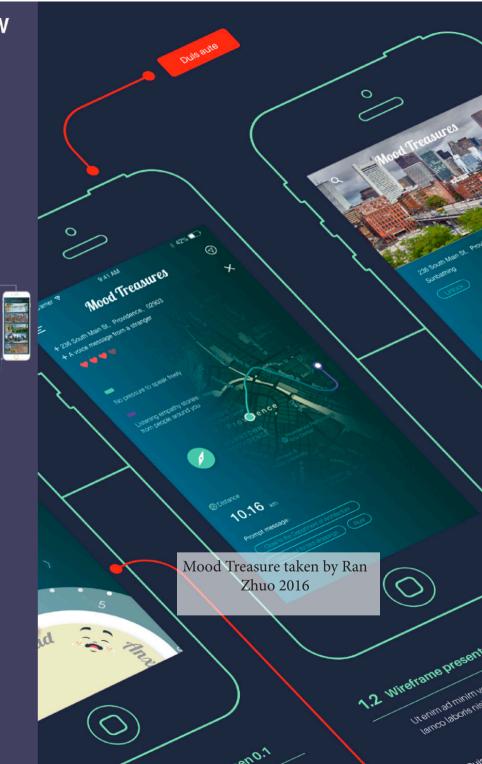






FLOV





ANALYSIS

In the experiment using bacteria as media for emotional communication, I accidentally found that the moving direction and speed of the bacteria living in the electric field of my mentality demonstrated changes under microscope observation. This was an unexpected discovery. Scientists collaborated with me were all very surprised and found it interesting. My crazy experiment was completely different from traditional scientific research which was structuralused, strict or even stiff, hardly leaving any space for creativity. The finding proved my assumption at the beginning. Bacteria grew to form different patterns under the influence of different mentality electric field, just like a new language symbol. Bacteria had an influence towards people far greater than what we imagined.

I found some people to test the final prototype of Mood Treasure. The users provided me important feedback. Some said that it reminded them of Pokémon Go1 that forced people to go out instead of immersing in traditional two-dimensional space of games. Moreover, my design of Mood Treasure combined real locations, the features of those locations and introduced hidden gears tailored for the location. My classmate Stephanie Muscat said "It's not just student coming from abroad who feel lonely sometimes. I think a lot of us are coming from different place and trying to build a new, temporary home." The feedback made me realized that the location, space and scenery I added to the places had important meaning to building self-identity. Interviewing people in the profession of science, art and philosophy from different countries helped me to see things from diversified viewpoints.

1 Pokémon Go is a freeto-play, location-based augmented reality game developed by Niantic for iOS and Android devices. The game was the result of a col-Jaboration between Niantic and Nintendo, by way of The Pokémon Company, and was initially released in selected countries in July 2016. In the game, players use a mobile device's GPS capability to locate canture hattle and train virtual creatures, called Pokémon, who appear on the screen as if they were in the same real-world location as the player. The game supports in-app purchases for additional in-game items.

CONCLUSION

Conclusion: the two years in RISD left me with very pleasant memories. I was free to do any experiments that I found interesting and I was able to try out all kinds of media. RISD was an excellent platform where I came across people from different professions and from different countries with different cultural backgrounds. I not only did my research on quantum entanglement on the super micro level and on microorganism, but also on how media changed people's lives in a macro view. My works attempted to convert invisible sense experiences to visible objects. I examined the society under the influence of science with a criticizing or even ironic viewpoint and pursued truly reliable scientific evidence. I like to completely devote myself to and take role play in every research. In one research, I was the maker and performer of the traditional Chinese musical instrument. In the research of animals' sense of smelling, I learned professional olfactory training method from wine tasters and perfume makers, and the odor extraction method from scientists in the chemistry lab. To study bees, I learned the life styles of bees and bees raising at the professional institute. As a cat person, I observed every special habit of my cat and its influence to me to redefine the relationship between men and cats. I even learned bacteria cultivation, and carried out different crazy experiments with scientists in dangerous bacteria labs. What's more, with my unceasing efforts, I brought two seemingly irrelevant objects together and discovered their compatibility. Finally, the "world of natural law" created by me could bring people some inspiration and enlightenment, affecting their daily life in some way. I hope my work is based on solid scientific evidence. Apart from that, I hope to transform people's viewpoint towards the neglected things by using a hippie, humorous or creative way of interpretation and give them new vitality.