16 Principles
of the Science of Creative Intelligence

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"These 16 principles are the Laws of Nature that uphold growth and progress of everyone and everything. They are everywhere, guiding the progress and evolution of the ant and the elephant, the cell and the planets", [and our own consciousness]. (Maharishi)

1. The nature of life is to grow.
2. Order is present everywhere.
3. Life is found in layers.
4. Outer depends on inner.
5. Seek the highest first.
6. Rest and activity are the steps of progress.
7. Enjoy greater efficiency and accomplish more.
8. Every action has a reaction.
9. Purification leads to progress.
10. The field of all possibilities is the source of all solutions.
11. Thought leads to action, action leads to achievement, and achievement leads to fulfillment.
12. Knowledge is gained from inside and outside.
13. Knowledge is structured in consciousness.
14. Harmony exists in diversity.
15. Whole is contained in every part.
16. The Whole is greater than the sum of the parts.

Find principles in every CS class

➤ Universal principles or laws of nature of growth of consciousness
➤ Laws of nature are repeatable patterns that we recognize in nature based on our own consciousness, mathematics, physics, chemistry, biology, psychology, sociology and every science that studies and identifies regularities in nature
➤ Art, music, literature also express regularities and deep principles or truths in life
➤ CS: an applied science, based on mathematics and logic
➤ Software: the principles and regularities become recognized as best practices; practices and procedures found to work effectively and efficiently across many types of applications
➤ Principles of nature found in every field, including CS

Sometimes principles from SCI will illuminate CS, and sometimes our understanding of CS will deepen understanding of SCI and our personal experience and growth of consciousness

1. The Nature of Life is to Grow

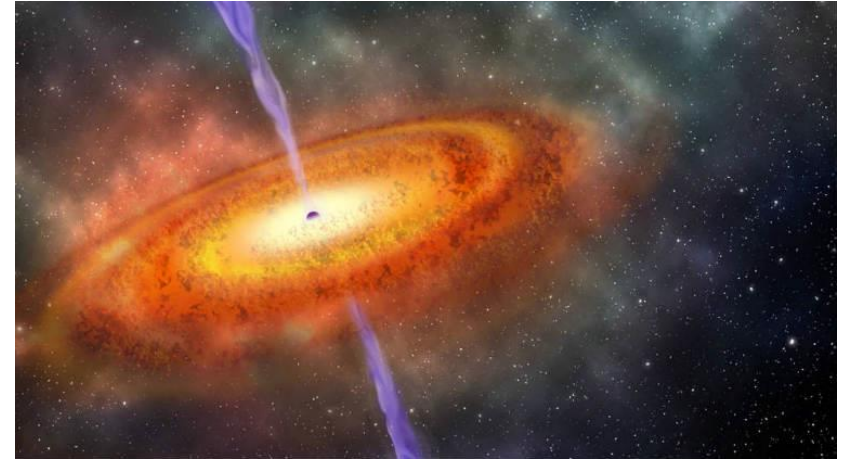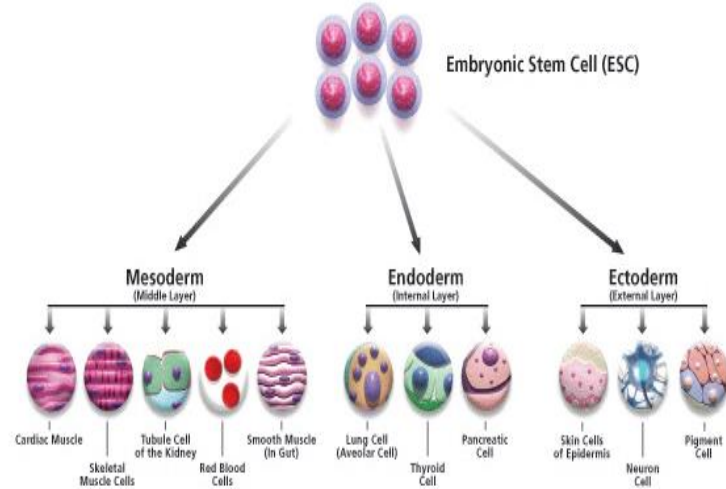Simple observation that everything that is living is always growing and evolving throughout its life

CS
- ➤ Complexity of hardware: Moore's Law

- ➤ Software from original small programs using machine language and punch cards to hundreds of millions of lines of distributed code for modern systems such as operating systems, browsers, interacting systems in The Cloud

Own consciousness
- ➤ Everyday growth of ability to observe and comprehend
- ➤ Experience a thought
- ➤ Experience pure awareness without thought
- ➤ Experience pure awareness along with thought and dynamic activity

2. Order is Present Everywhere: Universal Laws of Nature

Chaos Theory: What appears random is Orderly

... if we look closely enough at the randomness around us patterns will start to emerge ...

- [butterfly effect](#) a small change in one state of a system can result in large differences in later states,

- sensitive dependence on initial conditions

- metaphor: butterfly in Brazil can cause a hurricane in Texas

Fractals: Geometry of Nature

a curve or geometric figure, each part of which has the same statistical character as the whole.
Fractals are useful in modeling structures (such as eroded coastlines or snowflakes) in which similar patterns recur at progressively smaller scales, and in describing partly random or chaotic phenomena such as crystal growth, fluid turbulence, galaxy formation, lightening and thunder.

2. Order is Present Everywhere

CS

➢ Everything (that works) in computing is orderly

➢ Physics, electronics, hardware, bits, bytes, data types, programs, systems, …

➢ Huge complex systems from small repeating elements

  ➢ Statements, logic, Loops and recursion

Own consciousness

➢ We are rational beings, even when not always obvious from an outsider perspective

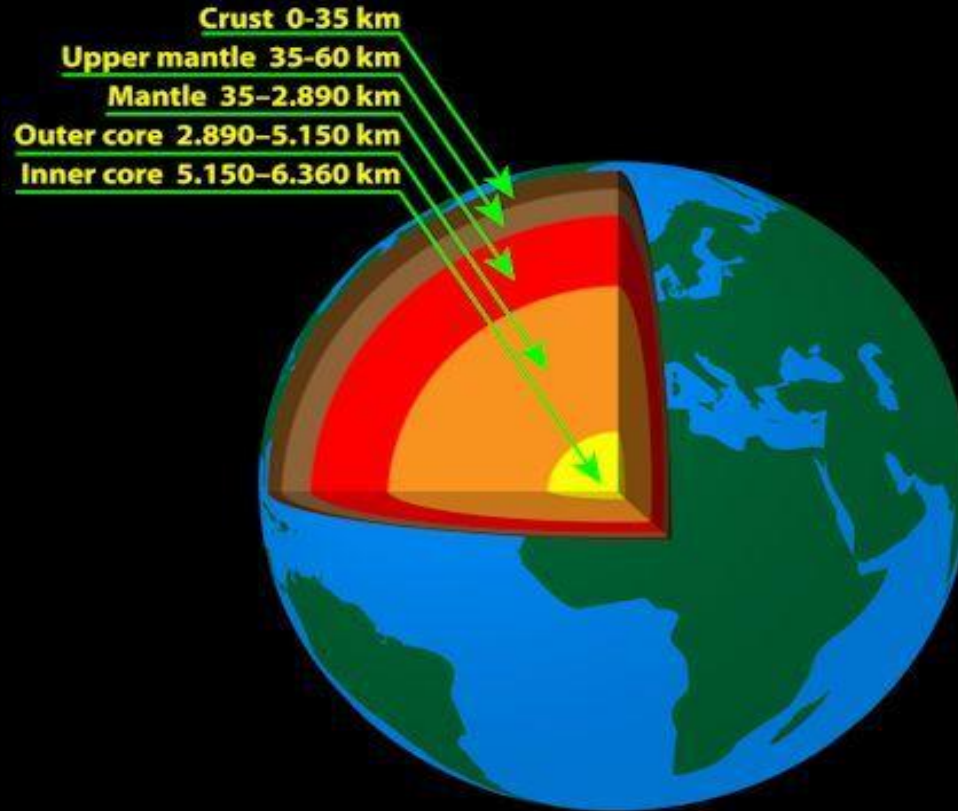➢ Experience of quieter levels of awareness, greater order, coherence

3. Life is Found in Layers (like an onion)

Rings of a Tree

The Earth is Found in Layers

Crust 0-35 km
Upper mantle 35-60 km
Mantle 35–2.890 km
Outer core 2.890–5.150 km
Inner core 5.150–6.360 km

The Physical Universe in Powers of Ten meters: Life is Found in Layers

10^{28} **Size of Observable Universe**   **Cosmology**

10^{24} **SuperCluster of Galaxies**

10^{23} **Local Cluster of Galaxies**   **AstroPhysics**

10^{20} **Our Milky Way Galaxy**

10^{14} **Our Solar System**

10^{7} **Earth**   **MacroEconomics**

10 **Continent**   **Geology**

10^{27} **Ecosystem**   **Ecology**

10^{27} **United States: Sociology, Political Science, Anthropology**

10^{27} **Fairfield**   **Hospital Medicine**

10^{2} **Arts Center**

10^{1} **Human Being**   **Biology**

10^0 **One meter**

10^{-2} **Ant**

10^{-4} **Cell Microbe**   **Microbiology**

10^{-1} **DNA**

10^{-5} **Virus**

10^{-10} **Atom**

10^{-15} **Proton/Electron**   **Chemistry**

10^{-19} **Quark**   **Elementary Particles**

10^{-34} **Superstrings**

The Planck Scale:Space & Time exist above

The Unified Field: The Vacuum State/The Absolute
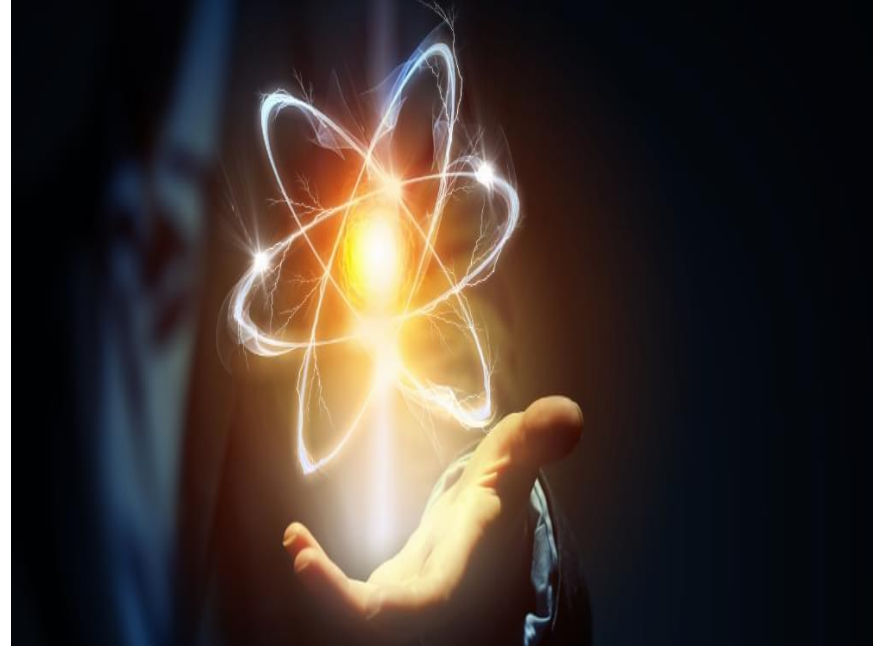
3. Life is found in layers

CS

➢ Layering a fundamental principle in CS: "no problem in CS that cannot be solved with another layer of abstraction"

➢ Everything bits and bytes,

  ➢ lo and hi power signals, …

  ➢ Then bytes into data types, instructions, programs, algorithms, applications, frameworks, etc

➢ Layers in networking, layers in hardware components, layers in software components

Own consciousness

➢ Layers of the mind: Self, ego, emotions, intellect, mind, senses

➢ Experience layers of thought when transcending

  ➢ Expressed verbal thoughts, quieter verbal thoughts, quieter more subtle, impulse …
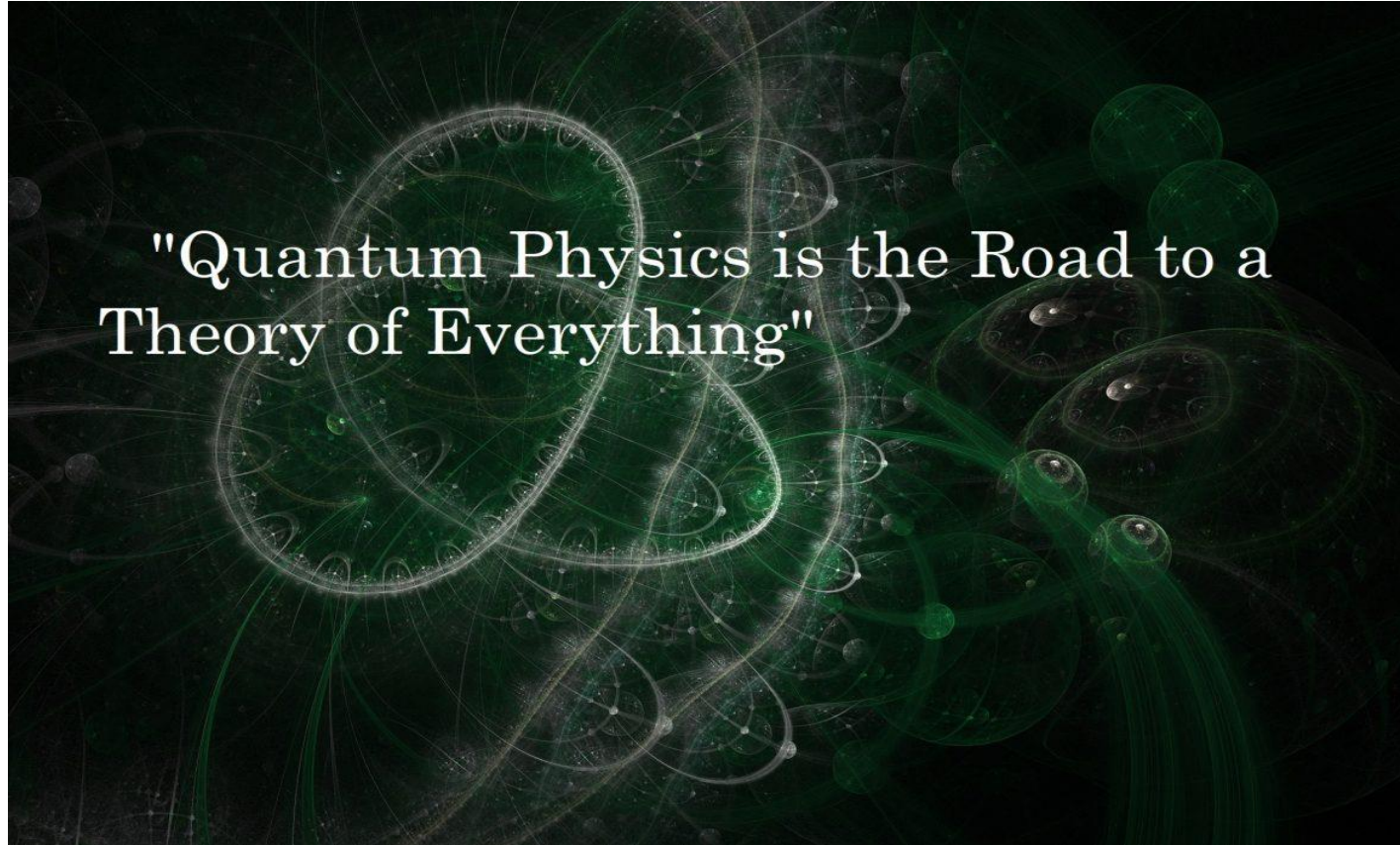
4. Outer Depends on Inner

Outer depends on inner

It's not the size of the dog in the fight, it's the size of the fight in the dog.

Mark Twain

The Ultimate Inner Reality of Quantum Physics: The Unified Field

"Quantum Physics is the Road to a Theory of Everything"

4. Outer Depends on Inner

CS

➤ GUI is what you see, but the program logic behind it is what makes it work
  "Below the surface of the machine, the program moves. Without
  effort, it expands and contracts. In great harmony, electrons scatter
  and regroup. The forms on the monitor are but ripples on the water.
  The essence stays invisibly below."
  —Master Yuan-Ma, The Book of Programming

➤ Programming languages depend on a compiler or interpreter

➤ Behind the global Internet is an unseen system of servers, wires, protocols, …

Own consciousness

➤ Our feelings, thoughts, and behavior depend on the health and state of our physiology

➤ Effectiveness of actions depends on clarity of our awareness

5. Seek the Highest First

➢ Capture the fort and then automatically control the entire territory

   ➢ If the president/king/boss supports you, then everyone else will follow

   ➢ Know that by which everything else is known

➢ CS

   ➢ Technologies and tools change very fast. Underlying principles stay the same. Know the principles and you can quickly understand and learn new technologies and tools

➢ Own consciousness

   ➢ If you are rested, alert, stable in your own awareness you can deal with any challenges

   ➢ We experience pure awareness to be a basis of calm, restful alertness, energy, happiness and preparation for dynamic and successful actions

6. Rest and Activity are the Steps of Progress

➢ Every natural system develops through steps of growth and consolidation

  ➢ Muscles require rest after exercise to grow stronger

    ➢ Resistance training causes microscopic tears which the body rebuilds during rest in a way that makes them stronger

  ➢ When we learn new material, we need to take time to use that information in some exercise and integrate it with our existing knowledge

  ➢ When action grows unprofitable, gather information; when information grows unprofitable, sleep.

    ➢ Ursula K. Le Guin, The Left Hand of Darkness

➢ CS

  ➢ Software engineering: Iterative cycles of planning, design, implementation, test are basis of modern software development

  ➢ Programming: retrieve information from a source, then process and integrate

    ➢ Validate, convert, apply business logic

➢ Own consciousness

  ➢ Inward and outward cycles of meditation

    ➢ Experience quite levels of awareness, gain deep physical rest, release stress, experience thought, realize off the mantra, now can repeat and dive deeper

6.1 Rest is Basis of Activity

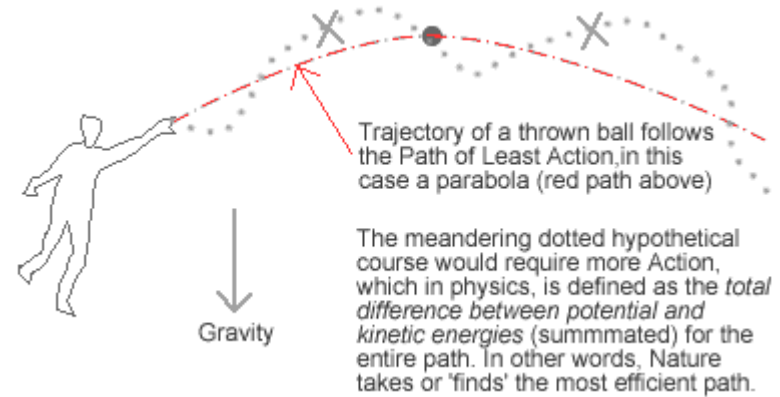# 6.2 Deep rest for dynamic activity

CS
- Planning is basis of a successful software project
- Design is basis of successful implementation
- Thought is basis of action
- Thought is a restful phase of any active endeavor
- Clear thought for successful action

Own consciousness
- Pretty obvious – poor sleep at night, then meditation dull

7. Enjoy Greater Efficiency and Accomplish More

➤ Do Less and Accomplish More

➤ Nature takes most efficient path

Trajectory of a thrown ball follows the Path of Least Action, in this case a parabola (red path above)

The meandering dotted hypothetical course would require more Action, which in physics, is defined as the *total difference between potential and kinetic energies* (summmated) for the entire path. In other words, Nature takes or 'finds' the most efficient path.

Gravity

➤ Competitive advantage through Increasing Capacity
  ➤ President vs clerk
  ➤ General vs soldier
  ➤ Rich business man versus someone without assets

8. Every Action Has a Reaction

To every action there is always opposed an equal reaction.
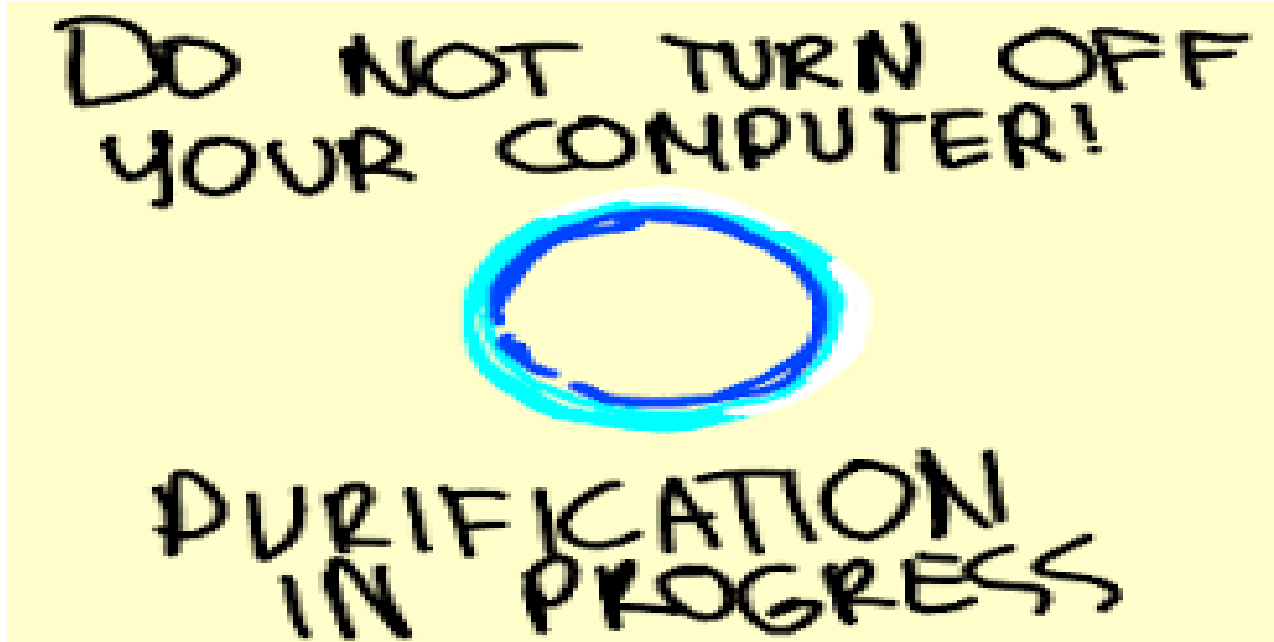
Isaac Newton

Every Action Has a Reaction

9. Purification Leads to Progress
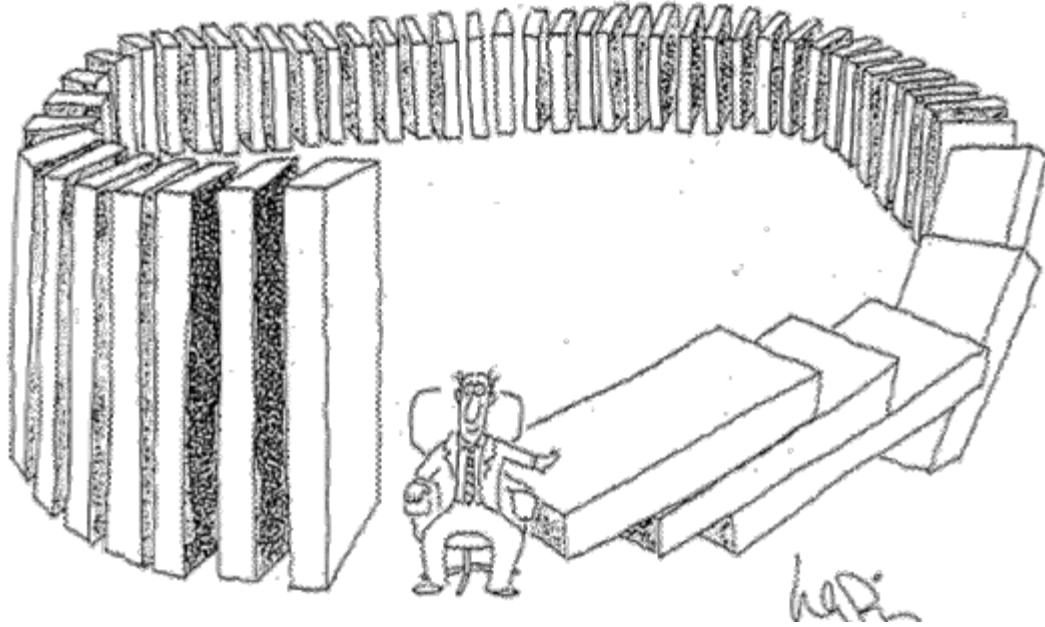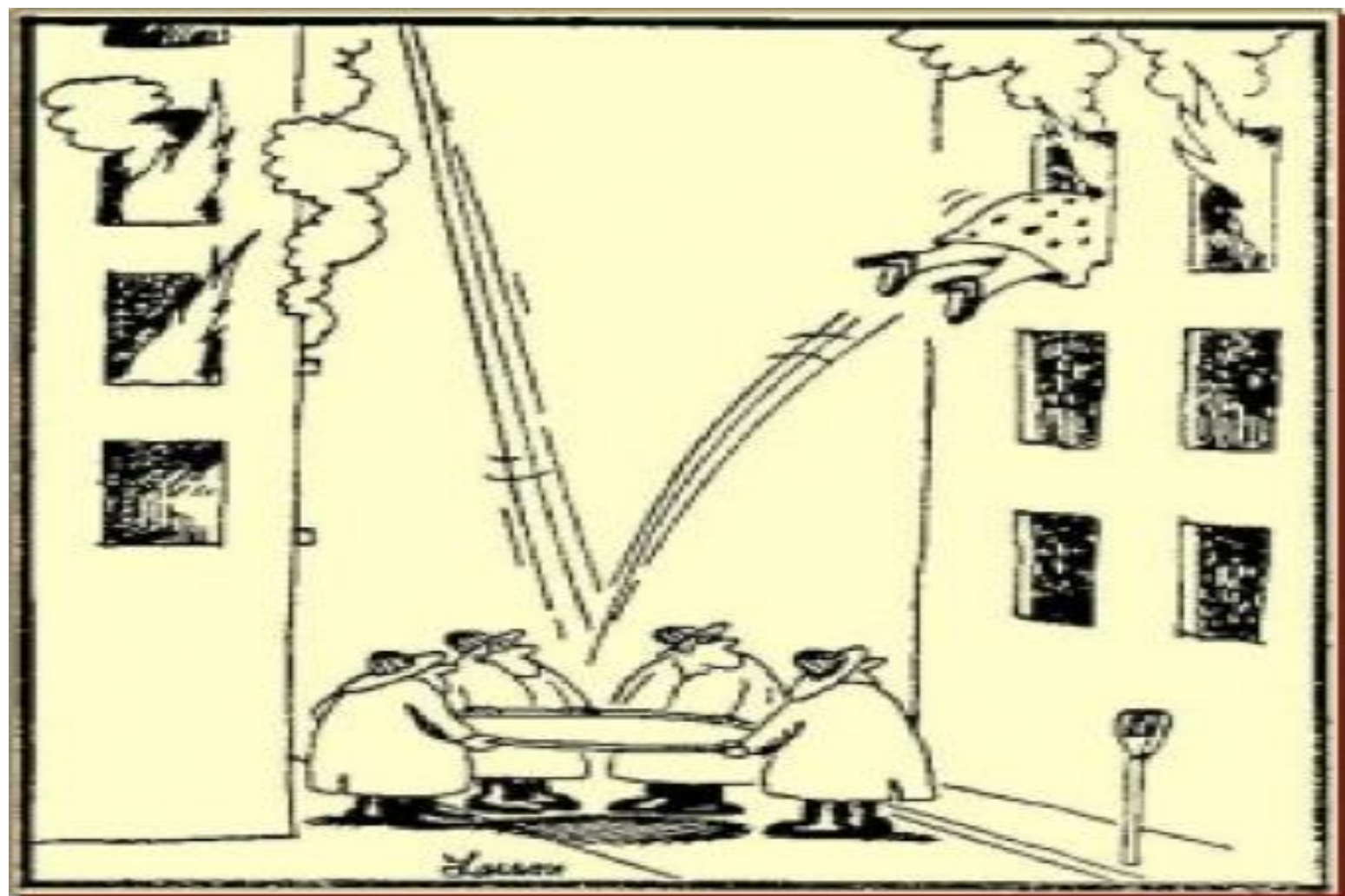
Remove the Obstacles to Progress

The Deep Rest of TC removes great Obstacles

Body

- headaches
- frequent infections
- taut muscles
- muscular twitches
- fatigue
- skin irritations
- breathlessness

Mind

- worrying
- muddled thinking
- impaired judgement
- nightmares
- indecisions
- negativity
- hasty decisions

Stress

Emotions

- loss of confidence
- more fussy
- irritability
- depression
- apathy
- alienation
- apprehension

Behavior

- accident prone
- loss of appetite
- loss of sex drive
- drinking more
- insomnia
- restlessness
- smoking more

10. The Field of All Possibilities is the Source of All Solutions

Where do Great Ideas come from?

"Everything you do—whether it's walking down the block, starting your car in the morning or hitting a bunker shot—originates in your head. The mental game isn't a segment of performance. It *is* performance."
(Dr. Brett McCabe, sports psychologist, U of Alabama athletic department)
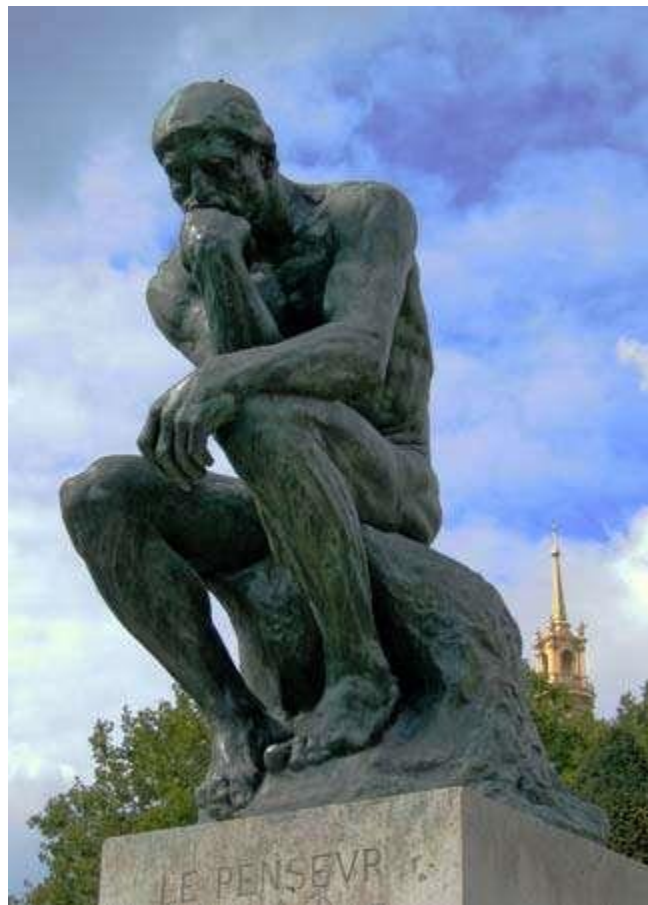
11. Thought Leads to Action, Action Leads to Achievement, and Achievement Leads to Fulfillment

12. Knowledge is Gained from Inside and Outside
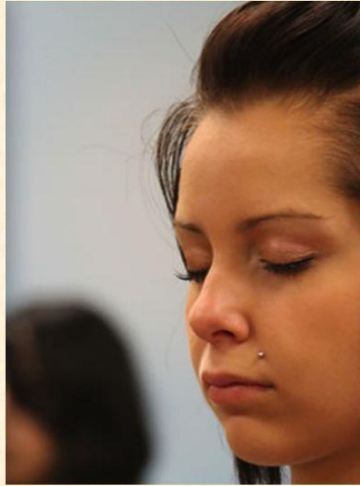
Knowledge is gained from inside and outside
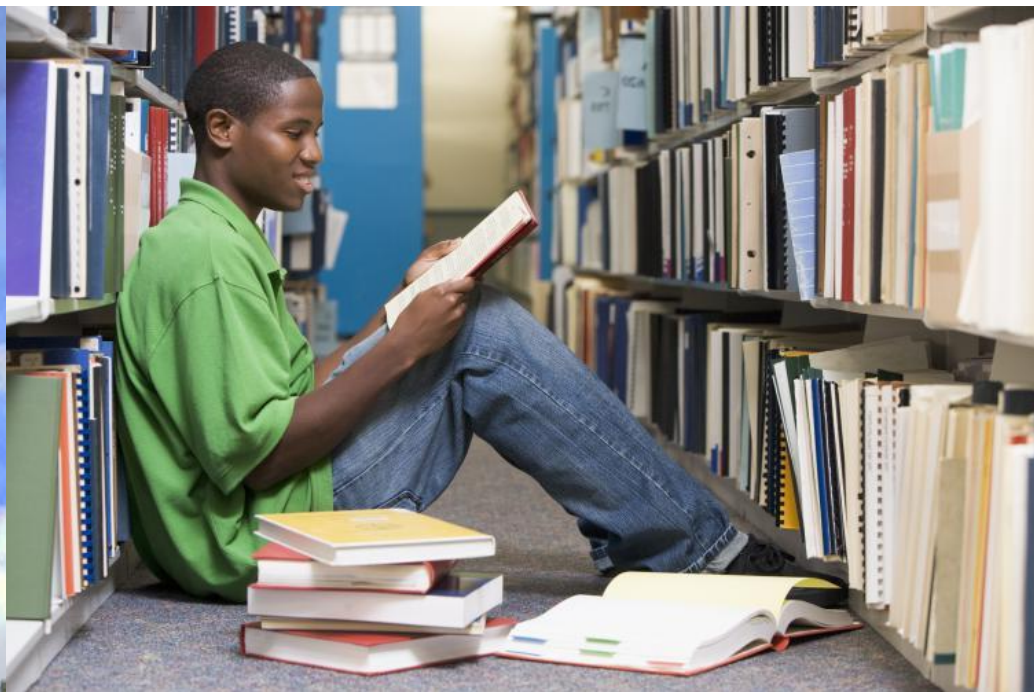
13. Knowledge is Structured in Consciousness

Knowledge is 'colored' by the state of our awareness—sleepy, dull, clear, bright, happy, sad, alert, depressed, fearful, optimistic, fulfilled …
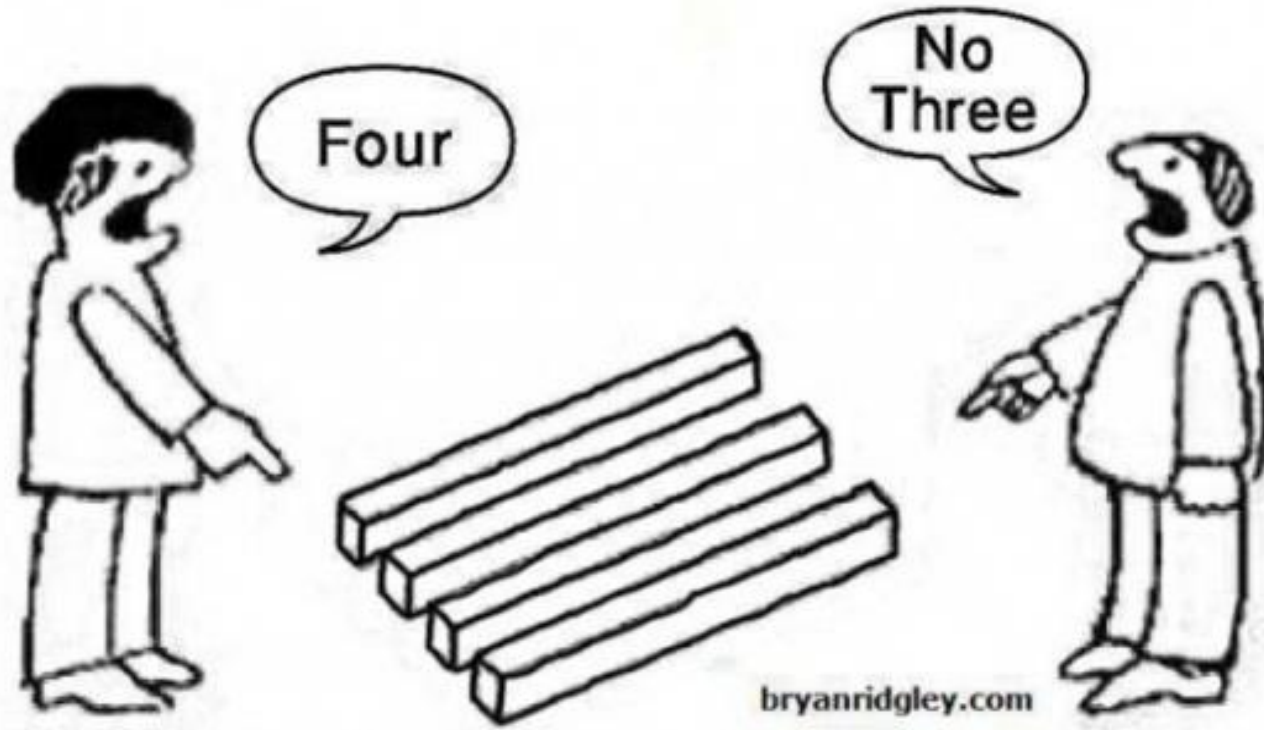
Knowledge is structured in consciousness
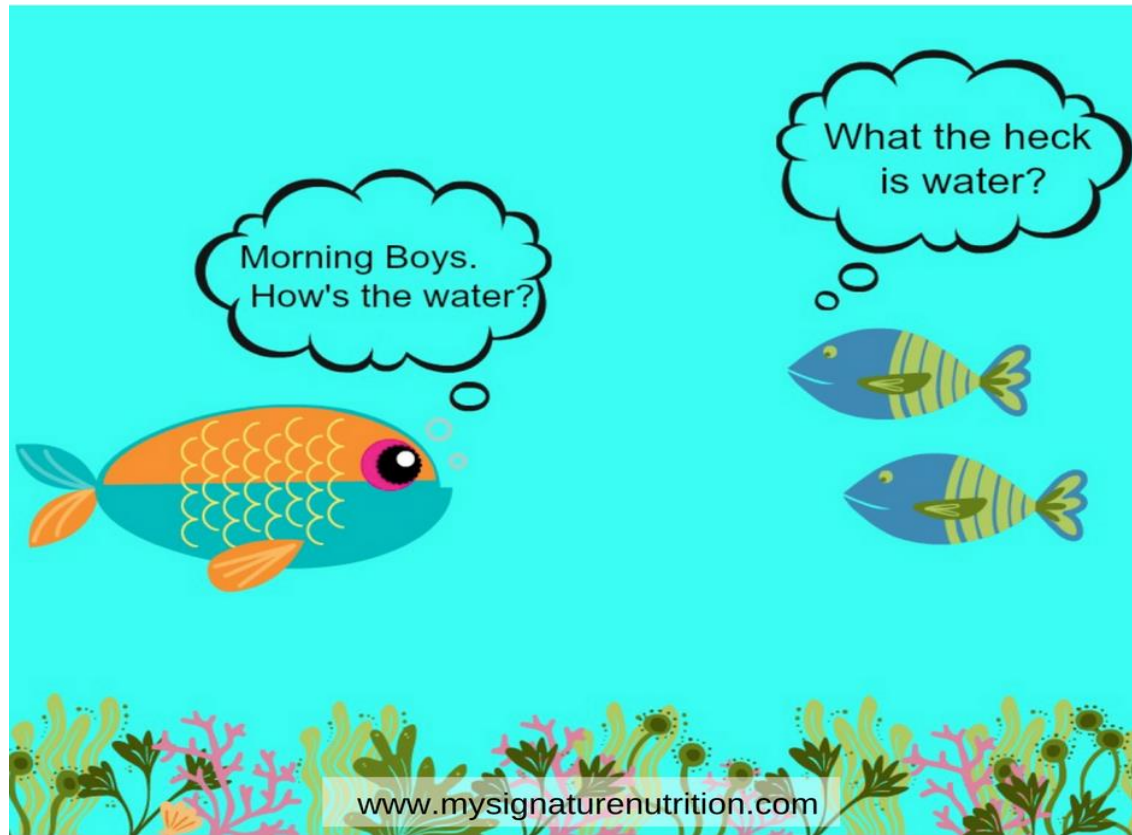
What is consciousness? We are always immersed in it.

What is air? We are always immersed in it.
What are thoughts, what is consciousness?

Perception and memory are active processes, structured by our physiology, past experiences, consciousness

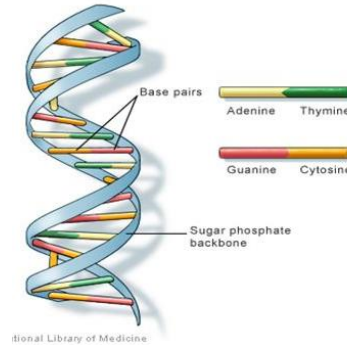# 14. Harmony Exists in Diversity

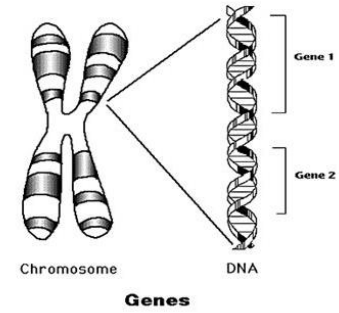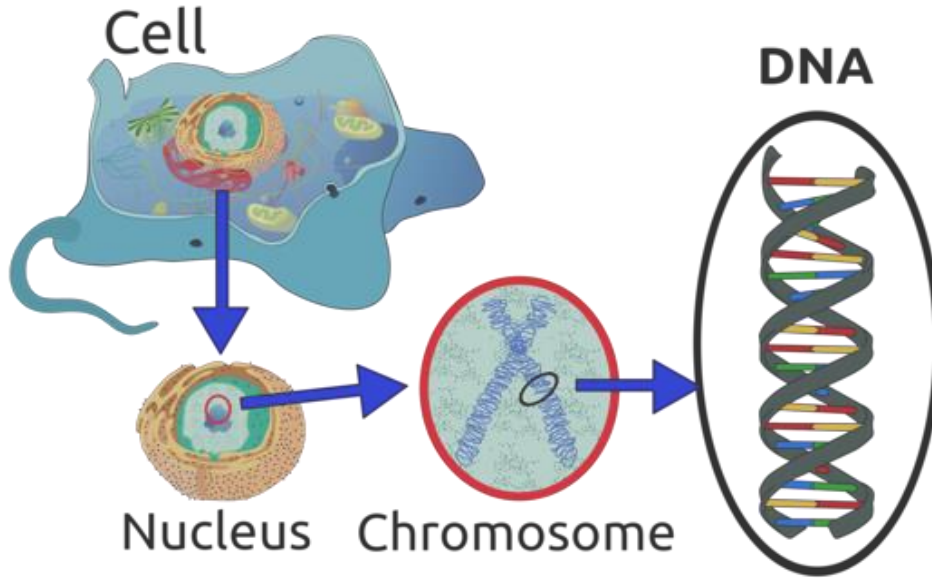Harmony exists in diversity

15. The Whole is Contained in Every Part

The whole is contained in every part

Biology Example

A **genome** is an organism's complete set of DNA, including **all** genes. Each **genome** contains **all** information needed to build and maintain that organism.
 In humans, a copy of the entire **genome**—more than 3 billion DNA base pairs—is contained in **all cells** that have a nucleus
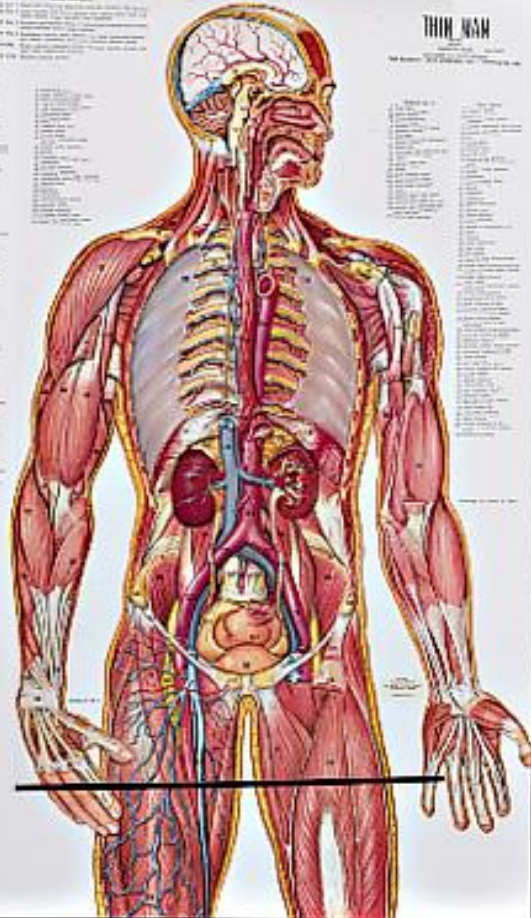
Examples of Whole is Contained in Every Part

➤ Every drop of water is like the whole of the ocean, the drops are the same as the ocean

➤ Every part of a flower is composed of sap

➤ To have brand integrity, your parts (website, what you do) need to reflect the whole (who you are)

➤ The seed of a tree contains the intelligence needed to grow into a tree

➤ Tone of a poem is expressed in every line

➤ Unified field is everywhere, in every part of the universe, we have intelligence of the whole

➤ Fractals: In a fractal, the pattern gets repeated. Each part contains the pattern, which is the whole shape.

16. The Whole is Greater than the Sum of the Parts

The whole is more than the sum of its parts

BO SCHEMBECHLER: "The Team, The Team, The Team"

A person is more than a collection of cells and organs

The whole is contained in every part, and the whole is more than the sum of the parts.

"All know that the drop merges into the ocean, but few know that the ocean merges into the drop." Kabir

The unified field (the level of silence and stillness we reach when we meditate) is everywhere, in every part of the universe, we have the intelligence of the whole.