

“Jeff, Do you even know what this is?”

“It’s a lemon.”

“How do you know?”

Then I quit the conversation by focusing on my own work, in response to my inquisitive roommate, as questioning as usual.

“How do I know you’re a human being?” I thought, but I didn’t say it out even so, trying to be polite and evoke the maturity inside of this man.

But think about it in a serious way, how do I know if the lemon is a lemon? Is it because of the memorable bright yellow, or the textural surface, or the artificial flavor in some tea drink I liked in middle school? Or is it because it triggered the memory of my grandma’s laughing face when she tricked me to bite it, just like how the madeleine recalls Marcel Proust’s aunt to him? In another word, what is vision? Why do we see what we see? As Tom Friedman says, art is compounded by four elements—idea, material, form and presentation. If visual art is to create a vision to its viewers, how can it make sense? In another word, how to make art?

According to an article posted by the Sightsaver organization, our eyes and the vision that we see, are responsible for four-fifths of all the information our brain receives. Vision is generated when the shape and color of an object are reflected by light, then are projected into our brain through our eyes, triggering certain senses in our memory, to remind us of the characteristics of this object, letting us to understand this object in our vision.

If vision is a miracle in the natural world, spheres will be the miracle in the visual world. Nature creates spheres mysteriously, to be perfect, aesthetically and functionally. Spheres are the only form that reject any vertex and edges, and contain only one surface, to present its pleasing and sublime shape. In the brutality of nature, the appearance of every object is designated by its function. As does the shape of spheres, which strengthens them to thrive in the nature. This is true from the atomic scale to the cosmic. For example, soap bubbles take the shape of spheres because it most efficiently balances the outward pressure of the air within the bubble against the surface tension of the soap film; planets appear to be round because their gravity compresses these planets into a shape that most evenly distributes the gravitational force among the planets. Overall, spheres contain the largest volume with the smallest surface. Also, the distances between their centers and any point on their surfaces are fair and even. Throughout history, spheres are often used to create language symbols and graphs in civilizations, given varied meanings based on their unique shapes and characteristics.

But what can spheres represent? And how can spheres make the invisible visible? Spheres are universally known to create models, from models of compounds to models of star systems. However, the topic that I consider the most important to visualize, is the system of social network. Why is that? Because it is invisible, or perhaps it is visible, but we are “blind”. In the short film Sound of Vision on POV, Frank Senior, the blind explorer in NYC describes that: “I think the biggest difference between a blind person and a normal person is that, a blind person can be very focused on details, but he can never perceive a whole image. See... We can touch every single rock on a mountain, but we will never know what a mountain looks like.” If to Frank, the the physical world is out of vision; then to us, the world of social network is outside of vision. In other words, we are all blind to this humongous map of our networks. That means we are covered in darkness, which will finally leads to

isolation and destruction. And that's why it is necessary to bring vision to us that we can see the connections as individuals and as the entire species.

But how can we build a model to reveal the structure of social network? Just like the solar system is constructed with a fixed star and several planets, and a water molecule is constructed with two hydrogen atoms and one oxygen atom, the structure of social network is constructed with certain components, oriented in different positions and distances, varying throughout different time periods and in different situations. I thought about how this may look. In a group of three friends, if one of them moves to another city that is far away, the other two would become closer and stay connected longer, which means that the bond between them becomes stronger and shorter, while the bonds between either one of them and the moved person become weaker and longer, and will break if the trend stays constant.

Another important component of the social network is the personalities of the social members. According to an article on Psych Central, how extroverted one person is may influence how the brain makes choices, and how they behave in different social situations. To a great degree, one's personality determines that person's social status and position, while being in different position in the society shapes that person's personality and thoughts.

When we were babies, we recognize shapes and graphs much earlier than words and languages. It is easy to see that, since we are the species of vision, visualizing information, structures, and systems into graphs and models is the most efficient way to display and demonstrate these data. I believe that visualizing the invisible structure of the social network can bring us a visual of society. The envisioning is compulsory also because the situation of darkness we are in now, can lead to alienation or corruption, and can be used by authoritarian organizations or to reach their goals against the common good. As Edward Tufte mentions in his book *Envisioning Information*, to envision information—and what bright and splendid vision can result—is to work at the intersection of image, word, number, art. The instruments are those of writing and typography, of managing large data sets and statistical analysis, of line and layout and color. And the standards of quality are those derived from visual principles that tell us how to put the right mark in the right place.

As I present this paper, I will be demonstrating the procedure of binding the information we can collect, to depict the world of social network in a way that can be visualized. So let's get back to my first question: What do we see?

First, let's talk about the organisms that perceives vision—us. What really makes us? Alwar Balasubramaniam—the artist of substance and absence will answer, “the past.” It is the past, whether the training, or the memory, or the experiment, which actually makes us. However, we can only look at the past and understand it by the available traces. If the past is the mark of the time, then vision is the mark of substances. We can't see all the substances, but we can always see the trace they leave. For example, we can't see light, but we can see the shadow it leaves; we can't see gravity, but we can see we are all pulled down to Earth. And that's our condition, we can't see the social network, but we can see the traces of people: the work they make collaborating with others, the scars they leave after fighting with others, and the trash and chaos they generate after partying with others.

So by following the traces, we are able to perceive vision. But how does vision make sense? If vision equals sight plus understanding, then how can we comprehend creations, art, and things that are unnatural, that we've never seen before? Apparently different artists create different ways for their viewers to understand their art. And those become the different styles of the artists. To Katherina Fritsch, her language is to evoke compassion within the viewers, letting them to participate in the artwork, to discover their own image in the sculpture by conveying common phases or obvious metaphor with strong contrast into her pieces. So instead of to merely stare at the piece, the viewers get to interact and experience, to reach the stage of understanding. Recalling Henry Fuseli's painting *The Nightmare* in which a male demon squats threateningly on a sleeping woman, Katherina created *Man and Mouse*, reversing the gender roles, to depict an ironic image of unrequited love, in which a passive man is pinned down by his female lover, his "Mousi," a German term of affection for women. The strong contrast and representation let the viewers realize their own roles in the scene.



Man and Mouse by Katherina Fritsch

Artists with different backgrounds have broadly varied styles and methods. However, they have a common goal—to persuade their viewers, to persuade them to understand and appreciate their work. As a victim of hurricane Andrew in 1992, Daniel Arsham found a way to transfer his voice to his viewers, trying to translate the devastating destruction of disasters. Inspired by the discovery of glass shards in his home after the hurricane, Daniel decided to build them—the residue of hurricane, into artificial forms. In his sculpture Thinking glass figure, he created this large, dense human figure sitting pensively or stoically, isolated from the crowd. It appears to be strong in contrast to the fragile glass that constructs it. The figure seems lonely but its material, the glass with sharp edges blocks out its interaction with its visitor. By then, viewers with or without similar experience will be able to understand the harsh and heavy message it conveys, and will generate compassion and relation with the piece—the vision they perceive.



Thinking glass figure by Daniel Arsham

So, vision can be, and needs to be spread, perceived, analyzed, and translated, but, by whom, to whom? The answer is the human beings in the invisible social

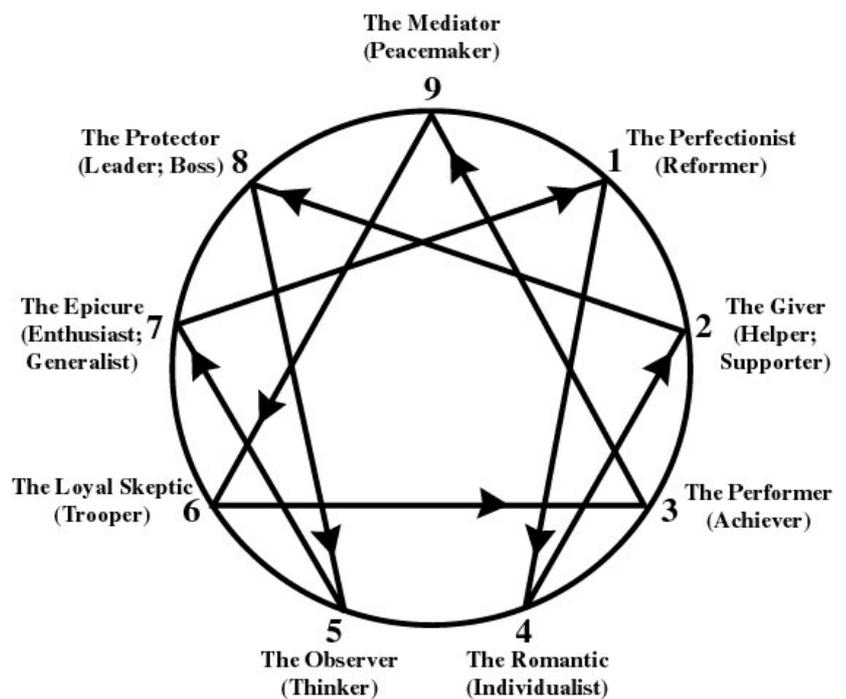
network. Social network is a structure that consists of “social actors,” from individuals, such as loners or friends, to organizations, both with and without “hubs.” All of these components, just like atoms, join together by being linked by sets of dyadic ties, through which reactions are caused between individuals or groups of them. What is a social network? “Balls and sticks, or marshmallows and toothpicks.”

Since my goal is to model the structure of social network, to cause understanding of this structure, we should discuss about all of these parts and levels. Divided into “Meso level” then into “Micro level,” a “Macro level” of social network indicates the overall large-scale, complex structure of the network throughout the world, in which individuals are no longer, and unnecessary to be visible. A Macro structure focuses more on impacts and influence of organizations or even countries, and the results and reasons of them. Being the “individuals” in the Macro structure, Meso structures are low density and focus on the bonds and interaction between groups of individual human beings. Within the groups of a Meso structure, people are linked with each other, or linked to a “hub,” to form a Randomly Distributed Network or a Scale-free Network. Breaking down to be even smaller, a Micro level structure focuses on the interplay within a group of people, or even the relationship between two individuals.

Between a Micro structure and a Meso structure stands the structure that balances our presences and influences in the best way. I call it the “Semi-Meso Level” of social network, which indicates both the interplay, relationship of people in a group, and the simple connections between a few groups, or the different groups a person belongs to simultaneously. I believe this structure is the most fundamental to us and the most necessary to be aware of and visualized.

As I have mentioned above, if the past is the mark of time, then vision is the mark of substances. So, if in the world of material, vision is the trace of substances; then in the world of social network, vision will be the trace of humans. Talking about the trace of human, obviously we will think of our footsteps, or our residue. If it is restricted in the level of social network, we will think of our impacts and contributions, to one another, or to the entire community. But tracing back to a deeper level, all of our behavior, our actions, our impacts, are originated from our characters, our personalities, this impresses that are deep in our soul.

The Enneagram The Three Centers of Intelligence



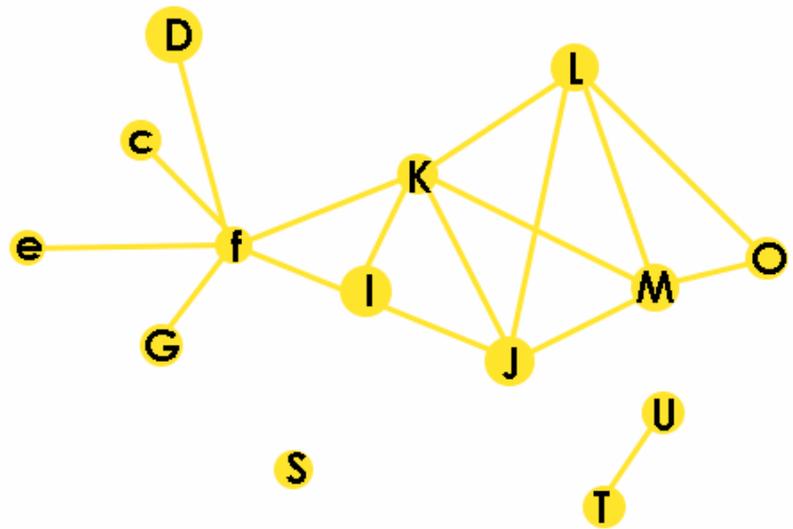
The Enneagram by Sandra Waltson

Instead of the Myers-Briggs Type indicators that put personalities into boxes, the Enneagram is more flexible by applying “Wings” and “Arrows”. “Wings” appear when one type leans toward another type next to it on the graph. For example, when “4-The Romantic” leans toward “5-The Thinker”, it turns into “4w5-The Unrestrained Poet”. Arrows appear when one type has a negative trend; it picks up a trait of its arrowed type to worsen its own condition. Anti-arrow then means its has a positive trend.

In order to explore into the envisioning, I designed a map of “Semi-Meso Level” network and printed out surveys to give out school-wide, asking my friends and teachers to locate their own position in the map, and defining their role, whether an “isolate,” a “liaison,” or a “bridge.” After collecting the information, I paired up the position they choose and their personality type in the Enneagram, then I gained a basic understanding of the components of the social network I’m in, and some interesting rules. For instance, in most cases, “5-thinkers” choose position “S”; position “F” is mostly consist of “7-the Enthusiasts”; the members of “K” bounce between “2-the giver,” “6-the Loyalist,” and “7-the Enthusiast”. The results indiate that, in a certain degree, one’s personality decides that person’s position in a social network, or more accurately, pushes that person toward the position. So, by visualizing these personalities into certain shapes, colors, patterns or textures and by putting them into their position according to the survey, the model wil generate interactions with its viewer. For example, sphere “S” will be covered in sand painted in dark blue, to show one’s profound thinking and intellegence but rough surface that leads to their isolation. Then the model will be able to evoke compassion within its viewer when they find their own shadows in their “spheres”, and in their positions.

Anyway, why is it important to convey these personalities, and using them to envision the social network? As I mentioned above, we need to undertand society’s structure. And the best way to depict the structure is to demonstrate the influences it leaves—the results of collaboration, and the shaping of personalities. I firmly believe that it is extremely necessary for me, both being inside and outside of the map, to envision the structure for all of us, in order to rouse our awareness of our position, to improve ourselves and to become better, both in our personalities and the society.

However, our society as an entity, is constantly changing throughout different time periods, and beyond different circumstances. Until the appearance of language, the sense of social network didn’t exist because all the individuals were located randomly on a piece of foggy, blurred cloud, which blocked all the connections and



Jeff's Semi-Meso Level social network map

even the acknowledgement of others. However, in modern society, in the world that is bombarded by social medium, the sense of individuals is expanding, while the sense of privacy is dramatically shrinking. This causes us to attach to and merge into each other like bubbles, by which the sense of connection is totally lost, causing us to form a distorted, chaotic polymer.

However, being a gigantic group of perceivers, our role and position shift dramatically to be restricted in a big bubble. As Micheal Anti, an important prolific journalist says, some governments block out the influences and critics from outside of the country by shutting down the foreign social medium. At the same time, they control the information within the countries, whether those they do or do not want to be spread and known. However, they are merely the examples, conditions like that are prevelant throughout the world. Authorities have turned to censoring into political tools, or even religious tools. It is truly urgent to waken us from our unconciousness of the crisis. It is definitely important for us to envision all of these conditions, whether they have happened or are happening, or are going to happen, because it is critical for us to understand where did we come from, where are we, and most importantly, where are we heading.

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