Imagination

Imagination

Masters of Architecture Thesis

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Introduction

We see with our eyes, but we see with the mind as well, and seeing with the mind is often called imagination. This thesis investigates the ambiguous, mystifying, and complex nature of imagination and has not been in any way straightforward nor simple. There exists no instruction manual for what I'm considering the most essential human ability. But what exactly is imagination? How is it cultivated, understood, used? Why do humans possess such a unique trait?

Sign

sign

1. An object, quality, or event whose presence or occurrence indicates the probable presence or occurrence of something else.
Synonyms: indication, signal, symptom, pointer, suggestion, intimation, mark, manifestation, demonstration, token, evidence

2. A gesture or action used to convey information or instructions.
Synonyms: gesture, signal, wave, gesticulation, cue, nod

Every human being, young and old, knows from his or her own personal experience, the ability to read text form a book and simultaneously a story comes to life in one's own mind. More often than not however, books do not contain any physical images nor depictions for the mind to see, only words to read.

> *If you choose to believe me, good. Now I will tell how Octavia, the spider-web city, is made. There is a precipice between two steep mountains: the city is over the void, bound to the two crests with ropes and chains and catwalks. You walk on the little wooden ties, careful not to set your foot in the open spaces, or you cling to the hempen strands. Below there is nothing for hundreds and hundreds of feet: a few clouds glide past; farther down you can glimpse the chasm's bed.*
>
> *This is the foundation of the city: a net which serves as passage and as support. All the rest, instead of rising up, is hung below: rope ladders, hammocks, houses made like sacks, clothes hangers, terraces like gondolas, skins of water, gas jets, spits, baskets on strings, dumb-waiters, showers, trapezes and rings for children's games, cable cars, chandeliers, pots with trailing plants.*
>
> *Suspended over the abyss, the life of Octavia's inhabitants is less uncertain than in other cities. They know the net will last only so long.*[1]

As one begins to read a story, the imagination creates a unique mental space in which text on the page is constructed into meaning as well as image. This everyday process of the human mind operates as a sign system. Semiotics is the study of signs and their use or interpretation; they exist as the fundamental structure for many domains such as: communication, cognition, and linguistics; it is also the presumption that signs and the interpretation of their meanings exists as the fundamental structure for imagination.

SIGNS

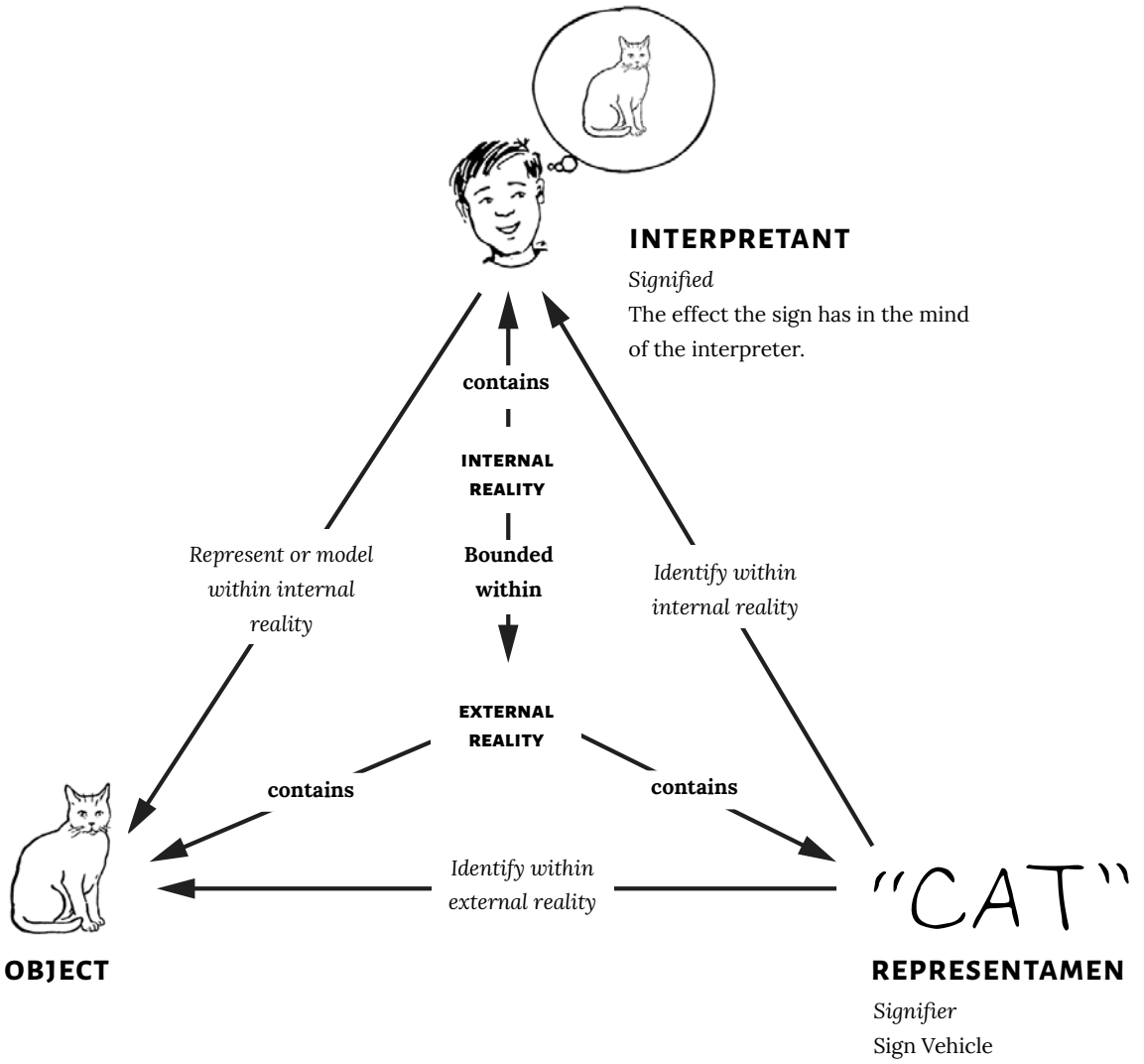
Messages are made of signs and are conveyed through sign systems called codes. A code functions as a system of rules; many of which include language, kinesics, braille, mathematics, chemistry, even architecture, to name a few. Understanding the elements and code of architecture is the purpose of most modern schools of architecture.

The more one shares the same code in a communication exchange, the closer his or her meaning will be.

But what is a sign? A sign is anything that stands for something else, such as an object or concept. The "stands for" is a process where meaning is created both through encoding, by the source, and decoding, by the receiver.[2] Ferdinand de Saussure, a Swiss linguist, was the first to develop a semiotic theory of signs. According to him, a sign occurs when a signifier invokes a signified concept in someone's mind. The signifier is the physical form of a sign such as sounds, images, or letters. For instance, the written word "cat" is the signifier but the concept it refers to isn't. Conversely, the signified is always a personal interpretation of the signifier; a mood or thought the signifier conjures up in the mind. For instance, when people hear the word "cat", one person may think lovingly of their cat at home while someone else may feel anxiety because a cat once bit them earlier in life. The way in which humans interpret signs always depends on one's own personal experience or lack thereof with the signifier.

Charles Sanders Peirce, founder of American semiotics, coined the concept "we only think in terms of signs" and that anything is a sign if someone interprets it as meaning something other than itself.[3] He proposed a triadic concept of signs which include: the representamen, object, and interpretant. The representamen is the form which the sign takes, also known as, the sign vehicle. The object, is to which the sign refers. Lastly, the interpretant is the effect the sign has in the mind of the interpreter (see image on left page). Pierce also points out there exist three types of signs: icons, indexes, and symbols. Symbols are arbitrary, but icons and indexes are, motivated; that is to say, they are more likely to resemble their object in one way or another, rather than being arbitrary.[4] An icon is characterized as being similar to its object; a representation such as a drawing or photograph where the likeness or resemblance is a determining characteristic. For instance, an illustration of a mustache resembling a real mustache on a man's face. Conversely, an index is physically connected with its object; an indication that something exists or has occurred. For instance, footprints meaning someone has been here before or smoke indicating there is a fire nearby. However, a symbol is arbitrarily linked with its object; it is culturally specific and has acquired its meaning through convention. For instance, a symbol such as a leaf on a flag or spoken and written language.

With all this in mind, there is no doubt, that imagination operates based on this sign structure. However, the bonds between the signifier



and signified, representamen, object, and interpretant are so concrete, there is no room left to imagine or interpret concepts otherwise. For instance, "when I say black bear, you can't help but think of a large bear walking of four legs possessing the trait of black fur". It may be the case, that Instead of the sign system acting as a way of fostering imagination, it acts as an inhibitor to one's own imaginative process. Furthermore, an idea as a way to liberate one's own imagination is to loosen the bonds between signifier and signified, or to de-signify completely. Disassembling and reassembling signs up until the point "when I say "black bear" you no longer think of a large bear walking on four legs possessing the trait of black fur, but of something else entirely".

Although, the theory that the sign system blocks the imagination is highly flawed and is left in a conundrum. For what would be the benefit in eliminating the structure for all thought, language, and knowledge. The imagination would serve no purpose and would be left in a state of constant chaos. Hold this thought, because there needs to be a deeper investigation and a return to the idea later in this thesis.

THIS IS NOT A PIPE

Consider the painting, The Treachery of Images by the French surrealist painter, René Magritte. Magritte demonstrates that humans attribute significance to images, as well as the complicated relationship between the verbal and the visual.[5]

Magritte's painting is dominated by the image of a large pipe set against a beige background, and underneath, written in script, Ceci n'est pas une pipe ("This is not a pipe"). The image of the pipe alone isn't especially interesting, and there doesn't seem to be anything unusual about the script either. However, the painting challenges the theory of the image itself. The idea that an image stands in relation to the object which it represents or re-presents.

When looking at the painting, one might initially think, "That sure does look like a pipe." Then he or she reads the script that tells them it is not a pipe. Well, what is it then? Magritte highlights the idea that an image of a pipe is not the same thing as the pipe itself, or the letters p-i-p-e. It is a representation of a pipe, once removed from its referent, the object to which it refers. He also forces one to consider his or her own reaction to the painting by suggesting that one's compulsion to call the image a pipe reveals our inclination to confuse the image with the thing it represents.[6]

Mental Imagery

men·tal
im·ag·ery

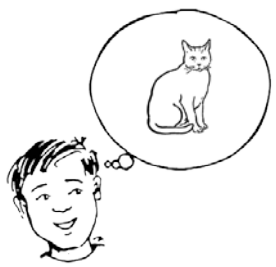
1. Picture-like representations in the mind.
Synonyms: imagery, imaging, imagination, imaginativeness, representational process, mind's eye, vision, envisioning, picturing, dream, dreaming, chimera, evocation, make-believe, pretense, symbolism

Remembering a cat sleeping (specifically, recollecting the way the cat looked), perceiving (specifically, seeing) a cat sleeping, and imagining (specifically, visualizing) a cat sleeping are very similar, and at times indistinguishable from each other. However, each act is fundamentally different in many ways. The manner in which remembering, perceiving, and imagining are alike concerns the "image".

The root of the word "imagination" refers to the word "image", to take within. The very word "Image" after all, suggests a picture. Therefore, the imagination is concerned with the production of inner pictures, or more precisely mental images. Representation of mental images have been considered a form of human pre-language that precedes verbal expression of thought. Verbal language is certainly more precise than images but at the price of replacing, at least in part, the real by convention and the image by a sign.[1]

Like semiotics, mental imagery is a commonplace aspect of everyday human experience, assisting in exercises such as communication and thought. In fact, there exists no such thing as image-less thinking. A few people may insist that they rarely, or never, consciously experience mental imagery, but for the vast majority of people, it is a familiar and mundane feature of the human mental life. The total number of connections between the outside world (everything humans perceive through the five senses) and the brain is .00001%. And upon adolescence every human will have created an exact copy of the outside word in their mind. It may be safe to say that humans actually live inside their own mind.[2]

THE MENTAL IMAGE



There are several ways of referring to mental imagery: "visualizing," "seeing in the mind's eye," "having a picture in one's head," and so on. There seem to be fewer ways of explaining mental imagery in the form of other sensory modes, but little doubt that it occurs. The experiencing of imagery in any sensory mode is often referred to as "imagining" the appearance, feel, smell, sound, or flavor of something.[3] Despite the familiarity of the experience, the precise meaning of "mental imagery" is remarkably hard to pin down, and differing understandings of it have added to its confusion. Some argue that humans have quasi-visual experiences, on the contrary, others believe these experiences are to be explained by the presence of representations in the mind that are in some sense picture-like.

At the same time, many believe that imagination and perception are indistinguishable from each other. Recent studies have revealed that the acts of perception and imagining take place in the same areas of the brain.[4] To point out, one series of experiments carried out by C.W. Perky in 1910 had proven what is called the "Perky effect"; the phenomenon of mistaking perception for imagination. Perky asked her subjects to fixate a point on a screen in front of them and to visualize various objects there, such as a tomato, a book, a leaf, a banana, an orange, or a lemon. As the subjects did this, and unknown to them, a dim image of the object mentioned was back projected (in soft focus) onto the screen, just above the normal threshold of visibility. Apart from a couple of occasions when the projection apparatus was mishandled, none of Perky's subjects, who ranged from a ten year old child to the trained and experienced researcher in her laboratory, ever realized that they were experiencing real percepts; they took what they "saw" on the screen to be entirely the products of their imagination. In fact, however, the projections did influence their experiences: some subjects expressed surprise at finding themselves imagining a banana "upright" rather than the horizontally oriented one they had been trying for; one was surprised to wind up imagining an elm leaf after trying for a maple. On the other hand, purely imaginary details were also reported: one subject could "see" the veins of the leaf; another claimed that the title on the imagined book was readable.[5]

It is argued, that imagination, unlike perception, is under the control of human will. One can imagine whatever, whenever, and however he or she wishes to.

> *Provided I know what an elephant looks like, I can choose to imagine one wherever and whenever I want to, but I cannot choose to see an elephant unless one actually happens to be present. By contrast, if an elephant is present before my open eyes, I cannot help but see it, whether I will or not.*[6]

Additionally, Humans can derive no new information about the world from mental imagery. No image can contain anything except for what the imager put there, which must already have been known in his or her mind. Conversely, the information humans can derive from one's own imagery is of a different sort, and is derived in a different way, from that which humans get from perception.[7] Mental imagery also bears intentionality, in the sense of being of, about, or directed at something, in the same sense that perception is always

a perception of something. All mental life is imaginative in so far as it supplements and deepens observation by permitting, clear insight into the remote, the absent, the obscure.[8] It is because of these traits that mental imagery is considered to play an important role in the human thought processes.

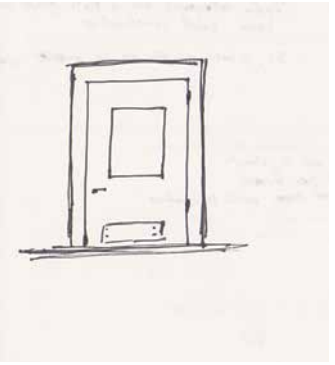
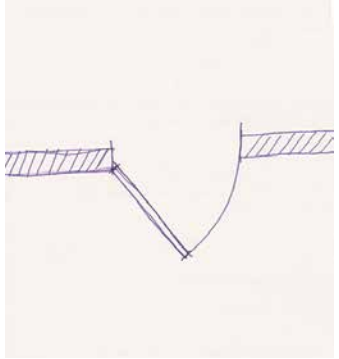
DOOR EXERCISE

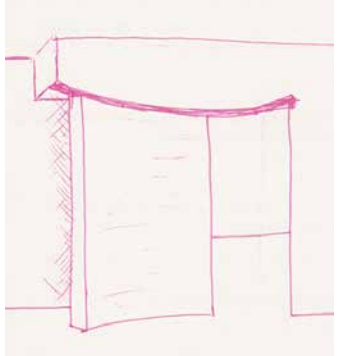
> *With this in mind, I wanted to better understand the role of mental imagery in regard to human's imaginative capacity by looking at a few key factors of mental images such as: context, detail, vividness, and their kinesthetic capacity. It was my idea to conduct a study asking people to imagine a door, and require each participant to sketch the mental image conjured in their mind as well as answer a few questions concerning their specific mental image.*

A sample of the "doors" drawn by participants are pictured on the following pages. The images conjured fell into one of three categories: memory, generic, or imaginary. Memory images are usually defined as images which refer to particular events or occasions having a personal reference. "The memory image of a hammer that I now have in my mind's eye is of a particular claw hammer that is resting on the top shelf of an old bookcase at the back of my garage". The visual image of a hammer of no particular weight or type and with no other personal reference marks would be a generic image. But, the mental picture of a hammer with a solid gold head and a smooth ivory handle would be an imagination image. "Because I had never seen such a hammer until a moment ago when I constructed an image of it".[10]

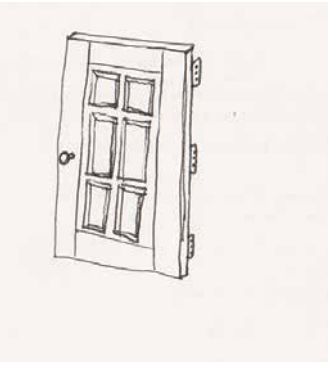
After analysis, it seemed that most participants conjured memory images of doors, recalling doors from childhood or doors they currently use every day. The findings demonstrate that participants may have been too familiar with a door, possibly undermining their ability to produce imaginary images of a door. A deeper investigation might yield different results if participants were asked to imagine a "sagnoot", allowing participants more freedom, as the word "sagnoot" is not attached to any signified concept in the English language.



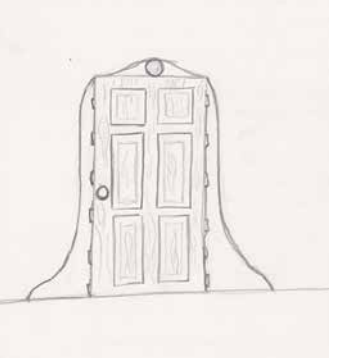











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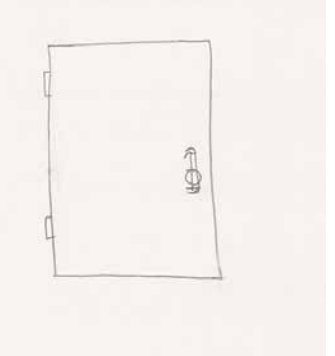



Memory

mem·o·ry

1. The faculty by which the mind stores and remembers information.
Synonyms: ability to remember, powers of recall, mind, recollection, remembrance, reminiscence
Antonyms: amnesia, repression

2. Something remembered from the past; a recollection.
Synonyms: recollection, reminiscence, impression, commemoration, hypermnesia, total recall, contemplation, meditation, musing, reflection, retrospection, thinking, awareness, cognizance, consciousness, apprehension, comprehension, grasp, grip, perception, understanding
Antonyms: forgetfulness

Immanuel Kant had distinguished between two different kinds of mental acts: a reproductive type, which is connected with memory, and a productive type which will be explained in the next chapter.

Remembering is recognized to be intrinsically imagistic in nature, simply put memory demands an image. Memory and imagination are essential as a pair and both are collaborative and complimentary to one another. What one cannot remember, one can try to imagine; and what one cannot imagine, one tries to summon up in memory. For instance,

> *While memory allows us to recall past experiences, we can make use of the imagination to produce new ideas by imposing a new order on past impressions. If someone describes a lake we do not know, we have to rely on the imagination to provide us with ideas which, although built up from memories, are put in a new order so that they are no longer memories for us, but ideas of the imagination, we shall then see Paris without ever having been there.*[1]

More precisely, the content of one's own imagination is rooted in all previous experience, memory, and knowledge, and it is one's ability to reorganize past impressions that serve as elements or building blocks for the imagination.

TYPES OF MEMORY

There exist two types of memory, episodic memory and semantic memory. Episodic memory concerns itself with personally experienced events or remembering what happened where and when. More descriptively, episodic memory makes possible mental time travel, from the present to the past, thus allowing one to re-experience his or her own previous experiences preserving an earlier perception. Semantic memory, on the other hand, is mundane by comparison, known as memory for general facts or general knowledge of the world. Semantic memory preserves knowledge gained, if one remembers p then one knows p and one knew p.[2] Semantic memory also helps one reason from cause and effect, learning how things work from experience. To illustrate,

> *Suppose I have seen many skunks, and on that basis can recall what a skunk looks like. When I recall what a skunk looks like, I visualize a prototypical skunk, a perceptual composite of the various skunks I have encountered thus, making use of my semantic memory.*

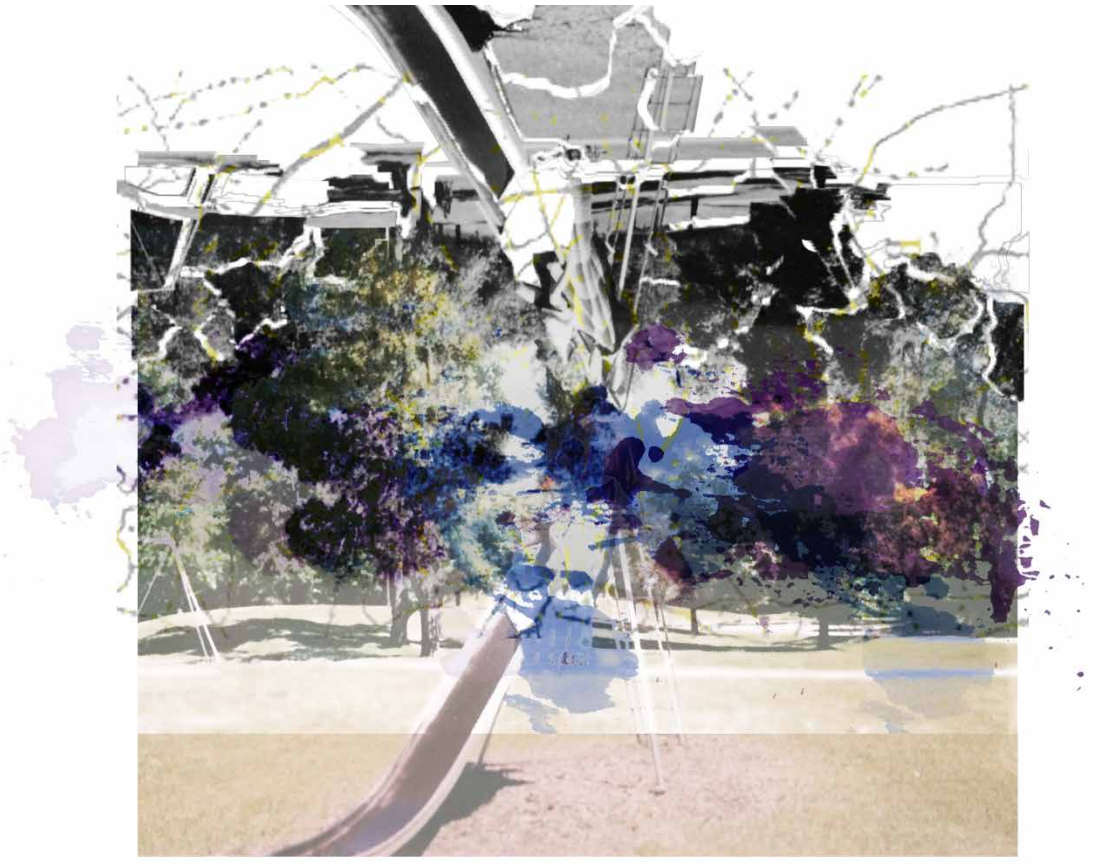
Recalling seeing a skunk in my garden this morning for instance, would be considered episodic memory, a memory of a personally experienced event.[3]

OPERATION

An object, which is recollected, is one which has been absent from consciousness altogether, and now relives anew. It is brought back, recalled, fished up, so to speak, from a reservoir in which, with countless other objects, it lay buried and lost from view.[4]

Although humans normally apprehend a remembered object or event with remarkable ability, one does so only for an instant, since it tends to elude him or her in the very next instant; one glimpse and vanished.[5] A remembered object does not remain present to humans in a persistent manner, as do many perceptual objects. To keep it before one's mental gaze, he or she must constantly remember it, and even then it is difficult to say whether one is continuing to remember exactly the same object or event again and again. In fact, the object remembered becomes somewhat distorted because of the prior times one has remembered it. A person's own memory of an event can grow less precise even to the point of being totally false with each retrieval. The reason for this distortion, is the fact that human memories are always adapting. Memories are not static, If one remembers something in the context of a new environment and time, or if one is even in a different mood, his or her memories might yield new information.[6]

In addition, Memories are inherently corrigible; they may present as having happened what did not in fact happen (or happened differently); they can deny that something happened when in fact it did, and in still other ways mislead us concerning our own previous experience.[7] Imagining, on the other hand is incapable of misleading us in this respect; not purporting to depict something as it really is or was, it cannot be called to account for wrongly depicting it either.[8] Imagining is thus, and to this extent non-corrigible. Another closely related difference between imagining and remembering is found in the factor of familiarity. Basic to remembering, but not imagining, is the sense of being already acquainted with what one remembers. In contrast with this, one is able to "imagine" objects and situations with which he or she is quite unfamiliar. Furthermore, a memory is positioning in nature; having a unique time and place in the past. No such positioning is characteristic to imagining, for all that one imagines might appear, arise, or happen, at any given time or place.

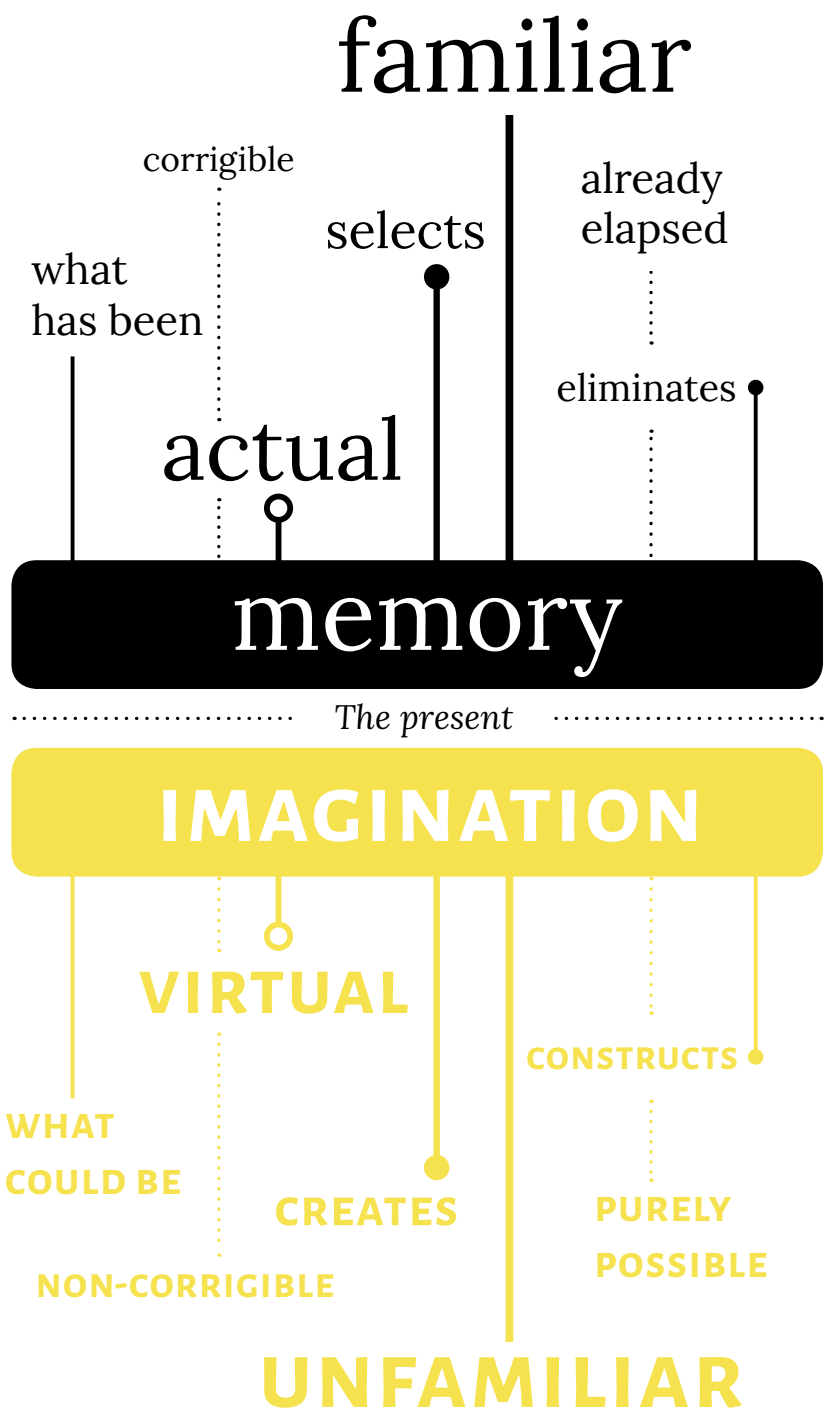


Possibilities

pos·si·bil·i·ties

1. Possible, as opposed to actual.
Synonyms: implicit, possible, conceivable, generable, imaginable, plausible, thinkable, likely, probable, conjectural, hypothetical, suppositional, theoretical
Antonyms: authenticated, confirmed, demonstrated, established, proven, substantiated, authentic, bona fide, genuine, true

2. Capable of being or becoming.
Synonyms: alleged, assumed, purported, reputed, supposed, achievable, attainable, doable, feasible, practicable, viable, workable
Antonyms: actual, existent, factual, real



While memory brings us back into the domain of the actual, the already elapsed, and to what has been, Imagination takes us forward into the realm of the purely possible. Both take the place of perception, a perception which a person no longer has or does not yet have. They summon up the absent, the not-now-existent.[1]

The imagination is to the possible as memory is to the actual. As when imagining fills in the gaps of imperfectly remembered material or when remembering offers an explicit basis for the projection of the future and, more generally, by the fact that both effect what the other cannot and yet need.[2]

With this in mind, the single most defining characteristic of imagination is the production of possibilities. It is also the most adventitious form of mental life that distinguishes humans from most other animals. Unlike animals, humans are constant scenario builders; imagining future situations, contemplating potential explanations, working out solutions to problems, and imagining one another's experiences.

In addition, knowledge of the world in which humans live is grounded largely in perception but, since humans have no sensory access to what is not actually there, perception can afford no real insight into non-actualized possibilities. In contrast, the imagination is not limited to what is, was, or must be, but provides a vision for what might be.

HANGER EXERCISE

Say I have a hanger,

the fact that I define it as a hanger in itself, limits its potential.

The hanger can be related to countless other ideas.

The hanger is so much more than a word or a device to hang clothes on,

and anything can come from it beyond what we think it should be.

The hanger with one word and one purpose is static.

But when the hanger becomes more and is subjected to unlimited possibilities,

that thing moves beyond and becomes unpredictable.

ONE WORD
ONE PURPOSE

LIMITED
POTENTIAL

SUBJECTED TO
POSSIBILITIES

MOVES BEYOND
+ BECOMES MORE

A deeper investigation into the production of possibilities generated a three part sketch problem. Posing the question, what are the potentials and possibilities of a hanger and how might one imagine a hanger?

Beginning with a primer, the alternative use test was conducted; designed by J.P. Guilford in 1967, it measures divergent thinking and imagination. Anticipating participants will generate numerous ideas for the alternative use of an object within a two minute time frame. This contrasts with most traditional exams, which focus on convergent thinking, in particular, our ability to reach a single, correct solution to a problem. Results of the test are measured across four categories: fluency, the number of alternative uses one can think of; Originality, how unusual those uses are as evidence of thinking different; Flexibility, the range of ideas across different domains and categories; and lastly Elaboration, the level of detail and development of the idea.[3]

> *The alternative use test conducted on myself*
>
> *Hanger*
>
> *Arm hook, door stop, pick up objects, hat, clothes, spatula, shovel, to mix food, pick a lock, fish with, hair pin, ear rings, open bags, climb with, an instrument, table, scratch with, weapon, poker, Frisbee.*

The next exercise in imagining the potentials and possibilities of hanger led to an art installation on the first floor of the school of architecture; hanging each hanger from the existing metal structure and from the hangers themselves. As a result, the hangers no longer functioned as a device to hang clothes on but together they acted

as a scaling piece of art. Curious how passerby's in the school might react to the art installation, pieces of paper were hung from many of the hangers asking students how they themselves might imagine a hanger.

As a final and more in depth exercise into the potentials of a hanger, it was decided to physically turn the hanger into something completely different, and in this case, a table; conceived from an earlier idea with the help from the alternative use test. The table's design began with looking at the numerous geometries of the hanger, grouping eight of hangers and placing them as the legs for the table and crafting a circular table top out of a piece of wood.

Constructions

con·struc·tion·s

1. The act or result of construing, interpreting, or explaining.
Synonyms: erection, arrangement, assembly, configuration, frame, framework, shell, skeleton, geography, geometry
Antonyms: disassembly, misconstruction,

2. The process, art, or manner of constructing something.
Synonyms: conception, compose, create, fabricate, make, originate, invent, manufacture, develop

Memory and perception operate essentially by a process of selection and elimination, whereas the imagination creates and constructs.[1] With this in mind, how does one construct and stimulate the imaginative process?

To investigate this relationship further, it was decided, in collaboration with a colleague, to form an experiment meant to induce imagination and to study the participant's mental space. The study concentrated on six key points of interest outlined below.

Make participants recognize unfamiliar in the familiar, by creating a contradiction in experience. Deprive them of their vision to heighten the other senses, and to study the idea of an image without sight? Let the participants act as a vessel, the interface, in which they alone can construct and make possible.

FAMILIARITY IN UNFAMILIARITY

In order to recognize the unfamiliar there must be amounts of familiarity present or traces of the familiar everyday world. It is when one realizes, in a moment of unfamiliarity, that the experience does not conform to his or her semantic memory. One's minds will tell them "this is not right, I know how the familiar operates and this is not the familiar". The simulation used familiar audio recordings such as sounds of someone baking in a kitchen and white noise from a television. As for the familiar tactile element, a soft unraveled ball of yarn and a large amount of dried wheat was used.

CONTRADICTIONS

If something familiar appears to be quite unfamiliar there must exist a contradiction in experience. If a contradiction in experience occurs the mind will attempt to reconcile and find a way to make sense of the experience. This reconciliation is the imagination at work, contemplating potential explanations for the contradiction. In order to produce a contradiction, the simulation attempted to create a non-existent human experience. In both attempts participants were asked to place their head into a mounted darkened-headpiece and simultaneously place their hands into a box mounted below. Anchored inside of the headpieces were speakers playing either the audio of someone baking or white noise. Inside of the boxes was either a soft ball of yarn or dried wheat. Attempt A juxtaposed the touch of soft yarn and the sounds of someone baking while, attempt B juxtaposed the touch of dried wheat and the sound of white noise. Assuming that the participants have encountered neither of the simulated

experiences in conjunction previously; the idea is that participants would experience a contradiction between the audio recording playing in their ears and the tactile sensation from their hands.

DEPRIVATION

It was theorized that if participants were deprived of their vision, the most prominent human sense, then the other senses such as auditory and touch will be heightened. The constructed headpieces for the simulation were painted black, functioning to immerse the participants into complete visual darkness.

IMAGE

What is an image? What is an image without sight? What does an image in the mind look like? What is an imaginary image? Since participants were completely deprived of their perceptual vision it was easier to study the images conjured in their mind and to investigate their mental space. Following the simulation, each participant was asked to either verbally articulate or write down what they had experienced and what thoughts were goings through their minds at that moment.

INTERFACE

What is an Interface? Can the human mind act as an interface? Do humans live their lives as an interface? As participants stepped into each simulation they themselves became the interface. Acting like a prism, taking in the sensory information then outputting and constructing what they will through the use of imagination.

POSSIBILITIES

Imagination concerns itself with the production of possibilities, and what has more possibility than a body without organs? Both simulations were an attempt to create a pseudo-body without organs. As participants stepped into each simulation they were confronted with a contradiction, this contradiction would then stimulate the mind to reconcile the experience. A reconciliation is the imagination at work, contemplating potential explanations for the contradiction. In that moment there exists a realm of possibilities for each participant to construct.

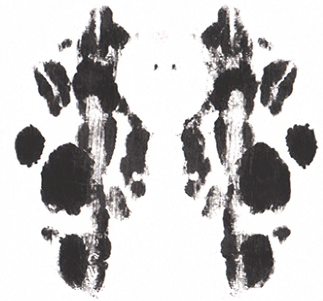
RESULTS

Many people spoke of memories but these memories were new to them, of memory but not memory. Some created stories, sequences,

and narratives. Some spoke of the ability to feel and some were transported to another “place” entirely. To explain what happened, another spoke in metaphor.

THE RORSCHACH INKBLOTS

In many countries, performing psycho-diagnosis is a major role of the psychologist working in a clinical setting. Among the psychological tests most frequently used, inkblot techniques are the most favored. The history of the inkblot procedure is not easily traced but can be linked back to Leonardo Da Vinci and Botticelli in the fifteenth century.[2] The Rorschach inkblots are the depiction of formless ink blots used to stimulate the imagination and study the fertility of one’s imagination, thought processes, reflex hallucinations, intelligence and personality. The procedure goes as follows: All the ink blot cards are placed, upside down, before the subject. Then he or she is instructed to pick them up, one by one, and to express the imaginations which enter his or her mind, one by one. During this thesis, an attempt was made to produce a series of ink blots used for the investigation of imagination and the construction of possibilities. Below are a sample of the ink blots created.



Creativity

cre·a·tiv·i·ty

1. The use of the imagination or original ideas, especially in the production of an artistic work.
Synonyms: inventiveness, imagination, innovation, innovativeness, originality, individuality; artistry, inspiration, vision, enterprise, initiative, resourcefulness

The phrase "being imaginative" and "being creative" are often used as synonyms, but they are not. Imagination is the ability to produce potentials and conjure up ideas that are not yet actualized for any given thing at any given time. Creativity, on the other hand, is the application of ones imagination to solve a problem; bestowing one with the motivation and freedom to explore and tinker; to do something meaningful with his or her imaginings.[1] Creativity generates the energy to see the process though, turning potentials and ideas into concrete reality. For instance, if one has an idea, but does not act on it, he or she is imaginative, not creative.

> *Imagination is the beginning of creation. You imagine what you desire, you will what you imagine, and at last, you create what you will.*[2]

Creativity indicates process. But what does this process look like? The typical design process, articulated by Vitruvius in his ten book on architecture can be equated into three stages: the pre-spark, spark, and post-spark.[3]

PRE - SPARK

The pre-spark stage is considered an identification of the issues required for design. The moment when an architect begins to contemplate how best to approach the factors involved. By the same token, It is also considered the free fall of the imagination; the boundlessness of possibility and the semi-conscience thought that will eventually lead to discovery.[4] The everyday mind exists within this stage, absorbing, reflecting, and consuming experience as it passes through the eyes, each image stored in memory for later use destined to become part of the conscious or subconscious trail of inspiration. However, it is important to control the nourishment of the imagination, refining what is necessary and eliminating what is not in order to gain full potential. A Eureka moment or spark is often required, acting as a limit to the never-ending flood of precedents.

THE SPARK

The spark is the moment of inspiration from the previous state of confusion to a state of understanding; this stage is where discordant ideas find logical relationships. After a long period of contemplation, in a quiet moment, or when the mind is at rest, the connection appears to arrive "all at once".[5] This contemplative process allows the mind to wander and relax thus, opening up to the possibility for Eureka. Once the spark has been realized, a return to a previous state is impossible.

EUREKA!
The eureka effect, also known as the aha! moment or eureka moment, refers to the common human experience of suddenly understanding a previously incomprehensible problem or concept.[8]

As the story goes: The king of the land wanted to wear a golden crown so he commissioned a goldsmith to make one. After few days, the goldsmith brought the finished crown back to the King. The king looked at the golden crown with suspicion for he believed the goldsmith had stolen some his gold. The king asked Archimedes to investigate, telling him "Find out how much gold had been stolen". Archimedes thought about the problem day and night until one day he took a bath. So preoccupied with thoughts of the crown, Archimedes did not notice the water in the bathtub had been filled to the brim. He slid into the bathtub and immediately displaced a large amount of water. Associating the connection between his experience in the bath with the volume of gold, he jumped out of the bathtub, shouting, "Eureka! Eureka!" or, translated: "I've found it! I've found it!"[9]

Several millennia later and the exclamation is abundantly used within the scientific and creative fields. The mathematical theories of Henri Poincare, Einstein's theory of relativity, and Newton's theory of gravity have all been described as eureka moments.[10]

JANUS
In ancient Roman mythology Janus, the god of beginnings and transitions, accentuates the crossing between the pre and post spark stage. Allowing a view of the past and the future simultaneously, this threshold may be the place of understanding and true illumination, being a privileged position it is ultimate knowledge.[11]

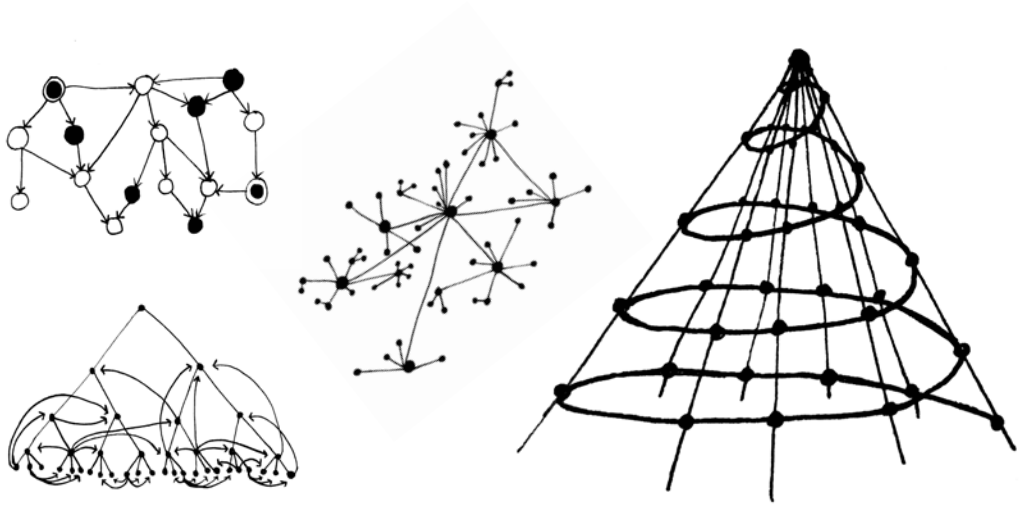
POST - SPARK

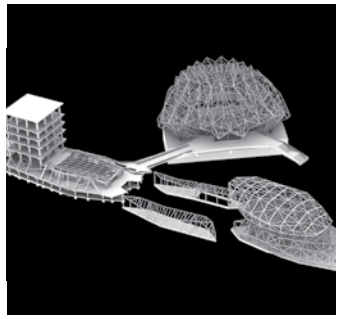
The post-spark describes the stage when an idea becomes a tangible reality. It captures the potentiality of ideas and consideration of precedent of the pre-spark while exposing the spark and eureka moment itself; it is the process that initiates design development.[6] The post-spark might be considered the most important stage because without it ideas can never be realized. The act of making is as valuable as the idea itself. For instance, Architects run the risk of appearing impotent if their ideas remain unbuilt.

MODELS

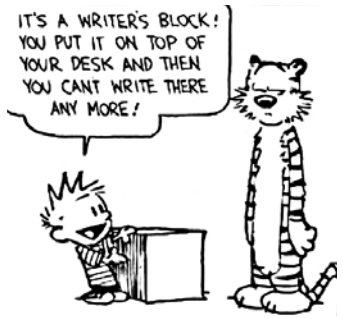
The three step typical design process is only one way of approaching a creative endeavor. Therefore, it is important to consider other models that may exist describing the creative process. Does such a model resemble a series; but a series implies a closed grouping. A sequence perhaps; that would suggests an open ended and expanding class. Maybe a directed graph or network; such a graph consists of a number of points or vertices which may or may not be connected by a straight line.[7]

Instead, an ideal model for creativity more closely resembles the shape of a helix. No matter the stage in the creative process one can never return to its initial point; rather, step backward or forward a few points. In this way, the creative process is considered acyclic. For instance, the human mind can never return to a previous state of knowledge and illumination. Rather, the process of trial and error always positions one a step following the initial state of knowledge. Equally important, while moving from one stage to another in the creative process there exist a variety of possible directions one may choose to select leading to the same result.





OVE ARUP AND PARTNERS
The global engineering firm Ove Arup and Partners represents a modern example of the post-spark stage in the typical design process. Known to work collaboratively with architects and urban planners, the firm exemplifies the ability to transform an imaginative idea into a buildable structure.[12]



WRITER'S BLOCK
Common to the lives of creative people, is the moment when one finds it difficult or impossible to produce sensible ideas. From an author's point of view, this obstacle is also known as writer's block. When this happens there is usually a problem with one's imagination. A person usually does not lose the ability to produce ideas, it is just that the quality of one's ideas are diminished.[13] Of course, this dilemma can happen on a daily basis for anyone, however, it is not called writer's block. Rather, it is normal to be on roll, and then suddenly hit a roadblock. But when one finds that, day after day, he or she cannot develop anything, we label it writer's block, and wait for the problem to solve itself.

IMAGINATION STATION

1.16.17 *I am finding a lot of good research and my mind is exploding with great ideas. I cannot process it all at once so to better organize my thoughts, I will start writing information down as I go and pin the research to the wall in studio. Additionally, I will start this diary as a way to record and study my own creative process.*

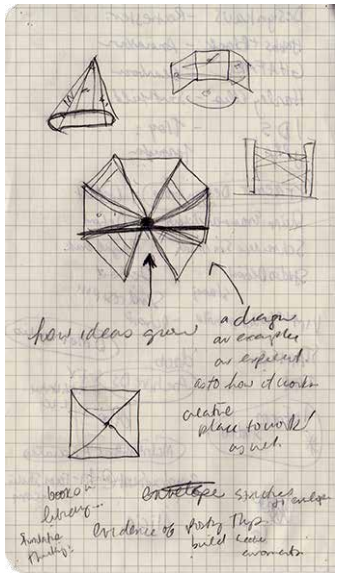
1.20.17 *Hand writing, cutting out, and pinning to the wall all of my research and thoughts is taking forever. Instead, I will use sticky notes to quickly jot down thoughts and important research as well as start a digital library of precedents and images.*

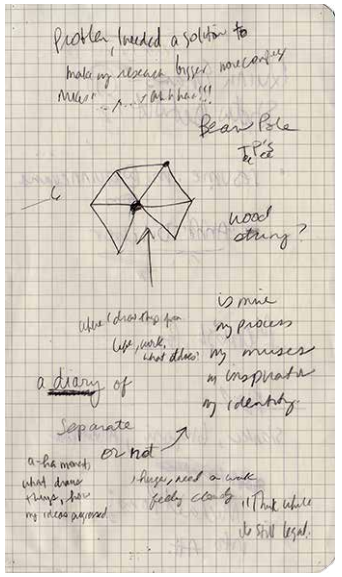
1.30.17 *A few days ago my professor recommended I read a book called "The shape of time". There is so much information and I'm drawing a lot of connections. I definitely need more wall space than what I currently have in studio. I have some ideas to make a structure hanging my research that will grow and morph as my thesis progresses; I think my process needs to become spatial. I began sketching what this space should look like.*

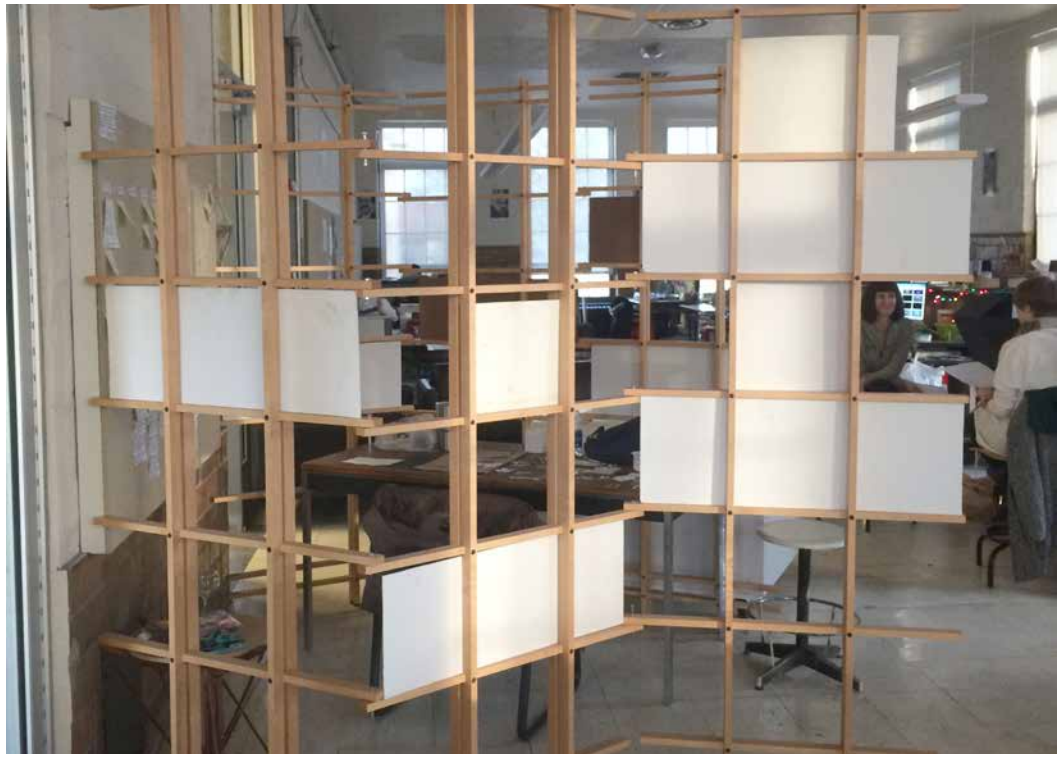
2.01.17 *Sadly, the hot box is being used and I don't know where to build this creative environment. But I do see potential with an existing structure behind the couch in studio. A few hours later, I took the panels off the structure and enveloped myself inside. Ha! This might work, I can pin things up as I need them, and there is unlimited space. I will be surrounded by my thesis.*

2.06.17 *Again, it is taking too long to print and pin the images from my digital library. I'm overwhelmed with information and sticky notes everywhere. I need to take a step back and dive deeper into some of these concepts I have already looked at. So instead, I will start a digital pin up board to better organize my research and ideas. It's mobile too!*

Upon reflection, the diary illustrates an outstanding example of the pre-spark phase in the typical design process. The diary was documentation at an attempt to control the nourishment of the imagination. Building a structure as way to refine research that is necessary and to eliminate what is not. Thus, an attempt to gain full potential for many eureka moments.







Behavior

be·hav·ior

1. The way in which one acts or conducts oneself.
Synonyms: conduct, deportment, bearing, actions, doings, manners, ways, functioning, performance, operation, working, reaction, response

Creativity, is open to every human at any moment and can be understood as either a dangerous departure from routine or as a daring lapse into the unknown. Many societies condemn the recognition of creative behavior, preferring to reward repetition over creative variations. Some are even schooled to convention so intimately that it is nearly impossible for him or her to stumble, even by accident, into the unknown. Humans seem to acknowledge creativity as a difficult tour de force and a reluctance to enter the creative process corresponds to the fear of change.

An artist's life if often thought as solitary; one spends long, uninterrupted hours, days even, creating work in his or her studio. But, despite this solitary appearance, an artist needs company. The association with the work of others both dead and alive engaged in similar problems and questions. Some major cities such as Amsterdam, Rome, and Bruges early accepted the presence of artists' guilds, thereby establishing precedent, ambiance, and artistic renewal.[1] Historically, artists prefer to work in permissive environments possessing both craft traditions and proximity to power and wealth.[2] A region with many unfulfilled needs, having the wealth to satisfy them, will under certain conditions attract creativity as well.

NEED AND SATURATION

When the industrial designer creates a new shape to satisfy an old need, he has difficulty finding enough buyers. This is because every durable and successful form saturates its place of origin, making it challenging for newer forms entering the scene to gain footing.[3] Furthermore, around every successful form, there exists a protective system of sorts for its maintenance and perpetuation.[4] Resulting in a diminished opportunity for the replacement of old things, fulfilling the same need, by novel designs. In fact, a living artist often encounters more competition from the work of dead artists than from his or her own contemporaries.

THE CHICAGO SCHOOL
Chicago after 1876 was extremely attractive to architects, both as new urban center of a new economic growth and as a city which the great fire had left in ashes. Daniel Burnham, Louis Sullivan and Frank Lloyd Wright are considered some of the most prominent names in Chicago architecture. Collectively, they created many highly impressive buildings for what became known as "The Chicago School of Architecture." In addition, they were among the first to promote the new technologies of steel-frame construction in commercial buildings and developed a spatial aesthetic which co-evolved with, and then came to influence, parallel developments in European Modernism.[5]

UNESCO DETROIT CITY OF DESIGN

DETROIT
Known as the birthplace of the American car industry, Motown, and electronic music, Detroit was once considered one of the wealthiest cities in America. Boasting a downtown decorated with architectural gems and the highest median income and home ownership rate of any major American city in the 1950's.[6] However, decades of white flight as well as the collapse of its manufacturing industry forced the city into an urban decline. The once dense suburbs now contain rows of vacant houses. Empty factories and apartment buildings haunt the landscape. And almost a third of Detroit, covering size of San Francisco has been all but abandoned. However, due to the city's many unfulfilled needs, it is currently highly attractive to designers, artists, architects, and problem solvers alike. Detroit's rich design heritage is evident as it boasts four schools of architecture and three schools of art and design. Furthermore, the city accommodates for its strong maker and design culture that resulted in Detroit becoming the first American city to become a UNESCO City of Design.

FURNITURE
For millennium, there existed the fixed need for furniture continually producing a single varied solution. Today many furniture forms of the eighteenth and nineteenth centuries continue to fulfill the need for which they were invented and often far better than the machine-made chairs and tables of modern design.

Mystery

mys·ter·y

1. Something that is difficult or impossible to understand or explain.
Synonyms: puzzle, enigma, conundrum, riddle, secret, problem, obscure, secrecy, uncertainty, mystique, closed book, head-scratcher, mystification, puzzlement, brainteaser, case, challenge, knot, matter, perplexity, poser, stumper, trouble
Antonyms: comprehensibility, understanding, explanation, definition

Where does creativity come from? To answer this question it is probably a good idea to look historically at past theories, conceptions, and beliefs involving creativity. Starting from ancient Greek and working all the way to the 20th century.

TALENT

Talent is a predisposition, a natural aptitude or skill. Someone who is creative most likely possess some kind of creative talent. A talented pupil begins younger, he masters the tradition more quickly, and his creations come more fluently than those of his untalented collogues. Predispositions are probably much more numerous than one thinks. The quality talented people share is a matter of kind rather than degree.[1] For instance, one may possess talent for figure drawing, while another possesses talent for figure skating. Although, these talents are completely different from each other both persons may possess the same level of mastery in their respective talent.

INSPIRATION

Inspiration is a much-used and amorphous word for what is actually a revolutionary, countercultural and spiritual phenomenon. Inspiration is the process of being mentally stimulated to do or feel something, especially to do something creative. Moments of inspiration do not make sense by normal logic. They feel transcendent, uncontrollable and irresistible. When one is inspired, time disappears or alters one's consciousness altogether. The senses are amplified, there's a thrilling feeling of elevation, a burst of energy, an awareness of enlarged possibilities. Inspiration is not something one can control. People who are inspired have lost authority over his or her work. They often feel that something is working through them, some power greater than themselves. The Greeks said it was the Muses.

Daughters of Zeus, the nine Muses, or Musae, were goddesses of literature and the arts; a constant source of knowledge, and often advising their worshipers. Since the Muses represented a wealth of knowledge they were the source of inspiration for many poets, authors, and architects. Pythagoras was rumored to often spend time with the muses, thanking them for their advancement in his discoveries.[2]

ANCIENT MODELS

Furthermore, the ancient Greeks did not believe that creativity came from human beings. Instead, they believed that creativity came from a divine attendant spirit who visited humans from distant and

MUSEUM
A museum is building or place in which works of art, scientific specimens, or other objects of permanent value are kept and displayed. The purpose of a museum is to provide precedent and endless inspiration to all mankind. The English word "museum" comes from the Latin word "musaeum". Originally a reference to the ancient library of Alexandria, it was considered the first museum or first collection of precedents. The library of Alexandria acted as a gathering place of objects and ideas that assisted individuals in understanding the world around them. The Latin word "musaeum" can trace its origins from the ancient Greek word "Mouseîon", a place or temple dedicated to the nine Muses.

unknowable sources for distant and unknowable reasons.[3] The Greeks famously called these divine attendant spirits of creativity "daimons". Socrates often wrote about his daimon, crediting the spirit as the one whom spoke wisdom to him.

The Romans believed in a similar concept but they called this disembodied creative spirit a "genius". A genius was a magical or divine entity who was believed to live in the walls of an artist's studio.[4] They were known to come out and visibly assist the artist with their work, shaping the outcome of that work. If one had produced brilliant work, he or she could not take all the credit; it was because one's genius. Conversely, if one's work was mediocre, then it was not entirely their own fault; his or her genius was the cause.

RENAISSANCE HUMANISM

A many hundred years later an ideal had developed during the Renaissance period called Renaissance humanism. This lead to dramatically different beliefs on creativity. The basic tenant of Renaissance humanism is man is the center of the universe. In which "a man can do all things if he will."[5] The human was now considered above all gods and mysteries, limitless in his capacities for development. Leading to the notion that men should try to embrace all knowledge and develop one's own capacities as fully as possible. The source of creativity was no longer distant and foreign to the human, but generated completely from the self of the individual, an internalization, synonymous with the human spirit. And for the first time in history people started referring to this or that artist as being a genius, rather than having a genius.

THE CULT OF ORIGINALITY

Possibly the most important shift occurred during the late 18th and early 19 century in which originality became the central driver for creativity. There are three principle elements of the Romantic's historical context which led to the obsession with originality and individuality. Firstly, the reaction against mass production and the industrial revolution. With the dawn of mechanical reproduction came concerns for the preservation of art and creativity. Consequently, unoriginal work was now considered of little value and importance; simply another mass produced commodity, soul-less and mechanic just like the machines that made them. The second influence resulting in the Romantic infatuation for originality is a sense of "identity crisis."[6] The human soul struggled for relevance in a world where human voices were being drowned out by machines. The Romantic

obsession for originality stems not only form a desire to assert their own individuality, but also from a longing for the infinite truth of what it means to be human.[7] They presented originality as the essential expression of humanity. The third influence for the Romantic's preoccupation with originality concerns a heightened awareness of the rise of mass-culture. Romantics felt the burden of the past, which poses an increasingly difficult question to answer that, as time goes by "what is there left to do?" As original work became scarce demands heightened for such acts of originality. Furthermore, there outgrew a sense of urgency and anxiety concerning the difficulty of creating an original work.

> *Where could an earnest soul, capable of appreciating genius, find the courage even to set pen to paper, if he were aware of such unfathomable and unreachable excellence already in existence.*[8]

This new conception of creative expression may have resulted in an excessive amount of responsibility placed on the human psyche. The distance between the artist and his or her work had vanished as well as protection from the results of that work.[9] No wonder people associate creatives with mental instability, anguish, and suicide. The pressures and expectations society places on creatives has been killing off artists for more than the past 500 years.[10]

CREATIO VS. INVENTIO

There exist two contrasting conceptions of originality in creation. These conflicting beliefs are in a constant swing back and forth between the two poles. The first theory of originality is creatio, Creators bring their works into existence either from within themselves or from an intangible force that works through them.[11] Creatio is associated with neither hard work nor skill, but suggests a moment of inspiration in which ideas spring from the individual soul and the imagination conjures up all its ideas out of naught. Logically, this theory of creativity as creation ex nihilo is inherently problematic, for nothing can be made from nothing.

> *If the imagination is without consciousness and understanding, the artist is only a raging dreamer, as order and unity must be used to contain the artist's original creative energy. It is the combination of talent and much reading that makes creative power and intellectual energy wrestle as in a war embrace.*[12]

VAN GOGH (1853-1890)
Vincent Van Gogh created the cliché for under-appreciated genius and the tormented artist. By the age of 27, he'd already failed at selling art, tutoring French, and finding love. Struck with depression he cut off his ear and had himself institutionalized. As his work was beginning to spread, he shot himself in the chest.

UNIVERSITY OF NOTRE DAME
The pedagogy at the university of Notre Dame school of architecture differs from many other schools of architecture in that they heavily weight student's education on architectural history. Students are taught classic techniques such as hand drawing and watercolor. They are also heavily schooled in architectural precedent, with a focus on classical architecture. This approach to creativity is an outstanding example of inventio.

Creatio is a natural ability that only select number of individuals are born with. This ability can be cultivated and improved, but can never be learned, regarding true imagination is a "gift".[13] However, rather than possessing a gift, originality as creatio is also believed to hail from a supernatural force. This force is channeled through the artist, where the artist is not the source but the prophet of divine inspiration. Considering the artist as the vessel for artistic originality suggest that originality is only achievable through a connection with a higher creative power.

Opposite of creatio is the theory of originality as inventio. Not associated with sparks of the imagination, but with hard work, wide knowledge, and skill. Inventio can therefore be considered a more pragmatic understanding of originality, representing creation as the rearrangement of existing parts. There exist an infinite number of external factors that may serve as building blocks. Rather than viewing past artists as competition, they should be seen as partners, and a tool to enrich and shape contemporary work.[14] Old works are judged by the new to the same extent that new works are judged by the old.

Although inventio connotes hard work, wide knowledge, and skill, it is argued that originality does not happen consciously or from acts of deliberation. Therefore, inventio also requires the artist's creativity to have an unconscious quality. However, it is also warned against pursuing inventio without possessing at least some artistic skill. "As silver dishes are of no use if one only has potatoes to put in them."[15]

Original

o·rig·i·nal

1. Of, relating to, or constituting an origin or beginning.
Synonym: archetype, prototype, source, example, mold, paradigm, pattern, beau ideal, classic, exemplar, ideal, model, nonpareil, paragon, blueprint, draft
Antonym: copy, imitation, replica, reproduction, counterfeit, fake, forgery, sham

2. Being the first instance or source from which a copy, reproduction, or translation can be made.
Synonym: earliest, foremost, ancient, early, primal, primary, prime, primeval, primitive, primordial, antecedent, preceding, previous
Antonym: advanced, late, consequent, ensuing, following, subsequent, succeeding, penultimate

3. Independent and creative in thought or action.
Synonym: creative, originative, first, authentic, real, actual, genuine
Antonym: old, stock, standard, traditional, normal, usual, ordinary, familiar, typical, conventional, old-fashioned, commonplace, stale, banal, antiquated, unimaginative, unoriginal

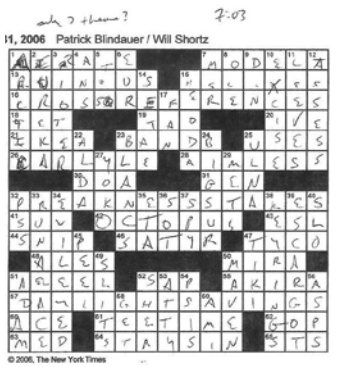
PRIME OBJECTS

Prime objects denote principal inventions. As well as entire systems of replicas, reproductions, copies, reductions, transfers, and derivations. It is guaranteed by direct comparisons with other things of lesser quality. Prime objects correspond to prime traits, or mutant intention, while replicas merely multiply the prime objects.[1] Their first full appearances may be indistinguishable in many instances from the immediate subsequent replicas.

The number of surviving prime objects is astonishingly small. They are now gathered in the museums of the world and in a few private collections. It is likely that buildings constitute the majority of our prime objects, being immobile and often indestructible objects. It is also likely that a large proportion of prime objects was made of perishable substances like cloth, paper, and precious metal. Prime objects may have existed only as random notes or sketches.

PARTHENON
The Parthenon is recognizable as a prime object by many refinements laking in other temples of its series. Yet the Parthenon is built upon an archaic formula surviving into Periclean time.

STATUE OF ATHENA
Made by Phidias in gold and ivory for the Parthenon. Known only by mean replicas made for pilgrims and tourists. But the copies of the Athena statue in the national museum of Athens only coarsen and reduce the original without increments of any kind.



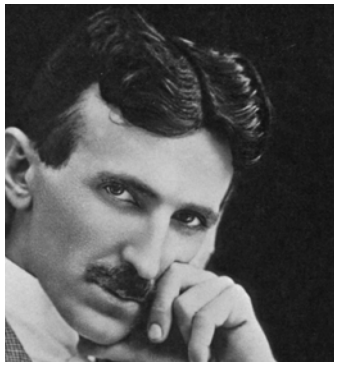
CROSSWORD PUZZLE
An example of the difference between prime objects and replica-masses is the daily crossword puzzle. The manuscript draft by the puzzle maker is a prime object (which no one conserves); all the solutions in subways a d on the desks of people who kill time compose the replica mass.

Inventor

in·ven·tor

1. One who creates or introduces something new.
Synonyms: contriver, architect, author, designer, developer, deviser, formulator, innovator, introducer, originator, begetter, creator, establisher, father, founder, generator, inaugurator, initiator, instituter, sire, groundbreaker, pioneer, planner, researcher, researchist, builder, maker, producer, dreamer, codeveloper, coinventer, coproducer, coresearcher
Antonyms: aper, copier, copycat, duplicator, imitator, mimic

An inventor is the first to perceive a connection among elements to witch the key piece had only just come into view. Another could have done it as well as him or her, and another very often does. As in the coincidence of Charles Darwin and Alfred Wallace in regard to The theory of the origin of the species. Darwin and Wallace both had similar training, an equal sense of the problem, and comparable amounts of perseverance. Yet both were without knowledge of one another's work and came to the same solutions independently and simultaneously from common premises and similar methods.



NIKOLA TESLA

Tesla's mental abilities require some mention, since, not only did he have a photographic memory, he was able to use creative visualization with an uncanny and practical intensity. Tesla's violent imagination and eccentric style have become a symbol of "mad genius".[1] Tesla describes in his autobiography how he was able to visualize in his mind a particular apparatus then test run the apparatus, disassemble it and check for proper action and wear. During the manufacturing phase of his inventions, he would work with all blueprints and specifications in his head. The invention always assembled together without redesign and worked perfectly. Tesla slept one to two hours a day and worked continuously on his inventions and theories without benefit of ordinary relaxation or vacations. He could judge the dimension of an object to a hundredth of an inch and perform difficult computations in his head without benefit of slide rule or mathematical tables. Far from an ivory tower intellectual, he was very much aware of the issues in the world around him, made it a point to render his ideas accessible to the general public by frequent contributions to the popular press, and to his field by numerous lectures and scientific papers.[2]

ANOTNI GAUDI

Gaudí's creative genius produced curves, shapes, and ornamentations literally changing the face of architecture and building technology during the late 19th and early 20th centuries. Gaudí recognized the formal order inherent in most architecture before his time and deliberately turned it upside down. As a result his buildings seem strikingly unique and almost surreal even after a century.

Invention

in·ven·tion

1. Something [as a device] created for the first time through the use of the imagination.
Synonyms: brainchild, coinage, concoction, contrivance, creation, innovation, wrinkle, novelty, design, product, work, dream, fantasy, picture, vision, conception, imagining, origination
Antonyms: carbon copy, clone, copy, dupe, duplicate, duplication, facsimile, imitation, reduplication, replica, replication, reproduction

2. Something that is the product of the imagination.
Synonyms: fable, fabrication, fantasy, figment, fiction, anecdote, narrative, novel, story, tale, fairy tale, falsehood, falsity, fib, lie, mendacity, misrepresentation, prevarication, untruth, make-believe
Antonyms: actuality, realness

3. The ability to form mental images of things that either are not physically present or have never been conceived or created by others.
Synonyms: contrivance, creativity, fancy, fantasy, ideation, imaginativeness, imagination, inventiveness, originality, brainstorm, brainstorming, inspiration, fertility, ingenuity, resourcefulness, versatility, chimera, daydream, delusion, dream, figment, hallucination, illusion, mind's eye, visualization
Antonyms: literality, literalness

4. The skill and imagination to create new things.
Synonyms: cleverness, creativeness, imagination, imaginativeness, ingeniousness, ingenuity, innovativeness, creativity, inventiveness, originality, fruitfulness, productiveness, productivity, capableness, resourcefulness, genius, giftedness, talent, fire, inspiration, muse
Antonyms: dryness, dullness

Without the act of invention the world would only know of mundane routine and infinite replication. The conception of "novel" would not even exist and humanity itself might be still stuck in the stone age hunting and gathering. Instead, the human condition yearns for originality, variation, and advancement. Human kind simply can not exist in perpetual boredom and as a consequence the human race exhibits imagination, and are driven to invent. The method of invention possesses two distinct stages: the discovery and its integration into the existing body of knowledge.

THE DISCOVERY

The birth of an invention first and foremost requires an idea or object of some kind devised or made for the first time. Inventions are commonly thought to mark great leaps in development and to be extremely rare occurrences. Like those inventions such as the discovery of gravitation or the circulation of the blood. However, the many discoveries assumed to be large are actually small when viewed in full context and are the proliferation of everyday behavior. Some inventions are even conceived from accidents or without intention. For example, a theorist collecting research gathered by others, is enabled to reinterpret entire bodies of work with a more satisfying explanation, for which the entire credit attaches to his name.[1] Although, his personal contribution is of the same order of magnitude as that of the single units of information on which the theory itself rests.

INTEGRATION INTO THE EXISTING BODY OF KNOWLEDGE

The second phase of invention requires its integration into the existing body of knowledge. The ability at any moment to accept new knowledge is narrowly delimited by the existing state of knowledge.[2] A fixed ratio describes the two kinds of knowledge: the more one knows, the more new knowledge one can accept. Inventions lie in a shadow between actuality and the future, where the dim shapes of possible events are perceived. These narrow limits confine originality at any moment so that no invention overreaches the potential of its epoch. An invention may appear to meet the edge of possibility, but if it exceeds the penumbra, it remains a curious toy or it disappears into fantasy.[3]

DELAY

With any invention, there is possibility for a delay between the discovery and its application, such as the inventions of oil painting,

THE DISCOVERY OF PENICILLIN

The discovery of Penicillin, one of the world's first antibiotics, marks a turning point in human history when doctors finally had a tool that could completely cure their patients of deadly infectious diseases. Penicillin was discovered by accident in London in September of 1928. As the story goes, Dr. Alexander Fleming, the bacteriologist on duty at St. Mary's Hospital, returned from a summer vacation in Scotland to find something strange happening inside his petri dishes. Upon examining some colonies of staphylococcus aureus, Dr. Fleming noted that a mold called penicillium notatum had contaminated the petri dishes. After carefully placing the dishes under his microscope, he was amazed to find that the mold prevented the normal growth of the staphylococci. Fourteen years later, in March 1942, Anne Miller became the first civilian patient to be successfully treated with penicillin.

THE EARTH IS ROUND

When Columbus lived, people thought that the earth was flat. They believed the Atlantic Ocean to be filled with monsters large enough to devour their ships, and with fearful waterfalls over which their frail vessels would plunge to destruction. Columbus had to fight these foolish beliefs in order to get men to sail with him. He felt sure the earth was round. In this example, the ability for people to accept new knowledge that the earth is round was narrowly delimited by their existing beliefs that the earth was flat. It is commonly believed that Columbus discovered the earth was round. But in actuality, he was about 2,000 years too late. Ancient Greek mathematicians had already proven that the Earth was round, not flat. Pythagoras in the sixth century B.C.E. was one of the originators of the idea. Aristotle in the fourth century B.C.E. provided the physical evidence, such as the shadow of the Earth on the moon and the curvature of the Earth known by all sailors approaching land.

TESLA'S INVENTIONS

Nikola Tesla is often named one of history's most important inventors of all time. Born in 1856, his discoveries in the field of electricity were radical and way ahead of their time. Tesla invented, predicted, and contributed to the development of hundreds of technologies that play an enormous part in modern everyday life. Such as the remote control, TV, neon, florescent lights, wireless transmission, computers, smart phones, solar power, laser beams, x-rays, radio, robotics, and perhaps the most influential, alternating current, the basis of our present-day electrical system. Although, many of Tesla's inventions were slowly integrated into the existing body of knowledge as a result of advancing technologies, many of his inventions and ideas still remain fantasy today. Tesla conceived of interplanetary communications, weather controlled by electricity, wireless transmission of electricity, earthquake machines, and his famous death ray, a device in theory, capable of generating an intense targeted beam of energy to dispose of enemy warplanes or foreign armies. Such fanciful inventions can only be depicted in film through the use of CGI.

virtual reality, or the many inventions of Nikola Tesla. There are many reasons for such delays but one of the most common is because the technology required for the invention simply does not exist at the time of discovery. Inventions may sometimes remain dormant or stunted until the technology required for the invention catches up and the invention is able to be applied and incorporated into the existing body of knowledge.

RADICAL INVENTION

Out of all inventions ever made only a small portion are able to be considered radical. Radical invention is a rare category in that they discard any ready-made positions. The inventor constructs his own system of principles and sets forth to discover the universe only they alone can disclose. They are seen as being a clear deviation away from the current technological views of the time. It is the confrontation between the new, untried connections, and the whole of experience; between untested guidelines and the evidence of the senses; between the unknown and the familiar, the assumed and the given.[4]

USEFUL INVENTION

Useful inventions are associated with the physical and biological environment of all living things. They modify the existence of mankind by altering his or her environment, most of the time for the better but can also result in many grave consequences. Inventions such as the telephone, concrete, wireless Internet, and the airplane are all examples of useful inventions that alter the environments of human kind all over the word. Useful inventions however, when seen in historical sequence display a gradual process, showing no great leaps or discontinuities from the inventions before them. Every stage of invention follows the previous in a close-meshed order.

ARTISTIC INVENTION

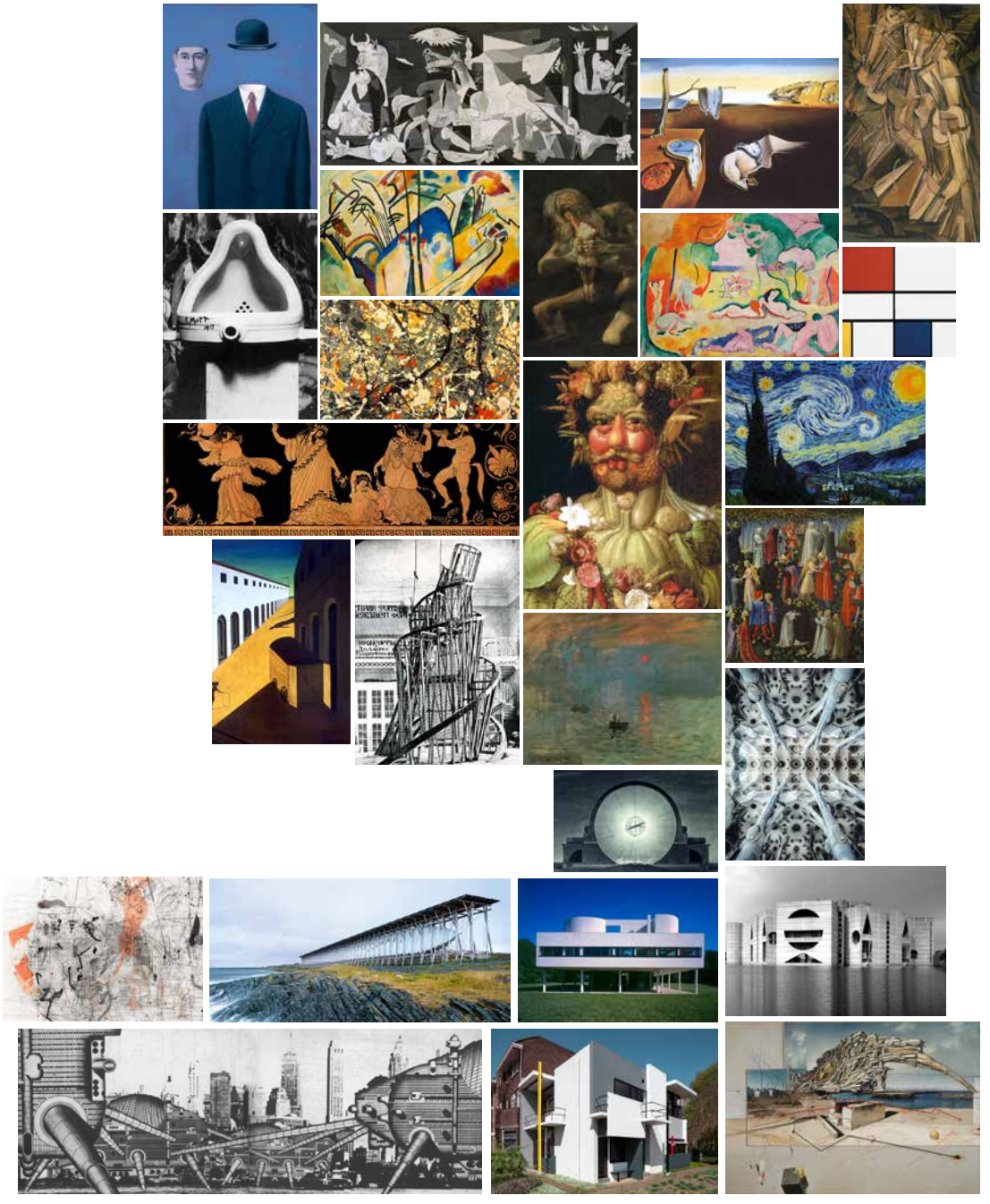
Artistic inventions alter the sensibility of mankind by changing his or her perceptions of the environment. They focus on individual awareness and new ways of experiencing the universe. They broaden the range of human perception by increasing the medium of emotional discourse. Artistic invention is one among many ways of altering the psyche. A trait of artistic inventions lies within their seemingly remoteness from what has gone on before them. The transformation is if instantaneous, discontinuous, abrupt, and

shocking. Sometimes the transitions are so difficult to identify that their existence may be put into question.[5]

ARCHITECTURE

Architecture is the art of building according to principles which are determined, not merely by the ends the edifice is intended to serve, but by considerations of beauty and harmony. It cannot be defined as the art of building simply, or even of building well. The end of building as such is convenience, use, irrespective of appearance, and the employment of materials to this end is regulated by the mechanical principles of the constructive art. The end of architecture as an art, on the other hand, is so to arrange the plan, masses, and enrichment of a structure as to impart to it interest, beauty, grandeur, unity, power. Architecture thus necessitates the possession by the builder of gifts of imagination as well as of technical skill, and in all works of architecture properly so called these elements must exist. And be harmoniously combined. The combination of technical with imaginative features removes architecture from the precise position occupied by painting, sculpture, and music, but does this more in appearance than in reality, since the greatest works of the architect must always be those in which the imagination of the artist is most plainly see.


greatest cooking discovery
since fire.



Innovation

in·no·va·tion

1. Occurs when someone improves on or makes a significant contribution to an existing product, process or service.
Synonym: modernization, addition, alteration, contraption, departure, deviation, introduction, modernism, modification, mutation, newness, notion, permutation, shift, variation, vicissitudes, wrinkle, cutting, edge,
Antonym: constancy, continuance, firmness, fixedness, fixity, identity, invariability, permanence, persistence, steadiness, unchangeableness, uniformity

HAS THE RATE OF INVENTION SLOWED DOWN?

There is no question that the discoveries and inventions of the past three centuries outnumber those of the entire previous history of mankind. When looking in historical context, an explosion of invention began along with the industrial revolution. Yet, after 1900, not a single year contains more inventions than the numbers invented at the turn of the century.[1] However, In recent decades there has been speculation concerning the stagnation of invention. Some argue that the inventions of today are fewer and less revolutionary than compared to the inventions of the late-nineteenth and early-twentieth centuries. These centuries produced such life changing inventions such as: cars, planes, telephone, radio, antibiotics, and indoor plumbing.

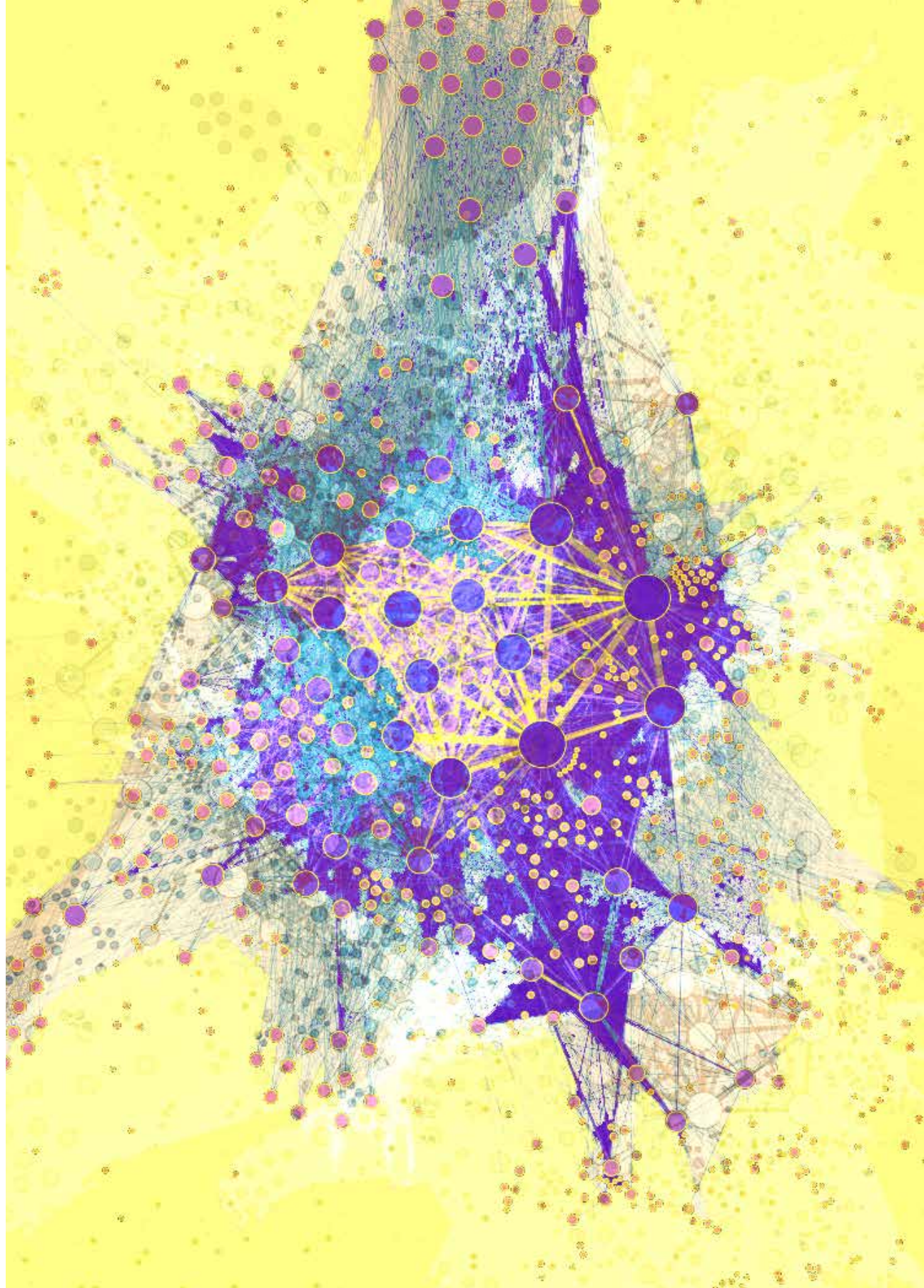
HAVE HUMANS EXHAUSTED WHAT IS LEFT TO INVENT?

No formal sequence is ever closed out by the exhaustion of all its possibilities in a connected series of solutions. The revalidation of old problems in new circumstances is always possible and sometimes actual when novel conditions require it.

When problems cease to command active attention as deserving of new solutions, the sequence of solutions is stable during the period of inaction. But any past problem is capable of reactivation. It may nevertheless seem inactive, simply because the technical conditions for its revival are not yet present.[2]

Among craftsmen a technical innovation can often become the point of departure for a new sequence where all the elements of the tradition are revised in the light of the possibilities opened to view by the innovation. Conversely, it is noted that many technological innovations provoke no immediate development. Henri Focillon used to speak of the "failures that lurk in the shadow of every success".[3] Technical failure have sometimes been revived for further development after long periods of oblivion.

THE CRYSTAL PALACE
The Crystal Palace was a huge glass and iron structure in London built to house the Great Exhibition of 1851. Joseph Paxton, the architect of the building, had experimented with cast plate glass and iron supports in the construction of greenhouses. The Crystal Palace was the largest building ever built using cast iron and glass at the time. The building was the first thorough example of prefabricated architecture. The Crystal Palace pioneered glass and iron architecture and eventually paved the way for steel-frame buildings in the 20th century.



Replica

rep·li·ca

1. An exact copy or model of something.
Synonyms: copy, carbon copy, model, duplicate, reproduction, replication
Antonyms: archetype, original, prototype

2. A duplicate of an original artistic work.
Synonyms: clone, counterpart, doppelgänger double, duplication, facsimile, fetch, likeness, look-alike, match, mirror image, picture, image, ringer, spit, spitting image, twin

The idea of copying is not favorable as an educational process and as an artistic practice. Human desires are torn between the replica and the invention, between the desire to return to the known pattern, and the desire to escape it by a new variation.[1] Generally the wish to repeat the past has prevailed over the impulses to depart from it. No act is ever completely novel, and no act can ever be quite accomplished without variation.

The term replication is a respectable old fashioned word long in disuse, and I revive it here only to avoid the negative connotation that adheres to the idea of "copying" but also to include by definition the essential trait of repeating events which include trivial variation.[2]

The replication that fills history actually prolongs the stability of many past moments, This stability, however, is imperfect. Every man-made replica varies from its model by minute, unplanned divergences, of which the accumulated effects are like a low drift away from the archetype.[3] These accumulated variations,over long period of time, may originate without design, merely for relief from monotonous repetition.

AUGMENTED QUALITY

Augmented quality is when the maker of a replica enriches upon his model by adding to its excellences. As when a talented pupil improves upon his teachers exercises.

DIMINISHED QUALITY

Diminished quality becomes apparent when the maker reduces the excellence of the replica. An unsophisticated or provincial degradation leading to rough or harsh quality or commercial vulgarization leading to cheap, showy, or gaudy. Kitsch or paintings copied by untalented pupils. Replicas of replicas of replicas... When a mass produced article of good design begins to have a wider market and more intense competition, the manufacturers simplify its design to get the price down until the product is reduced to the fewest possible parts in a construction no more durable than necessary.

KITSCH
Kitsch is the reduction of aesthetic objects or ideas into easily marketable forms. The kitsch object is commonly understood as one of that great army of trashy objects, made of plaster of Paris or some such imitation material: that gallery of cheap junk, accessories, folksy knickknacks, 'souvenirs', lampshades or fake African masks which proliferate everywhere, with a preference for holiday resorts and places of leisure.[4] To the aesthetics of beauty and originality, kitsch opposes its aesthetics of simulation. It everywhere reproduces objects smaller or larger than life; it imitates materials; it apes forms or combines them discordantly; it repeats fashion without having been part of the experience of fashion.

GHOST CHAIR
Take for example the King Louis chair, reinterpreted today and you get the ghost chair for $900, replicated time over and you can buy one for yourself at your local Walmart for $60.

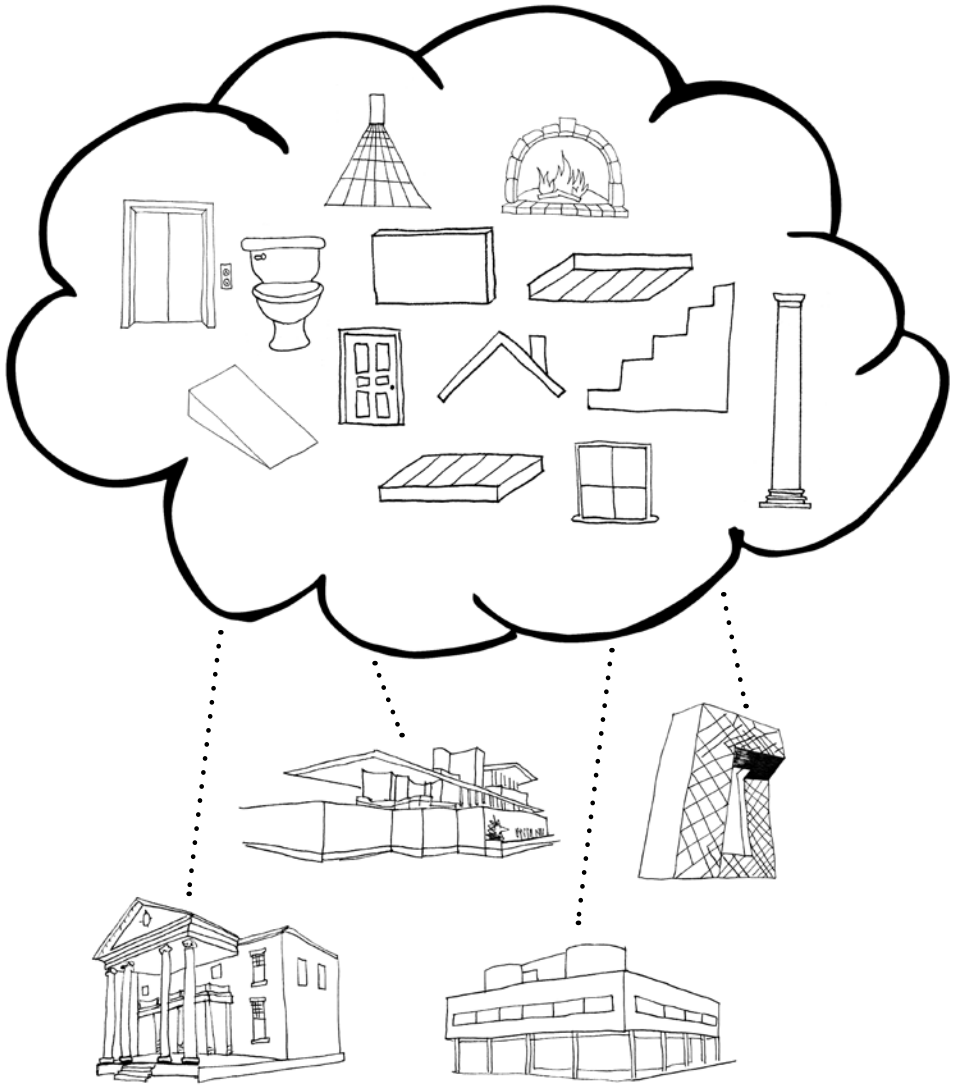
Style

style

1. A manner of doing something.
Synonyms: manner, way, technique, method, methodology, approach, system, mode, form

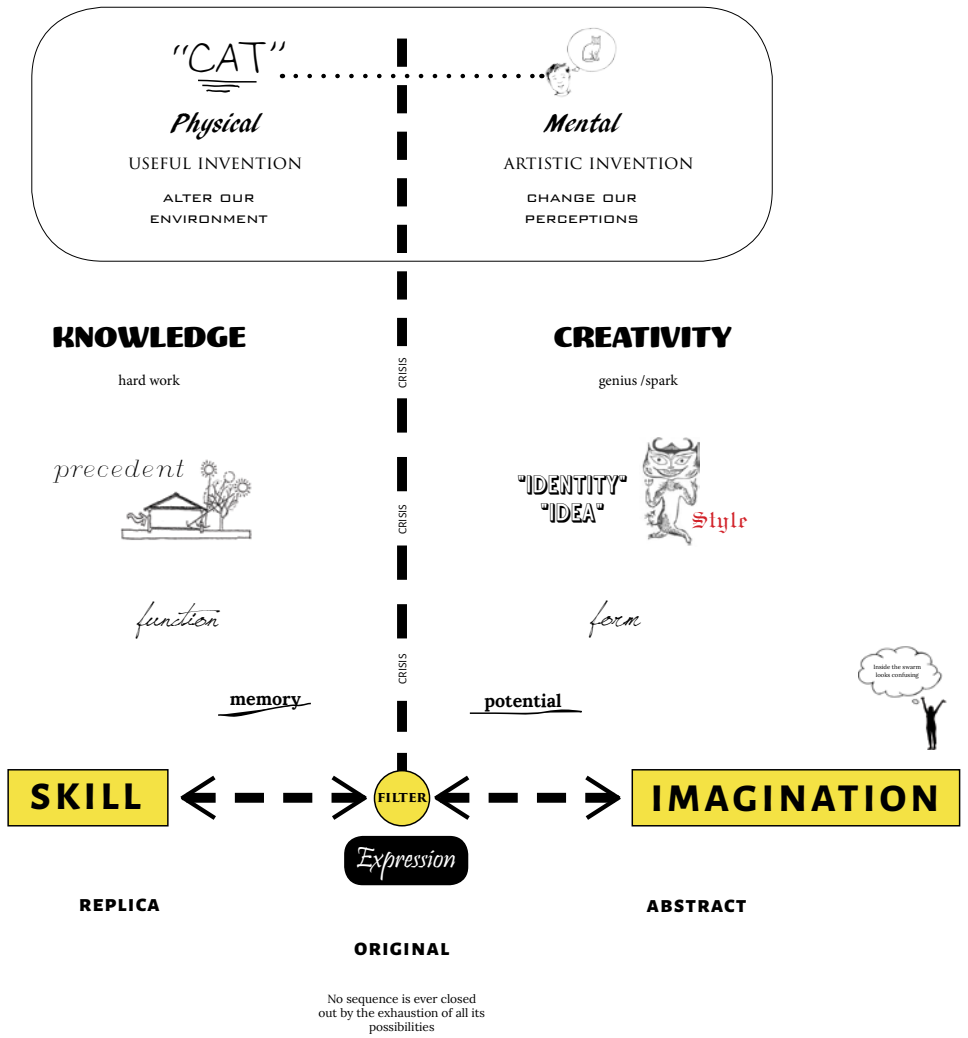
2. A distinctive appearance, typically determined by the principles according to which something is designed.

3. A particular kind, sort, or type, as with reference to form, appearance, or character



Replication is very much prevalent in architecture weather we create exact copies like the Chinese or become perpetuators of a style.

> *Style, the international style, avant garde style and so on. But this is where my research took a very slippery slope and I became obsessed with the word style. I had concluded that architecture was nothing more than a style. We design using the same elements of architecture, the door, window, wall, over and over each time using slightly different configurations than the last, for nothing exists in architecture that is without style, style, the closest we can come to being original is becoming the inventors of a style, style is bad, is bad, were doomed and we can't get out. But the word style has such a negative connotation to it and when I stopped thinking about it so negatively, and replaced the word style with the words identity or idea, it becomes not so bad, comforting really. For that "style" is the outward expression of our creativity.*



Conclusion

Let's take a step outside the swarm.

So, it turns out imagination is not at the center of the creative universe. Sure it's really, really, important but it's only a piece of the whole puzzle. And the whole puzzle is quite elementary in theory.

One must strive for an equilibrium between possessing skill and imagination. Filtering our knowledge through creativity and filtering our creativity through our knowledge. Learning from what has been but also possessing the ability to create potentials. And we know, when a work is created through an imbalance, you get either replication or work that it too abstract what's the purpose for it anymore.

Form follows function. That phrase has been seriously misunderstood. Form and function should be one, joined in a spiritual union.

Being aware of the creative process and making the most of it works to your advantage, you might even find it empowering. Do you have to? No, you can do whatever you want! But, each idea outlined in this thesis is worthy of consideration and may save you time and frustration in the long run.

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