

What tHe βLĒĒP Dō ωΣ (k)pow!?

STUDY GUIDE

And Manual for Navigating Rabbit Holes

*Are we seeing the world
as it really is?*

What are thoughts made of?

How do paradigms shift?

Why are we here?

Presented by

The Institute of Noetic Sciences

and

Captured Light



What the Bleep Do We Know!?

A STUDY GUIDE

*Presented by
The Institute of Noetic Sciences and Captured Light Industries*

"As the bonfires of knowledge grow brighter, the more the darkness is revealed to our startled eyes." —Terence McKenna

"The important thing is not to stop questioning. Curiosity has its own reason for existing. One cannot help but be in awe when one contemplates the mysteries of eternity, of life, of the marvelous structure of reality. It is enough if one tries merely to comprehend a little of this mystery every day. Never lose a holy curiosity." —Albert Einstein

Welcome to the *What the Bleep Do We Know!?* Study Guide. Congratulations on your decision to continue the adventure you began by watching the film. The questions that draw you to this adventure are deep questions that philosophers, scientists and mystics have been exploring for thousands of years. This exploration raises our awareness of all that is unknown, increasing our appreciation for the depth of mystery. We offer this study guide to enrich your capacity to navigate the mysteries with an open mind and heart.

At the core of this film are provocative questions about the way we participate in an unfolding, dynamic reality. *What the Bleep Do We Know!?* proposes that there is no solid, static universe, and that reality is mutable—affected by our very perception of it. At the same time, the film acknowledges that reality is not entirely relative or simply created out of thin air. Mothers do give birth to real babies. Some things are more solid and reliable than others.

Many claims made and research cited in *What the Bleep Do We Know!?* are considered marginal by the mainstream scientific community. Either they haven't been proven true to everyone's satisfaction or they challenge prevailing scientific theories. Although we may decide to believe them because they feel right to us, it is important to be able to discern the difference between what is known through sensory empiricism or science, and intuition, spiritual insight, nature, and body-based wisdom. Then consider that opening to the vast universe takes all our ways of knowing: the rigors of science, the powers of imagination, embodied wisdom and mystical vision. We hope this study guide will enhance your journey to your own deepest knowing and invite your imagination into an expanding realm of possibility.

What is in the Guide?

This guide is divided into chapters that provide an overview of topic areas, as well as references and links to articles. Each chapter also includes questions to generate dialogue, activities for engaging the ideas more fully, and quotations to inspire you.

CHAPTERS INCLUDE:

Paradigm Shift

A paradigm is a philosophical or theoretical framework that holds our experience together and creates a coherent picture of reality—a worldview. What are the roots of our current prevailing paradigm? What worldview is articulated in *What the Bleep!*? What difference does our paradigm really make? Our worldview implies a way of knowing. This chapter also explores how to question claims of knowledge. What makes science, intuition, or channeled messages reliable or easy to dismiss?

Quantum Reality

What are the discoveries of quantum physics? What challenges do they pose to our current worldview? What do the discoveries of quantum physics tell us about the nature of reality? Many of the pioneers in quantum physics disagreed on the implications of their discoveries. Explore different explanations and perspectives on this mind-boggling science or add your own.

Creating Our Days

How can we create our days consciously and with clear intention? What is the scientific evidence for the power of intention? How can we know if our intention is having an effect? Here we explore both the extent and limits of our creative capacities and offer guidance on establishing our own practices for creating our days.

Healing the Past

How can we let go of old stories and shift the way we interact with the world? Here we explore ways in which emotional patterns can become biomechanical processes, and we introduce pathways to begin liberating ourselves from past conditioning.

How to Use this Guide

"Once individuals link together they become something different. . . . Relationships change us, reveal us, evoke more from us. Only when we join with others do our gifts become visible, even to ourselves."
—Margaret Wheatley and Myron Kellner-Rogers

STUDY GROUPS

You might find it is more fun and enriching to explore in the company of other brave adventurers. You can play with more ideas, hear different perspectives, and get support for your transformation. This study guide is designed to make it easy for groups to engage the material.

The Institute of Noetic Sciences has a national network of community groups made up of IONS members. This is an excellent way to meet others who have been exploring the same terrain. Each group is a self-organizing, self-directed voluntary association that operates independently of the Institute (www.noetic.org/community/groups.cfm).

Whether you decide to join an IONS group or start your own, we suggest you gather five to ten people and reserve a minimum of two to three hours for each chapter. Make sure everyone has had a chance to reflect on the readings before you meet. It is also helpful when people highlight sections of the reading or the questions that stir their interest.

FACILITATOR

To get the most out of your study group, we suggest having a facilitator to open and close meetings, make sure everyone gets a chance to contribute, keep the flow going, track the clock, and establish the next meeting's host and facilitator.

GROUP PROCESS

Whether you are forming a group that stays together through the whole study guide or are calling new people together for specific topic areas, here are a few meeting tips:

- Have food! Never underestimate the power of food.
- Choose a host.
- Choose a facilitator.
- Start and end on time.
- Meet at the same time and on the same day of the week.
- Schedule as many meetings in advance as possible.

It is helpful if the group agrees to some ground rules for the conversations. Here are some suggestions (also see the section on group dialogue):

- Read the relevant content before coming to the meeting.
- When someone is talking, maintain a strong intention to be present.
- Practice not interrupting.
- Speak and listen from the heart.
- Make sure each voice is heard.

MEETING DESIGN

This guide provides materials that you can use to set up meetings in any way you are inspired. We encourage you to be creative and to follow the energy of the group. Even if

you choose not to use a meeting design, it helps to have one available as a launching pad. Here are some elements and a flow for the evening that we recommend.

Creating the Space (5–10 minutes) – Sit in a circle and take a moment of silence to become present together. You might light a candle or invoke sacred space in some way. This is a good time to read a poem or offer an intention: for example, “May our time together help each of us become more fully alive to the beauty and mystery of existence, and may it bring more consciousness to our world.”

Check-In (10–15 minutes) – If the group is new, make sure everyone has a chance to introduce themselves, say where they’re from and why they came. Even if the group is already familiar with one another, it can still be helpful to go around the circle, checking in with the specific interests and curiosities members have brought to this particular meeting. Each check-in should be no longer than two minutes.

What are We Talking About? (15–20 minutes) – Review the content of the chapter by inviting people to share the sections that most interested them.

Group Dialogue (45-60 minutes) – Review the dialogue questions for inspiration. The questions are interspersed throughout the reading. Some chapters have additional questions at the end. Because there are a lot of questions, we suggest you read each aloud and respond to the ones that have the most energy for you. Some questions invite you to explore intellectually, some are more personal, and others are practical. We highly recommend that you spend time sharing thoughts and reflections in each of these areas. In the section titled “Group Dialogue” that follows, we offer suggestions for making the dialogue as rich as possible.

Exercises and Activities (20 minutes per exercise) – Each chapter includes several activities designed to help you fully engage the material and explore its implications. Exercises can be interspersed between dialogues or done afterward. There are group activities to enrich your meetings and individual activities and practices to enable your own deeper exploration.

Sharing Resources (5–10 minutes) - Provide the opportunity for people to share and distribute resources, articles, and information about the topic. Encourage people to gather materials to share in future groups.

Taking it Home (5 minutes) – Each chapter includes some activities or practices you can do at home. Review the possibilities and decide what you want to commit to doing.

Check-Out (10–15 minutes) – Go around the circle to share intentions and commitments for practices people will do at home, to offer gratitude and appreciations, and to speak to what worked and did not work about the meeting. The next facilitator could take notes for future meetings.

Plan Ahead (5 minutes) – Set up logistics for the next meeting. Make sure you have established a date, a host, a facilitator, and the chapter you will be studying.

Close (5 minutes) – End the meeting by taking a moment of silence and offering a blessing or poem. If you lit a candle for the meeting, you can blow it out as part of your closing ritual.

GROUP DIALOGUE

"A great many people think they are thinking when they are merely rearranging their prejudices." —David Bohm

What makes some conversations so much juicier and satisfying than others? Sometimes it has to do with the content. More often than not, it is a function of the way people talk and listen to one another. At its best, conversation can be a shared exploration toward greater understanding, connection, and possibility. Good dialogue does not consist of arguments, posturing, defensiveness, bantering discussions, or other forms of communication where we do not discover anything new or connect with one another. Good dialogue actually changes how we think.

Talking Staff - A lot of good research has been done exploring structures that make group conversations truly generative. Some tools, like the talking staff (typically a wooden rod or pole), are ancient. Using a talking staff is a simple structure to help deepen conversation. The person holding the talking staff speaks from the heart. When not holding the staff yourself, listen to the speaker. If you wish to speak, make a gesture to indicate that you would like the staff passed to you.

Bohmian Dialogue - A more recent approach to dialogue was developed by quantum physicist David Bohm. Bohmian Dialogue is a process that puts into practice many of the ideas expressed in *What the Bleep Do We Know!?* If interested you can learn more here: www.thedialogueproject.org/dialogue.htm. Its purpose is to help expose and liberate us from habits of mind, so that we are not just replaying tired assumptions and beliefs but thinking new thoughts and creating new neural networks together.

Whatever tools you use, however formal your dialogue, have a great adventure.

*God be with those who explore
In the cause of understanding:
Whose search takes them far
From what is familiar and comfortable
and leads them to danger or terrifying loneliness.*

*Let us try to understand their confronting or
Unusual language; the uncommon life of their emotions,
For they have been affected and shaped and changed
By their struggle at the frontiers of a wild darkness,
Just as we may be affected, shaped, and changed
By the insights they bring back to us
Bless them with strength and peace.
Amen*

By Luenig, From "Prayer Tree"

About the Institute of Noetic Sciences

This study guide was created by the Institute of Noetic Sciences (IONS). IONS is a nonprofit research and educational organization that serves an emerging movement of globally conscious citizens who are dedicated to manifesting our highest capacities to create a better world.

The word “noetic” comes from the ancient Greek nous. It refers to inner knowing: a kind of intuitive consciousness that provides direct and immediate access to knowledge from beyond our normal senses and rational thinking. Noetic Sciences explores the inner cosmos of the mind—consciousness, soul, spirit—and how it relates to the outer cosmos of the physical world.

On the 1971 trip home from the moon, Apollo 14 astronaut Edgar Mitchell had a life-changing epiphany leading to the vision and creation of the Institute of Noetic Sciences. As he watched the planet Earth floating in the vastness of space he was engulfed by a profound sense of universal connectedness. In Mitchell’s own words: “The presence of divinity became almost palpable, and I knew that life in the universe was not just an accident based on random processes...The knowledge came to me directly.”

Today a large Noetic community fulfills Mitchell’s visionary mission through frontier research, transformational learning programs, and 30,000 members. IONS conducts and sponsors leading-edge research into the potentials and powers of consciousness that includes perception, belief, attention, intention, and intuition. The Institute explores phenomena that do not necessarily fit conventional scientific models, while maintaining a commitment to scientific rigor. IONS builds community, provides ways for its members and colleagues to share their experiences and ideas with one another through local community groups, online discussions, and other networking opportunities.

IONS is not a spiritual association, political-action group, or a single-cause institute. Rather, the Institute of Noetic Sciences honors open-minded approaches and multiple ways of knowing, brings discernment to its work, and supports diverse perspectives on social and scientific matters.

RESOURCE: For general information about IONS visit our website: www.noetic.org For more information about IONS research see www.noetic.org/research.cfm. To find out about community groups go to: www.noetic.org/community.cfm. To become a member of IONS go to: www.noetic.org/membership.cfm

Additional Resources

BOOKS

Bohm, David. *On Dialogue*. Routledge, 1999.

Ellinor, Linda, and Gerard, Glenna. *Dialogue: Rediscover the Transforming Power of Conversation*. John Wiley and Sons, Inc. 1998.

Hammond, Sue Annis. *Thin Book of Appreciative Inquiry*. Thin Book, 1998.

Isaacs, William, *Dialogue: The Art of Thinking Together*. Doubleday, 1999.

Jaida N'Ha, Sandra. *The Joy of Conversation*. Utne, 1997. *The Utne Reader*—sponsored guide to co-creative salons of all types. Excellent write-ups on study circles, listening circles, and more. See: www.utne.com

Oliver, Leonard P. *Study Circles: Coming Together for Personal Growth and Social Change*. Seven Locks Press, 1987.

INTERNET

For an informative list distinguishing dialogue from debate, see Dialogue vs. Debate on the Canada's National Adult Literacy Database: www.nald.ca/clr/study/scdvd.htm

For a general description of many types of dialogue and facilitation, see the dialogue and facilitation pages of the Co-Intelligence Institute's website. www.co-intelligence.org

RESOURCE CENTER

The Study Circle Resource Center, PO Box 203, Pomfret, CT, 06258. Phone (860) 928-2616, FAX (860) 928-3713, email scrc@neca.com and www.studycircles.org. Provides training materials, study circle packets, and guidance. Helpful staff. You can ask for their study circle guide "Building Strong Neighborhoods" and the larger neighborhood kit, which has a plan for organizing whole cities, as well as the dialogue guide.

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PARADIGM SHIFT

What is a paradigm?
 How do paradigms shift?
 How do we know what we know?
 What is truth?

"The success of the masterpieces seems to lie not so much in their freedom from faults – indeed we tolerate the grossest errors in them all – but in the immense persuasiveness of a mind which has completely mastered its perspective." —Virginia Woolf

"The universe is made of stories, not atoms." —Muriel Rukeyser

Ever since humans first developed the capacity to think and wonder, we have been awed by the magnificence, beauty, and sometimes terrifying forces of nature. Witnessing the journey of life from the miracle of birth to the finality of death, our ancestors wondered: Where did we come from? Why are we here? Where are we going? Like us, they wanted to know how we fit into the world around us.

To make sense of these mysteries we create stories. Some cultures create stories about earth spirits embedded in nature, others about a single sky god who rules from above, still others tell us we are alone in an indifferent universe.



Can we say that any of these stories are truer, better, more valid than others?
 If so, in what ways?
 How do we evaluate what is true?
 And what happens when the stories we have relied on stop making sense?

The ideas presented in the film *What the Bleep Do We Know!?* challenge aspects of the prevailing story the West has told itself for the past 300 years. The paradox is that these challenges arose from Western science's deepening study of the world. Indeed, the history of science can be viewed as an evolution of ideas that reveal that reality is not as it appears, nor are we precisely who we think we are. The film presents some of the science and philosophy that are the basis of a new story, and the implications are paradigm shattering.

What is a Paradigm?

The word "paradigm" refers to the conceptual framework, belief system, and overall perspective through which we see and interpret the world.

The dictionary defines paradigm as "a pattern, example, or model." The word derives from the Greek *paradeigma*, composed of *para*, meaning "alongside of, beside or beyond," and *deigma*, meaning "example" or "a showing." So para-digm means "beside or beyond

example;” we could say it is that which is alongside or “fits” an example—hence, a model. We could also say it is that which is “beyond showing,” implying it is something that is somehow invisible or unnoticed. Thus, paradigm catches a double sense, meaning both a model of something (for instance, the world) and an invisible structure (for instance, the system of thinking within which we view the world).

Our paradigm determines what we are able to see, how we think, and what we do. We do not question its accuracy because we’re usually unaware of its existence. Trying to reflect on our own worldview is like trying to study the color blue while wearing blue-colored glasses. We cannot distance ourselves enough from it to see how much it affects our perception. We simply assume that the way we see things is the way they really are. Our paradigms are usually all we know and only become perceptible to us when we encounter ones that are different from our own.

SCIENTIFIC PARADIGMS

Science historian Thomas Kuhn brought paradigms into prominence in his classic book *The Structure of Scientific Revolutions* (University of Chicago, 1962). He describes how the scientific community holds paradigms, “like an accepted judicial decision in the common law.” Kuhn goes on to explain:

“Paradigms gain their status because they are more successful than their competitors in solving a few problems that the group of practitioners has come to recognize as acute. The success of a paradigm . . . is at the start largely a promise of success discoverable in selected and still incomplete examples. Normal science consists in the actualization of that promise.”

According to Kuhn, a scientific paradigm is more like a hypothesis which “normal science” elaborates upon by accumulating more and more data. As such, scientists tend to seek consistency and avoid novelty. They frequently overlook anomalies that challenge the existing paradigm until those anomalies become too disruptive to ignore.

Any scientific paradigm takes place within a cultural context that supports the project of science. While paradigms can exist on many scales—personal, family, community—they flow out from the headwaters of a deeper cultural paradigm that is the context within which our understanding of science or religion exists.

Metaphors We Live By

Our core assumptions about the universe are embedded in the metaphors we use. Eco-philosopher Joanna Macy explores five central metaphors through which people in different spiritual traditions see the world: world as battlefield, world as classroom, world as trap, world as lover, and world as self. We have added to this list: world as machine.

Resource: For more information about Joanna Macy’s work, see www.joannamacy.net

WORLD AS BATTLEFIELD

“Many people see the world as a battlefield, where good and evil are pitted against each other and the forces of light battle the forces of darkness. This ancient tradition goes back to the Zoroastrians and the Manichaeans. . . . There is the sense that you are fighting God’s battle and that ultimately you will win. William Irwin Thompson called this kind of certainty and self-righteousness ‘the apartheid of good,’” Macy tells us.

WORLD AS CLASSROOM

"A more innocuous version of the battlefield image," Macy offers, "is the image of the world as a classroom, a kind of moral gymnasium where you are put through certain tests which would prove your mettle and teach you certain lessons, so you can graduate to other arenas and rewards. Whether a battlefield or a classroom, the world is a proving ground, with little worth beyond that. What counts is our immortal souls, which are being tested here. . . . For the sake of your soul, you are ready to destroy." These two views are strong among monotheistic religions. But according to Macy, agnostics can also fall prey to this way of thinking when they become militant or self-righteous. Fundamentalism has both religious and secular adherents.

WORLD AS TRAP

"Here the view is not to engage in struggle or vanquish the foe, but to disentangle ourselves and escape from this messy world. We try to extricate ourselves and ascend to a higher, supra-phenomenal plane. This stance is based on a hierarchical view of reality, where mind is seen as higher than matter and spirit is set over and above nature. This view encourages contempt for the material plane," says Macy. The Western worldview was based on this metaphor, with the trap being the illusion that the phenomenal world is real. To know truth one must directly apprehend the eternal, transcendent Platonic ideas or forms. These perfect forms are unchanging, a welcome relief from the overwhelming flux and chaos of the world.

Elements of this worldview have entered all major religions of the last 3,000 years, regardless of their metaphysics. Macy tells us, "Many of us on spiritual paths fall for this view. Wanting to affirm a transcendent reality distinct from a society that appears very materialistic, we place it on a supra-phenomenal level removed from confusion and suffering. The tranquility that spiritual practices can provide, we imagine, belongs to a place aloof from our world and to which we can ascend and be safe and serene." For those not engaged in spiritual pursuits, another version of this worldview is the idea that we need to get healed from all our neuroses and hang-ups first and then we can participate in the world. In this view the self and the world are seen as essentially separate, so we believe we can heal one without healing the other.

WORLD AS MACHINE

Also known as modernity, the world is viewed as a collection of inanimate objects that interact in predictable, mechanistic ways based on mathematical laws (developed principally by Isaac Newton and thus known as Newtonian, or classical physics). Introduced in the seventeenth century by Descartes, Newton, Bacon, and others, modernity established a discontinuity between mind and matter, the subjective and objective, and ultimately between science and religion. Over centuries of struggle between a rising tide of empiricists who battled against an entrenched theology, an uneasy truce developed. Science claimed the domain of the physical world, religion claimed the domain of the mental world.

Resource: For more information on the scientific revolution, see the scientific revolution page on the Internet Modern History Sourcebook website www.fordham.edu/halsall/mod/modsbook09.html. --- For more information on love and evolutionary biology, see Dr. G. Campbell Teskey "A Discussion of David Buss's 'A Dangerous Passion' - Jealousy & Evolutionary Psychology" www.abskeptic.htmlplanet.com/files/speaker_200203_tes.htm. --- For general information on evolutionary psychology, see a search using the words "work evolutionary psychology" on the Psychology Today website www.psychologytoday.com.

In a worldview where the physical and the mental have split allegiances, what happens to powerful religious and spiritual impulses, which address the essential role of meaning in

our lives? Integral theorist Ken Wilber argues that when driven underground the basic human need for transcendence comes out “sideways,” through compulsions to accumulate possessions and stroke the ego.

WORLD AS LOVER

Macy tells us that with this view, “The world is beheld as a most intimate and gratifying partner. In Hinduism we find some of the richest expressions of our erotic relationship with the world. Desire plays a creative, world-manifesting role here, and its charge in Hinduism pulses onward into Krishna worship, where devotional songs, or *bhajans*, draw on the erotic yearnings of body and soul. . . . You feel yourself embraced in the primal erotic play of life. This erotic affirmation of the phenomenal world is not limited to Hinduism. Ancient Goddess religions, now being explored, carry it too, as do strains of Sufism and the Kabbalah, and Christianity has its tradition of bridal mysticism.” Nineteenth-century Romantic poets like Blake, Wordsworth, and Shelley felt this erotic affinity with the world, as did Walt Whitman in his “body electric.” The American Transcendentalist Movement, with Emerson and Thoreau, also communed deeply with the natural world to discover that in doing so they became more fully human.

Resource: See “Eros and Aphrodite” by Erin Sullivan at www.erinsullivan.com/articles/eros_aphrodite_article.htm --- Also see “Eros and the Psychology of Worldviews” by Eugene Webb at <http://faculty.washington.edu/ewebb/Eranos.html>

WORLD AS SELF

The world as lover is a complement to the world as self. The subject (the lover) and object (the beloved) are no longer separate. The world is an interconnected whole and each individual a node in a living web of life. The Hindu tradition offers the image of Indra’s net, in which each node is a jewel that shimmers with the reflection of all the other nodes. In Buddhist thought we find this idea expressed in the concept of “dependent origination,” or mutual causality. Today this perception also arises in the realms of science—in general systems theory, complexity science, and quantum physics. We are discovering that Mind is immanent in nature, extending far beyond the spans of our individual conscious purpose.

Resource: For information on Paticca Samutpada, see www.akshin.net/philosophy/budphilcausality.htm



- How much do you operate within each of these worldviews?
- How do you see these worldviews being expressed in the world around you?
- Are each of these views equally valid?
- What makes some more valid than others?

Author Robert Todd Carol cautions us about a common misconception that “what makes up a paradigm is relative and subjective, and therefore purely personal with no connection or test in reality. Some of those who think that creationism and evolution are competing paradigms or theories make this mistake. It may be true that all theories and beliefs are ‘subjective’ to some extent, but this does not mean that they are all equally useful or probable, or even of the same type.”

Resource: See “Paradigm and Paradigm Shift” in “The Skeptic’s Dictionary” at www.skepdic.com/paradigm.html

As the Worldview Turns

"Today the Western Mind appears to be undergoing an epochal transformation, of a magnitude perhaps comparable to any in our civilization's history. I believe we can participate intelligently in that transformation only to the extent to which we are historically informed." —Richard Tarnas

A BRIEF HISTORY OF THE WESTERN WORLDVIEW

According to historian and philosopher Richard Tarnas, the West has moved through three major phases in its 2000-year history, in which distinct overarching worldviews prevailed: the Classical Worldview, the Pre-Modern or Medieval Worldview, and the mechanistic Modern Worldview.

Classical Paradigm — Age of Gods and Oracles

Ancient Greek worldview. Knowledge is delivered from the gods via oracles. Meaning was bestowed by the gods. Beginning with the pre-Socratic philosophers and followed by Socrates, Plato, and Aristotle, Greek philosophy turns away from gods and oracles and increasingly looks to nature and the power of reason to reveal the nature of reality.

Pre-Modern Paradigm — Age of Faith/Superstition

Medieval worldview. Knowledge is derived from authority; meaning is derived from sympathies between things, as in the Hermetic doctrine of "as above, so below."

Modern Paradigm — Age of Reason/Empiricism/Science

Beginning in the seventeenth century through today. Age of analysis, reductionism, individualism, and mechanism. Meaning is projected by the human mind onto nature. Mechanical causality is the only way things move or change. The guiding metaphor is the machine. Time is linear.



Does this history represent progress?

If so, toward what?

What has been lost in the development of the Western worldview?

What has been gained?

WHERE ARE WE NOW?

While modernity prevails as the dominant paradigm of the West, other worldviews exist alongside it simultaneously. Sociologist Paul Ray, who has used survey research to identify new movements within our society, maintains that three primary subcultures exist today: the Traditionalists, the Modernists, and the Cultural Creatives.

Traditionalists are cultural conservatives who wish to preserve the pre-modern simplicity of life. Ray also calls this group Heartlanders, who "believe in a nostalgic image of return to small town, religious America, corresponding to the period 1890 to 1930 . . . what they believe are the good-old traditional American ways."

Modernists, says Ray, are an extension of the Enlightenment. This group "promotes aggressive change, material progress, and big-city ways. What is most distinctive about this group is their belief in a technological economy that is reshaping the globe."

Cultural Creatives are called that because they prefer to operate on the leading edge of cultural change. Paul Ray says they have both person-centered and green (ecological) values. They are concerned with psychology, spiritual life, self-actualization, and self-expression. They like things foreign and exotic, enjoy mastering new ideas, advocate for women's and minority issues, and support the notion of ecological sustainability.

According to Ray, bearers of the culture of Traditionalism, or the Heartlanders, make up 29 percent of today's population in the United States, or about 56 million adults. Modernists comprise 47 percent of the population, or 88 million adults, and Cultural Creatives comprise 24 percent of the adult population, or 44 million adults.

Resource: See "The Rise of Integral Culture" by Paul Ray at www.noetic.org/publications/review/issue37/r37_Ray.html --- For an interview with Paul Ray, see www.paraview.com/features/paul_ray.htm



If it's true, what are the implications of this data?

How does it change your sense of yourself?

What does it make possible?

WHERE ARE WE GOING?

Worldviews are formed to solve problems. They change when existing solutions no longer work and rising problems require new approaches. Sometimes the problems are conceptual—how do we make sense of new information that cannot be interpreted within our existing framework? At other times the problems are more practical—a worldview might lead to wars, mass extinctions, and a sense of alienation. Sometimes, as with modernism, a worldview that solved some problems ends up creating others.

TROUBLE IN PARADIGM CITY

For the last 300 years modern society has relied primarily on scientific discovery to tell us about the nature of reality. On the one hand, we have all benefitted enormously from the technologies that science has made possible. On the other hand, many may have felt uneasy when science cannot account for or explain our most significant personal experiences. Many find a deepening mismatch between what they know from their own experience and what they know from science.

Experiences such as out-of-body or near-death events, telepathy, clairvoyance or remote viewing, and the powerful healing effects of intention and prayer are just some of the anomalies that challenge the dominant scientific explanations for how the world works.

However, we are witnessing a remarkable convergence of discoveries on the frontiers of science that appears to support age-old wisdom from perennial spiritual traditions. We are learning, for example, from quantum physics about the ways certain aspects of reality transcend our usual understanding of time and space, and we are learning from neurosciences and consciousness studies remarkable connections between mind and body. Phenomena such as "quantum nonlocal interconnectedness" and the power of mind and emotions to affect the body (and other parts of the physical world) do not fit the dominant story about how the world works.

Gradually, purely mechanistic views are likely to be replaced by the truly mind-boggling revelations issuing from quantum physics, systems and complexity theories,

psychoneuroimmunology, and other mind-body studies in consciousness research. For decades, news from these frontier sciences has been filtering through to the general public—due in part to consciousness-raising efforts from organizations such as the Institute of Noetic Sciences.

The emerging story tells us the universe consists not of things but of possibilities—that relationships and processes are more fundamental than substances. As theologian Thomas Berry puts it, “The world is a communion of subjects, not a collection of objects.” It is a world as lover and a world as self—a conscious, evolving universe, in which we participate through our every thought and action. *What the Bleep Do We Know!?* has touched a nerve because for many thousands of people it is the first public validation of what they have privately known or suspected for many years: Reality is far more mysterious than they have been taught. And at the core of this mystery is the creativity and potency of consciousness.

Philosopher Duane Elgin puts it this way:

I believe that the most far-reaching trend of our times is an emerging shift in our shared view of the universe—from thinking of it as dead to experiencing it as alive. In regarding the universe as alive and ourselves as continuously sustained within that aliveness, we see that we are intimately related to everything that exists. This insight ... represents a new way of looking at and relating to the world and overcomes the profound separation that has marked our lives.”

We may wonder why it is so difficult to accept new science and update our version of reality. But worldviews change slowly over time. Consider that we have known for hundreds of years that the world is round and turning on its axis, yet we still talk in terms of the sun “setting” over the horizon. Likewise, the discoveries of quantum physicists are not recent. The theory was first developed over 70 years ago. And no matter how well we think we understand the implications of atomic theory and neuroscience, which tell us that matter is mostly full of empty space and that our brains “construct” our perceptions of the world, the world still looks and feels very much like it is “out there,” solid and reliable.

How can we come to know and embrace our new understandings of reality?

How the Bleep do we Know What we Know?

“What you cannot know in your body you can know nowhere else.”
—The Upanishads

“‘There is no use trying,’ said Alice. ‘One can’t believe impossible things.’ ‘I dare say you haven’t had much practice. When I was your age, I always did it for half an hour a day. Why, sometimes I’ve believed as many as six impossible things before breakfast.’” —Lewis Carroll

We can’t change our fundamental assumptions about the world without changing the way we gain knowledge about it. Each worldview has a corresponding way of knowing, called an epistemology. Epistemology is the branch of philosophy that studies knowledge. It attempts to answer the basic question: What distinguishes true (adequate) knowledge from false (inadequate) knowledge? Practically, this question translates into issues of methodology: How can one develop theories or models that are better than competing theories?

STANDS TO REASON

The West's bias toward rationalism and empiricism began with the Greeks. In Plato's view, knowledge is merely an awareness of absolute universal ideas or forms, existing independent of any subject trying to apprehend it. Though Aristotle puts more emphasis on logical and empirical methods for gathering knowledge, he still accepts the view that such knowledge is an apprehension of necessary and universal principles. Following the Renaissance, two main epistemological positions dominated philosophy: Empiricism, which sees knowledge as the product of sensory perception, and Rationalism, which sees it as the product of rational reflection.

The scientific revolution provided even more exacting tools both intellectually and physically with which to probe and analyze the world. We were taught to suppress our subjective experience so that the senses could gather data without "hindrance" or "distortion."

NONRATIONAL WAYS OF KNOWING

Other nonrational ways of knowing—such as faith, intuition, spiritual insight, nature, and body-based wisdom—have been associated with earlier stages of cultural development and therefore considered regressive. Interestingly, in spite of itself, science has made many of its gains and discoveries from these nonrational ways of knowing.

The German chemist Kekule puzzled extensively over the structure of the benzene molecule. One afternoon while dozing and in a hypnogogic state, he saw a whirling serpent biting its own tail. He awoke with the insight that the atoms in benzene form the shape of a ring. In fact, many prominent scientists—including Rene Descartes, James Clerk Maxwell, and Nicola Tesla—all gained inspiration for their discoveries through dreams and visions.

"The cosmic religious feeling is the strongest and noblest incitement to scientific research," said Einstein, who spoke of truths that one "feels but cannot express." And when asked how he knew a solution to a problem to be true, he replied that he felt it in his muscles. Other scientists speak of truth that can be known through an aesthetic sense that comes about when a problem is solved with elegance and symmetry.

Barbara Alice Mann, PhD, a noted author and speaker on Iroquoian history and culture, writes in her book *Iroquoian Woman: The Gantowisas* (New York: Peter Lang, 2000.) that "ongoing Western scholarship portrays Iroquoian (and all Native) medicine as magical thinking. . . . It is, however, Western bias, not empirical observation, that defines Native medicine as childish superstition, spirits as figments of a muddled imagination, and spirit work as fantasy." She speaks of Native American medicine as a "mystic potency" that is not the equivalent of the Western concept of magic. This medicine deals primarily in non-ordinary states of consciousness, which include the trance of the medium as well as "ceremonial states of reverence, during which ritual is served; visionary states, in which the past or the future is glimpsed; far viewing, in which events at a distant location are beheld; and out-of-body travel by one's spirit, usually in a Sky Journey." All of these, she says, are real and valid ways of obtaining knowledge from the universe.

Women have traditionally been encouraged to receive knowledge in nontraditional ways. In ancient Greece, Italy, Egypt, and Turkey, for example, women served as oracles or sibyls, going into trance to reveal information about the past, present, and future. Kings and generals sought out their advice because it was accurate and reliable, particularly in places such as Delphi and Dodona in Greece and Cumae in Sicily. No one knows exactly how these women had access to their knowledge, but ancient sources suggest they achieved oracular states by inhaling special vapors or drinking certain waters from the earth, chewing particular leaves or inhaling smoke from burned plants, or ingesting or anointing themselves with special herbs or poultices.

While ancient women were said to be channeling the voice of divinities such as the earth mother Gaia, the sky god Zeus, and the sun god Apollo, contemporary women continue this tradition by claiming to channel wisdom from a host of disembodied beings who are friends to humanity, with names such as Seth, Orin, Ramtha, the Pleiades, the Virgin Mary, and Emmanuel.

In *What the Bleep Do We Know!?* JZ Knight channels a 35,000-year-old warrior named Ramtha. Using an EEG, psychologists Ian Wickramasekera and Stanley Krippner, of the Saybrook Graduate School, observed that while JZ Knight was channeling Ramtha, her brainwave activity shifted to lower frequencies and her lower cerebellum appeared to be operating her body. Such scientific findings are beginning to validate that some claims of nonrational ways of knowing are grounded in observable effects. This kind of research can help open modernist minds to more possibilities.

No single way of knowing is adequate for this complex universe. Each has its own domain of expertise. But it takes all of our ways of knowing, all working in concert—rational empiricism, intuition, mystical awareness, and receptive spirit—to open us to the universe.

Resource: For more information on Barbara Alice Mann and her work on Native American spirituality and ways of knowing, see www.english.utoledo.edu/faculty/barbaramann. --- For more on the oracles at Delphi and Cumae, see, for example, www.dreamscape.com/morgana/desdemon.htm#DELPHI. --- Test your own psychic ability at the Institute of Noetic Sciences' psi arcade www.psiarcade.com. --- For information on "The Implications of Alternative and Complementary Medicine for Science and the Scientific Process," by Marilyn Schlitz, see www.sfms.org/sfm/sfm1003b.htm.



Can reality ever be fully known?
 In what context is it wise to trust science? Intuition? Instinct?
 How does our way of knowing the world affect and limit what can be known?
 How can we evaluate nonrational ways of knowing on their own terms?

How do Paradigms Shift?

"To change a major paradigm is to change our definition of what is possible." —Mark B. Woodhouse

We are at the threshold of a "great divide" in history. The future of life on the planet arguably turns on what paradigm prevails. When Einstein said, "You cannot solve a problem from the same level in which it was created," he was referring to paradigms. What is it that makes a paradigm shift possible?

Worldviews emerge to solve problems. For an emerging new worldview to take hold, the majority of the population has to deeply understand, beyond abstract intellect, that its current way of thinking is inadequate to solve the problems it faces. A new worldview cannot take hold simply by suppressing the voices of those who disagree, or through impassioned arguments.

We are being challenged to cultivate our capacities to combine rational and nonrational ways of knowing. This means there is no instruction manual for changing paradigms and no blueprint to follow. Needing absolute answers may well be an artifact from outdated worldviews, while becoming comfortable with uncertainty may be our path to a new one.

IS THE PARADIGM SHIFTING?

Paul Ray is optimistic that a new worldview is in the process of arriving. He claims that the Cultural Creatives are a very large pool of people, 44 million, larger than any comparable group at the birth of any previous societal revolutions. Ray believes that with this group:

“Global communications and transportation systems are in place and developing rapidly; advances in the ‘new sciences’ of quantum physics, holistic biology, and complexity theory (with their discoveries of nonlocality, ecological interdependence, and self-organizing systems) are already dismantling the old Modernist paradigm; in addition, a host of new developments in humanistic-transpersonal psychology, eco-sciences, and feminism, as well as a burgeoning psychospiritual consciousness revolution, are all broad social movements contributing to a Transmodern culture and a new kind of world. The transformation is happening right in front of our eyes...”

Renowned sociologist Robert Bellah sums it up for us:

“We may be seeing the beginnings of the reintegration of our culture, a new possibility of the unity of consciousness. If so, it will not be on the basis of any new orthodoxy, either religious or scientific. Such a new integration will be based on the rejection of all univocal understandings of reality, of all identifications of one conception of reality with reality itself. It will recognize the multiplicity of the human spirit and the necessity to translate constantly between different scientific and imaginative vocabularies. It will recognize the human proclivity to fall comfortably into some single literal interpretation of the world and therefore the necessity to be continuously open to rebirth in a new heaven and a new earth. It will recognize that in both science and religious culture all we have finally are symbols, but that there is an enormous difference between the dead letter and the living word.”



- When has your worldview been radically expanded or altered?
- What made it possible?
- What do you think is needed for the dominant paradigm to change?
- What helps you live with uncertainty?

Group Activities

PARADIGM PARTY

(1) The group starts out making up a new worldview by deciding together how to fill in the blanks for the following sentences:

- _____created the world.
- Humans are on Earth because_____.
- Our purpose in being here is to_____.
- If we succeed, _____happens.
- If we fail, _____ happens.
- The good and bad things that happen on Earth are the consequence(s) of_____.
- It is important for us to_____ nature.
- It is important for us to_____one another.
- It is important for us to_____the force that created the world.

(2) Now that you have your worldview, tell a story that expresses this paradigm by going around the circle with each person taking a turn to add a short episode. The story will reflect the worldview you have just created. The following structure might help you as you create your story:

Who is the protagonist? --- What do they want? --- What's in the way of their getting what they want? --- Do they overcome the obstacle? --- If so, how? --- What is possible as a result?

GETTING TO KNOW YOU

Place an object in the middle of the circle. Take a few moments to be with it in these different ways and notice how each one feels. Share your experience with the group.

- (1) Examine its physical properties—make a guess as to its exact weight, size, shape, texture, density, etc. Notice what that is like.
- (2) Look at it with the awareness that it's not solid but mostly empty and pulsing in and out of existence and in some way affecting and being affected by you. Notice what that's like.
- (3) Sit with the object without labeling it, and without touching its edges, sense its density. Sit with your full attention reaching into it until you feel your own body take on some of its qualities. Notice what that is like.
- (4) Be with the object noticing what it moves in you, what it makes you think and feel. Write a short poem about it. Notice what that is like.

Individual Activities

A WORLD FULL OF VIEWS

Everything we do and say is the expression of our beliefs about the world. Finding the underlying beliefs can lead to insights and understanding.

As you go through the day, try to identify some of the assumptions that inform your own and others' actions. Be sure to include people you find objectionable. Ask yourself what this person would have to believe in order to do, say, or be that way.

Expand your inquiry to include the assumptions held by other cultures and nations. What would China, Sudan, the United States, Israel, or Palestine, for example, have to believe in order to behave the way they are behaving?

IDENTIFYING YOUR WORLDVIEW

To get a better picture of your worldview, fill in the blanks for the following statements:

_____created the world.

I am on Earth because_____.

My purpose in being here is to_____.

If I succeed, _____happens.

If I fail, _____ happens.

The good and bad things that happen on Earth are the consequence(s) of_____.

It is important for me to_____ nature.

It is important for me to_____ other people.

It is important for me to_____the force that created the world.

Quotations

"Broad, wholesome, charitable views ... can not be acquired by vegetating in one's little corner of the earth."

—Mark Twain

"The dogmas of the quiet past are inadequate to the stormy present. The occasion is piled high with difficulty, and we must rise with the occasion. As our case is new, so we must think anew and act anew."

—Abraham Lincoln

"There is only one admirable form of the imagination: the imagination that is so intense that it creates a new reality, that it makes things happen."

—Sean O'Faolain

"I believe that unarmed truth and unconditional love will have the final word in reality. That is why right, temporarily defeated, is stronger than evil triumphant."

—Martin Luther King Jr.

"'Reality' is the only word in the English language that should always be used in quotes."

—Unknown

"For a successful technology, reality must take precedence over public relations, for Nature cannot be fooled."

—Richard Feynman

"Einstein's space is no closer to reality than Van Gogh's sky. The glory of science is not in a truth more absolute than the truth of Bach or Tolstoy, but in the act of creation itself. The scientist's discoveries impose his own order on chaos, as the composer or painter imposes his; an order that always refers to limited aspects of reality, and is based on the observer's frame of reference, which differs from period to period as a Rembrandt nude differs from a nude by Manet."

—Arthur Koestler, *The Act of Creation*

"As far as the laws of mathematics refer to reality, they are not certain; and as far as they are certain, they do not refer to reality."

—Albert Einstein

"Intuition is the source of scientific knowledge."

—Aristotle

"When a thing is new, people say: 'It is not true.' Later, when its truth becomes obvious, they say: 'It is not important.' Finally, when its importance cannot be denied, they say: 'Anyway, it is not new.'"

—William James

"Dear dear! How queer everything is today! And yesterday things went on just as usual. I wonder if I've been changed in the night. Let me think: was I the same when I got up this morning? I almost remember feeling a little different."

—Lewis Carroll, *Alice's Adventures in Wonderland*

Additional Resources

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QUANTUM REALITY

What does quantum physics tell us about the nature of reality?
 What does it tell us about the nature of consciousness?
 How is it relevant to our lives?

"Things are not as they appear to be. Nor are they otherwise."
 —The Lankavatara Sutra

"Quantum physics tells us 'the world is very big and very mysterious. Mechanism is not the answer, but I'm not going to tell you what is.'"
 —from What the Bleep Do We Know!?

A basketball appears in ten places at once. Amanda sees herself through the eyes of someone she has become. Time stands still, and particles become waves. *What the Bleep Do We Know!?* invites us to bend our minds around the startling discoveries of quantum physics and to entertain the possibility that things are not as they appear to be. As the *Lankavatara Sutra* says, neither are they otherwise. In fact, according to quantum physics, things are not even "things," they are more like possibilities. According to physicist Amit Goswami, "Even the material world around us—the chairs, the tables, the rooms, the carpet, camera included—all of these are nothing but possible movements of consciousness." What are we to make of this? "Those who are not shocked when they first come across quantum theory cannot possibly have understood it," notes quantum physics pioneer Niels Bohr.

Before we can consider the implications of quantum mechanics, let's make sure we understand the theory.

What is Quantum Mechanics?

Quantum mechanics, the latest development in the scientific quest to understand the nature of physical reality, is a precise mathematical description of the behavior of fundamental particles. It has remained the preeminent scientific description of physical reality for 70 years. So far all of its experimental predictions have been confirmed to astounding degrees of accuracy.

To appreciate why quantum mechanics continues to astound and confound scientists, it is necessary to understand a little about the historical development of physical theories. Keeping in mind that this brief sketch oversimplifies a very long, rich history, we may consider that physics as a science began when Isaac Newton and others discovered that mathematics could accurately describe the observed world. Today the Newtonian view of physics is referred to as classical physics; in essence, classical physics is a mathematical formalism of common sense. It makes four basic assumptions about the fabric of reality that correspond more or less to how the world appears to our senses. These assumptions are reality, locality, causality, and continuity.

Reality refers to the assumption that the physical world is objectively real. That is, the world exists independently of whether anyone is observing it, and it takes as self-evident that space and time exist in a fixed, absolute way. Locality refers to the idea that the only way that objects can be influenced is through direct contact. In other words, unmediated action at a distance is prohibited. Causality assumes that the arrow of time points only in one direction, thus fixing cause-and-effect sequences to occur only in that order. Continuity assumes that there are no discontinuous jumps in nature, that space and time are smooth.

Classical physics developed rapidly with these assumptions, and classical ways of regarding the world are still sufficient to explain large segments of the observable world, including chemistry, biology, and the neurosciences. Classical physics got us to the moon and back. It works for most things at the human scale. It is common sense.

WEIRD SCIENCE

But it does not describe the behavior of all observable outcomes, especially the way that light—and, in general, electromagnetism—works. Depending on how you measure it, light can display the properties of particles or waves. Particles are like billiard balls. They are separate objects with specific locations in space, and they are hard in the sense that if hurled at each other with great force, they tend to annihilate each other accompanied by dazzling displays of energy. In contrast, waves are like undulations in water. They are not localized but spread out, and they are soft in that they can interact without destroying each other. The wave-like characteristic also gives rise to the idea of quantum superposition, which means the object is in a mixture of all possible states. This indeterminate, mixed condition is radically different than the objects we are familiar with. Everyday objects exist only in definite states. Mixed states can include many objects, all coexisting, or entangled, together.

How is it possible for the fabric of reality to be both waves and particles at the same time? In the first few decades of the twentieth century, a new theory, Quantum Mechanics, was developed to account for the wave-particle nature of light and matter. This theory was not just applicable to describing elementary particles in exotic conditions, but provided a better way of describing the nature of physical reality itself. Einstein's Theory of Relativity also altered the Newtonian view of the fabric of reality, by showing how basic concepts like mass, energy, space, and time are related. Relativity is not just applicable to cosmological domains or to objects at close to light-speeds, but refers to the basic structure of the fabric of reality. In sum, modern physics tells us that the world of common sense reveals only a special, limited portion of a much larger and stranger fabric of reality.

The Quantum Basics

Wave-Particle CoExistence

Electrons can behave as both particles and waves. As waves, electrons have no precise location but exist as "probability fields." As particles, the probability field collapses into a solid object in a particular place and time. Unmeasured or unobserved electrons behave in a different manner from measured ones. When they are not measured, electrons are waves. When they are observed, they become particles. The world is ultimately constructed out of elementary particles that behave in this curious way.



Who or what is the observer that determines the location of the particle?

Is there an ultimate observer?

Can we be conscious of that observer?

What would you see if you looked through the eyes of the ultimate observer?

HEISENBERG UNCERTAINTY PRINCIPLE

In classical physics, all of an object's attributes are in principle accessible to measurement. Not so in quantum physics. You can measure a single electron's properties accurately, but not without producing imprecision in some other quantum attribute. Quantum properties always come in "conjugate" pairs. When two properties have this special relationship, it is impossible to know about both of them at the same time with complete precision. Heisenberg's Uncertainty (also known as the Indeterminacy) Principle says that if you measure a particle's position accurately, you must sacrifice an accurate knowledge of its momentum, and vice versa. A relationship of the Heisenberg kind holds for all dynamic properties of elementary particles and it guarantees that any experiment (involving the microscopic world) will contain some unknowns.



How are we affected by others' observations?

Does every observer affect the world the same way?

What causes differences?

BELL'S THEOREM AND NONLOCALITY

"Local reality" is the reality that is governed by the laws of classical physics. In a local reality, influences cannot travel faster than the speed of light. In 1964 Irish physicist John Stewart Bell showed that any model of reality compatible with quantum theory must be nonlocal. For quantum physics to work, information must travel not just faster than light, but instantaneously. Nonlocality suggests that everything in the universe is connected by information that can appear anywhere else, instantaneously.



If everything in the universe is able to communicate instantaneously with everything else, what establishes which information we receive?

What are the implications of nonlocality on how we can know the world?

How would this change our lives?

The new theories systematically challenged all of the assumptions of classical physics:

Reality faded away like the Cheshire cat because we now know that fundamental properties of the physical world are not fixed; the world changes in subtle ways depending on how we wish to observe it. The objects we encounter in everyday life do not ordinarily exhibit obvious quantum effects because the strangeness of the microscopic world is effectively smoothed out through innumerable interactions with the environment. Indeed, classical descriptions of nature are often good enough for mundane purposes. But those descriptions are an approximation of a more fundamental quantum world, leaving open the possibility that some aspects of observation may subtly persist even into classical domains.

Locality was replaced with nonlocality, the idea that objects that are apparently separate are actually connected instantaneously through space-time. With nonlocality it is no longer true that unmediated action at a distance is not possible. In fact, such actions are required.

Causality has dissolved because the fixed arrow of time is now known to be a persistent illusion, a misapprehension sustained by the classical assumptions of an absolute space and time. We now know that sequences of events depend on the perspectives (technically called the frame of reference) of the observers.

Continuity has faded away because we now know that there are some discontinuities in the fabric of reality. Space and time are neither smooth nor contiguous.



When has your experience of reality been radically altered, and how?
 How did the experience affect you?
 What would it be like to feel quantum physics through the senses?
 What are the implications?

Practice: Look around you. Imagine that what you are seeing is just the tip of the iceberg, a “special limited portion of a larger fabric of reality.” Look where there appears to be nothing and imagine that this space is teeming with possibilities. Look where there appears to be something and imagine that what appears solid is mostly space. Feel your hands. Imagine them on the quantum level, particle/waves flashing in and out of existence. Consider how our hands are communicating in quantum language with the rest of the universe. What do you notice?

What Does it Mean?

What does the phrase “we know” mean? It means that theoretical predictions were made, based on mathematical models, and then repeatedly demonstrated in experiments. If the universe behaves according to the theories, then we are justified in believing that common sense is indeed a special, limited perspective of a much grander universe.

The portrait of reality painted by relativity and quantum mechanics is so far from common sense that it raises problems of interpretation. The mathematics of the theories are precise, and the predictions work fantastically well. But translating mathematics into human terms, especially for quantum mechanics, has remained exceedingly difficult.

The perplexing implications of quantum mechanics were greeted with shock and awe by the developing scientists. Many physicists today believe that a proper explanation of reality in light of quantum mechanics and reliability requires radical revisions of one or more common-sense assumptions: reality, locality, causality or continuity.

Given the continuing confusions in interpreting quantum mechanics, some physicists refuse to accept the idea that reality can possibly be so perplexing, convoluted, or improbable—compared to common sense, that is. And so they continue to believe, as did Einstein, that quantum mechanics must be incomplete and that once “fixed” it will be found that the classical assumptions are correct after all, and then all the quantum weirdness will go away. Outside of quantum physics, there are a few scientists and the occasional

philosopher who focus on such things, but most of us do not spend much time thinking about quantum mechanics at all. If we do, we assume it has no relevance to our particular interests. This is understandable and in most cases perfectly fine for practical purposes. But when it comes to understanding the nature of reality, it is useful to keep in mind that quantum mechanics describes the fundamental building blocks of nature, and the classical world is composed of those blocks too, whether we observe them or not.

The competing interpretations of quantum mechanics differ principally on which of the common-sense assumptions one is comfortable in giving up. Some of the more widely known interpretations of quantum mechanics include the Copenhagen Interpretation, Wholeness, Many Worlds, NeoRealism, and, as promoted by the *What the Bleep?* film, Consciousness Creates Reality.

Copenhagen Interpretation – This is the orthodox interpretation of quantum mechanics, promoted by Danish physicist Niels Bohr (thus the reference to Copenhagen, where Bohr's institute is located). In an overly simplified form, it asserts that there is no ultimately knowable reality. In a sense, this interpretation may be thought of as a “don't ask–don't tell” approach that allows quantum mechanics to be used without having to care about what it means. According to Bohr, it means nothing, at least not in ordinary human terms.

Wholeness – Einstein's protégé David Bohm maintained that quantum mechanics reveals that reality is an undivided whole in which everything is connected in a deep way, transcending the ordinary limits of space and time.

Many Worlds – Physicist Hugh Everett proposed that when a quantum measurement is performed, every possible outcome will actualize. But in the process of actualizing, the universe will split into as many versions of itself as needed to accommodate all possible measurement results. Then each of the resulting universes is actually a separate universe. Popular television shows like *Sliders* and a few scenes in *What the Bleep?* capitalize on these ideas.

Quantum Logic – This interpretation says that perhaps quantum mechanics is puzzling because our common sense assumptions about logic break down in the quantum realm. Mathematician John von Neumann developed a “wave logic” that could account for some of the puzzles of quantum theory without completely abandoning classical concepts. Concepts in quantum logic have been vigorously pursued by philosophers.

NeoRealism – This was the position led by Einstein, who refused to accept any interpretation, including the Copenhagen Interpretation, asserting that common sense reality does not exist. The neorealists propose that reality consists of objects familiar to classical physics, and thus the paradoxes of quantum mechanics reveal the presence of flaws in the theory. This view is also known as the “hidden variable” interpretation of quantum mechanics, which assumes that once we discover all the missing factors the paradoxes will go away.

Consciousness Creates Reality – This interpretation pushes to the extreme the idea that the act of measurement, or possibly even human consciousness, is associated with the formation of reality. This provides the act of observation an especially privileged role of collapsing the possible into the actual. Many mainstream physicists regard this interpretation as little more than wishful New Age thinking, but not all. A few physicists have embraced this view and have developed descriptive variations of quantum theory that do accommodate such ideas.



- Which interpretation appeals to you the most?
- How would you elaborate on it?
- Do you have another possible interpretation?
- What are the implications of each of these interpretations on the world?
- How would each of these interpretations affect your life?
- What is your basis for deciding which interpretation to adopt?

It should be emphasized that at present no one fully understands quantum mechanics. And thus there is no clear authority on which interpretation is more accurate.

EXPERIMENTAL TESTS OF MIND MEETING MATTER

One approach to gaining some leverage on which quantum reality may be closer to truth is to consider frequently reported anomalies that are not well accounted for by classical physics but might be by quantum physics. In particular, psychic and mystical experiences have been reported throughout history and in all cultures. Laboratory experiments attempting to demonstrate psychic effects have been conducted since the late nineteenth century. These efforts continue today, including at the IONS' Consciousness Research Lab.

The cumulative evidence from the discipline of parapsychology strongly suggests that some psychic phenomena do exist. Many scientists assume that such research consists of ghostbusting by dubiously credentialed "paranormal investigators," as this is how the media tends to portray parapsychology. In fact there is a long and distinguished history of academic scientists who have seriously investigated these phenomena and published their results in peer-reviewed journals. When this body of data is assessed without prejudice, there is strong evidence that we can gain information without the use of the ordinary senses, unbound by the usual constraints of space and time. The evidence remains controversial because these effects are impossible under the rules of classical physics. But the space-time flexibility, nonlocality, and acausal connections described by quantum physics do allow for such phenomena.

Resource: For more information on developing intuition go to: www.awakening-intuition.com and www.psiarcade.com. For an interview with Francis Vaughan, author of *Awakening Intuition* see www.intuition.org/idxtran.htm

Thus the data of parapsychology provide a new perspective from which to reinterpret the various quantum realities. Bohm's "wholeness" interpretation, in which everything is ultimately interconnected with everything else, seems particularly compatible with psychic phenomena. Imagine that at some deep level of reality, our brains are in intimate communion with the entire universe as Bohm's interpretation proposes. If this were true, what might it feel like on an experiential level? You might occasionally get glimpses of information about other people's minds, distant objects, the future, or the past. You would gain this information not through ordinary senses and not because signals from other minds and objects somehow traveled to your brain, but because your brain is already coexistent with other minds, distant objects, and everything else. To navigate this psychic space, you would focus your attention inward rather than outward. This proposal is supported by the role of attentional focusing in meditation practice, which has long been associated with the development of spontaneous psychic and mystical experiences. From this perspective psychic experiences may be reinterpreted not as mysterious powers of the mind but as momentary glimpses of quantum wholeness, the fabric of reality itself.

Resource: For more information on the science of parapsychology, see www.parapsych.org

The Institute of Noetic Sciences studies the relationship between the mind and the quantum world. One type of experiment uses a sensitive optical apparatus to measure whether mental intention interacts directly with the wave/particle characteristics of photons. Another uses an electronic random number generator based on the direction that photons take upon hitting a half-silvered mirror; and detects whether the mind can influence the photon's "decision" about which path to travel. These experiments continue a legacy of a half-century of research by many scientists around the world who have explored the role of mind in the physical world. Overall this body of research suggests that mind does interact with matter to a small degree, and so far no simple explanatory model has been developed that clearly explains how this happens. The answer may well lie in an improved understanding of the quantum realities.

Practice: With a friend, close your eyes and sit quietly, focusing your attention on an object until your mind becomes relatively still. With eyes still closed, Partner A thinks of an event or image that is potent and that can be held in vivid awareness. Partner B just notices any impressions or images that come to mind and writes them down. Then Partner A chooses another image. Repeat three times and trade roles. Then check your answers against the actual image. What do you notice?

Science and Mysticism

Does quantum mechanics help us to understand consciousness? How does it inform our understanding of the spiritual dimensions of our experience? We must remember in our attempts to address these questions that confusion can arise when we mix metaphors with mathematics. There are clearly areas of commonality between mystical experiences of unity and what physicists describe as the quantum field. Still, the leaders of quantum mechanics—including Niels Bohr, Werner Heisenberg, and Erwin Schrodinger—rejected the idea that physics and mysticism were describing the same phenomena. In the words of Max Planck, efforts to bring them together are "founded on a misunderstanding or, more precisely, on a confusion of the images of religion with scientific statements. Needless to say, the result makes no sense at all."

However, it does make sense to seek a reconciliation between science and spirituality. As noted by Tom Huston in his review of *What the Bleep?* for *What Is Enlightenment?* magazine (www.wie.org/j27/what-the-bleep.asp):

In our postmodern and scientific age, what is the most obvious direction for a spiritually seeking soul to turn in search of Truth (with a capital T) after traditional mythic religion has been seen through and left behind? Why, it's toward science, surely, with its claim to universal truth and its mathematical certainty to ten decimal places about the inner logic of space and time. Having our spiritual beliefs backed by science lends them some degree of legitimacy, however tenuous the connection. Moreover, it seems to make those beliefs more easily defensible against the preying guards of scientific authority—that is, the skeptics and scientific materialists of our era—both when encountering such adversaries in the world at large and when the same materialist doubts arise in our own minds. . . . That we should even feel the need to overcome the doubt of the scientific materialist worldview indicates how all-pervasive it actually is, and how thoroughly steeped in it most of us are.



How is our worldview shaped by scientific assumptions?
 How do you treat knowledge that cannot be proven scientifically?
 How do you know something is true?

We need not force a scientific explanation onto intuitive insights into the connections between science and spirit. We can let our intuitions and spiritual insights stand and be evaluated on their own terms, for their beauty and their power to inspire and stir a feeling of deep accord between ourselves and the world. As British physicist Sir Arthur Eddington put it a century ago:

In the mystic sense of the creation around us, in the expression of art, in a yearning towards God, the soul grows upward and finds the fulfillment of something implanted in its nature. . . . The pursuit of science [also] springs from a striving which the mind is impelled to follow, a questioning that will not be suppressed. Whether in the intellectual pursuits of science or in the mystical pursuits of the spirit, the light beckons ahead and the purpose surging in our nature responds. —The Nature of the Physical World

Quantum physics, with its startling revelations and freakish discoveries, has successfully awakened the world from what William Blake called “Newton’s slumber.” We can no longer look at a world that appears real, local, consistent, and causal, and believe with full conviction that we are perceiving the whole of reality. Nor can we say that we know what reality we are perceiving. Until more secrets are revealed, perhaps all we can say is “What the bleep do we know?”

Additional Dialogue

What do the discoveries of quantum physics spark in you?

Can you imagine a world in which objects do not have intrinsic properties?

How much of reality do you think exists separate from our perception of it?

How much does our method of questioning nature influence the answers nature gives to our questions?

How would it change your life if you experienced reality as an open-ended conversation or dialogue?

If the world is the result of a participatory interplay between ourselves and nature, to what extent do you think reality is arbitrary?

Quantum physics is a physics of possibilities...

- Who chooses from these possibilities to give us the actual event of experience?
- How do you think in terms of possibilities?
- How do you think without having objects of thought?

MAKING IT PERSONAL...

Can you think of a time in your life when your experience was extended beyond its previous range, revealing that your view of the world was, in some sense, an illusion?

If the strange properties of quantum theory are only observable on the atomic scale, to what extent do you think quantum theory is relevant to your ordinary experience?

Quotations

Those who are not shocked when they first come across quantum theory cannot possibly have understood it.

—Niels Bohr

The ontology of materialism rested upon the illusion that the kind of existence, the direct "actuality" of the world around us, can be extrapolated into the atomic range. This extrapolation is impossible, however.

—Werner Heisenberg

The smallest units of matter are, in fact, not physical objects in the ordinary sense of the word; they are forms, structures or—in Plato's sense—Ideas, which can be unambiguously spoken of only in the language of mathematics.

—Werner Heisenberg

We have to remember that what we observe is not nature in itself but nature exposed to our method of questioning.

—Werner Heisenberg

Observation plays a decisive role in the event and . . . the reality varies, depending upon whether we observe it or not.

—Werner Heisenberg

Useful as it is under everyday circumstances to say that the world exists "out there" independent of us, that view can no longer be upheld.

—J. A. Wheeler

"I think it is safe to say that no one understands quantum mechanics. Do not keep saying to yourself, if you can possibly avoid it, 'But how can it be like that?' because you will go 'down the drain' into a blind alley from which nobody has yet escaped. Nobody knows how it can be like that."

—Richard Feynman

Additional Resources

BOOKS

Davies, P. C. W. *The Ghost in the Atom: A Discussion of the Mysteries of Quantum Physics*. Cambridge University Press, 1986.

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Greene, Brian. *The Elegant Universe: Superstrings, Hidden Dimensions, and the Quest for the Ultimate Theory*. Vintage, 2000.

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Herbert, Nick. *Quantum Reality: Beyond the New Physics*. Anchor Books, 1987.

McFarlane, Thomas. *The Illusion of Materialism: How Quantum Physics Contradicts the Belief in an Objective World Existing Independent of Observation*. Center Voice: The Newsletter of the Center for Sacred Sciences, Summer-Fall 1999.

Zukav, Gary. *The Dancing Wu Li Masters*. Bantam Books, 1990.

INTERNET

Heisenberg and Uncertainty: A Web Exhibit American Institute of Physics
www.aip.org/history/heisenberg/

Measurement in Quantum Mechanics: Frequently Asked Questions edited by Paul Budnik
www.mtnmath.com/faq/meas-qm.html

The Particle Adventure: An interactive tour of fundamental particles and forces
Lawrence Berkeley National Laboratory www.particleadventure.org

Discussions with Einstein on Epistemological Problems in Atomic Physics, Niels Bohr (1949)
www.marxists.org/reference/subject/philosophy/works/dk/bohr.htm

The History of Quantum Theory, Werner Heisenberg (1958)
www.marxists.org/reference/subject/philosophy/works/ge/heisenb2.htm

The Copenhagen Interpretation of Quantum Theory, Werner Heisenberg (1958)
www.marxists.org/reference/subject/philosophy/works/ge/heisenb3.htm

The Illusion of Materialism by Thomas J. McFarlane
www.integralscience.org/materialism/materialism.html

LINKS FOR GENERAL INFORMATION ON QUANTUM MECHANICS:

http://en.wikipedia.org/wiki/Quantum_mechanics

<http://plato.stanford.edu/entries/qt-quantlog/>

<http://scienceworld.wolfram.com/physics/topics/EarlyQuantumMechanics.html>

www.benbest.com/science/quantum.html

www.mtnmath.com/faq/meas-qm-0.html

CREATING OUR DAYS

How do we consciously create our lives?

What is the power of intention?

Is there a deeper order to the universe?

People are always blaming their circumstances for what they are. I don't believe in circumstances. The people who get on in this world are the people who get up and look for the circumstances that they want, and if they can't find them, make them. —George Bernard Shaw

What would it mean if the thoughts we have when we start our day actually affect what happens without our having to *do* something? What if all thoughts, conscious or not, influence the world? Would we start the day yelling at our children? Dashing out the door? Making "to do" lists? How would it change our lives?

While the theoretical explanations for mind-matter interaction effects are not yet conclusive, many of us intuitively feel the power of intention. In the film *What the Bleep Do We Know!?* Joe Dispenza describes his practice of consciously creating his day:

I wake up in the morning, and I consciously create my day the way I want it to happen. Sometimes...it takes me a little bit to settle down, and get to...where I am actually intentionally creating my day...[then throughout the day] out of nowhere, little things happen that are so unexplainable, I know they are the process or the result of my creation. We're consciously, from a spiritual standpoint, throwing in the idea that our thoughts affect our reality or affect our life.

I have this little pact...I say, "I'm taking this time to create my day" and I'm infecting the Quantum Field. Now, if it is a fact, that the observer's watching me the whole time that I am doing this, and there is this spiritual aspect to myself, then "show me a sign today that you paid attention to any one of these things that I created. Bring them in a way that I won't expect, so I'm surprised at my ability to be able to experience these things and make it so I have no doubt that its come from you." And so, I live my life all day long thinking about being a genius...and as I do that, during parts of the day, I'll have thoughts that are so amazing, that cause a chill in my physical body, that have come from nowhere."

Practice: Take a moment to set an intention for your time exploring the ideas and practices in this guide. If you're in a study group, go around the circle sharing your intention with the whole group. You can clarify your intention by reflecting on the following questions: What draws you to this exploration? What do you want to get out of it? Why does it matter to you?

How do we "infect the quantum field" so that inexplicable things happen that are in alignment with our intentions? How can we indeed "create our days?" First, let's find out what science and consciousness researchers have to tell us about intention and the extent of our capacity to shape our lives.

The Power of Intention

How do our intentions shape our lives? Intentions continuously affect the world by guiding our actions. You intend to mow the lawn, eventually you mow the lawn, and the lawn is physically changed. So the real mystery is not whether intentions influence the world indirectly, but whether the human mind influences the physical world by an act of intention directly—without physical contact of any sort.

Intention is a long-standing puzzle in the study of human consciousness. Operationally defined, intention involves directing the mind, with purpose and efficacy, toward some object or outcome. Intention represents both challenges and opportunities for deepening our understanding of how we might create our days. Indeed, it draws our focus to some of the most interesting and perplexing questions about the connections among mind, body and spirit—leading us to explore the influence of consciousness both directly and indirectly on individual and collective well-being.

We can speak of three key areas of research on intention:

- 1. Self-directed intention.** How our intentions, particularly visualizations, influence our bodies and minds. This area of research includes the neuroscience and biochemistry of emotions, which we explore in the chapter, *Healing the Past*.
- 2. Intentions and our interactions with the world.** How our intentions influence others through direct or indirect communication. This area explores the possibility that the expectations of others may actually influence our health and well-being.
- 3. Transpersonal intention.** Ways in which our intentions might influence others and the world through nonphysical and nonsensory means, for example, as reported claims of distant healing, intercessory prayer, or mind over matter. This area challenges core precepts of the Newtonian worldview's assumption of separation.

SELF-DIRECTED INTENTION

"I never hit a shot," Jack Nicklaus writes in *Golf My Way*, "without having a very sharp, in-focus picture of it in my head." For Lee Evans, four-hundred-meter Olympic champion and world-record holder, success in the 1968 Olympics involved "visualizing every stride of the race, correcting weaknesses in every step I took." Body builder, and current Governor of California, Arnold Schwarzenegger claims that when he has an image of a particular muscle while doing a pump, the benefit to that muscle is ten times that of one done when his mind is drifting.

What's going on here? Top athletes daydreaming between practice sessions? Not at all. These are athletes who have discovered, often quite accidentally, the validity of psychologist and champion body builder Charles Garfield's maxim for athletic success: Once the physical training is done, the difference between winning and not winning is in your head. Since the publication thirty years ago of W. Timothy Gallwey's *The Inner Game of Tennis*, in fact, more and more professional competitors and weekend jocks alike are entertaining the possibility that the mind is the playing field on which the real game takes place. There is a growing consensus that the next breakthroughs in athletic performance will come not so much from more muscle bulk and skeletal strength as from a skillful combination of physical training and the use of such largely neglected "powers of the mind" as concentration, meditation, visualization, and inner sensing.

Researchers have been exploring what might be called the “mental game” of fitness for many decades, and coming up with provocative findings. A 1946 study of suggestion and hypnosis by M. B. Arnold was among the first to suggest what modern-day physiologists now take for granted: that if one *imagines* throwing darts, the result is a small but measurable contraction of the muscles used in actually throwing darts. And in a 1932 study of the electrophysiology of mental activities, Edmund Jacobson found that using a combination of visual imagery and internal feeling (“proprioception”), as opposed to only visual imagery, produced greater muscle action during imagined weight lifting.

INTENTION AND INTERACTIONS WITH THE WORLD

As we know just by looking around the world, there are a lot of other conscious beings participating in this creative process along with us. The philosopher Alfred North Whitehead put forward the view that everything in the universe, from particles to planets alike, is in constant contact, exerting varying degrees of creative influence on each other.

Resource: For further description of Whitehead’s Process Philosophy read the article, “What the Butterfly Knows,” by Keith Thompson. In *Noetic Sciences Review* #52, June - August 2000. (www.noetic.org/publications/review/issue52/r52_Thompson.html)

Social creativity researchers Alfonso Montuori and Ronald Pursuer (1996) describe additional factors that influence our creativity. These include the environment, economic and educational resources, cultural forces, political and organizational contexts, biological factors, psychological and personality issues, and interpersonal relationships. The psychologist Mihaly Csikszentmihalyi encourages us to recognize the complex nature of creativity and the need to adopt a new “model in which the person is a part of a system of mutual influences” (Csikszentmihalyi, 1988, 336). We are not exclusively responsible for the outcome of our intentions, but we are part of a larger chorus of creativity that is constantly exerting influences on what manifests around us. We are participants in a creative process that is both originating within our own consciousness and interrelated to the whole universe.

How does intention that is communicated through interactions with others influence our minds and bodies? Interesting studies done on placebos provide clues. Traditionally, researchers use placebos in clinical tests to investigate the effects of a drug. As an inert substance, the placebo is not intended to have any benefit, but instead to provide a baseline by which to measure the effectiveness of the active drug. However, placebos do prove to have beneficial effects. How is this possible? What is the power of suggestion?

Every interaction between healthcare providers and their clients has at least some component of suggestion built in. Whether we know it or not, we are “listening” to and interpreting the messages our healthcare provider unconsciously conveys through every gesture and vocal tone, facial expression and innuendo. In other words, we pick up on the practitioner’s unconscious messages. These signals affect our own beliefs about our health, and our beliefs inform our healing as we have already seen.

This “placebo effect,” the powerful influence of a healer’s intentions on the patient puzzles and disturbs many researchers. After all, it seems to prevent them from collecting reliable data on “real” medicine. But, these placebos may in fact turn out to be a key to our understanding the connection between intention, belief, expectation and bodily responses. While more research needs to be done to examine the nature of factors like rapport, anticipation and hope in everyday life, there is research showing that long-term states of distress, hopelessness and despair can cause serious disruptions to the healing process.

Resource: for reviews of the literature on the correlations between mind states and the healing process, see Pert, Dreher and Ruff, 2005. "The Psychosomatic Network: Foundations of Mind-Body Medicine" as well as Simonton-Atchley and Sherman, 2005 "Psychological Aspects of Mind-Body Medicine: Promises and Pitfalls from Research with Cancer Patients," both in *Consciousness and Healing* by Schlitz, Amorok and Micozzi, Elsevier, 2005.

TRANSPERSONAL INTENTION AT A DISTANCE

Can all aspects of intention be explained by conventional biological, psychological and social processes? Or can the human mind influence the physical world by an act of intention directly – that is, without physical contact of any sort? Does intentionality require force as conventional physics dictates? Or is there something more to consciousness than its physical properties? If intentionality is somehow *causal* rather than merely caused, then how can it be included, even potentially, in our usual concept of "scientific laws?" The field that speaks most directly to these questions is experimental parapsychology (Radin, 1997; Broughton 1991.)

Parapsychology is the scientific study of anomalous mind-matter interactions, including telepathy (mind to mind), clairvoyance (mind to object or event), precognition (knowledge of future events), and psychokinesis (mind over matter). Most of the scientific evidence for the effects of mind-matter interaction fall into two classes: Intention directed at living systems and intention directed at inanimate systems.

Resource: There are several professional scientific communities studying distant intention. These include the Parapsychological Association (www.parapsych.org) and the Society for Scientific Exploration (www.scientificexploration.org). A training program on parapsychology research will be held by the Institute of Noetic Sciences (www.noetic.org). To test your own parapsychological abilities, visit a set of online psi games at www.psiarcade.com.

INTENTION ON LIVING SYSTEMS

In the former case, laboratory studies have been conducted to determine whether intention might influence the growth of cell cultures, the structure of water, the rate of wound healing in mice, the swimming activity of fish, activity in the human autonomic nervous system, and the course of illness in human disease. The literature on these studies is massive and uneven in quality, but overall it suggests that intention can affect living systems to some degree. A cautious assessment is that intention appears to weakly correlate (but perhaps not *influence* in the physical sense of applying force) with changes in the behavior of a wide range of living systems.

Resource: For more information on the IONS Distant Healing Project visit www.noetic.org/research/dh.cfm.

For example, a meta-analysis published in the *British Journal of Psychology* in 2004 revealed that in independently replicated, rigorously controlled, double blind laboratory experiments, the thoughts of one person had a measurable effect on the physiological state of another person. The two people in these distant healing experiments were isolated in soundproof and electromagnetically shielded chambers to exclude any ordinary signals from passing between them. And yet, when a "sending" person directed calming or activating thoughts at a "receiving" person, the receiver's body complied in the desired direction. There are as yet no well-accepted theoretical explanations for why this occurs, but evidence that it does happen is becoming increasingly persuasive.

Dean Radin, author of *The Conscious Universe: The Scientific Truth of Psychic Phenomena*, (Harper Collins, 1997) is Senior Scientist at the Institute of Noetic Sciences, where he and his colleagues study extended human capacities, including mind-matter interactions. Radin worked with Princeton University psychologist Roger Nelson, who in 1998 spearheaded a worldwide collaboration among 75 researchers, to create the *Global Consciousness Project* (GCP). The goal of the GCP is to determine whether world events that tend to focus mass consciousness, like international sports events, natural disasters and acts of terrorism, might influence devices that randomly generate numbers based on quantum noise. The results of this experiment to date show strong overall evidence for some form of mass mind-matter interaction. For example, during and immediately after the terrorist attacks of September 11, 2001 on the World Trade Centers and on the Russian school hostages in September 2004 in the city of Beslan, the random numbers being generated world-wide became unusually orderly. (Electronic random number generators are a kind of electronic coin-flipper.) On days with nothing particularly interesting was happening, the random numbers reverted back to their expected random behavior. The scientists are hypothesizing that events that cause "mass mind" to become coherent affect physical matter itself. Scientists are beginning to catch up with philosophers and mystics in acknowledging that the data does seem to show that mind and matter are somehow linked in fundamental ways, and that maybe thoughts do affect the world in subtle ways.

Resource: For more information on the GCP see <http://noosphere.princeton.edu>. This site includes the full list of results, explanations, background materials and the raw data. You can also visit www.noetic.org/publications/research/frontiers_58.htm.



How does individual creative power interact with the rest of the world?

What groups use their creative powers to manifest opposing goals?

What determines which one will prevail?

How can we tell the difference between our own thoughts and suggestion?

INTENTION AND PHYSICAL SYSTEMS

In the case of inanimate systems, individual experiments have examined the effects of intention on tossed dice, spinning coins, falling plastic balls, the movement of water bubbles, the height of water fountains, fluctuations in tiny weights, alterations in weak magnetic fields, and so on.

Resource: For information on the studies and uses of Random Number Generators see www.princeton.edu/~pear/correlations.pdf. For a longer list see www.princeton.edu/~pear/publist.html

By far, the two largest databases of mind-matter interaction experiments have examined whether intention can influence random physical systems. These experiments have focused on the fall of tossed dice and the behavior of electronic random number generators. The former involves tossing a die and wishing or intending for a certain die face to land up. The latter involves wishing for streams of random bits (zeros and ones) to become biased so as to produce more ones than zeros, or vice versa. In both cases, analyses of all known experiments, numbering in the hundreds indicates that under well-controlled laboratory conditions intention does weakly correlate with predictable changes in the behavior of these random systems.

In one of the better-known, long-term studies at the Princeton University's Engineering Anomalies Research Laboratory (PEAR for short, see www.princeton.edu/~pear/), an individual presses a button, which causes an electronic circuit to generate 200 random bits. The person first tries to "aim high," meaning to get more 1's than 0's. On the second button press, the person "aims low," and on a third, has no aim to act as a control. After 12 years and hundreds of thousands of such button pressing by hundreds of participants, the results were clear: The mind makes random numbers comply (weakly, and observed so far only in statistical form) with its will. Whether this is due to an energetic effect, or a more abstract probabilistic shift in the random numbers, or an even more exotic explanation, is not yet certain. But the evidence that *something* interesting is going on is exceedingly strong.

THE MESSAGE OF WATER

Dr. Masaru Emoto's research on the "message of water" is featured prominently in the film. While this work is highly compelling, it is more an artistic metaphor of mind-matter interaction effects than a scientific fact. As presented in Dr. Emoto's books, it does not yet meet the rigor of Western scientific controls. It is unclear, for example, how many pictures were taken, the precise methods by which individual crystals were selected for examination, and many other details, which would make this work acceptable to rigorous experimental standards. Beyond these missing details, this work has not been published in peer-reviewed scientific journals, so we cannot have confidence that scientists who are knowledgeable about the chemistry of water (which is extremely complex) have agreed that the effects presented are credible. Still, the work is highly intriguing and calls for independent replications.



What experiences have you had of your thoughts effecting things "at a distance?"
 How does Emoto's research spark your imagination?
 How do discoveries in science influence your life?
 How would you live if you recognized the full power of your intention?

Coincidence? Maybe, Maybe Not!

How do we know if we're actually creating our day? What are the signs? More than likely we look for evidence that the universe is "listening" and responding to our thoughts. You open a book randomly and find the precise answer to a question you were thinking about. You get an offer for a dream job the day you decide to quit your old job. You think about a friend minutes before they call. As Joe Dispenza said, "Out of nowhere, little things happen that are so unexplainable, I know they are the process or the result of my creation." What are the odds?

SYNCHRONICITY

The noted Swiss psychotherapist, C. G. Jung was the first psychologist to explore "meaningful coincidences" as events that defy the normal laws of causality. Jung was unable to explain through the normal action of cause and effect the "meaningful coincidences" he witnessed repeatedly, yet it seemed mistaken to reflexively write them off as pure chance. For example, one of his patients dreamed that she received a golden scarab, an insect that plays an important role in Egyptian mythology. Later, when she was telling Jung the dream, he heard a gentle tapping at the window, and when he opened it, in flew a beetle that was Switzerland's equivalent to the golden scarab. Catching it in his

hand and handing it to her, Jung said, "Here is your scarab." This uncanny event had the effect of breaking through the rationalistic shell she had built around herself.

Resource: For more information about Jung and Synchronicity see Jungian-Christian Dialogue on the Inner Explorations website www.innerexplorations.com/catchmeta/mys3.htm

These kind of events led Jung to what he called synchronicity, or meaningful coincidence. He reasoned that if these events were not causally connected, perhaps they were the manifestations of some non-causal connecting principle. He was encouraged along these lines because it seemed that modern physics, in developing quantum theory, had broken with causality. "'Causality is only one principle and psychology essentially cannot be exhausted by causal methods only," Jung said, "because the mind (psyche) lives by aims as well," Jung added: "Psychic finality rests on a 'pre-existent' meaning which becomes problematical only when it is an unconscious arrangement. In that case we have to suppose a 'knowledge' prior to all consciousness." (*The Mystery of Matter* Ch. 3 "C.G. Jung's Synchronicity" at www.innerexplorations.com/catchmeta/mys3.htm)

THE SCIENCE

The phenomenon of coincidence has begun to yield new scientific insights. Researchers at the Institute of Noetic Sciences have explored the hypothesis that people unconsciously know when they're about to view upsetting photos. Dean Radin has found that electrical resistance of viewers' skin rises before they are about to view a disturbing image, but not before a neutral image. This is not due to anticipation, because the effect is observed even under double-blind conditions when the images are selected at random by a computer. Researchers at other centers have successfully replicated this effect, using both skin conductance measures and heart rate variability.

Resource: For more information go to Is There a Sixth Sense? in the Jul/Aug 2000 issue of Psychology Today <http://cms.psychologytoday.com/articles/pto-20000701-000034.html>

Psychologist William Braud and others have noted that evidence from experiments in parapsychology, as well as innumerable anecdotes about premonitions, implies that our ordinary apprehension of time is incomplete. Braud suggests that under special conditions, it may be possible to transcend time in the sense that intentions can work "backwards in time" to influence the past.

At first blush this sounds ridiculous, for how can we change what has already happened? But intention seems to be able to influence the initial seed moments or decisions upon which events come into being in the first place, and then ultimately unfold. Thus, as we are making dozens of minor decisions throughout the day, the possibility arises that our future self may be influencing those decisions.

Something very close to this has been observed in repeated laboratory experiments by first blindly recording streams of random bits generated by truly random number generators; that is, no one observes the bits while they are being recorded. The next day, the bits are played back while a person is asked to try to influence them (to get more 1's say, than 0's) according to instructions generated that day, i.e. after the bits were already recorded. These experiments indicate that prerecorded random bits conformed to intentions produced in the future, or equivalently that the unobserved bits in the past somehow conformed to intention generated in the present.

What is “really” happening in these experiments is unknown, because the random bits are not observed until the experiment is already underway in the “future,” but the results are consistent enough to suggest that the past, present and future are, as Einstein showed, genuinely relative. And not just for objects moving close to light-speed, but also in human experience.

As in most areas of frontier and pre-theoretic science, there are inklings that something interesting and probably important is going on, and there is some scientifically valid data to support these ideas. But at this point in our limited understanding, we should be wary of strong claims like “mind creates reality,” as the scientific evidence so far does not support such interpretations without qualifications. Gaining a thorough education on controversial topics requires an understanding of experimental and statistical methods, an appreciation of the epistemological assumptions and limitations of science, and the ontological interpretations of reality from a modern physical perspective.

Resource: For more information about William Braud’s studies see <http://integral-inquiry.com/cybrary.html>. --- For an article about retrocausal influences see William Braud’s article Transcending the Limits of Time <http://integral-inquiry.com/docs/649/transcending.pdf>. --- For a more technical paper on the subject see William Braud’s Wellness Implications of Retroactive Influence: Exploring an Outrageous Hypothesis published in *Alternative Therapies in Health and Medicine*. 2000; 6(1): pp. 37-48. <http://integral-inquiry.com/docs/649/wellness.pdf>.



How have synchronicities impacted your life?

What enables us to notice them?

Do they exist even if we don't notice them?

What is the purpose of synchronicities?

Scientists Speak of Spirituality

Edgar Mitchell, the sixth astronaut to walk on the moon, and founder of the Institute of Noetic Sciences, played a significant role in supporting the scientific investigation of consciousness. The view he had of the Earth from space gave him deep insights into the creative nature of consciousness in the universe:

In one moment I realized that this universe is intelligent. It is proceeding in a direction and we have something to do with that direction. And that creative spirit, the creative intent that has been the history of this planet, comes from within us, and it is out there—it is all the same...

Consciousness itself is what is fundamental and energy-matter is the product of consciousness... If we change our heads about who we are—and can see ourselves as creative, eternal beings creating physical experience, joined at that level of existence we call consciousness—then we start to see and create this world that we live in quite differently.

Resource: For more of Edgar Mitchell’s insights into the nature of consciousness read: Mitchell, Edgar. “As the Paradigm Shifts: Two Decades of Consciousness Research,” *Noetic Sciences Review* #24, p.7, Winter 1992. (www.noetic.org/publications/review/issue24/r24_Mitchell.html)

Mitchell's mystical insights suggest that the creativity inherent in the universe is also within us. His vision suggests that we may play a vital role as participants in the creative process of the life of the whole Earth. Mitchell, not only a leader in humanity's exploration of *outer space*, is playing a key role in promoting a scientifically oriented exploration of *inner space*. His insights into understanding our roles as co-creators within a creative cosmos were later echoed by the research of consciousness theorists and physicists Peter Russell and Amit Goswami.

Peter Russell describes how our view of ourselves and the cosmos, and the relationship between the two, takes on greater meaning when we experiment with a perspective in which science and spirituality converge. At this pivot point, says Russell, divine intention informs the physical manifestations. Likewise, Amit Goswami proposes that the integration of the scientific with the spiritual enhances our ability to understand the creative nature of the cosmos. The way these two scientists understand consciousness as the fundamental basis of existence is echoed in the world's spiritual traditions (as Allah, Satguru, Spirit, the Godhead, the Omega Point, etc.). Goswami explains his personal cosmology on how consciousness creates the material world:

The new science says that the material part of the world does exist...but it is not the only part of reality. [The whole view], the integration of the spiritual and the scientific, was very important for me... because I discovered the new way of doing science when I discovered spirit. Spirit was the natural basis of my being. The material world of quantum physics is just possibility. It is through the conversion of possibility into actuality, that consciousness creates the manifest world... The universe is self-aware, but it is self-aware through us...[with conscious human beings] there is then the possibility of manifest creativity...now that I recognized that consciousness was the ground of being, within months all the problems of quantum measurement theory, the measurement paradoxes, just melted away. The net upshot was the creativity... ever since I have been just blessed with ideas after ideas, and lots of problems have been solved—the problem of cognition, perception, biological evolution, mind-body healing (<http://twm.co.nz/goswam1.htm>).

Russell and Goswami suggest that the consciousness pervading the universe is immensely creative, that it decisively informs the material world, and that, because we are expressions of that consciousness, we have the opportunity to participate with it in manifesting events in our daily lives.

Resource: To learn more about the convergence of science and spirituality go to Peter Russell's website www.peterussell.com and Amit Goswami's website <http://twm.co.nz/goswam1.htm>.

Edgar Mitchell, Peter Russell and Amit Goswami offer a view of how the whole universe at its most fundamental level is consciousness, and that the consciousness that permeates the universe dwells within each of us. There are many practices that can provide direct experiences of this consciousness. The practice of meditation, for example, helps us quiet the mind so we can see clearly into the nature of awareness. With a still mind, it becomes possible to perceive that our true nature is awareness itself, the field from which all phenomena arise and are sustained. We can consciously draw from this dimension of our nature that we share with all existence, direct it with intention, particularly when we are in a meditative state.



How do we know if we are in touch with the cosmic consciousness?

When Amanda's attitude shifts, she immediately receives a phone call from her ex-husband. Have you noticed changes in your life that seemed to come from a change of attitude or perspective?

How would your life be different if you felt the universe to be conscious?

Some of these scientists' views are not shared by mainstream physicists. Perhaps this is because many mainstream physicists aren't taught to care about the deeper ontological issues of what modern physics *means*. In addition, many people, including most quantum physicists and neuroscientists, believe that the appearances of our daily lives, including how our minds and bodies work, can be completely accounted for in classical physical terms. Strict materialism, while justifiably denying metaphysical assumptions unsupported by data, has its own share of assumptions that its adherents simply take for granted. This includes systematically ignoring or excluding the evidence for psychic phenomena and mystical experiences. The time has come to consider more integral views of the world; perspectives that include tested data from all arenas of existence, inner and outer, individual and collective.

Practice: Signs of Intelligent Life: In the course of a day, entertain the possibility that everything you see is permeated with consciousness. Practice sensing yourself connected to this larger field of consciousness. Become an investigator looking for signs of intelligent design permeating existence. What do you find? How do you feel as you look?

A NOTE OF CAUTION

Even though we can play an important role in what manifests in our lives, and we can consciously create our days (or at least our reactions to daily events), there are limits to how much responsibility we can claim for what actually happens in our daily lives. The risk involved in not recognizing our potential as co-creators is that we become victims of life's circumstances. On the other hand, the risk of acknowledging our potential powers is that we are likely to claim more than our individual share of credit for what happens in our lives. How do we avoid the distortions that have us blaming ourselves for a devastating illness or taking all the credit for our healing? How can we have an accurate sense of our own powers?

Father Bruno Barnhart, a Benedictine monk, writes:

"There are moments when one suddenly realizes the sheer cliff that divides our certainty from our uncertainty, the impossible coexistence within us of pure light and every degree and quality of darkness and confusion...our eyes ever so slowly begin to catch a glimpse, to recognize our subtle shadows at work behind the scenes of our creative intentions (1999, 77)."

Unlike a light switch, which requires "on" or "off" but never both at once, we can choose to develop our capacity to consciously create our days, while at the same time staying grounded in a realistic perspective of our personal power in a world of teeming complexity.



How can we tell the difference between divine will and our individual will?

What are the limits, if any, to our creativity and power?

Can we really change the laws of physics?

Learning to create more effectively, what kind of responsibility do we have?

Summary

There are two ways in which we can think of creating our days. One is an internal orientation—we adjust our perceptual and behavioral filters to act in ways that make our days seem better, but in any objective sense, they haven't really changed. For example, a positive change in attitude can make a day seem far better than a negative shift, but the events of the day itself aren't really so different. Or we can choose an external orientation in which our thoughts literally influence the world so that events that might have happened don't, and others that wouldn't have, do. The former requires a psychological shift, while the latter requires a radical change in conventional views of reality.

Overall, the present scientific evidence suggests that mind does matter in ways that the neurosciences cannot yet adequately explain. This is not the majority opinion within mainstream science, yet it seems fair to note that resistance to such ideas is often couched in theoretical objections rather than on the experimental observations themselves. There is some theoretical support for mind-matter interactions within quantum physics, and it suggests that mind and matter might be complementary in some fundamental way. But there are many competing interpretations of what quantum theory actually *means*, so hitching one's explanations about mind and matter to one or another flavor of quantum reality is probably premature.

Yet, we do have uncanny experiences of creating our days, of our intention manifesting in mysterious ways, laced with synchronicities. When this happens, there is a feeling that we are in deep accord with the powers of the universe, participating in the unfolding manifestation of this mystery, and that, as creators, our days are more worth living. Ultimately, it is up to each of us to choose the meaning system we want to live by. While there are many more questions than answers, the very process of inquiring adds meaning to our lives.

[F]rom the emptiness comes forth your dream, through the power of clear intention, through the wisdom of equanimity and compassion, through right action that builds and brings things to clear conclusion. These three building fires exist within each of us, as spirals of energy ever moving, ever bringing forth the fruits of our intention and desire.
- Dhyani Ywahoo

Resource: Dhyani Ywahoo is a lineage holder of the medicine teachings of Wild Potato clan of the Tsalagi (Cherokee) Nation. For information about Dhyani Ywahoo see (www.sunray.org)



What is the most constructive use of our creativity?

How can we know that our individual aims are aligned with cosmic aims?

What is the impact of knowing that we are creating all the time, whether consciously or not?

What role can emotions like anger, grief, or jealousy play in our practice of creating our day?

The Practice of Creating Your Day

How do we go about developing a practice for creating our days? It can be as simple as the one Joe Dispenza used, taking a moment in the morning simply to reflect on what you want to have manifest that day. Joe focused not on getting material or emotional needs met, but on cultivating qualities that made him more aligned with his deepest values. Then he simply paid attention to the results. Here are some tips for making a more intentional practice out of creating your day.

THE FOUNDATION OF A PRACTICE

Daily Practice. One of the keys to mastering any skill is developing a daily, disciplined practice.

Pick a Place. Find a location where it is easy for you to have a period of uninterrupted practice. Choose a setting that allows you to focus inwardly and quiet your mind.

Start-Up Ritual. Twyla Thorpe, the accomplished American choreographer, writes, "it is vital to establish some rituals—automatic but decisive patterns of behavior—at the beginning of the creative process...it eliminates the question, Why am I doing this?...[It] erases the question of whether or not I like it...[The ritual is an] automatic call and response mechanism that anchors [the practice]. An organizational tool, a daily ceremony, a repeatable kick-start." (15-16).

Make a Commitment. Keep your commitment to yourself to show up, to be present and to fully participate in your daily practice. Thich Nhat Hanh, a Vietnamese Buddhist monk who was nominated for the Nobel Peace Prize, teaches his students there are many options in life, but "it is not an option not to meditate." Your practice may not be meditation, but whatever it is, your commitment is needed to sustain it.

Resource: For more information on Twyla Tharp see www.twylatharp.org --- For more information about the teachings of Thich Nhat Hanh go to www.plumvillage.org/teachings/TeachingsInfo.htm --- Read more about Jon Kabat-Zinn's work in training the mind in "The Contemplative Mind in Society," Noetic Sciences Review #35, p.14, Autumn 1995, (www.noetic.org/publications/review/issue35/r35_KabatZinn.html).

Develop Your Skill. Jon Kabat-Zinn, a meditation teacher, writes, "Transformational change...takes a certain kind of inner work which involves training [the mind]." He suggests that we "turn our attention to developing what we may call inner technologies. The untapped potential of the human mind for individual and collective creativity and wisdom has to be intentionally cultivated."

Attention & Awareness. Pat Allen, artist and author, states, "Achieving awareness of what mind is creating is a goal of spiritual practice... We create thoughts, feelings, and ideas that construct our view of the world and our experience of reality. We become aware of the stories we are living. When these are visible to us, we can choose whether or not they serve us, whether or not we are creating the world we truly want. We open ourselves not only to what mind is creating—often a frenetic monkey chase of judgments, guilts, and circular thoughts—but to what mind can create—beauty, wisdom, meaning" (168).

Resource: To read Tiller's article on "Conscious Acts of Creation: The Emergence of a New Physics." Visit his website www.tiller.org.

Opening the Heart. Western and Eastern spiritual traditions teach that love is at the heart of every spiritual practice. William Tiller, Professor Emeritus of Stanford University's Department of Materials Science, who appears in the film, has done extensive research into conscious acts of creation and has distilled several key factors. He writes, "Elevated and loving human consciousness is a likely key requirement...we create our collective future via our thoughts, attitudes and actions [by] maintaining an uplifted spiritual/mental/heart-state. It is the practitioner's love, compassion, devotion to service and intent that can elicit the 'unseen' assistance of the universe."

Setting an Intention. Make a clear, simple statement of intention. Describing his apprenticeship to a teacher named don Juan Genaro, anthropologist Carlos Castaneda recalls: "Don Juan always told me, 'Make a gesture. A gesture is nothing more than a deliberate act undertaken for the power that comes from making a decision. ... You see, the path of the heart is not a road of incessant introspection or mystical flight, but a way of engaging the joys and sorrows of the world.'" In short, setting an intention is a way of recalling your place in the larger community of existence—doing so in concrete ways that are personal to your life.

Resource: For more information about Jean Shinoda Bolen see www.jeanshinodabolen.com

Synchronicity. Cultivate awareness of synchronicities as a way of validating outcome. Jean Shinoda Bolen, a prominent Jungian analyst states, "to appreciate a synchronistic event, one needs the ability to note...an inner subjective state, a thought, feeling, vision, dream or premonition and to intuitively link it with a related outer event...and feel a spontaneous emotional response—of chills up the spine, or awe, or warmth...Ideally, there should be no way to account for the coincidence rationally or by pure chance" (45-46).

DESIGN YOUR PRACTICE

Designing how you go about creating your day can itself be a very creative personal process. Think of it as a ritual. Here are some suggestions:

Create Sacred Space. Some choose to read a poem, light a candle, or play beautiful music. Think of actions that have evoked a sense of communion with your deepest sense of what brings meaning and value to your life.

Center Yourself. This might have already happened just by creating sacred space. In addition, you can incorporate meditation, chanting, singing, yoga, or any other practice that calms your mind and makes you more sensitive and present.

Form Your Intention. Let your intention come in your own words from your own heart. Let yourself get excited about the day ahead. Here's how one person characterized her intention:

"I choose to set my intentions for a day of flow and grace. I am in harmony with all I encounter and connected to my higher wisdom. I intend to notice if and when that connection weakens so I can reconnect in that moment. It is my intention that the people I encounter feel appreciated and acknowledged."

AFFIRMATIONS, VISUALIZATION, AND INNER SENSING

We can create positive intentions through affirming statements. According to Dhyani Ywahoo, affirmation (using positive statements about oneself and the world) "enables one's unmanifest potential to become real" (p. 48). The idea is not to bury or mask

negativity, but to consciously open the mind and body simultaneously to life affirming thoughts and energy. Making your statements in the present tense as if they are a current reality can have a more immediate and direct impact.

It can be powerful to add visualization to your affirmations. Ywahoo suggests we do the following:

Affirm, "I realize my creative gifts," repeating this affirmation. . . three times. And visualize in your mind's eye the accomplishment of such tasks. For example, if you wish to have better relationship with co-workers, visualize you and your co-workers seated in a circle, surrounded by rose light, talking heart to heart and accomplishing great works. It is important to believe your words and to cultivate faith that you will manifest your sacred gifts in this lifetime (p. 48).

Adding inner sensing to your visualizations creates an even stronger intention. Golfer Bobby Jones claimed he often heard a melody on the golf course and that he would play his best game if he used the music to give rhythm to his swing. Here's an example of a visualization that incorporates inner sensing:

Close your eyes and see yourself as a child again, bounding out the front door on a warm spring day. Imagine yourself taking a deep, full breath, seeing the sky, feeling the fresh, clean air race through your body, then jumping down the steps into the brand-new world of morning.

Practice paying attention to your thoughts when you're playing a favorite sport, when you're sitting alone quietly, even when you're at a party. In the words of Henry James, "Try to be one of the people on whom nothing is ever lost." Practice being aware of even the subtlest sensations: Can you feel your fingertips tingle as you wake in the morning? Experiment with focusing your center of consciousness at different locations: in your head, your toes, your heart. Follow dream images. See where they lead.

Whatever approach you take, the very intention of setting an intention is likely to have begun the process. What matters is that you are living a more intentional life. Whether there is compelling scientific evidence to prove that this process is having a direct impact on the material world may not matter. Your life is likely to improve from the inside out.

Finally, be patient with yourself; progress in your practice can't be forced. But be steadfast; improvement requires commitment. (Or, as the legendary golf champion Ben Hogan once put it, "The more I practice, the luckier I get.") Relax, focus, take yourself lightly, be an explorer, and consider the words of Zen master Shunryu Suzuki-roshi: "In the beginner's mind there are many possibilities, but in the expert's mind there are few."

Practice: Design your practice. Collect and create inspirational readings, images, objects and music for your practice. Set up the time and establish a special space for it. Be deliberate. Find the support you need to sustain your practice. Watch for the results. Keep practicing.



What inspires you about the possibility of creating your day?

How do you intend to act on this inspiration?

What do you want to incorporate into your practice?

What will you use to sustain your practice?

Quotations

The last of the human freedoms—to choose one's attitude in any given set of circumstances, to choose one's own way.

—Viktor Frankl

Watch your manner of speech if you wish to develop a peaceful state of mind. Start each day by affirming peaceful, contented and happy attitudes and your days will tend to be pleasant and successful.

—Norman Vincent Peale

In the province of the mind, what one believes to be true either is true or becomes true.

—John Lilly

Life isn't about finding yourself. Life is about creating yourself.

—George Bernard Shaw

Go confidently in the direction of your dreams.

Live the life you've imagined.

—Henry David Thoreau

Tomorrow is a new day; begin it well and serenely and with too high a spirit to be encumbered with your old nonsense.

—Ralph Waldo Emerson

You create your opportunities by asking for them.

—Patty Hansen

To create means to bring into existence...creativity is, in essence, an internal process that is going on within us, all the time.

—Peter Russell

The most powerful force behind creation is described as the need of the creative principle to give love and receive love.

—Stanislav Grof

To know ourselves as this free, creative energy is to know the meaning of life in this world.

—Bruno Barnhart

When the soul wishes to experience something she throws an image of the experience out before her and enters into her own image.

—Meister Eckhart

Additional Resources

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HEALING THE PAST

How do experiences get wired into our brains?
 How can we free ourselves from past conditioning?
 What makes healing possible?

"We must be willing to get rid of the life we've planned, so as to have the life that is awaiting us. . . . The old skin has to be shed before the new one is to come." —Joseph Campbell

"We are what we think. All that we are arises with our thoughts. With our thoughts, we make the world." —Buddha

In the film *What the Bleep Do We Know!?* Amanda (Marlee Matlin) has been struggling with flashbacks, high anxiety, and low self-esteem—not to mention a hangover. The morning after a particularly harrowing experience, she lashes out at her reflection in the mirror. In the middle of her "breakdown," she has an epiphany. It occurs to her that her violent thoughts might be affecting the very structure of the cells in her body. This awareness creates a profound shift in Amanda. She moves from self-rejection to compassion and self-love. What causes Amanda's breakdown? What is the basis of her transformation? In what way are Amanda's thoughts affecting her body? For the past 25 years the field of mind-body science has been expanding rapidly, providing exciting breakthroughs in our ability to answer these questions.

The Science

NEURAL NETS

One of the remarkable things about how the human brain works is that we are able to function at high levels of complexity, react to numerous stimuli in our environment simultaneously, and make decisions on the fly about what things mean and what should be done about them. We don't have to make a new decision in each circumstance because with repeated experience, we form associations. In other words, we learn from our experiences, and what we learn colors our response to new situations.

Resource: An article on long-term potentiation by Robert Malenka of Stanford University and Roger Nicoll of the University of California, San Francisco, entitled "Long-Term Potentiation—A Decade of Progress?" can be found at http://monitor.admin.musc.edu/~cfs/IT/LTP_review.pdf.

The neural basis for this kind of learning can be understood through a process called "long-term potentiation." This means that connections between nerve cells are strengthened when stimulated repeatedly. So if a bell is rung each time food is presented, you learn to salivate each time you hear the bell, even without the food (remember Pavlov's dogs?). A neuronal pathway linking bell and food is established and strengthened through repetition. This is classical conditioning. But there are many other forms of associative learning.

Problems develop when this otherwise adaptive and beneficial system is hijacked by negative responses to otherwise innocuous stimuli. It appears our brains can be programmed not only by repeated experiences (this is how we learn) but also by extreme circumstances. For example, a single dose of cocaine can prime a system to react with strong craving when cocaine is presented on another occasion. Brain changes and associative learning can also result from traumatic experiences. Imaging technology makes it possible to observe the brain in action, revealing how trauma actually changes the structure and function of the brain. A significant finding is that brain scans of people with relationship, learning, and/or social problems reveal structural and functional irregularities similar to those resulting from post-traumatic stress disorder (PTSD).

Resource: For more information about healing trauma, see the article "Emotional and Psychological Trauma: Causes, Symptoms, Effects and Treatment" on the HelpGuide website at www.helpguide.org/mental/emotional_psychological_trauma.htm --- For information on the neurological impact of trauma, see "Wounds That Never Heal" by D. Goleman at <http://cms.psychologytoday.com/articles/pto-19920101-000036.html>.

In the film we are led to believe that Amanda's new husband had an affair and their breakup is the cause of Amanda's distress. Did the feeling of betrayal create an association and corresponding pathway in the brain that got triggered at the wedding? This prior experience may have distorted her perception of reality. Carl Jung called this distortion "projection," a psychological process in which the world becomes a screen on which we project images from our past.

Resource: For more information on internal working models, an article by Ross A. Thompson at the University of Nebraska, Deborah J. Laible at the Southern Methodist University, and Lenna L. Ontai at the University of California, Davis, entitled "Early Understanding of Emotion, Morality, and Self: Developing a Working Model" can be found at <http://psychology.ucdavis.edu/labs/Thompson/pubs/ThompsonLaibleOntai.pdf>

But Amanda's breakdown may have had deeper roots than the recent betrayal by her husband. Attachment theory, first conceived by John Bowlby, suggests that infants, through their interactions with their primary caregivers, develop "internal working models" that color their expectations of relationships and their overall worldview for the rest of their lives. Early experiences with caregivers lead young children to develop mental representations of caregivers' sensitivity and responsiveness, as well as the degree to which they believe themselves deserving of care. Over time these models become interpretive filters through which children reconstruct new experiences and relationships in ways consistent with past experiences and expectations.

These then create implicit internalized rules for relating to others. The theory predicts that children with secure or insecure attachment histories will respond to others based on expectations of warmth and intimacy. Such expectations may cause them, for better or worse, to evoke the kinds of responses from others that conform to their initial expectations. Sadly, if we are preparing for rejection and are well defended against it, it seems more likely to occur. One way to put it is that we find what we are looking for.

Resource: UCLA researchers Daniel Siegel and Alan Schore have integrated neurobiology with attachment theory to construct a neurodevelopmental theory of the mind, showing how an infant's interactions may influence the maturation of its brain structure, as well as its future socio-emotional functioning; see www.themetro.com/redecision/pastart_s2000.htm



What emotional situations do you find yourself in over and over again?
 What do you expect will happen in your relationships with friends? Lovers?
 Family members? Colleagues? Employers?
 How much of your experience do you imagine is conditioned from the past?
 How would your life be different if you were free from this conditioning?

MOLECULES OF EMOTION

But there is more to our emotional response than just wiring. According to neurobiologist Candace Pert, every emotion we feel circulates through our bodies as chemicals called "neuropeptides," short-chain amino acids or proteins that talk to every cell of our body. Pert's research suggests that these molecules of emotion play a significant role in guiding what we experience as perception and conscious choice. According to Pert, "Our emotions decide what is worth paying attention to . . . The decision about what becomes a thought rising to consciousness and what remains an undigested thought pattern buried at a deeper level in the body is mediated by the receptors [of our bodywide, biochemical, information network]."

Why do we keep getting into the same kinds of relationships, having the same kinds of arguments, encountering the same kinds of bosses? According to Pert, when receptor sites are repeatedly bombarded with peptides, they become less sensitive and require more peptides to be stimulated. Receptors actually begin to crave the neuropeptides they are designed to receive. In this sense, our bodies are addicted to emotional states. When we have repeated experiences that generate the same emotional response, our bodies will develop an appetite for these types of experiences. Like addicts, we will draw experiences toward us that give us a fix.

Resource: For articles related to molecules of emotion and Candace Pert, see the following: www.candacepert.com and www.noetic.org/publications/shift/issue4/s4_pert.pdf.



What is it like to think of jealousy, love, or ecstasy as a chemical?
 What is it like to think of your emotions as addictions?
 What is the benefit of thinking about emotions this way?
 Is anything lost with this way of thinking?

ARE WE HARD-WIRED FOR LIFE?

It seems that we are neurologically conditioned through our experiences to see the world and relate to others in ways that are preprogrammed. Can we transcend this preprogramming? Can we shift our internal working models and remove our tendencies to see the world and relate to others in ways that are no longer adaptive? Can we actually rewire the brain—effectively "metaprogramming" ourselves?

Considering how emotional patterns get locked in our brains, it is remarkable that we change as often as we do. A near-death experience, the birth of a child, an epiphany, a new intimate relationship, or religious conversion can catalyze profound changes of perception and identity. People's lives can also be radically transformed through meditation, diet, exercise, and repeated corrective experiences in relationship to loved ones or in psychotherapy. Some are changed by taking medication, others by stopping the use of drugs. Some change for the better, and others change for the worse.

While the brain was previously thought to stop developing in early childhood, exciting new research shows that we continue to rearrange the connections between brain cells (neuroplasticity) throughout our lives. More exciting research shows that we are able to produce new brain cells (neurogenesis) throughout our lives as well. We can change because neurons are inherently flexible and regenerative. (www.the-scientist.com/yr2000/dec/hot_001211.html)

Receptors for molecules of emotion also change in both sensitivity and arrangement with other proteins in the cell membrane. In the depth world of our biochemistry lies what Pert calls “our potential for change and growth.” Various types of intention training—visualization, for example—can help bring pertinent information to a level of self-aware consciousness. But the wisdom of the body works in even more mysterious ways: “The unconscious mind of the body seems all-knowing and all-powerful and in some therapies can be harnessed for healing or change without the conscious mind ever figuring out what happened.”

THE BIOCHEMISTRY OF HEALING

Our biochemistry confirms our capacity to choose and our potential to heal. While healing can happen without conscious effort, it appears that we can accelerate the process through conscious practices. New research suggests that various modalities of psychotherapy change not only one’s state of mind but also the state of one’s brain, including increased blood flow to normalized metabolism in the parts of the brain that regulate emotion, such as the amygdala and the prefrontal cortex. Exciting new research also shows that talk therapy changes the brain in ways similar to antidepressant medication.

Resource: For more information on research of the neurological impact of therapy, see “Brain Blood Flow Changes in Depressed Patients Treated With Interpersonal Psychotherapy or Venlafaxine Hydrochloride.” Martin S., Martin E., Rai S., Richardson M., & Royall R. *Arch Gen Psychiatry*. 2001; 58:641-648. at <http://archpsyc.ama-assn.org/cgi/content/short/58/7/641> and <http://archpsyc.ama-assn.org/cgi/content/short/58/7/631>.

So it seems our wiring is less our destiny than the initial conditions of our existence. In the body’s biochemical flow, there is an ocean of new patterns and possibilities waiting to be relearned to support our new goals. We can take action to reduce preprogrammed, mechanical responses to the world, increasing our capacity to meet the world as a fresh experience, moment to moment.

How do we Heal?

“Miracles rest not so much upon the faces or voices or healing power coming to us from afar off, but on our perceptions being made finer so that for a moment our eyes can see and our ears can hear what there is about us always.” —Willi Cather

If healing means being free from conditioned, preprogrammed reactions to the world, then being healed begins to look like having the capacity to choose fresh, creative responses to each situation as it presents itself. Freedom may not be a new or better story, but the capacity to hold any story or identity lightly, shifting as needed. How do we heal? A plethora of the world’s spiritual traditions, psychologies, and philosophies address this issue. Philosophers from nondual traditions tell us that the essence of transformation is the shift from seeing the self as separate from God or Being—the

creative force that animates manifestation—to an identification with that force. This healing thus encompasses the whole body, mind, and spirit in full integration with itself and the divine. A. H. Almaas expresses this process in this way:

The moment you become aware of the vicious cycle of the activity of defensiveness, you will see clearly that what you have been rejecting is yourself and that the rejection is useless and unnecessary. Then you will relax and stop. The complete perception of this cycle is the stopping of the wheels. Then the personality is dissolved by clarity. There is clarity because there is no movement in the personality separating it from Being. As you can see, this insight comes only with a great deal of work. It takes a long time to get to the point of seeing the totality of ego activity. To see it experientially and directly rather than from a disidentified or transcendent perspective is made possible by a deep exploration of the territory of personality from within. When you see this completely, it is possible for the movement in you that connects you with the rest of society to stop. When it stops, you become pure, clarified personality, soul with no ego structure. . . . For the first time, you can perceive the actual substance of the personality without the past. (www.ridhwan.org)

Healing occurs when we remove the blocks to this natural process. It is accelerated when we can participate consciously in the process. The recent anthology *Consciousness and Healing* (Elsevier Churchill Livingstone, 2005) features numerous maps and guidelines for the quest of making the unconscious conscious. It helps to remember and be humbled by the fact that our habitual patterns of thought are not useful in helping us get free of those patterns. As Einstein put it, “We cannot solve a problem from the same level in which it was created.” The key is to be willing to engage the process.

Easier said than done, though. Willingness does not come easily when we have spent a lifetime reinforcing our version of reality. Sometimes we have to hit bottom, as Amanda did, to fully appreciate how imprisoned we are. Or we might have a rude awakening, such as finding ourselves behaving very much like our parents, which often happens when we become parents. We seldom change without discomfort. We don’t even change our position in a chair without discomfort. We change our minds with the discomfort of cognitive dissonance (an inconsistency between our authentic beliefs and our actions). We change our behaviors when we experience the discomfort of our desires being thwarted. We change our hearts when they are shattered by grief or joy. Suffering may not be required, but it is certainly a common impetus. We can also catch glimpses of our potential through peak experiences, an inspiring film, book, piece of art, or person. Myriad possibilities can open our imagination in ways we may least expect.



- What motivates your desire to heal?
- What enables you to stay committed to the process?
- What have been the primary catalysts for your healing?
- What tends to block the process?

Stages of Healing

While healing and transformation can take many forms, they seem to move through consistent stages, with some essential human capacities getting developed along the way. The first step to healing the past and transcending conditioning is often simply noticing that you are, in fact, behaving in a way that is re-enacting past wounds. As Deepak Chopra says: “Part of becoming more conscious in life is noticing responses that

used to be unconscious before. This recognition is the first step toward gaining mastery of your reactions and transforming the old conditioning. As you become more and more aware of your internal processes, you will come to recognize how your habits encourage you to favor old patterns, and you will see how by not favoring the deeply worn ruts in your consciousness, you can instead choose fresh responses and create different outcomes." Cultivation of awareness is thus an essential aspect of healing. In fact, scientific evidence suggests that training in contemplative practice can change your brain. Long-term meditators have demonstrated an ability to self-induce peaceful brain states. Those who took just an eight-week course in mindfulness meditation showed brain changes associated with greater positive emotion that remained six months later—they even showed improved immune response to a flu shot (see Richard Davidson's work at the University of Wisconsin: <http://psych.wisc.edu/faculty/bio/davidson.html>).

Resource: For a complete review of the scientific study of the benefits of meditation, see www.noetic.org/research/medbiblio/ and www.pnas.org/cgi/content/full/101/46/16369 and www.alite.co.uk/readings/brain_and_mind/brain_and_mind4.htm --- For more information on mindfulness practices and basic instruction on meditation, see www.wildmind.org/meditation/mindfulness/intro.html.

WHAT A RELEASE!

Healing begins once we get to the root of our wounding. Psychodynamic psychologists believe that our preprogrammed hard-wired responses to the world are defenses against the actual pain of an original trauma, whether it was an overt single event, like an accident or even birth itself, or subtle forms of abuse and deprivation that pervaded our childhood. According to trauma expert Peter Levine, we replay the past because natural processes of releasing the energy of the trauma went awry. Levine posits that our rigidified responses to the world stem from "the frozen residue of energy that has not been resolved and discharged; this residue remains trapped in the nervous system where it can wreak havoc on our bodies and spirits." Similarly, controversial psychologist and pioneer in somatic psychotherapy Wilhelm Reich proposed that unexpressed emotions from the past are stored in "body armor." Release of this energy through body-oriented psychotherapy is crucial to healing, Reich believed.

Definition: Catharsis, \ca*thar"sis\, n. (Psychotherapy) The process of relieving an abnormal excitement by re-establishing the association of the emotion with the memory or idea of the event that first caused it and of eliminating it by complete expression (called the abreaction). (Merriam-Webster Medical Dictionary, 2002)

As transpersonal theorist Stanislav Grof notes, "The full expression of a feeling is its funeral pyre." This suggests that when the energy is released, the trauma is released. Myriad therapeutic modalities help to excavate and release the core energy locked in our body-minds. Some examples include Holotropic Breathwork, Re-Evaluation Counseling, the Hoffman Quadrinity Process, Somatic Experiencing, and inner child work. What they all share is a basic assumption that healing entails bringing love to aspects of experience that have been deprived of love. Love is understood to be our full attention and unconditional acceptance.

Practice: You can begin to get to the root of your own addictive emotions through bodily inquiry. When you find yourself feeling distress, take your attention off of the story and thought-stream. Take a few deep breaths and feel the sensations in your body. Keep breathing and feeling sensations as they deepen and change. Let your body find the positions that feel good. Keep asking yourself, "What is true for me in this moment?" It helps to have a trusted friend stay with you through the process.

The Healing Power of Love

Contemporary science is moving towards an insight that parents have never doubted: Love heals. Everybody knows that when mom or dad kissed the scraped knee, it stopped hurting so much. When we were children, a loving embrace could make almost anything better. Love is so integral to the path of healing and transformation, it's impossible to separate it from any aspect of the process.

Resource: For information on a study conducted at the California Pacific Medical Center and the Institute of Noetic Sciences about the effects of training partners of cancer patients in a practice of loving, compassionate intention on the patient's functional quality of life and the bond between partners, see www.noetic.org/research/files/program2.pdf and www.noetic.org/publications/shift/issues1/s1_frontiers.pdf

In their book, *A General Theory of Love* (Random House, 2001), Tom Lewis, Fari Amini, and Richard Lannon weave together evidence from such varied fields as cognitive neuroscience and evolutionary biology to suggest that a primordial area of the brain, far older than reason or thinking, creates both the capacity and the need for emotional intimacy that all humans share. *A General Theory of Love* describes the workings of this ancient, pivotal bond and reveals that our nervous systems are not self-contained. Instead, our brains link together with those of the people close to us, in a silent rhythm that makes up the very life force of the body. These wordless and powerful ties determine our moods, stabilize and maintain our health and well-being, and change the structure of our brains. Consequently, who we are and who we become depend in great part on those we love.

FORGIVENESS

Many painful patterns from the past get locked into our system behind the bars of blame and shame. We might assume that if we are in pain, somebody, whether ourselves or another, must have done something wrong. Forgiveness is an essential key to healing the past. Gerald Jampolsky, MD, author of *Forgiveness: The Greatest Healer of All* (Beyond Words Inc., 1999), says, "Forgiveness is the process of letting go of your negative judgments about other people and your negative judgments and self-condemnations about yourself. . . . Forgiveness is the willingness to give all of your anguish and anger up to a higher power and trust that it can be transformed into love."

Resource: See two articles on forgiveness by Fred Luskin, PhD, at www.coopcomm.org/essay_luskin.htm

Research shows that forgiveness can have beneficial health effects. Fred Luskin, PhD, of the Forgiveness Project at Stanford University points out, "Research based on controlled studies has recently shown that forgiveness training can be effective in reducing hurt and stress." Luskin focuses on forgiveness training as a way to alleviate the anger and distress involved in feeling hurt. This could have important implications for the prevention and treatment of cardiovascular and other chronic diseases. The need for forgiveness emerges from a body of work demonstrating that unmanaged anger and hostility can be harmful to health. Research has suggested that heart attack patients who act in a more forgiving way demonstrated less anger and hostility and thus reduced disease. They also reported improved overall quality of life.



How would your life be different if you forgave those who caused you pain?

What do you have to lose by forgiving them?

What do you have to gain?

What helps you forgive?

Practice: The practice of loving-kindness is a specific meditation practice that can be used to develop the quality of kindness that is the basis of forgiveness. The following instructions were adapted from *The Path with Heart* (Bantam Books, 1993) by Jack Kornfield. --- Sit in a comfortable position. Let your body relax. As best you can, let your mind be quiet. Then begin to recite inwardly the following phrases: May I be filled with loving-kindness. May I be well. May I be peaceful and at ease. May I be happy. --- When you are ready, you can begin to expand the focus of your loving-kindness to include others. Picture others and direct the phrases toward them: May you be filled with loving-kindness. Start with someone you consider a benefactor, then include family, friends, and people you feel neutral toward. When you feel the sense of loving-kindness building, you can start to direct it toward difficult people whom you have not forgiven. With practice, 15–20 minutes a day, the sense of loving-kindness will begin to flow more easily toward these people. (<http://dharma.ncf.ca/introductions/metta.html>)

GRATITUDE

In recent years scientists have begun examining the links between religion and good health, both physical and mental. Two psychologists working to unlock the puzzle of how faith might promote happiness, Michael McCollough, of Southern Methodist University in Dallas, Texas, and Robert Emmons, of the University of California, Davis, say their initial scientific study indicates that gratitude plays a significant role in a person's sense of well-being.

Resource: For more information on the theory and practice of gratitude see www.acfnewsresource.org/religion/gratitude_theory.html and www.gratefulness.com

Practice: *Keep a gratitude diary. Each evening before you go to bed, make a list of ten things you are grateful for. Let yourself relish them as you write them down. During the day, look for things to be grateful for, and either express them to someone or make note of them.*

PRACTICE, PRACTICE, PRACTICE

Many experiences create instant changes in our state of mind and biochemistry. Americans have a weakness for quick-fix solutions—the crash diets, the ten easy steps to fitness, health, or enlightenment. We also love a good rush—from extreme sports or psychotropic drugs to spiritual highs. But these temporarily exalted states do not necessarily transform our level of consciousness. Once we come down from the high, we can be left at the same level of consciousness we started with. Worse yet, our search for shortcuts and our relentless pursuit of climactic moments can contribute not only to self-destructive, addictive behavior but also to disillusionment with the very idea of positive human change. It is difficult for most of us to face the fact that long-term change often requires long-term, diligent practice. The good news is that such practice can produce results that seem nothing less than magical.

Research from the field of psychoneuroimmunology reveals some of the extent to which thoughts and emotional patterns have physiological impacts. It is clear that our physical and emotional healing are thoroughly interconnected. Although we can change our

bodies by changing our minds, it is not always an easy process. Putting new patterns in place requires us to dismantle old structures and to build new ones. It can be painful, but it can also be filled with grace and the sense of being intimately engaged in a miraculous process. Whatever our process, in the end we are fully capable of healing our past, changing our neural networks, recovering from emotional addictions, and living healthy, happy lives. More than at any other time in history, we have abundant resources available to support us.



What makes healing possible?

What does your own intuition tell you about healing the past?

What stands out for you from this chapter?

What difference can what you have learned make in your life?

Group Activities

PLAYING WITH PEPTIDES

Healing doesn't have to be somber and heavy. We can gain a sense of freedom by turning our problems into playmates. The little animated molecules of emotion that wreaked havoc in the film's wedding scene were exaggerated versions of real patterns. Did any of them look familiar? Here is a chance to make a scene with your own tyrannical peptides. (Time: 10–15 minutes)

1. Find the chemical subpersonality that has been bombarding your cells. Maybe you have a tendency to be bossy, timid, or a victim.
2. Get up and explore how this subpersonality walks and talks. Exaggerate the character. Give it a name, an accent, and an attitude.
3. Everybody in the group introduces themselves as these characters. See what scenes play out. Engage in dialogue, letting your peptides speak for you, or pretend you are at a party and speak out, act out.
4. Shake off your subpersonality play; then share what you noticed happened when you made these emotional patterns explicit.

INQUIRY PRACTICE

Sit in pairs. Take turns talking and listening. Ask one question at a time, repeating it a few times. Take two to three minutes for each question. Use a bell to time the turns and give people a one-minute warning to wrap it up.

- To which emotions might you be addicted?
- What kinds of situations do these addictions consistently draw toward you?
- What would your life be like without these addictions?
- What do you plan to do about it?

Resource: For help starting an attitudinal healing group, see www.localcommunities.org/servlet/lc_ProcServ/dbpage=page&PG=01004011550953863429083691 --- For suggestions on locating groups near you, see <http://ourworld.compuserve.com/homepages/energyhealing/findinga.htm> --- Join or start an Institute of Noetic Sciences community group: www.noetic.org/community.cfm

Individual Activities

ESSENTIAL STEPS FOR SOFT ADDICTIONS

In myriad traditions around the world, taking stock of one's life, sharing it with another, and then making amends for wrongdoing have been an essential part of transformation. The 12 steps of Alcoholics Anonymous give explicit instructions on how to do this. Here are some steps derived from AA that can help free you from outdated modes of behavior and thinking:

1. Write down all the ways that your thoughts and behaviors may have harmed yourself or others.
2. Read what you have written to someone you trust, someone who will keep it confidential but who can also be somewhat objective.
3. Make a list of all the people you might have harmed through your behavior and set the intention to make amends to them all.
4. Make direct amends to these people wherever possible, except when to do so would injure them or others.

BUDDY SYSTEM

It's easy to feel isolated in the healing process. In addition to the professionals you might work with, it helps to have peers with whom you can share the trials and tribulations of your journey. Sharing your healing process is in itself healing. Find a supportive friend or group to meet with regularly to reflect on and support each other's transformation and healing. There are many resources available to help you.

Quotations

"Of all the creatures of earth, only human beings can change their patterns. Man alone is the architect of his destiny. . . . Human beings, by changing the inner attitudes of their minds, can change the outer aspects of their lives."

—William James

"We are what we repeatedly do. Excellence then is not an act, but a habit."

—Aristotle

"Those who do not have power over the story that dominates their lives, the power to retell it, rethink it, deconstruct it . . . and change it as times change, truly are powerless because they cannot think new thoughts."

—Salman Rushdie

Additional Resources

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