

## Visual Imagination

### Mixed Realities : VR begins in the Mind's Eye

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We are living in the world we inherited and almost immediately respond and learn to adapt. In our early years, we mirror whomever and whatever we contact. Over time, becoming more aware of our surroundings, we begin to intuit their relationship to us and imagine how to communicate, and eventually re-construct this world to correspond to our expectations or needs. We are creating a dynamic habitat. Improving our ability to see, know, visualize, and interpret these surroundings and the world beyond, in constructive ways, is essential to our survival.

This semester, our objective will be to understand the processes of this dynamic relationship, one to many, by imagining, thinking, and making.

Analyzing precedents in nature, society, and cities will be our subject, starting with patterns. Being able to recognize patterns is what gave humans their evolutionary edge over animals. How we refine, shape and improve our pattern recognition is the key to how much longer we'll have the evolutionary edge over machines.

Virtual reality begins in the mind's eye.

Visual perception refers to the brain's ability to make sense of what the eyes see.

Visual imagination refers to the brain's ability to synthesize fragmented sensory images into a coherent, meaningful whole.

#### *Visual Imagination is fundamental to the creative process.*

The senses are said to apprehend data from events happening in the outer world as our body is moving in space, and imaginative thinking is said to process it into a coherent whole.

In an academic setting the information is well formed and is exchanged in a highly evolved and structured way.

It is assumed here that this more structured way of knowing can be enlarged to encompass the lived human experience and its inherent creative possibilities.

Visual Imagination grows from our spatial intelligence, which is dependent on the depth and quality of our spatial memory. Spatial memory is a cognitive memory map of direct experience as our bodies move through time and space. Spatial Memory, Spatial Intelligence and Visual Imagination are inter-dependent.

In order to cultivate visual imagination, we will shift our focus away from academic research concerns to architectural concerns, especially its source code: virtual reality. In an academic setting information is systematically researched and exchanged in highly analytical and historically considered conventional ways. It is assumed here that this more structured way of knowing can be enlarged to encompass the lived human experience and its inherent creative possibilities.

This seminar is not about how we know what we know, instead it is how to access what we know and convert it into conceptual structures that serve our Visual Imagination.

#### *Objectives for the Semester*

- to re-learn how to see once by looking twice
- to enhance your capacity to convert experience into ideas, into imagination, into space-form
- to re-contextualize your ideas via scaling, analogy, metaphor
- to increase the size and scale of your 'network of knowing'
- to learn why it is said in science the Universe is a symmetry operation
- to see the creative process in terms of systemic change and growth
- to become more aware of the basis for making choices
- to visualize in the mind's eye prior to your media displays
- to visualize an entire dynamic process of formation from beginning to end, in your mind's eye
- to do 'rhino' in your mind

## Introduction

VI grows from our spatial intelligence, which is dependent on the depth and quality of our spatial memory, the source being direct experience converging with memory, as our bodies move through space. Spatial Memory, Spatial Intelligence and Visual Imagination are inter-dependent.

Creative conversions first occur in our 'mind's eye', prior to their representation through media.

The 'mind's eye' is the zone where virtual images are synthesized recombining and transforming selected parts of our spatial memory into new hybridized images of processes, events, places, and objects.

The body in motion through physical space is the basis for our spatial memory, recording and storing information about the environment and our place in it. Our body-mind complex records everything it apprehends and stores it for either short and long term use recollecting at the appropriate times to enhance and enrich new experiences. We are embedded in a world we inherit and immediately respond and adapt, but most significantly we begin to imagine how to re-construct this world. Improving one's ability to see-know, visualize, and interpret the world in constructive ways is a great asset. Our focus will be to best understand these processes by thinking and making.

When we are infants beginning to crawl and then walk, we experience more than ever before, and our brain grows as fast as possible to take it all in and process it. Simply stated, we need more RAM. With no prior experience we see everything for the first time. We are enchanted by what we see, a world filled with wonder. At this phase of life our curiosities are intrinsic and first nature. We must learn in order to survive - so we naturally explore with a growing brain and clever hands. We benefit from 'not knowing' - we see things as they are, not as we expect them to be. Imagine, as adults, the possibility of 'looking twice'. Look once and you see what something is and how it operates, look twice and you see it in context and speculate on purpose and meaning.

## Overview

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<b>Ways of Seeing</b>	Looking at the world with curiosity and wonder - bare attention and mindfulness
<b>Ways of Knowing</b>	The world that you see and interpret is the basis for what we know - awareness to insight
<b>Ways of Making</b>	The ultimate test of an idea is to construct it, to give it form

## Themes

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<b>Cosmology</b>	single coherent framework of knowing - faith and reason
<b>Creativity</b>	an evolutionary imperative – communal - curiosity, courage,
<b>Optimism</b>	biological necessity and the essence of creativity
<b>Communal</b>	shapes human societies and the basis of civilization
<b>Cooperation</b>	the basis for communal life and the foundation for society
<b>Story</b>	the foundation to teaching and learning - structure, purpose, meaning
<b>Beginner's mind</b>	seeing as if for the first time, as it is, without expectation
<b>Context</b>	genetics, family, society, culture, city

## Concepts

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<b>Time</b>	scale, interval duration
<b>Space</b>	medium for bodies in motion and at rest
<b>Light</b>	outer light of nature gives meaning to the inner light of the mind
<b>Scale</b>	worlds within worlds
<b>Transformation</b>	transition from one medium or state to another
<b>Symmetry</b>	mirroring, conservation of energy, equilibrium
<b>Play</b>	intrinsically motivated activity and central to learning
<b>Pattern</b>	index of matter energy and form over time

## Words

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<b>Process</b>	inter-activity	(on becoming)	things change
<b>Order.</b>	inter-relationships	(on meaning)	things self-organize
<b>Unity</b>	inter-dependence	(on being)	things come together

## Phrases

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Economy of Means	conservation of energy
Theories of Economy	systems of exchange
Time Scales	evolutionary shifts
Scale Shifts	conceptual revolutions
Social Shifts	geo-politics, geo-economics, geo-technology
Conservation and Change	Memory and Action
Convergence and Hybridization	aggregation, integration
Mobility and Dexterity	imagination, exploration, risk
Complexity and Coherence	

## Questions

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time structures	"Is it possible to have a long-term vision in a short cycle world?"
intuition	"Is it possible that at the moment of birth we hold the potential to be all knowing?"
wisdom	"Is it possible to experience the still point in between faith and reason?"
social	"Is it possible that cooperation is an evolutionary imperative?"
economy	"Is it possible that we are 'hard wired' for scarcity, not abundance?"
mirroring	"Is it possible that the entire Universe is a symmetry operation?"

## formats

- lectures,
- creative discourse
- spontaneous model making
- sketching
- photography
- writing

## grades

- |                     |   |
|---------------------|---|
| class attendance    | - it is expected that everyone be present. 3 absences maximum                       |
| class participation | - it is expected that everyone be engaged in the discourse during class time        |
| class assignments   | - it is expected that all writing, modeling, imaging projects be completed on time. |

## subjects

### World View

Some of the biggest problems of present society is the effect of overall change and acceleration of change. To cope with the radical shift from a seemingly simpler, recursive mechanical world view to a quantum world view of unpredictable change and greater complexity, we need to come to terms with our personal world view to give us perspective and purpose. We need a framework that ties everything together allowing us to understand the world, and our place in it, it can give us a consistent and integral sense of being.

### Cosmology

Cosmology is the study of the origins, grand evolution, and eventual fate of the universe. It has 2 lenses, religion (faith) and science (reason). The shift from the age of faith to the age of reason began the process of dis-engaging the mind from the body. Much was gained and lost. The world was seen as 'imperfect'. Perfection and how to attain it was interpreted from the sky and embedded in the creation stories. The stories were projected on the sky and reflected back down to the earth to interpret and use as a blueprint for reconstituting the imperfect world. Symbolically, Earth and Sky were mirrored.

### Classical Antiquity

Age of Faith - Stars and constellations, were mapped and interpreted through complex stories about human-like gods projected onto the heavens. These projections then formed pathways for the human journey and geometric diagrams for social order manifest in urban and architectural forms.

## **Enlightenment**

the newly discovered rational relations among the heavenly bodies are projected back to earth as the demand for rational relations among people and their institutions. It resulted in a duality: demanding rationality of the state (which results in totalitarianism) and rationality on the part of the individual (which implies personal responsibility and the ownership of the self, thus personal freedom).

## **Modernity**

middle of the 19<sup>th</sup> century until the present. The concept that is projected into the cosmos is that of the abstract materiality of space. Instead of being seen as a container or place where things happen, space becomes the substance of particles and forces. Everything that is—energy, space, time, forces, materiality, ourselves - are seen as abstract conditions of space itself

## **Storytelling**

It has existed as long as humanity has had language. Stories are a means of entertainment but more significantly they have been central to the preservation of culture. Storytelling is a fundamental form of teaching. Traditionally, oral stories were passed from generation to generation, and survived solely by memory. In the oral tradition, storytelling is an improvisational art form with a hidden structure of connected events, ideas, and images that are transformed with each telling. Generally, a storyteller does not memorize a set text. Instead he has a framework of facts or events that direct a narrative arc that guides the teller as he visualizes the characters and the settings while improvising the words.

## **Collective Intelligence**

Collective learning gave us a history,

making it possible for us to learn more, faster while in proximity to others.

When in the right proportions, density (population), intensity (interactions), and complexity (human enterprise),

We benefit immensely, individually and collectively.

Collective Learning shapes the Evolution of Human Societies.

Over time, humans naturally became highly networked and inter-dependent creatures.

In numbers we became a learning organism storing memory in hard and soft ways.

Symbolic Language is our means of communication but as importantly it became a flexible memory system in many forms and formats that metaphorically serves as an 'external hard drive'.

## **Creativity**

Analytical, Critical, Generative

It occurs in the interaction between a person's thoughts and a socio-cultural context.

Although we learn more, faster when proximity to others and the foundation for our creative work is shared

The creative moment itself is an introspective and private moment. Beyond the creative moment is its realization which is a collective activity in varying degree. More on this later.

Creativity is contingent on the cultivation of curiosity, bare attention, and confidence.

We are most curious when we are children and less so as we drift toward expediency.

Creative individuals are remarkable for their ability to adapt to any situation and to make do with whatever is at hand.

They 'play it as it lays'. Each of us is born with two sets of instructions: a conservative tendency made up of instincts for self-preservation, and an expansive tendency made up of instincts for exploring.

## **Exploration**

Humans are innately restless.

We explore and then map and then explore some more. No other mammal moves around like we do. In 50,000 years we have spread around the planet. Part of our motivation was to follow the sun and the food but we now know that our migratory urges to explore rises in us innately. Scientists now have evidence that its foundation lies within our Genome. We are wired for curiosity, restlessness, and exploratory risk taking. We have limbs that give us great mobility, hands with extraordinary dexterity and a big and clever, slow growing brain that develops an imagination though a long childhood and an unmatched period of protected play that fosters the growth of our imaginative capacity. Other animals play but mainly to practice basic survival skills. Children play by creating hypothetical scenarios that defy gravity and consequence. We play less of this as we get older. In our wanderings, real and imaginary, what do we see and how do we convert these new discoveries into a more precise and focused conceptual imagination

that forms the basis of the world we want to construct. Our conceptual imagination greatly magnifies the effect of our mobility and dexterity which in turn fuels our imagination. This is another chicken and egg moment.

### **Order**

D. Bohm, a theoretical physicist, said that reality means something existing independently of being known through conventional absorption and measurement. He sought to develop a theory of reality that would be inclusive and whole. Wholeness is a coherent view in which everything at all sizes and scales are inter-connected and inter-dependent. He conceived a hidden order at work beneath the seeming chaos and lack of continuity of worlds within worlds. This hidden dimension is Bohm's 'IMPLICATE ORDER,' which has infinite depth and is the source of all the visible of the 'EXPLICATE MATTER' universe (4-D world of objects, space-time).

Developing the capacity to 'see' and 'know' these realities are contingent on looking without pre-conditioning, pre-conception, or pre-determination. Bare attention, it's often called - this is the foundation of discovery. It required observing things as they are without expectations.

### **Reciprocity**

Individualism and altruism

Claude Levi – Strauss, a cultural anthropologist, told a story from his experiences traveling with his father. One day they sat for lunch, in a French country inn, directly across from a stranger. When they were served his father and the stranger both poured their small carafe of wine into the other's glass; an equal exchange, nothing lost but much gained, symbolically. Levi-Strauss would eventually write that reciprocity was a fundamental centerpiece of society.

### **Evolution of Cooperation**

Nature rewards cooperation.

The Human Enterprise marks the continual emergence of new levels of complexity.

The transition to greater complexity is linked to the creation of new forms of interdependence and larger patterns of cooperation and new collective structures. Our survival as a species is predicated on our capacity to cooperate,

### **Play and Learning**

Many animals play but mainly to practice basic survival skills. Generally, humans have the longest period of protected play, that begins in early childhood and extends until the rites of passage in our early teens, approximately 10 years. Children play to develop imagination, creating hypothetical scenarios to test and learn. During childhood we build the brain wiring to explore.

We do less of this as we get older. Years ago on a walk through nature with my son, I stood and watched him explore with enthusiasm and surprise. He was delighted with each little discovery. As I watched, I realized that he was seeing things for the first time. Prior experience not being a factor allowed him to see without pre-determination or expectation. He saw things as they were and not as he expected them to be. That was my problem to overcome. The world is filled with wonder and if I take pause to focus on an aspect of it I may discover something new in something old.

### **Finite and Infinite Games**

There are at least two kinds of games. One can be called finite, the other infinite.

A finite game is played for the purpose of winning. An infinite game is for the purpose of continuing the play.

The creative process is, at best, an infinite game.

### **Space and Spaciousness**

The richness and range of the Human environmental experience is defined by low, close and vast spaces we inhabit through our life, beginning with the finite space of a near weightless floating environment of our mother's womb to the vastness of the California Deserts where I now sit. Looking across a valley 25 miles wide and 100 miles long I am surprised by the clarity and the distance. I am even more surprised that my thoughts are too small for this space. Perhaps the size of my thoughts are in proportion to the space in between buildings. Here, I begin to think about aspects of geologic time – existence, evolution, plate tectonics, and the nature of time scaled events, in particular the intertwining of humans and the natural world.

## Networks

### *systems and information*

This topic will be our gateway into visualizing the dynamic processes of systems and information.

Everything, at all sizes and scales, in all dimensions, are simultaneously interconnected and interdependent.

We think of networks as a product of the computer age, the Internet is its common name. The fact is that digital networks are a phase in the ongoing evolution of a networked global brain, which has existed for more than 3 billion years. It is a product of evolution and biology. The global brain is a web between all species.

In Costa Rica as tuna hunt for their prey, seabirds watch their movement waiting for the leftovers. Fishermen searching for the tuna watch the birds, leading them to their catch. This is a network.

## Organisms

### *Edward O Wilson*

#### *The Insect Societies, 1971*

"Why do we study these insects? Because, together with man, they are among the great achievements of organic evolution. Their social organization – is far less than man's because of the absence of culture, but far greater in respect to cohesion, caste specialization, and individual altruism – is nonpareil. The biologist is invited to consider insect societies because they best exemplify the full sweep of ascending levels of organization, from molecule to society. Among the tens of thousands of species of wasps, ants, bees, and termites, we witness the employment of social design to solve ecological problems ordinarily dealt with by single organisms. The insect colony is often called a super-organism because it displays so many social phenomena that are analogous to the physiological properties of organs and tissues. Yet the holistic properties of the super-organism stem in a straightforward behavioral way from the relatively crude repertoires of individual colony members, and they can be dissected and understood much more easily than the molecular basis for physiology."

## Time –

### *Fast-Slow*

#### *The Clock of The Long Now*

#### *Stewart Brand*

In recent years scientists have been probing time intervals in ecological systems: How do they manage to change, and how do they absorb and incorporate shocks? The answer appears to lie in the relationship between components in a system that have different change rates and different scales of size. Various elements in a system work together in ways that increase overall resilience – fast and slow time intervals are coordinated. Instead of breaking under stress like something brittle these systems yield as if they were malleable. Some parts respond quickly to the shock, allowing slower parts to ignore the shock and maintain their steady duties of system continuity. The combination of fast and slow components makes the system resilient, along with the way the differently paced parts affect each other. Fast learns, slow remembers. Fast proposes, slow disposes. Fast is discontinuous, slow is continuous. Fast and small instructs slow and big by accrued innovation and occasional revolution. Slow and big controls small and fast by constraint and constancy. Fast gets all our attention, slow has all the power. All durable dynamic systems have this sort of structure; it is what makes them adaptable and robust.

## Scale

### *Freeman Dyson*

"The destiny of our species is shaped by the imperatives of survival on six distinct time scales. To survive means to compete successfully on all six time scales. But the unit of survival is different at each of the six time scales. On a time scale of decades, the unit is the family. On a time scale of centuries, the unit is the tribe or nation. On a time scale of millennia, the unit is the culture. On a time scale of tens of millennia, the unit is the species. On a time scale of eons, the unit is the whole web of life on our planet. Every human being is the product of adaptation to the demands of all six time scales. That is why conflicting loyalties are deep in our nature. In order to survive, we have needed to be loyal to ourselves, to our families, to our tribes, to our cultures, to our species, to our planet. If our psychological impulses are complicated, it is because they were shaped by complicated and conflicting demands."

## Hybrid of Extremes

### *Equilibrium and Integrity*

Two things move into each other's field of interference and something unique emerges, a third thing that is the progeny of the two. If written as an equation it would be one plus one equals one. This is the oldest equation of all.

All living organisms are evidence of this. Now there are three, each similar and unique, a paradox. The progeny is the new hybrid and the parents are the old hybrids. Each generation becomes more and more complex and simple, another paradox. Simplicity on the other side of complexity – a distillation of all that has come before it became what it currently is, a unique variation on a continuously emerging theme – life, as an aggregation of varied parts incorporated into a greater whole. Its most singular purpose is survival, the metric being endurance. The ultimate living organism is an ecosystem of worlds within worlds, natural and artificial, physical and virtual. The creation process is a constant transformation of matter into energy and energy into movement, movement into energy and energy into matter. Ashes to ashes is a phrase we use to describe this process. This is a dynamic system in a constant state of equilibrium. The point of balance in this system is the Hybrid of Extremes.

## Semester Schedule

Week 01	<b>overview</b>	introductions, syllabus
Week 02	<b>context</b>	reciprocal action
Week 03	<b>cosmology</b>	what's the big idea
Week 04	<b>process-order</b>	things change according to the rules
Week 05	<b>order-unity</b>	things come together
Week 06	<b>dynamic equilibrium</b>	what goes around comes around
Week 07	<b>time scales</b>	conceptual revolutions and societal shifts
Week 08	<b>bodies in motion</b>	space is our medium and place is our destination
Week 09	<b>economy of means</b>	just enough and nothing more and weight removal
Week 10	<b>hybrid of extremes</b>	complexity and coherence
Week 11	<b>networks</b>	one thing leads to another
Week 12	<b>cooperation</b>	rights and responsibilities
Week 13	<b>play</b>	exploration and curiosity
Week 14	<b>pattern</b>	index of time, energy, and form
Week 15	<b>open dialogue</b>	

## weekly class Itinerary

1.	warm up discussion	10 mins
2.	meditation	10 mins
3.	standing yoga	10 mins
4.	presentation of weekly theme	90 mins
5.	break	10 mins
6.	5 minute model	5 mins
7.	30 sec presentation	45 mins