

# Sudden Stillness



Andy Ilachinski

andy.ilachinski@gmail.com

571-217-8198

<http://www.sudden-stillness.com>

<http://tao-of-digital-photography.blogspot.com>



My creative process is very simple:  
*I take pictures of what calms my soul.*

There may be other, more poetic words that may be used to define the “pattern” that connects my images, but the simplest meta-pattern is this:

I capture moments in time and space in which a peace washes gently over me, and during which I sense a deep interconnectedness between my soul and the world.

Not Cartier-Bresson’s  
“Decisive Moment,”  
but rather a...

***Sudden Stillness***

# Outline of Lecture

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- Who am I?
- What is my approach?
- Three Portfolios: *On the art of the unexpected*
- Comparing my younger and older “eyes” / “I”s
- Two recent “experiments”
- “The Skies of Skye” & “The Ring o’ Brodgar”
- Stages of growth in photography
- East / West / Complexity ... photography
- Concluding thoughts / sneak peek
- **Questions?**
- *Sample “Blurbs” / Sample Prints*

*If interest  
warrants*



*If interest  
warrants*



# Outline of Lecture

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Who am I?

Short bio / recent photo vitae

# Bio

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Whatever I may  
know about light,  
tone, texture,  
form, and  
composition  
I learned by  
watching my dad.

He was not a  
photographer,  
But was an artist  
*par excellence*

- **Born 1960 / Glen Cove, Long Island, NY**
- **First camera: 1970**  
Polaroid instamatic / Christmas gift  
First picture: *(abstract?) closeup of my right toe*
- **First “serious” camera: 1982**  
*Canon AE-1*
- **Ph.D. Theoretical Physics, 1988**  
*Complex Adaptive Systems*
- **First digital camera: 1998**  
*Nikon Coolpix 950*
- **First “serious” DSLR: 2002**  
*Canon D60*
- **First Solo Show: 2007**  
*Coral Gables, Florida*
- **First *Lenswork* portfolio: 2007**  
DVD Edition #71 / July-August
- **Joined first art co-op: 2008**  
One of 14 founding members of Lorton Arts, VA

# Recent Photo Vitae

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- **"Worlds Within Worlds" Exhibit (2009-2010)**  
American Physics Center
- **1<sup>st</sup> Prize, Juried photo exhibit (2009)**  
*RoHo Photo Gallery*, Cincinnati, OH
- **Photography Workhouse Society, 2008/09**  
*Lorton Arts*, VA
- **Featured photographer (*Lenswork Magazine*)**  
*LOOK3 Photo Festival*, Charlottesville, VA, 2009
- **Wall calendar and datebook**  
*Change Your Mind, Change Your Life*  
by Wayne Dyer (Amber Lotus Publishing, 2010)
- **Featured Artist / After Words**  
*Northern Virginia* magazine, August 2009
- **"Micro Worlds" portfolio**  
*Lenswork* magazine, Print & Extended Edition  
Issue #76 (May-June, 2008)
- **Merit award, single-image contest**  
*Black & White* magazine (2008)
- **Semi-finalist, *Photographer's Forum* magazine**  
Annual Contest , 2008
- **Honorable mention**  
*Photo Techniques*, portfolio contest, 2008
- **Solo Exhibit (32 Photographs, 2007)**  
*Books & Books / Gallery*, Coral Gables, FL
- **Honorable Mention**  
*Photo Techniques*, Portfolio Contest, 2007
- **"Spirit & Light" portfolio**  
*Lenswork* magazine, Extended Edition  
Issue #71 (July-August, 2007)
- **Winner of book contest, 2007**  
*UK Black & White* magazine and *Envisage Books*
- **"Entropic Melodies Series" portfolio**  
*Focus Magazine*, April 2006
- **Merit of Excellence (Abstracts)**  
*2007 B&W Spider Awards*
- **Portfolio contest winner**  
*Black & White* magazine, Feb 2006
- **Merit award, *Abstract Exposure***  
Oct 2006 juried on-line exhibit
- **Finalist, *Photographer's Forum* magazine**  
Annual Contest , 2005
- **Third Place, photo contest**  
*Sybex Publishing* gallery contest, 2005

# Outline of Lecture

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## What is my approach?

*From one of my most heavily commented Blog entries, August 26, 2007*

*Written in response to a sincere email from  
a young photography student who asked:*

*"What advice do you have for someone trying to become a photographer?"*

→ **Seven core lessons (I've thus far learned)**

# Some important lessons I've picked up along the way

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Then never again allow it to distract you... *lose yourself in your picture taking*

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Then never again allow it to distract you... *lose yourself in your picture taking*
5. **Never stop learning from the masters;**  
**Always keep looking over their images and those of traditional artists...**  
**... take away what is most meaningful to you**

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... take away what is most meaningful to you
6. **Forge your own path (stronger / mature form of #3 & #5)**

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5. Never stop learning from the masters;  
Always keep looking over their images and those of traditional artists...  
... take away what is most meaningful to you
6. Forge your own path (stronger / mature form of #3 & #5)
7. Always be mindful of Louis Pasteur's adage (and a favorite of Ansel Adams):

*"Chance favors the prepared mind"*

# Outline of Lecture

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What is my approach?

Ten “epiphanous” photographs

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*"If you were going to demonstrate to a non-photographer the nature of fine art photography and why you are so passionate about it, which ten photographs would you show them?"*

# 10 “epiphanous” photographs

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**#1: *Capitol Reef, Utah (1962)***

Minor White

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**#2: *Monolith, The Face of Half Dome,*  
Yosemite National Park, 1927  
Ansel Adams**

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**#3: Greece, 1961**

Henri Cartier-Bresson

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**#4: *Pepper No. 30*, 1930**

Edward Weston

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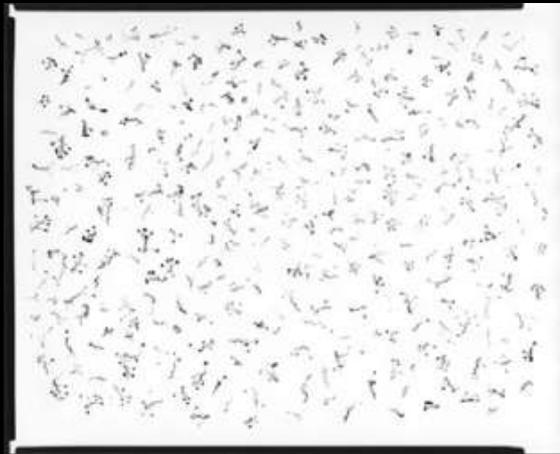
**#5: Mondrian's Glasses and Pipe, Paris, 1926**  
André Kertész

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**#6: *Ivy Tentacles on Glass, Chicago, 1952***  
Harry Callahan

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**#7: *Circular Chimney,*  
*Antelope Canyon*  
Bruce Barnbaum**

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**#8: *Rainbow over Potala Palace, Lhasa (Tibet, 1981)***  
Galen Rowell

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#9: *Jerome* (Arizona, 1949)

Aaron Siskind

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**#10: *At the Janaceks* (1948)**

Josef Sudek

# Outline of Lecture

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On the art of the unexpected

Portfolio 1: *“Seeing the Light”*

# National Cathedral (“Seeing the Light”)

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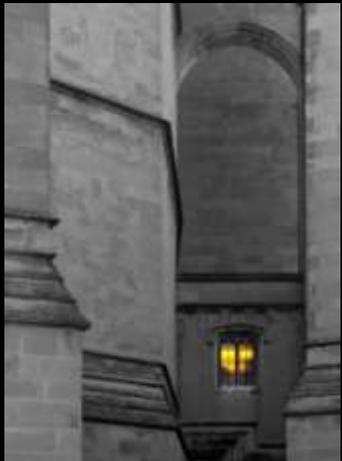


Participated in juried exhibition at the Washington National Cathedral (2002)

On my way to the National Cathedral, would always pass St. Nicholas, a Russian Orthodox church on Massachusetts Ave, NW

Years later, during a “lull” between projects, decided to visit St. Nicholas

That was the start of a 6 month project that took me to many Orthodox churches in the area, and back in NY



“Spirit & Light” portfolio  
*Lenswork*, Extended DVD Edition  
Issue #71 (July-August, 2007)











# Outline of Lecture

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On the art of the unexpected

*Portfolio 2: "Micro Worlds"*

# A “planned” day of rocks & water variety



Came home from a long photo-safari at Great Falls, during which I took many soon-to-be-forgotten photos of the usual rocks-and-water variety

Sat down to dinner with my family

As my fork was about to pierce the skin of a potato, my wife nonchalantly placed two small acrylic candle holders with *trapped air bubbles inside* on the table

My “eye” was consumed for the next 4 months



“Micro Worlds” portfolio  
*Lenswork*, Print & Extended DVD Editions  
Issue #76 (May-June , 2008)











# Outline of Lecture

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On the art of the unexpected

*Portfolio 3: "Elements of Order"*

# A “nothing happening” day on vacation

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Went to Coral Gables, Florida  
to visit in-laws with the kids.

Everything was *right*, all the equipment  
worked, the lenses were clean, the  
camera bag had exactly what I needed,  
the light was right, the location was  
right, beautiful vistas were all around  
me, and ... *Nothing. Absolutely nothing.*  
No magic. No spark.

My wife suggested we go to a local park  
so the kids could feed the pelicans.  
*I almost refused to take the camera (!)*



Solo show (30 prints)  
*Books & Books / Gallery*  
Coral Gables, Florida (Dec 2007)  
First portfolio book (self-published)  
*Elements of Order* (Blurb.com)













# “Elements of Order”

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## **Elements of Order**

*Imposed and Natural*

Photographs by Andy Ilachinski



<http://www.blurb.com/my/book/detail/170852>

# Outline of Lecture

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Comparing my younger and older “eyes” / “I”s

Hawaii: *1980s vs. 2006*

# Hawaii: 1980s & 2006

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- Made numerous trips before & during graduate school
- 1982 – 1987
- Canon AE-1 / color slide film



# Hawaii: *1980s* & 2006

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- Went back for 10<sup>th</sup> anniversary in 2006
- Canon D60 / 20D













# Outline of Lecture

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Two recent “experiments”

Experiment #1: “*Mystic Flame*”

Experiment #2: “*Swirls, Whorls, and Tendrils*”

# “Mystic Flame”

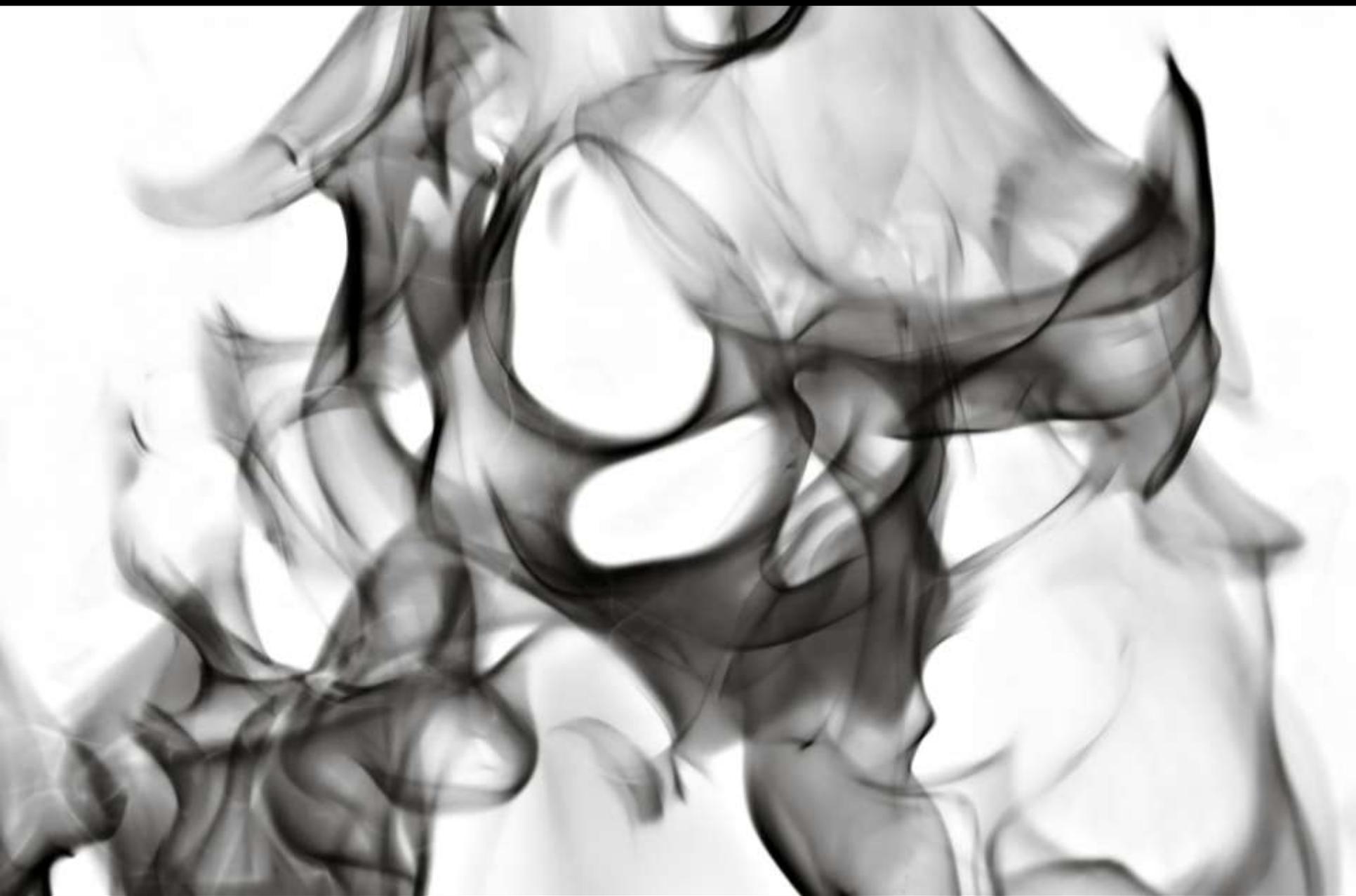
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My wife bought a fire-pit for our kids to  
have fun with in the backyard while we barbeque

*I noticed an interesting pattern ...*

“Mystic Flame” portfolio  
(Dec 2008)







# “Swirls, Whorls, and Tendrils”

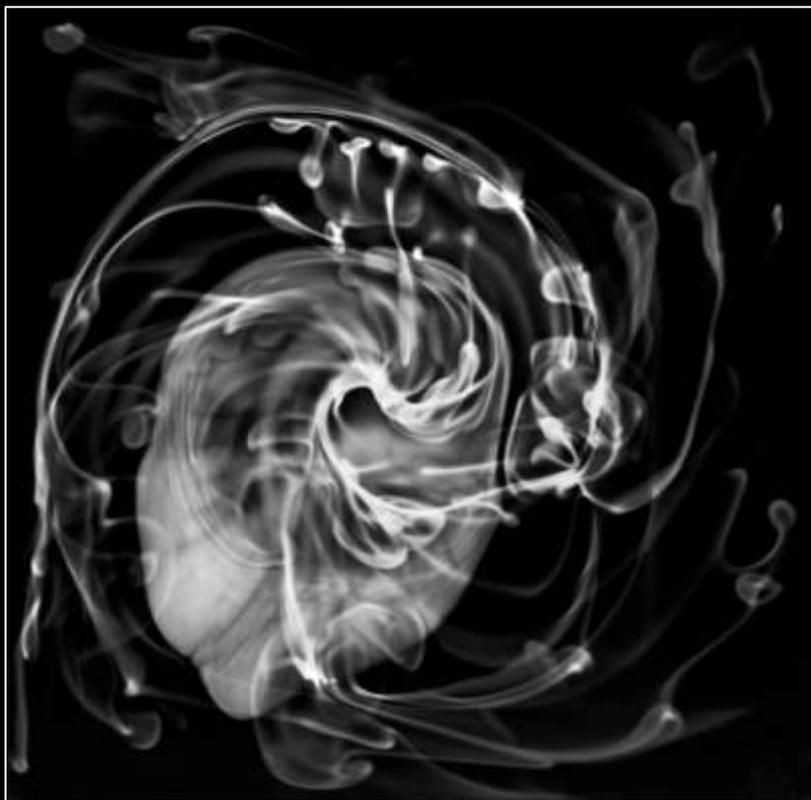
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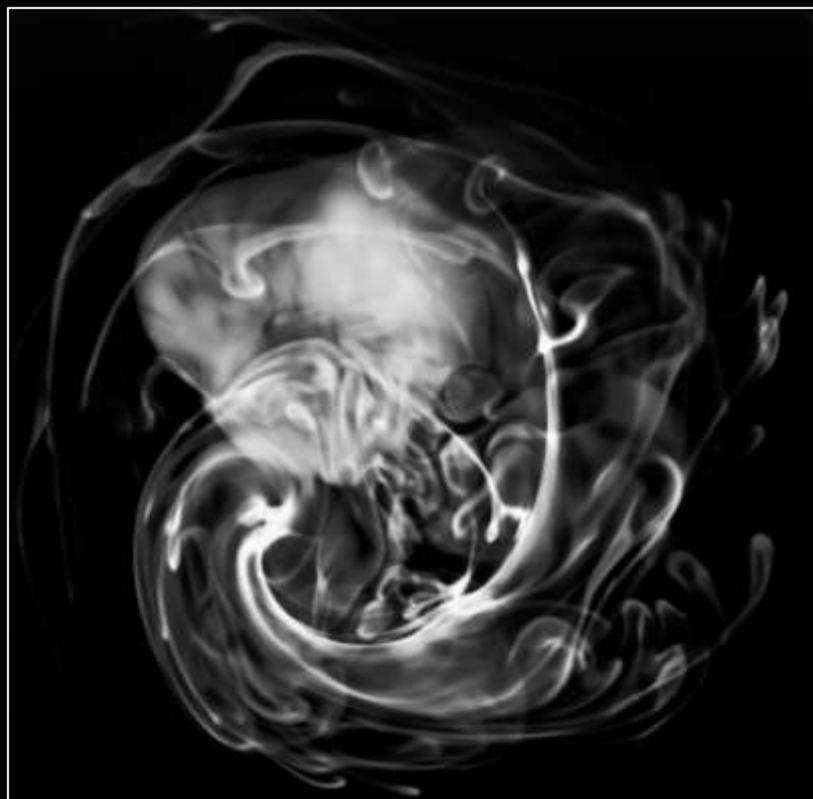


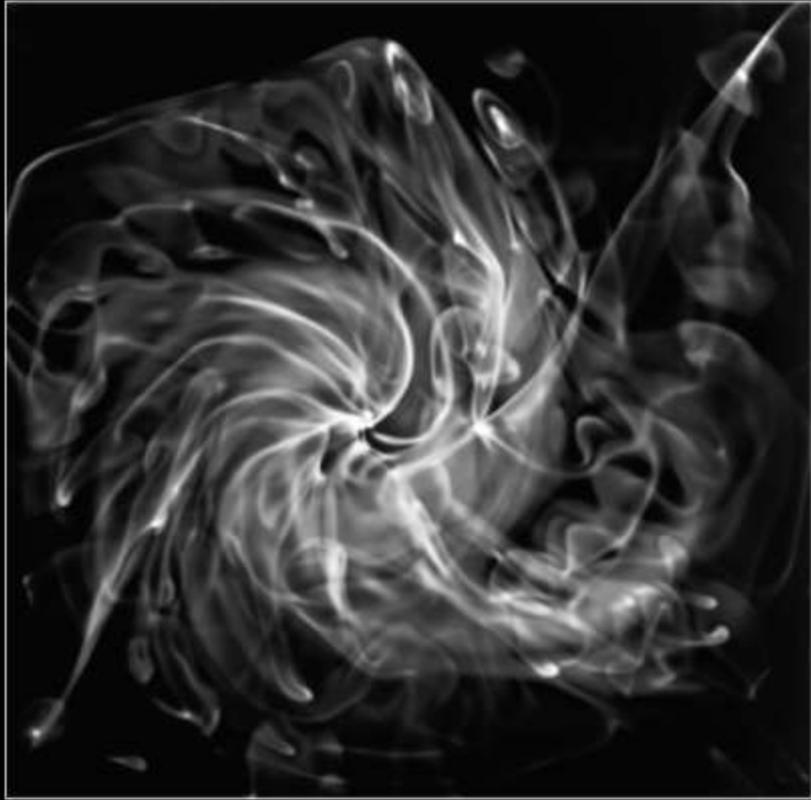
My younger son (Josh, 7) accidentally  
dropped a newspaper that I had written  
something on with a fountain pen  
into the sink

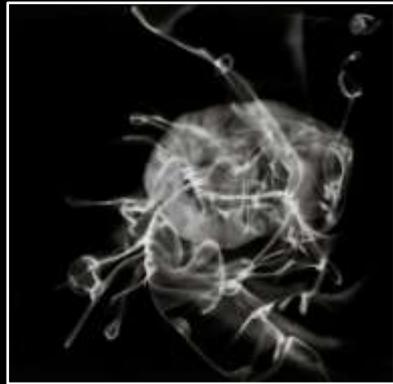
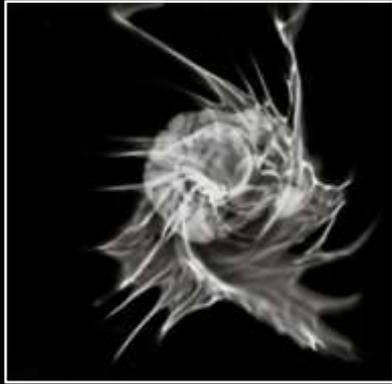
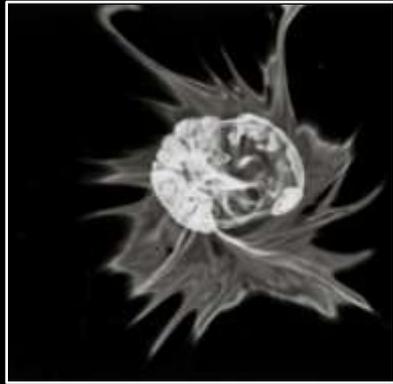
*I noticed an interesting pattern ...*

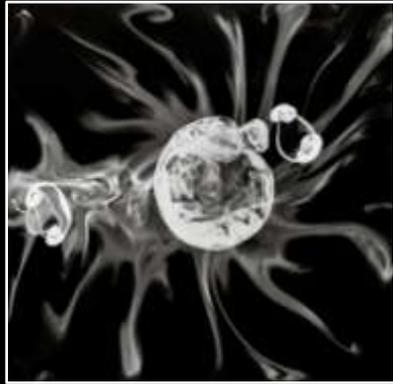
“Swirls, Whorls, and Tendrils” portfolio  
(March 2009)











# “Swirls, Whorls, and Tendrils”

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## Swirls, Whorls, and Tendrils

*Ephemeral Unfolding*

Andy Ilachinski



<http://www.blurb.com/my/book/detail/874142>

# Recent Portfolios (Sep/Oct 09)

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“The Ring o’ Brodgar”



“The Skies of Skye”





















# Outline of Lecture

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Stages of growth in photography

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Stage 1: Joyful snapshots of anything  
and everything

→ *First camera, excited about  
anything & everything*

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→ *Certain objects draw a deeper attention than others*

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Stage 3: Willful engagement of the aesthetic environment

→ *Photographer actively seeks out images of interest*

→ *Both difficult to see "from the outside" and dramatic*

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→ *Photographer discovers how to express not the object itself, but what draws attention to the object*

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→ *Photographer begins to see the world as a patchwork; a tapestry of images*

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**Stage 6: Need to tell a story**

→ *Focus on portfolios of interrelated images as elements of narrative*

→ *Interested in telling a story about what the eye (and heart) is drawn to, and why*

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**Stage 7: Portfolios of Portfolios**

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→ *Photographer "discovers" the patterns of the world by observing her own work*

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**Stage 8: Self-discovery**

→ *Outwardly similar to Stage-7 (to others)*

→ *Inwardly, photographer "discovers" truths about her own soul*

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# At first, the *photographer* finds the *picture*...

**Physicist**

Light,  
Entropy,  
Geometry

**Poet**

Romance,  
History,  
Culture



**Photographer A**

Textures,  
Landscape

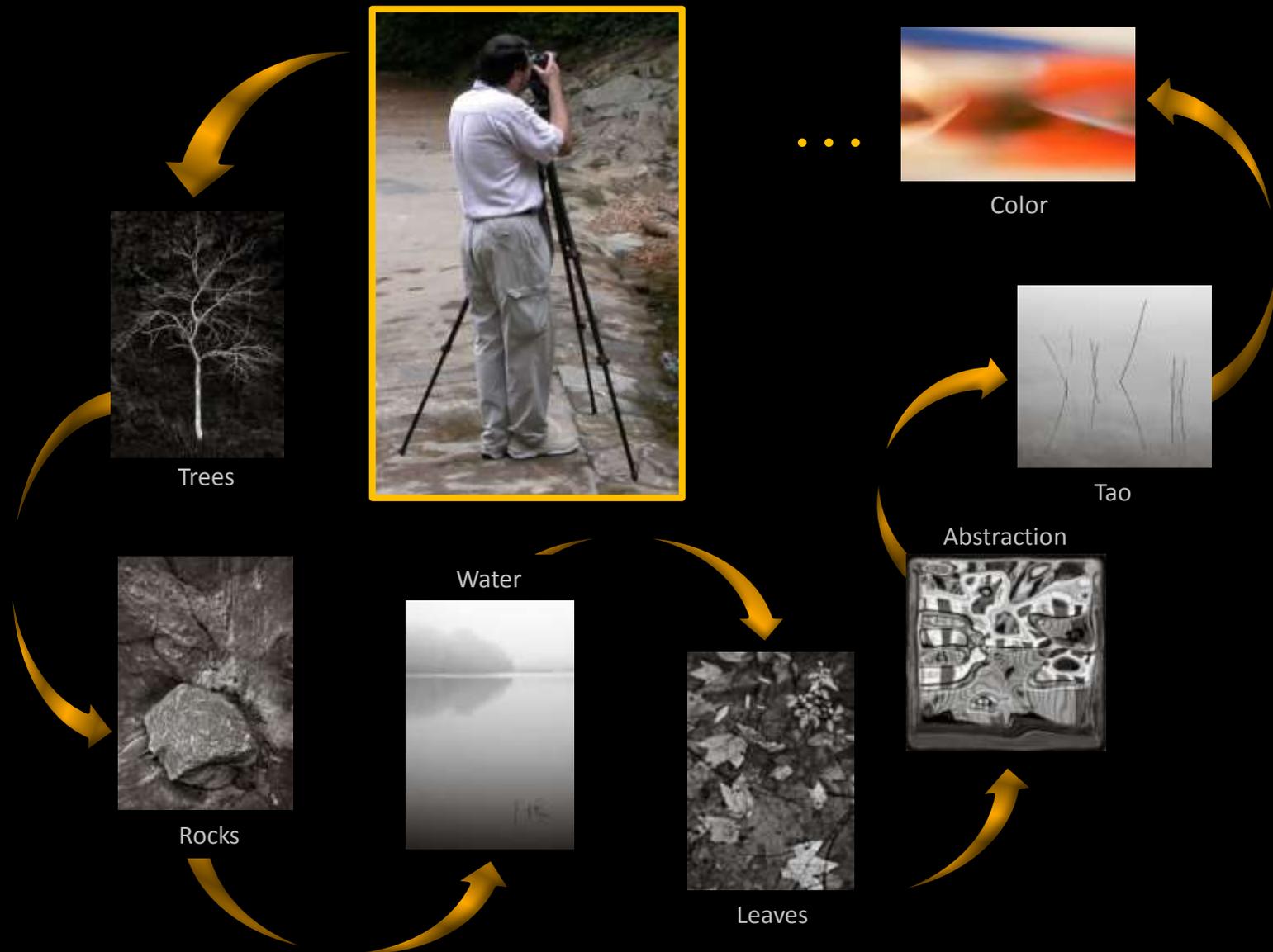
**Photographer B**

Dilapidated door,  
Contrast

**Photographer C**

Tones,  
Forms

# Then, the *pictures* discover a *path*...



# Eventually, the *path* defines the *photographer*



“Through the years,  
a man peoples a space with images  
of provinces, kingdoms, mountains,  
bays, ships, islands, fishes, rooms,  
tools, stars, horses and people.

Shortly before his death,  
he discovers that the  
patient labyrinth of lines traces  
the image of his own face.”

— Jorge Luis Borges (1899-1986)

# Outline of Lecture

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East / West / Complexity ... photography

*If  
interest  
warrants*



# Ching-te Ch'uan Teng-lu (*“Transmission of the Lamp”*)

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“Before I had studied Zen for thirty years,  
I saw mountains as mountains, and waters as waters...

# Ching-te Ch'uan Teng-lu (*“Transmission of the Lamp”*)

---

“Before I had studied Zen for thirty years,  
I saw mountains as mountains, and waters as waters...

When I arrived at a more intimate knowledge, I came to the point where I saw  
that mountains are not mountains, and waters are not waters.

# Ching-te Ch'uan Teng-lu (*“Transmission of the Lamp”*)

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“Before I had studied Zen for thirty years,  
I saw mountains as mountains, and waters as waters...

When I arrived at a more intimate knowledge, I came to the point where I saw  
that mountains are not mountains, and waters are not waters.

But now that I have got its very substance I am at rest.  
For it's just that I see mountains once again as mountains,  
and waters once again as waters.”

# A Lesson From Art: *East vs. West*



Hung-jen, 1658



Gao Yang, 1608



William Bennett, *Niagara Falls*, 1840



Edward Hopper, *American Landscape*, 1920



Albert Bierstadt, *Lake Lucerne*, 1858

# A Lesson From Art: *East vs. West*



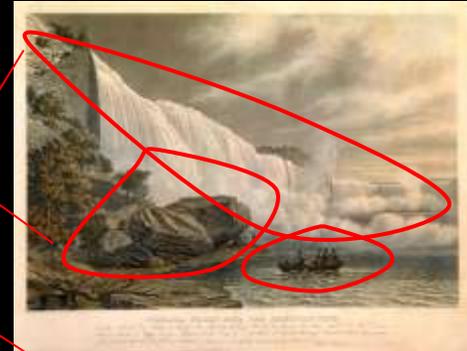
Hung-jen, 1658



Gao Yang, 1608

Focus on  
things

Parts,  
wholes, and  
landscapes  
— yes —  
but the eye  
is made to  
wander  
from **thing**  
to **thing**



William Bennett, *Niagara Falls*, 1840



Edward Hopper, *American Landscape*, 1920

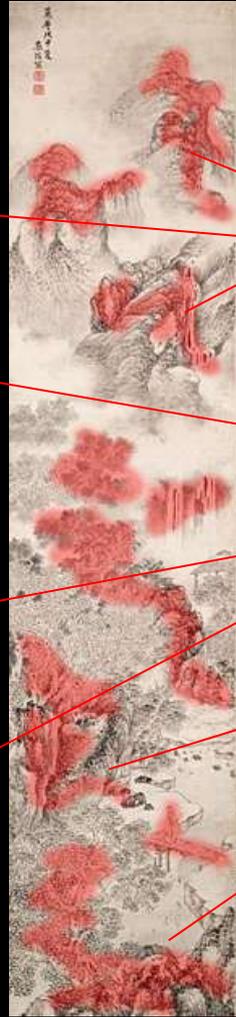


Albert Bierstadt, *Lake Lucerne*, 1858

# A Lesson From Art: *East vs. West*



Hung-jen, 1658



Gao Yang, 1608

Focus on harmony  
The eye is never anchored on any one thing;  
Distinction between part/whole; near/far invisible



William Bennett, *Niagara Falls*, 1840

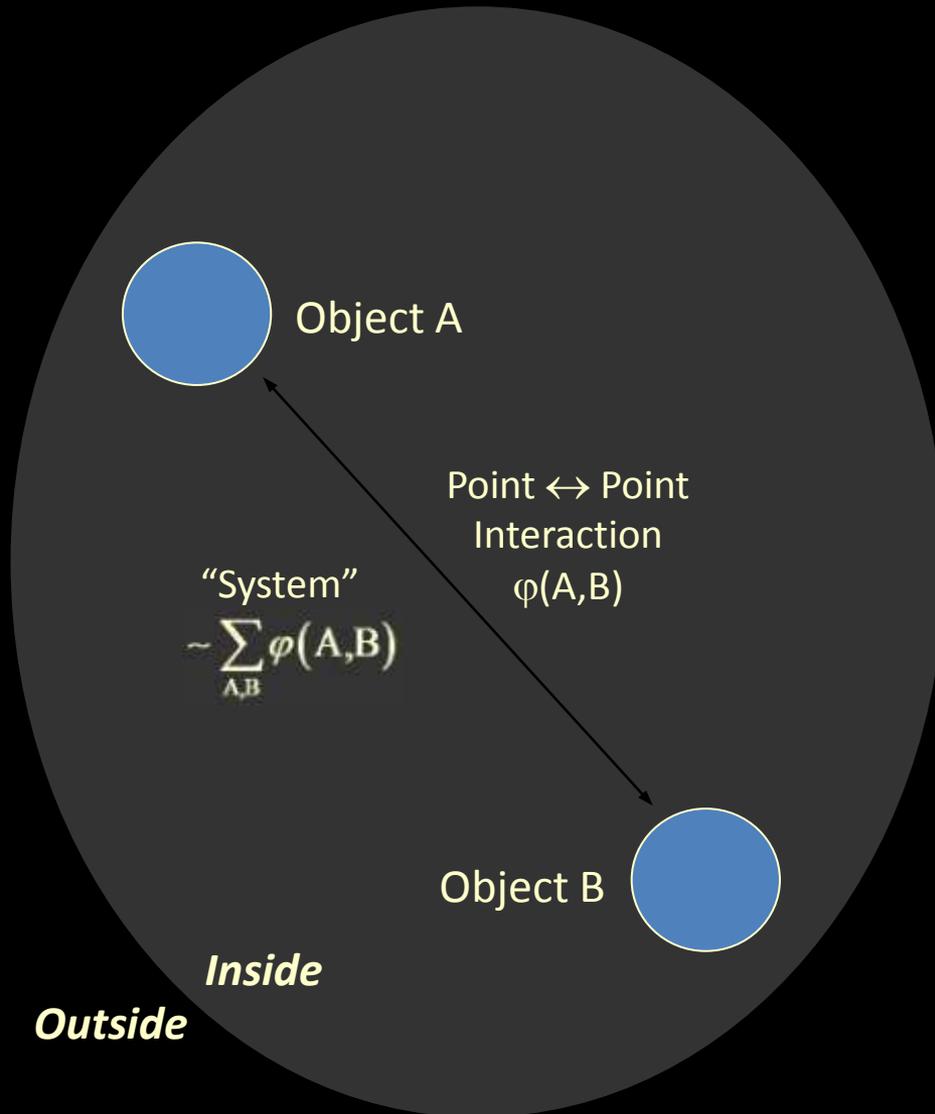


Edward Hopper, *American Landscape*, 1920



Albert Bierstadt, *Lake Lucerne*, 1858

# Complex Systems: A Gentle Introduction

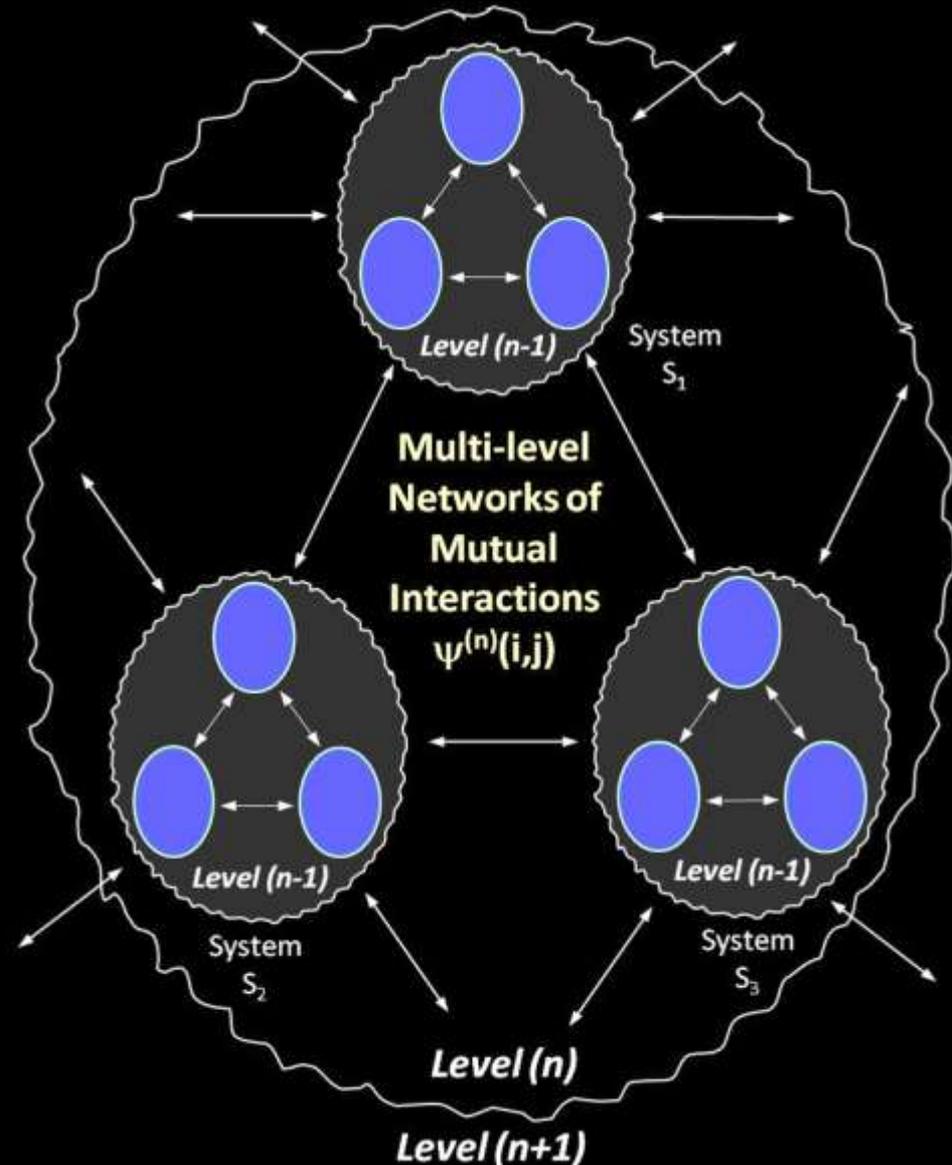


- Static
- Linear
- Homogeneous
- In Equilibrium
- Stable
- Predictable
- Reductionist
- “Closed System”
- Autonomous

*How Conventional (Western) Science “Sees” the World...*

# Complex Systems: A Gentle Introduction

- Dynamic
- Nonlinear
- Heterogeneous
- Far from Equilibrium
- Poised near Edge-of-Chaos
- Unpredictable
- Holistic
- “Open System”
- Interconnected
- *Universal Behaviors?*

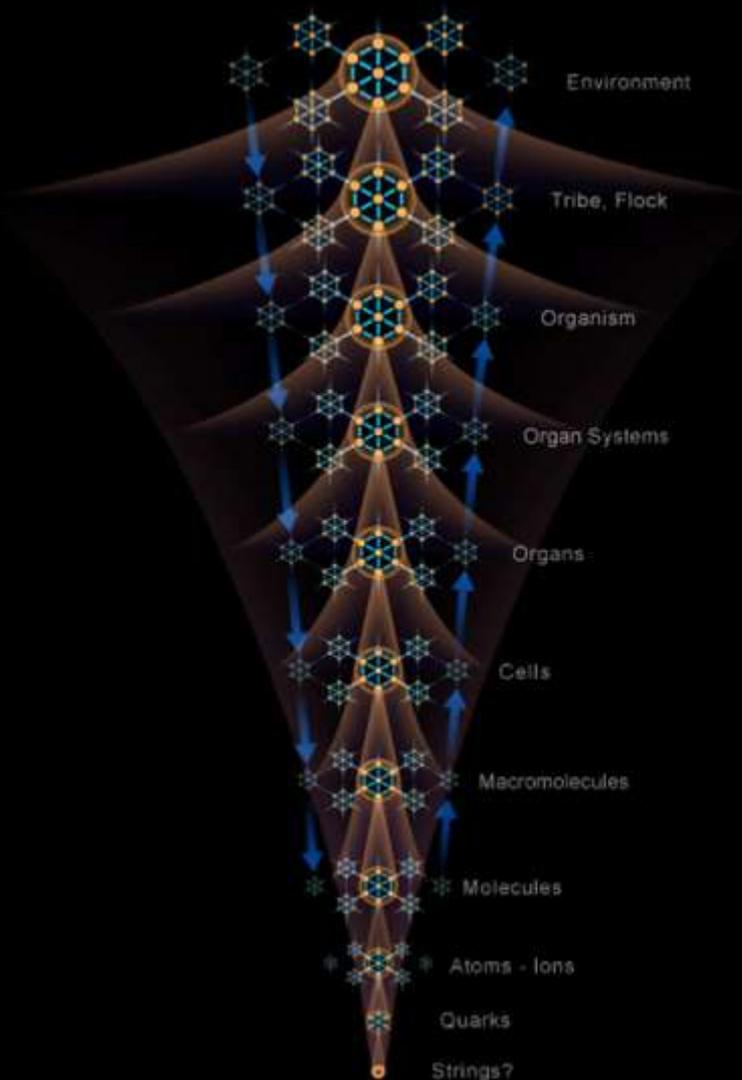


*How Complex Systems Theory “Sees” the World...*

# Complex Systems: A Gentle Introduction

## Properties

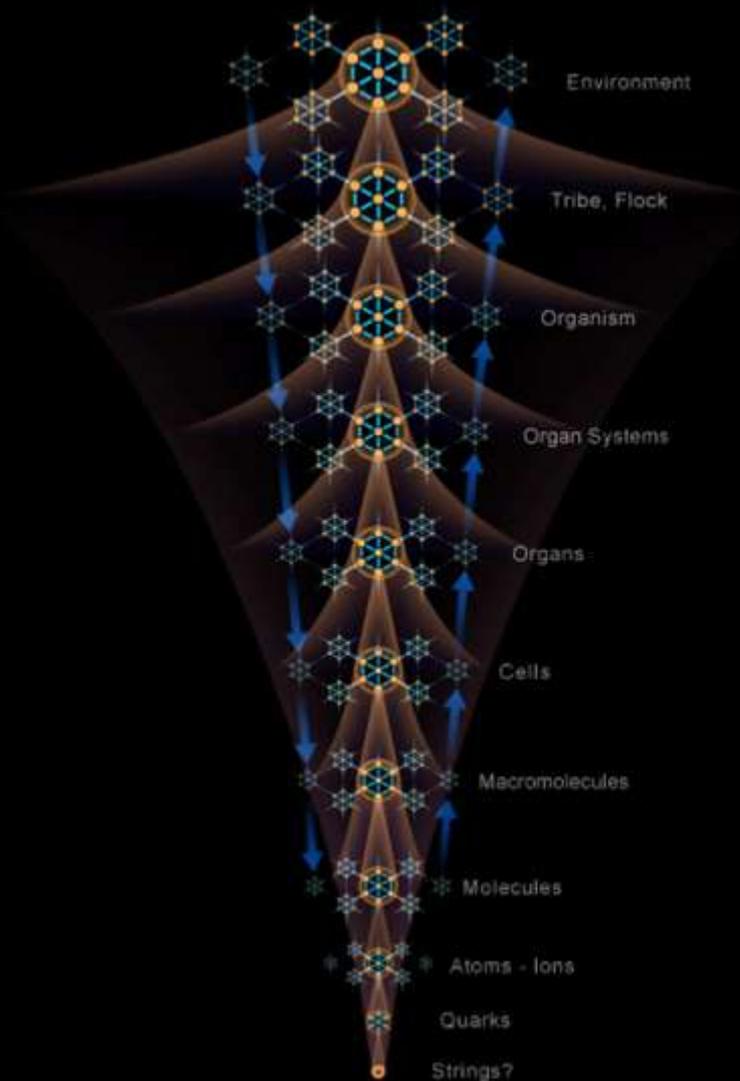
- **Diverse heterogeneity**  
→ Components defined by many properties and behaviors
- **Nonlinear interactions**  
→ Small perturbations may cause a large effect
- **Local information processing / decentralized**  
→ Components only know a small “part” of the system
- **Relationships contain feedback loops**  
→ Both negative (damping) and positive (amplifying) feedback
- **Multiple simultaneous scales of resolution**  
→ Agents, meta-agents, .... system
- **Self-organization & phase transitions**
- **Emergent behavior**  
→ Global patterns cannot be deduced from local behavior
- **Open to the environment**  
→ Nonequilibrium patterns & order;  
boundaries difficult to define
- **Adaptive**  
→ Prior states influence present states; learning
- **Understanding requires both analysis & synthesis**  
→ Components may themselves be “complex systems”



# Complex Systems: A Gentle Introduction

## Examples

- Biological cells, organisms
- Global climate patterns (Lovelock, ~1970s)
- Human culture (Luhmann, 1984)
- Natural ecosystems (Sigmund 1993)
- Gene-regulatory networks (Kauffman, 1993)
- Social networks (Wasserman & Faust, 1994)
- Economics / financial markets (Arthur, 1994)
- Natural evolution (Smith & Szamary, 1995)
- Biosphere (Levin, 1998)
- Insect colonies (Bonabeau, 1999)
- Brain / nervous system (Kandel & Squire, 2000)
- Information flow on the internet
- Immune system (Segel, 2000)
- Pedestrian / vehicular flow (Still, 2000)
- Communication networks (Barabasi, 2000)
- Warfare (Ilachinski/CNA, 2000)
- Terrorist networks (Ilachinski/CNA, 2007)



# 1-Dimensional Cellular Automata

---

*Using very simple “agents” (building blocks) to generate complexity...*

- Consider a one-dimensional row of cells:



# 1-Dimensional Cellular Automata

---

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- Consider a one-dimensional row of cells:



- Suppose each cell is either *on* (  ) or *off* (  )

# 1-Dimensional Cellular Automata

---

*Using very simple “agents” (building blocks) to generate complexity...*

- Consider a one-dimensional row of cells:



- Suppose each cell is either *on* (■) or *off* (□)
- **Suppose each cell turns *on* or *off* depending on whether it was on or off before and whether its *left* and *right neighbors* were on or off**

# 1-Dimensional Cellular Automata

---

*Using very simple “agents” (building blocks) to generate complexity...*

- Consider a one-dimensional row of cells:



- Suppose each cell is either *on* (■) or *off* (□)
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- **Choose a specific rule for this (out of a total of  $2^8=256$  possible rules):**



# 1-Dimensional Cellular Automata

*Using very simple “agents” (building blocks) to generate complexity...*

- Consider a one-dimensional row of cells:



- Suppose each cell is either *on* (■) or *off* (□)
- Suppose each cell turns *on* or *off* depending on whether it was on or off before and whether its *left* and *right neighbors* were on or off
- Choose a specific rule for this (out of a total of  $2^8=256$  possible rules):



*Pretty simple!*

*But, what happens after a row of random cells “evolves” in time?*

# Let's Look at a Few Steps ...

*Start with a few random ON cells:*



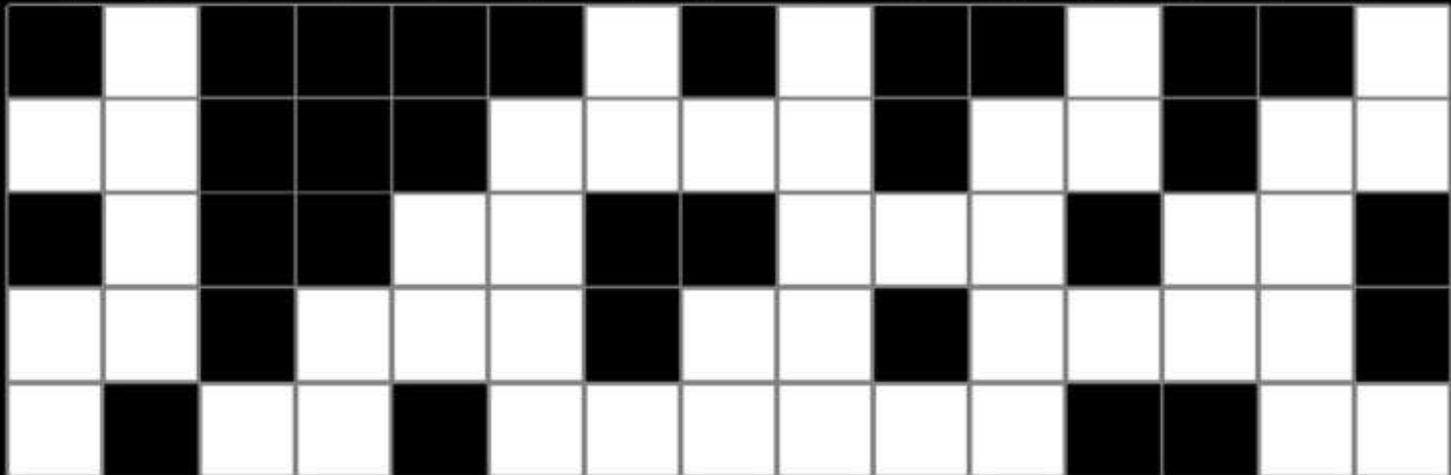
$t=0$

$t=1$

$t=2$

$t=3$

$t=4$

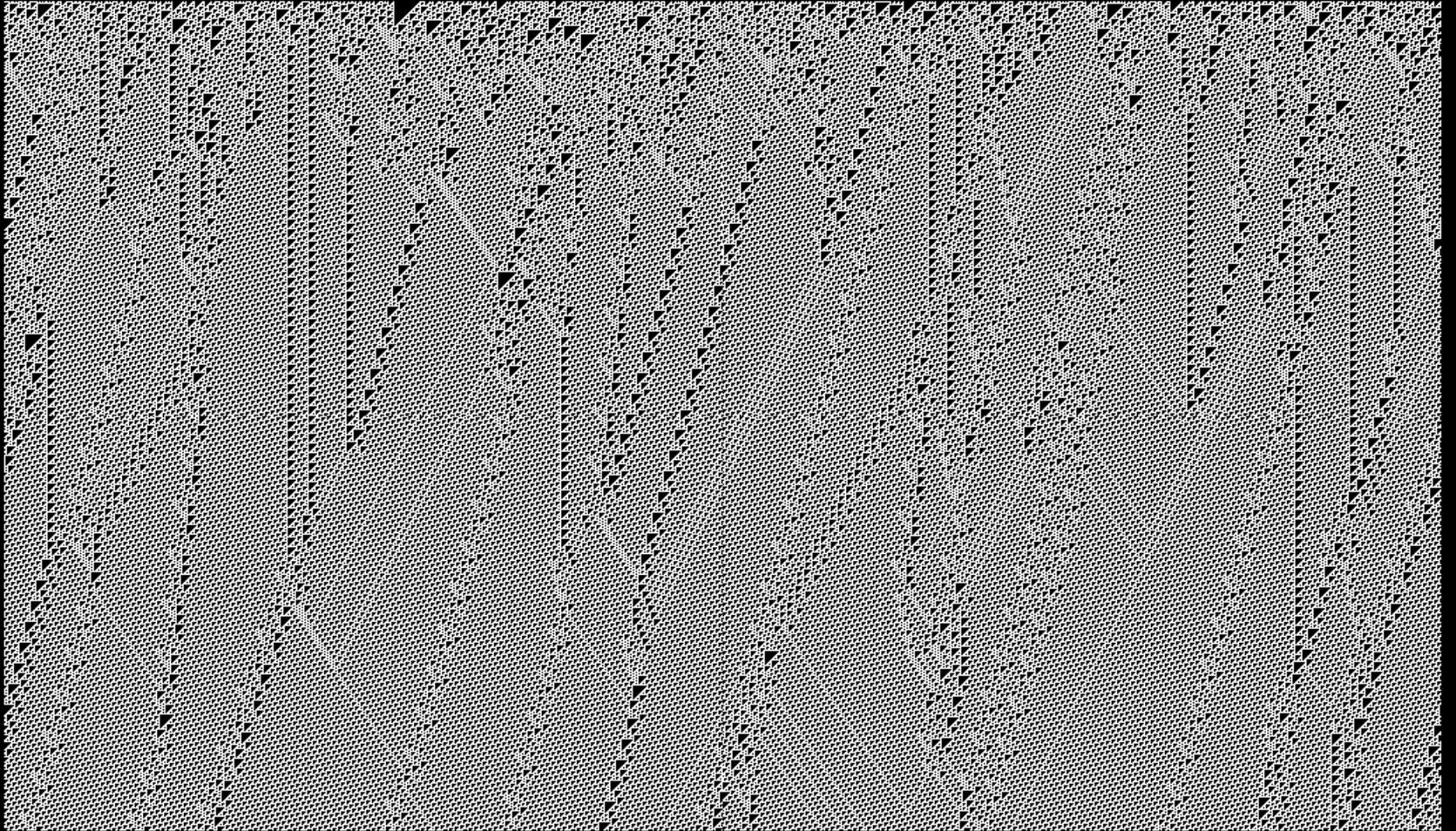


*Still pretty simple..nothing interesting yet!*

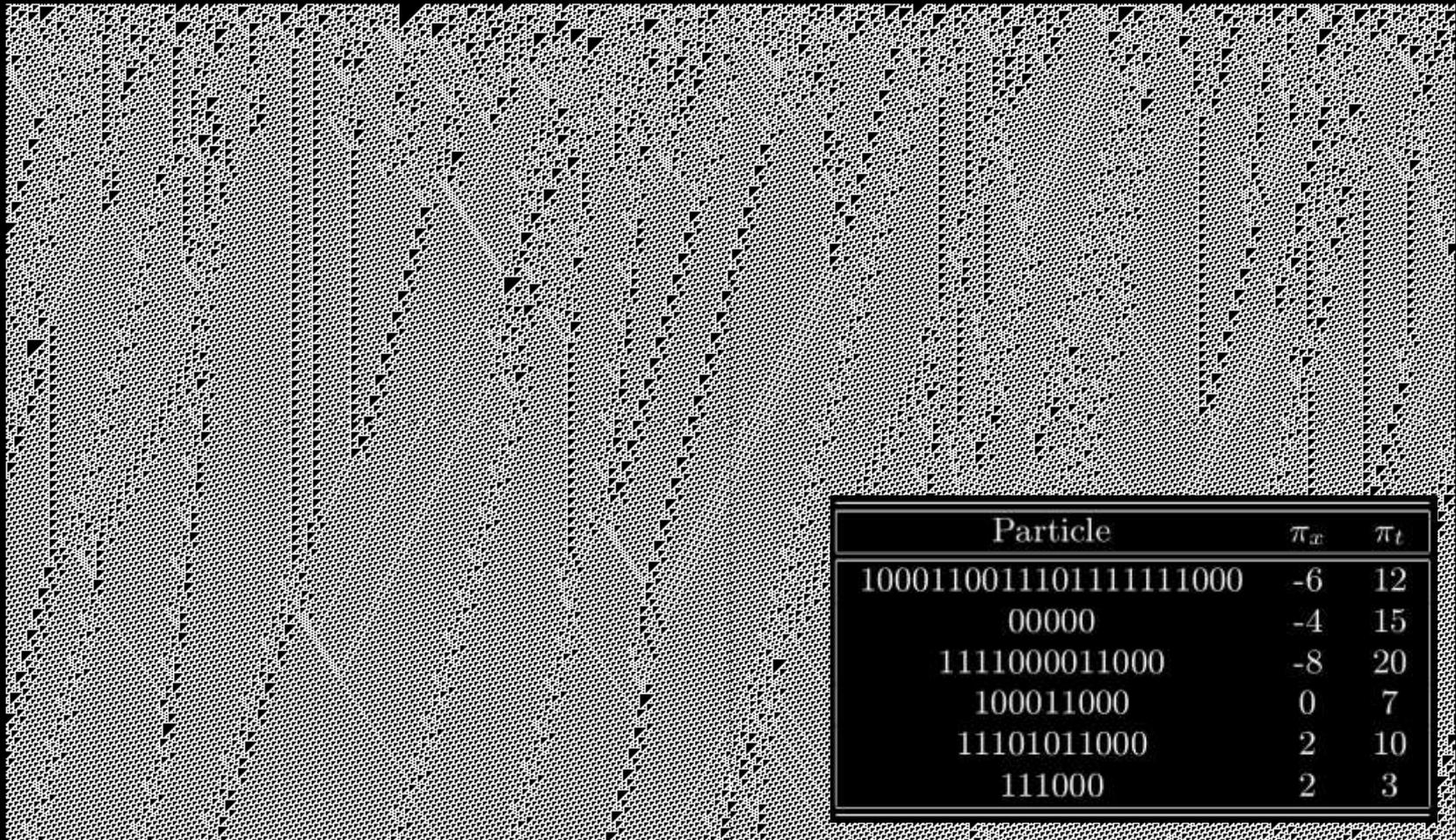
*What if we look at many cells evolving for longer times?*

# Simplicity Breeds Complexity!

---



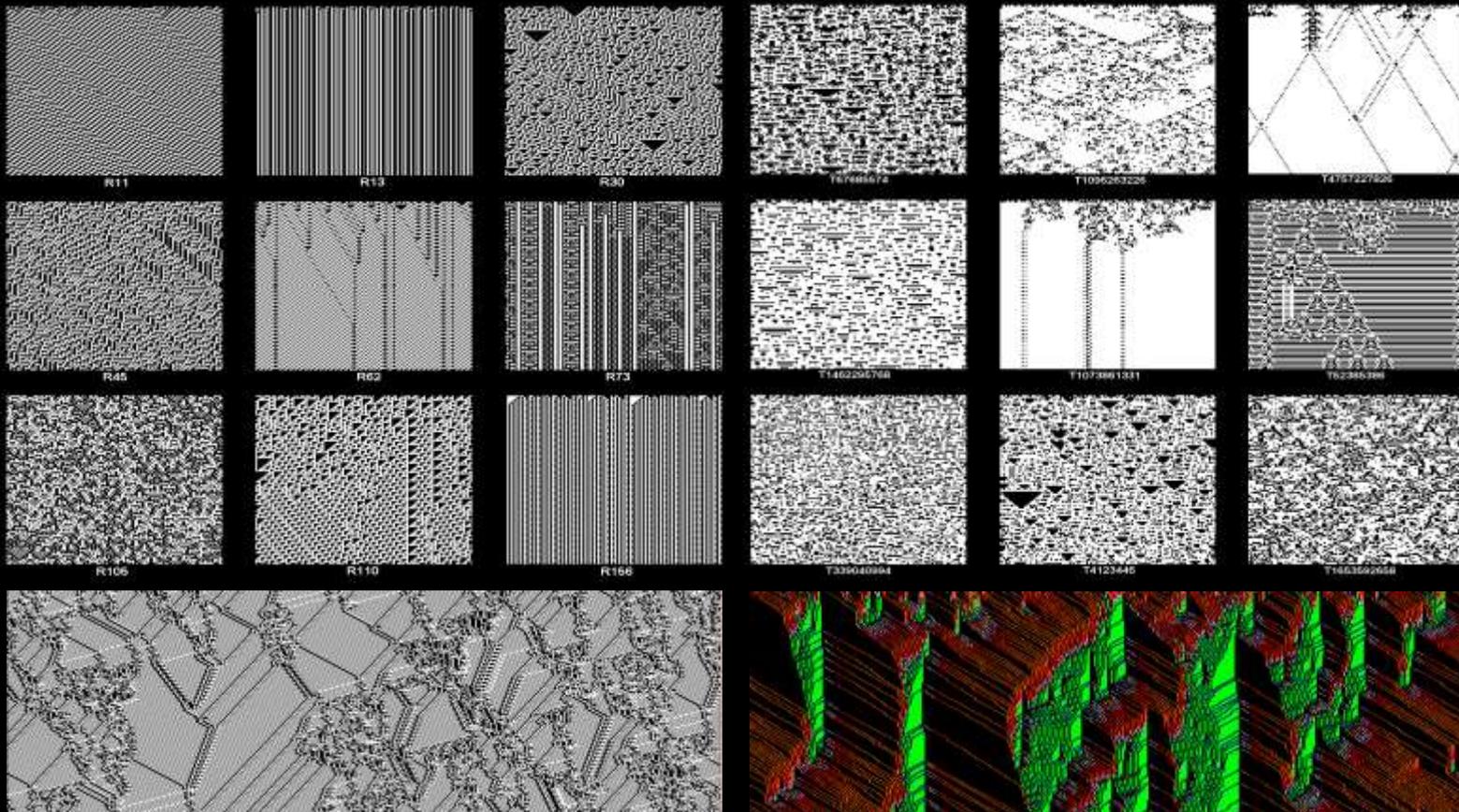
# Simplicity Breeds Complexity!



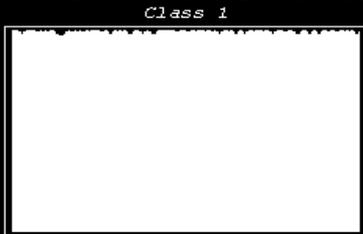
Alternative “explanation” → *Particles of form...*

...BBBBPBB...BB...BBBP'BB...BBBP''BBB...

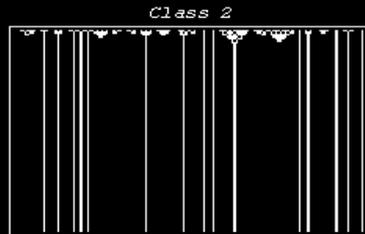
# Other Rules: A Universe in 1-Dimension...



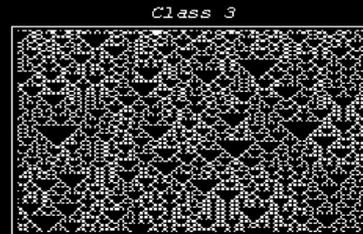
## Wolfram CA-Classification:



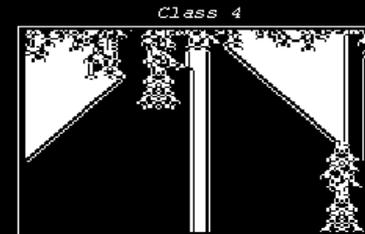
Fixed State



Periodic State

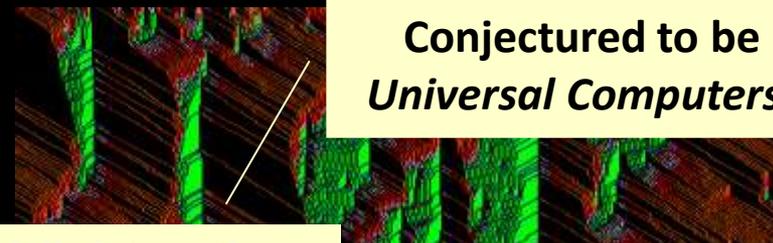
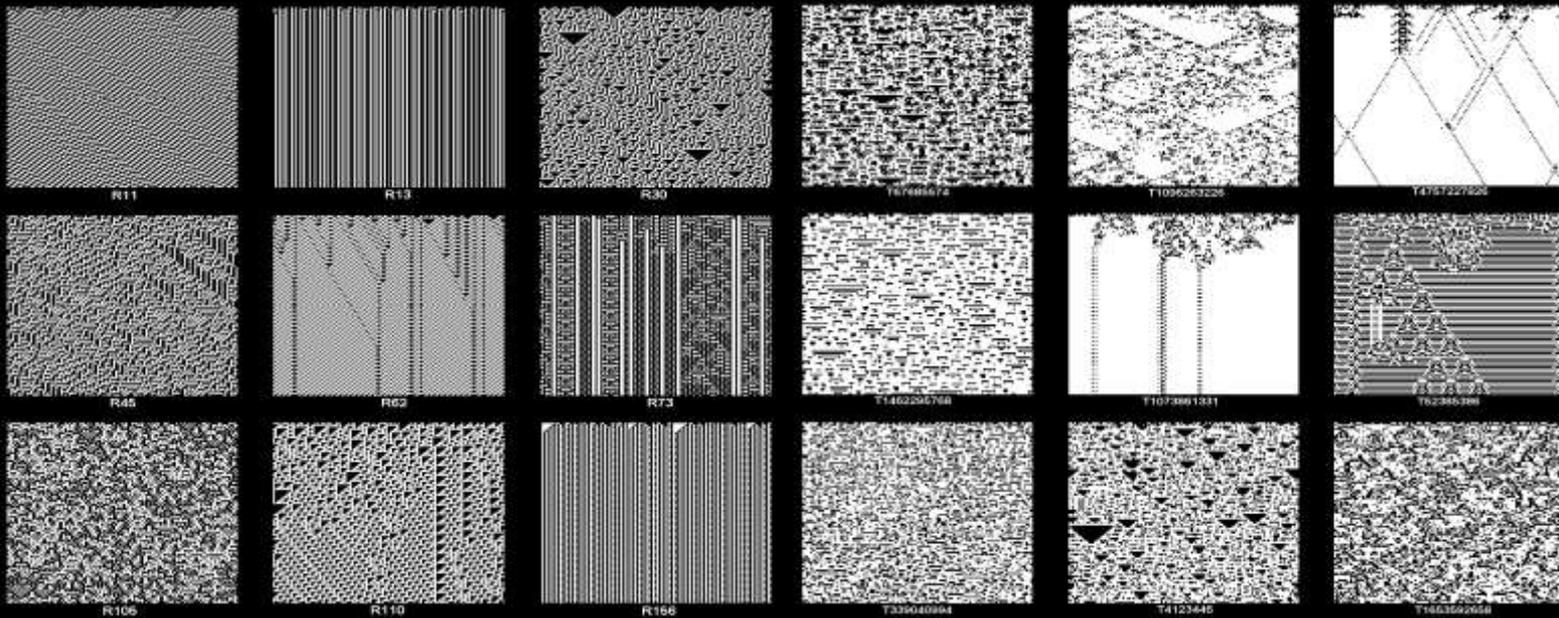


Chaotic State



Complex State

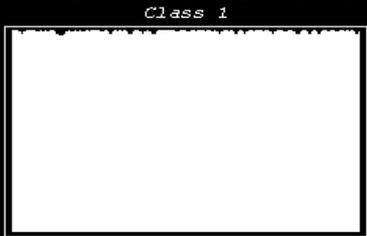
# Other Rules: A Universe in 1-Dimension...



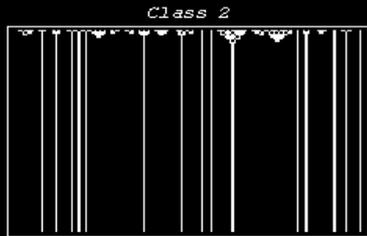
Conjectured to be *Universal Computers!*

Especially interesting...

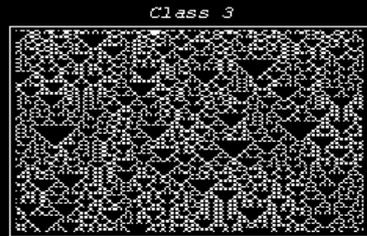
Wolfram CA-Classification:



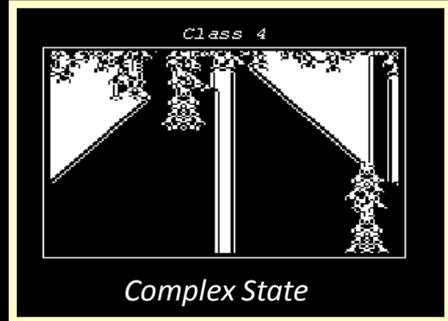
Fixed State



Periodic State



Chaotic State



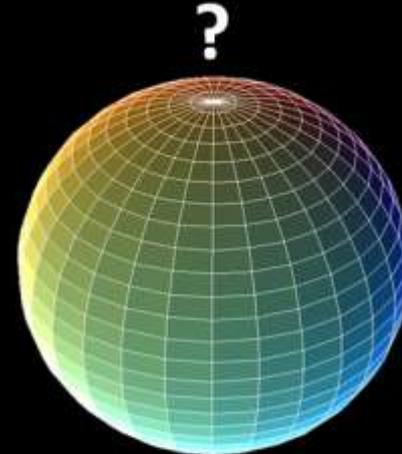
Complex State

“If patterns of ones and zeroes were  
'like' patterns of human lives and deaths,  
if everything about an individual could be  
represented in a computer record  
by a long string of ones and zeroes,  
then what kind of creature could be  
represented by a long string of lives and deaths?”

— *Thomas Pynchon, Vineland*

# What do Physics & Complexity have to do with Art & Photography?

$$\begin{aligned} \dot{\mathbf{p}} &= \frac{\partial H}{\partial \mathbf{q}} & \dot{\mathbf{q}} &= \frac{\partial H}{\partial \mathbf{p}} & \nabla \cdot \mathbf{E} &= 4\pi\rho & \nabla \times \mathbf{E} &= -\frac{1}{c} \frac{\partial \mathbf{B}}{\partial t} \\ \nabla \cdot \mathbf{B} &= 0 & PV &= nRT & S &= k \ln \Omega & \frac{dS}{dt} &\geq 0 \\ \Delta x \Delta p_x &\geq \frac{1}{2} \hbar & \nabla \times \mathbf{B} &= \frac{4\pi}{c} \mathbf{J} + \frac{1}{c} \frac{\partial \mathbf{E}}{\partial t} & \Delta E \Delta t &\geq \frac{1}{2} \hbar \\ dE &= dQ - dW & G_{\mu\nu} &= -8\pi G T_{\mu\nu} \\ i\hbar \frac{\partial \Psi}{\partial t} &= -\frac{\hbar^2}{2m} \frac{\partial^2 \Psi}{\partial x^2} + V(x)\Psi(x,t) \equiv \hat{H}\Psi(x,t) \end{aligned}$$



Reality

**Parts**  
*(Conceptual Building Blocks)*

**Syntax**

**Grammar**

**Language**



Particles (P, n, e <sup>-</sup> , π, ν, ...)	
Mass (m)	Energy (E)
Inertia (I)	Fine-Structure Constant (α)
Momentum (p)	Speed of Light (c)
Planck's Constant (h)	Spin (s)
Gravitational constant (G)	

**Traditional Physics**

# What do Physics & Complexity have to do with Art & Photography?

**Self-Organized Criticality**

**Complexity**



$$D(s) = s^{-\beta} \quad P(k) \sim k^{-\alpha}$$

**Metastability**      **Emergence**

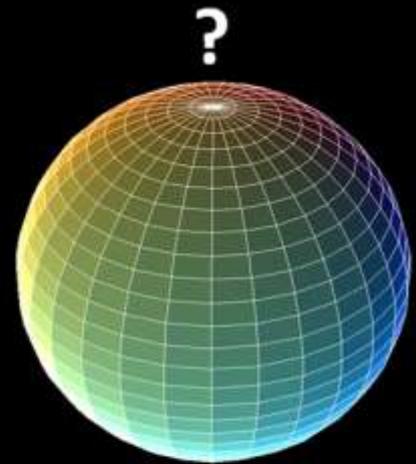


$$\sigma_{i,j}^{(t+1)} = \phi(\sigma_{i,j}^{(t)}, \sigma_{i-1,j}^{(t)}, \sigma_{i+1,j}^{(t)}, \sigma_{i,j-1}^{(t)}, \sigma_{i,j+1}^{(t)})$$

$$S(t) = -\frac{1}{N} \sum_{i=1}^{2^N} p_i^t \log_2 p_i^t$$

$$D_F = \lim_{\epsilon \rightarrow 0} \frac{\ln [N(\epsilon)]}{\ln(1/\epsilon)}$$

**Autopoiesis**

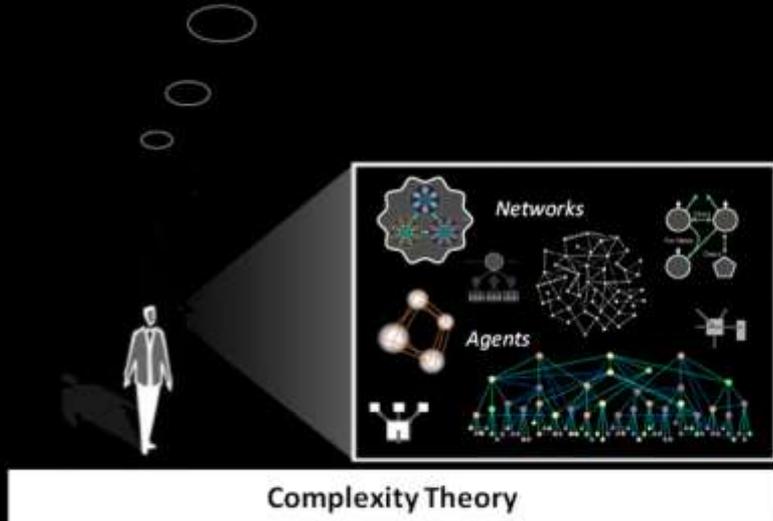
**Reality**

**Parts**  
(Conceptual Building Blocks)

**Syntax**

**Grammar**

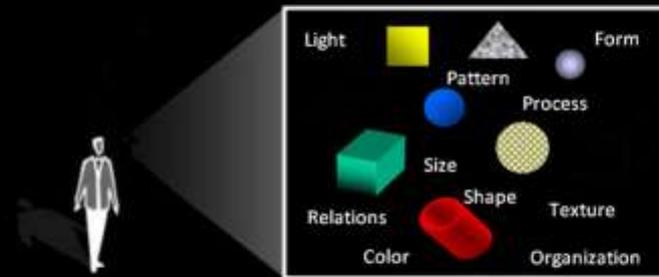
**Language**



Graphical elements adapted from [www.idiagram.com](http://www.idiagram.com)

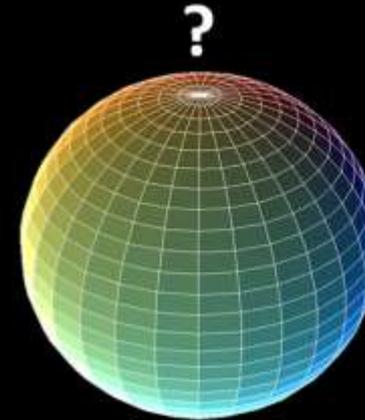
# What do Physics & Complexity have to do with Art & Photography?

- 
1. Levels of Scale
  2. Strong Centers
  3. Boundaries
  4. Alternating Repetition
  5. Positive Space
  6. Good Shape
  7. Local Symmetry
  8. Deep Interlock & Ambiguity
  9. Contrast
  10. Gradients
  11. Roughness
  12. Echoes
  13. The Void
  14. Simplicity / Inner-Calm
  15. Not-Separateness



Art / Photography

Graphical elements adapted from [www.idiagram.com](http://www.idiagram.com)



Reality

**Parts**  
*(Conceptual Building Blocks)*

**Syntax**

**Grammar**

**Language**

**Laws of Beauty?**

---

Christopher Alexander, *Nature of Order*  
Center for Environmental Structure, 2003

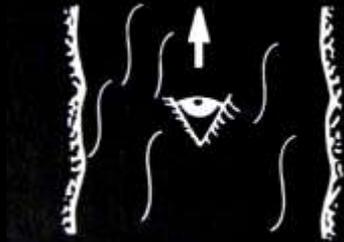
“Photography is a *language*...

...the concept underlying  
this phrase is a very important one...

Just as in the media of the written word we have  
poems, essays, scientific and journalistic reports,  
novels, dramas and catalogues, so with photography  
we touch the domains of *science, illustration,*  
*documentation and expressive art.*”

— *Ansel Adams*

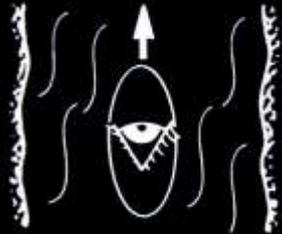
# Complexity Theory & Photography



The observer is the stream  
(Complexity / Systems theory)

## Level 3: Lose distinction between “inside” and “outside”

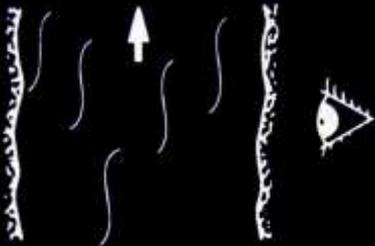
- Forget about *things*...
- Forget about conventional *categories*...
- Forget about *boundaries*...
- Use the lens to find the “I” behind the lens!



The observer attempts to  
steer a canoe in the stream  
(Quantum physics)

## Level 2: Use photography to create *self-organized pattern*

- Use *light, color, form, texture, and pattern* as primitive building blocks out of which to create “mini-worlds”



The observer is outside the stream  
(Newtonian physics)

## Level 1: Use complexity to steer your camera

- *Fractals, dynamics, symmetry, order, pattern, ...*

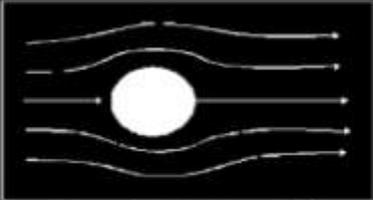
# What a *Complexicologist* thinks about when he sees a stream of water...

**Navier-Stokes Equations of Fluid Flow**

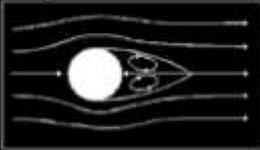
$$\begin{cases} \frac{\partial \vec{v}}{\partial t} + (\vec{v} \cdot \nabla) \vec{v} = -\frac{1}{\rho} \nabla p + \nu \nabla^2 \vec{v}, \\ \nabla \cdot \vec{v} = 0 \end{cases}$$

$\delta \equiv \lim_{n \rightarrow \infty} \frac{\alpha_n - \alpha_{n-1}}{\alpha_{n+1} - \alpha_n} = 4.6692016091$

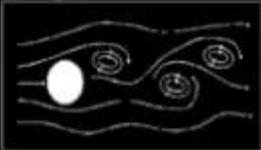
$\Delta \equiv \lim_{n \rightarrow \infty} \frac{d_n}{d_{n+1}} = 2.5029078750\dots$



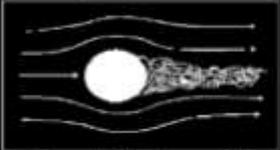
Reynolds Number  $\sim 10^2$



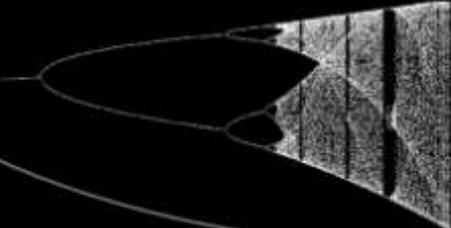
Reynolds Number  $\sim 10$



Reynolds Number  $\sim 100$



Reynolds Number  $\sim 10^6$



# How a *Photographer* uses his understanding of chaos to guide his camera as he walks by the same stream...



$$\frac{\partial \vec{v}}{\partial t} + (\vec{v} \cdot \nabla) \vec{v} = -\frac{1}{\rho} \nabla p + \nu \nabla^2 \vec{v},$$

$$\nabla \cdot \vec{v} = 0$$

$$\lambda = \lim_{n \rightarrow \infty} \frac{\lambda_n}{\lambda_{n-1}} = 2.002078756...$$

$$\delta = \lim_{n \rightarrow \infty} \frac{\theta_n - \theta_{n-1}}{\theta_{n+1} - \theta_n} = 4.6692016091$$



Reynolds Number = 10      Reynolds Number = 100      Reynolds Number = 10<sup>5</sup>

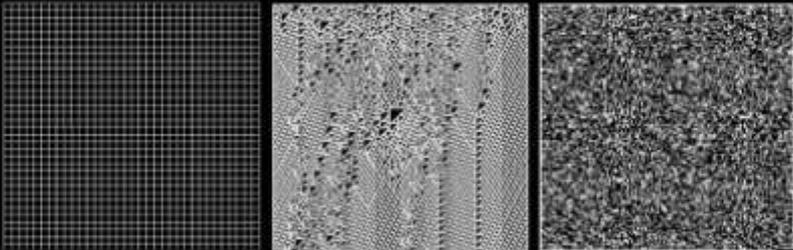
# What a *Complexicologist* thinks about when he sees something “complex” ...

$$I = -\sum_{i=1}^N p_i \log_2 p_i$$

$$K_U(s) \equiv |\mathcal{P}_U^*|$$

$$K(\mathcal{C}) = \frac{2}{(D+1)(D+2)} \sum_{i=0}^D (i+1)Q_i$$

*Computational complexity*  
*Algorithmic complexity*  
*Logical depth*  
*Thermodynamic depth*



**Order                      Complexity                      Randomness**

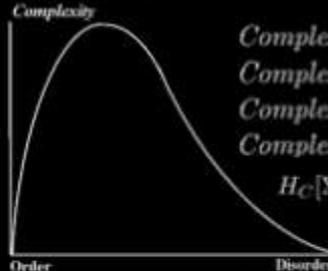
$$\mathcal{C} = \min_{A \in \mathcal{A}} \mathcal{N}_{\mathcal{A}}(f)$$

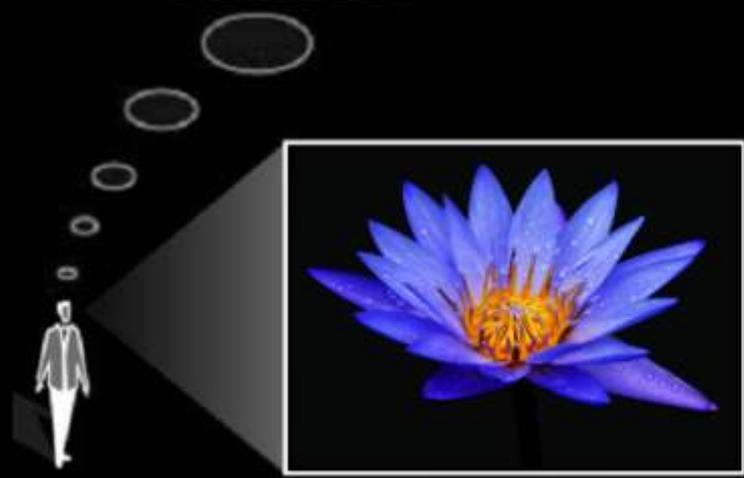
$$\mathcal{D}_U^L(\mathcal{O}) = \tau_U(\mathcal{P}^*)$$

$$\mathcal{C}(T) = \log_2 \{ f(k_T) \prod_{j=1}^k \mathcal{D}(T_j) \}$$

*Complexity as information*  
*Complexity of a graph*  
*Complexity of a simplex*  
*Complexity of a hierarchical system*

$$H_C[\Sigma_N^{(f)}] = \min_{U(\mathcal{P}) = \Sigma_N^{(f)}} \tau_U(\mathcal{P})$$





# How a Photographer uses complexity to steer his camera as he “looks” at the world...

The collage illustrates various photographic subjects: a stone archway, a tree with white blossoms, a large tree trunk, a gothic hallway, a gnarled tree branch, a blue lotus flower, a white lily, and a lily pad.

Below the collage, a diagram shows a person looking at a screen displaying mathematical formulas for Order, Complexity, and Randomness:

Order	Complexity	Randomness
$I = -\sum_{i=1}^N p_i \log_2 p_i$	$H_C[\Sigma_N^f] = \min_{\mathcal{P} \in \mathcal{P}_N^f} \tau_U(\mathcal{P})$	$K_U(s) =  \mathcal{P}_U^s $
$D_U^f(\mathcal{O}) = \tau_U(\mathcal{P}^*)$	$\mathcal{C} = \min_{A \in \mathcal{A}} \mathcal{N}_A(f)$	

# No Conclusion, But...

---

*Here are two secrets of applying  
complexity to photography (or art)...*

# Secret #1

## Capture process, not disconnected things

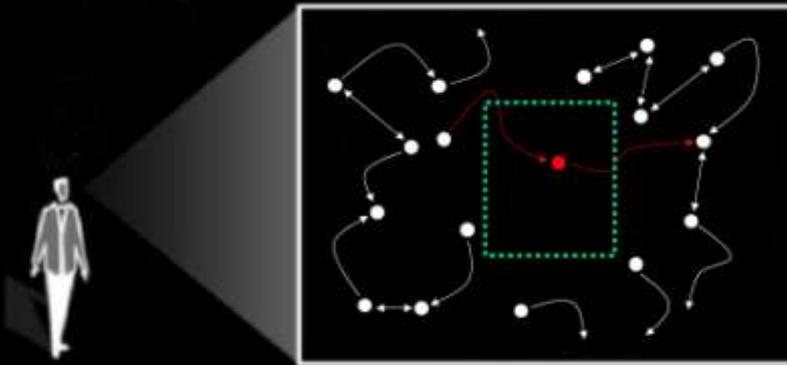
*Decisive Moment* = “The simultaneous recognition, in a fraction of a second, of the significance of an event as well as the precise organization of forms which gives that event its proper expression.”

“Above all, I craved to seize the whole essence, in the confines of one single photograph, of some situation that was in the process of unrolling itself before my eyes.”

— Henri Cartier Bresson (1908 - 2004)

How to take a *snapshot*...

- Focus on a thing(s)
- Wait for all “distractions” to disappear
- Click the shutter



# Secret #1

## Capture process, not disconnected things

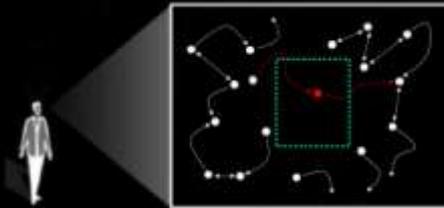
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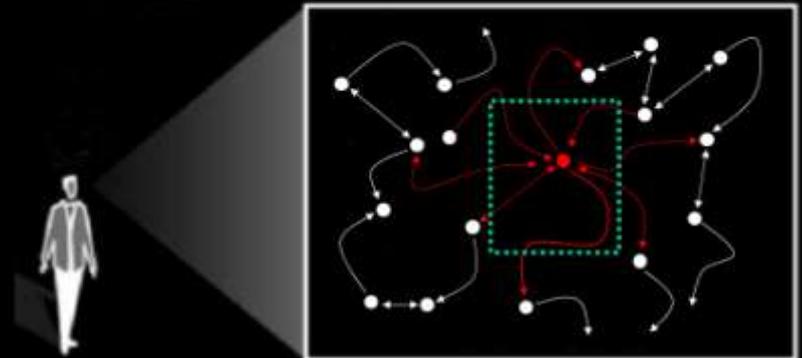
How to take a *snapshot*...

- Focus on a thing(s)
- Wait for all “distractions” to disappear
- Click the shutter



→ How to take a *photograph*...

- Focus on what is happening
- Wait for all the interconnections to become clear
- Click the shutter

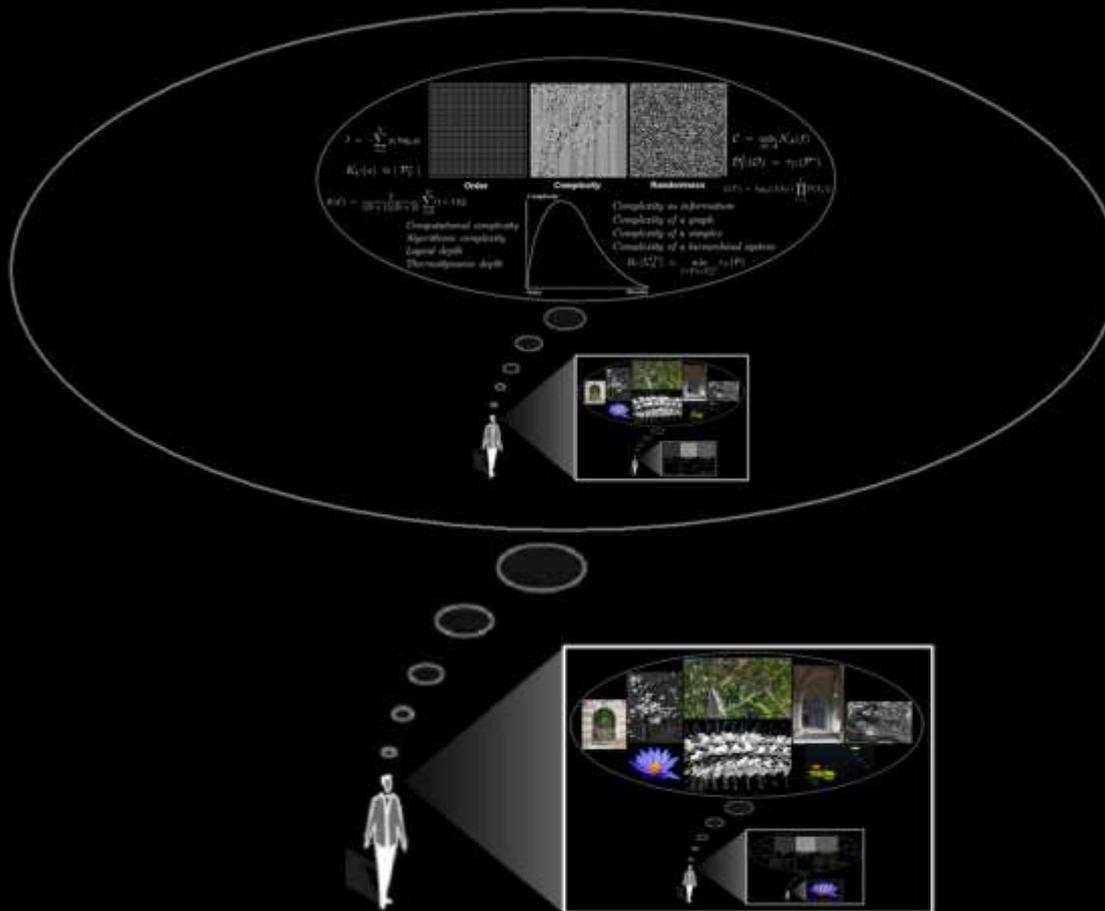


# Secret #2

## Search for the “I” behind the “eye” of the camera

[Art is a process] “...in which we give ourselves so deeply to our seeing that we take things right into ourselves and then give forth a new version of them from inside, tinted by all of the possibilities within us, transformed the way an oyster takes grit and makes a pearl.”

— Sean Kernan, *Photographer* (Lenswork, May 2004)



Please visit my website...  
<http://www.sudden-stillness.com>

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[gallery](#)

[older portfolios](#)

[books](#)

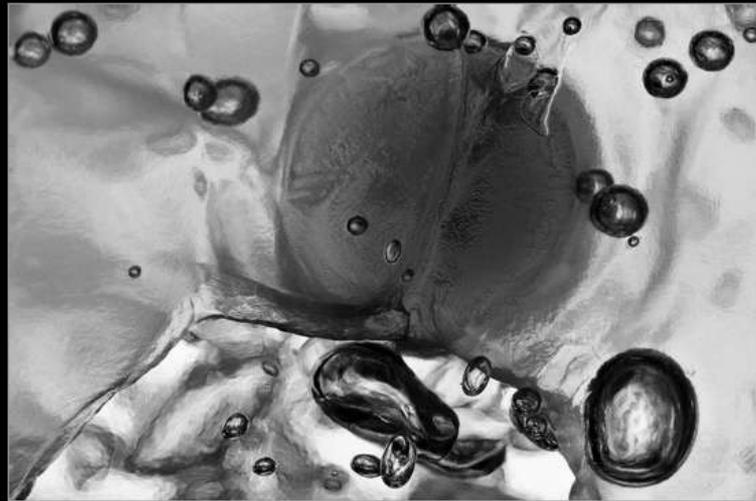
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[contact](#)

## Sudden Stillness

*Fine-Art Photography by Andy Ilachinski*



Scotland



Whorls



Micro  
Worlds



Mystic  
Flame



Glyphs



Ice



Santorini



Tao

[PORTFOLIOS](#) | [FEATURED PORTFOLIO](#) | [BLOG](#) | [SOUND](#)

# Sneak Peek: *Work in Progress* ...

---



A set of *Nambe*-like metallic salt and pepper shakers (w/shiny reflecting metallic surfaces), assorted pots and pans and formal serving trays, patterned table cloths and colored paper, and the backdrop of our dining room...

*...creates wonderful "abstract landscapes"*

<http://tao-of-digital-photography.blogspot.com/2009/12/blurred-distinctions.html>



**Questions?**