

The Rhythms of Creativity

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“Fascinations that fool us out of our limits.”

---Robinson Jeffers, Joseph Campbell, Wyn Wachhorst



www.nasa.gov/oct

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“The pleasure of figuring things out”.

--Richard Feynman

Order and Structure

Patterns

Curiosity

Symmetry

Harmony

Reality

Imagination

Science

Revolutionary Concepts & Technology (NIAC)

Normally evolutionary

Angst

Human origins

Crisis driven

Transforms human existence

Visionaries often have a passion for science and art.

Visionary science is art.

Symmetry

Patterns

Order and Structure

Symbolism

Angst

Capture the moment

Art

Flow of Light and Form

Imagination

Sense of place

Exuberant Joy

Enchantment

Immortality

Pre-science visions

Culture often define the limits of truth and knowledge.
Whenever science and culture clash, culture wins in the short term,
but science and nature ultimately prevail.

Quest for meaning

Transcendence Immortality

Order Symmetry Patterns

Rituals Angst Joy

Culture, Spirituality & Religion

Faith Uplifting Grace

Occasionally stifles creativity

Transformative Inspires art

Re-enforce values

Culture, Spirituality & Religion

Order and Structure

Curiosity

Symmetry

Patterns

Transformative

***Rhythms of Creativity,
Discovery & Life***

Immortality

Angst

Joy

Harmony

Imagination

Science

Art

Symmetry

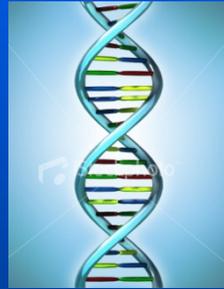
What is symmetry? An expression of equivalence between things.
Think of symmetry as “balance”.

Essential element of art, music, dance, poetry, architecture,
chemistry, physics, mathematics, biology, physiology and astronomy

Mathematical

$$F = MA$$

Physics and Chemistry



Visual Art



Nature and Biology



Astronomy & Optics



Cosmology



Engineering



Patterns

- We tend to gravitate toward rituals and repeated patterns that sooth our psyche and stimulate the soul
- Repeated patterns in our nature imply an underlying order and stability
- Order and structure are not naturally stable states. It takes an input of energy to turn chaos into order, structure and patterns.



*“Without order and comforting patterns, life can degenerate into **Petty Dribble.**”*

Robert A. Cassanova

A Little Philosophical Calibration

*Holding onto fundamentalist beliefs in
art, science and culture,
stifles the intellectual pursuit of
knowledge and expression.*

*Don't let "rules" become millstones that lock
your culture, science and art into fundamentalist cages.*

"Rules" may be over-extended suggestions.

"Rules and laws are for the imitators."

“Artists treat facts as stimuli for the imagination,
while scientists use their imagination to coordinate facts.”

--Arthur Koestler

Scientists look for patterns in nature that
suggest a deeper explanation.

Scientific “Laws”, such as the laws of physics, are often the result of predictive explanations and mathematical modeling, rather than an “understanding” of nature’s secrets. “Laws” may also become modified as understanding and knowledge are achieved.

Likewise, laws and rules of art are merely starting points and should not be restrictions of further understanding and creative expansion of artistic expression.

Visionaries and geniuses share a common trait:

The ability to transcend life's experiences and leap vast intellectual distances to set a new course for others to follow.

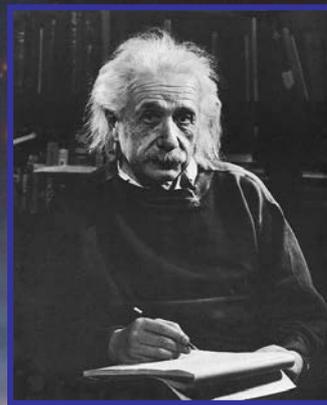
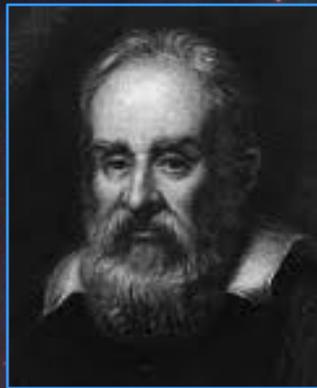
Imagination and visualization are, generally, the first step in learning, or creating, something radically new.

Imagination often requires the willful suspension of reality!

*“We do not see things as they are;
we see things as we are.”*

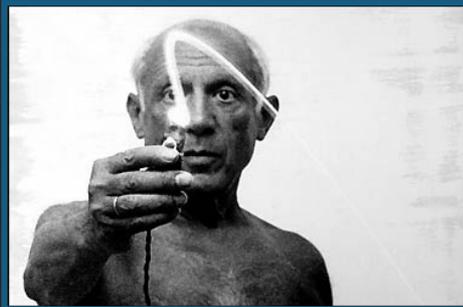
The Talmud (a central text of Rabbinic Judaism)





The true visionary delights in an unfettered, creative imagination, exploring the possibilities of understanding the mysterious.

**Genius is the ability to transcend experience
And
“The Rules”.**



“Creativity and tension often spring forth at the interface of art, science and culture.”

A Few Reminders of the Basics

Creativity takes courage AND perseverance!!

Human emotions such as angst, joy, passion, love, etc. often provide the context and “spark” for creativity in art , science and culture.

Holding onto fundamentalist beliefs in art, science, and culture stifles the intellectual pursuit of knowledge and expression.

**“All religions, arts and sciences are branches of the same tree.”
Albert Einstein**

Our scientific, psychological and artistic tendencies are predisposed towards symmetry, order, patterns, simplicity, elegance, beauty and harmony.

“For every complex problem, there is a simple solution - And it is wrong”.

Anon.

***“How difficult it is to be simple.”
Vincent van Gogh***

**You can be a BEACON
And
change the direction of aerospace endeavors**

**Here's to the crazy ones. The misfits. The rebels.
The trouble makers. The round pegs in the
square holes. The ones who see things
differently. They're not fond of rules. And they
have no respect for the status quo.**

**You can quote them, disagree with them, glorify or vilify
them. About the only things you can't do is ignore them.
Because they change things. They push the human race
forward. And while some may see them as the crazy
ones, we see genius.**

**Because the people who are crazy enough to think they can
change the world, are the ones who do.....**

Attributed to Steve Jobs in an Apple ad

***Be daring, be different, be impractical, be anything that will assert
integrity of purpose and imaginative vision against the play-it-safers,
the creatures of the commonplace, the slaves of the ordinary.***

- Sir Cecil Beaton

FINAL ADVICE

Avoid “Petty Dribble”!!

Don't get the DTs (Do This, Do That)

Credible controversy is OK

Listen to your divine discontent and Exceed Yourself

Develop a creative vision before mediocrity's embrace.

Don't be just a landmark

Be a Beacon that inspires further elaboration of the concept

Be driven by the genius of the generalities and not by your ability to beat the hell out of the details.

Don't let your preoccupation with reality stifle your imagination

Creativity often begins in the subconscious

Have Fun!!

Wyn Wachhorst, The Dream of Spaceflight

“The frontier, like the world of a child, is a place of wonder, explore in the act of play. Work is self maintenance; play is self-transcendence probing the larger context, seeking the higher order....”

