"Beware of the stories you read or tell; subtly, at night,

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A Decidedly Different Mind

BY STEPHANIE PACE MARSHALL

WE ARE BORN LEARNING BEINGS. We naturally imagine, wonder, invent, and explore our way into unknown territories and perplexing and paradoxical questions. Our curiosity and insatiable drive to know and figure things out is innate. Even if we wanted to, we could not stop learning and trying to make sense of our world and our place in it. We could not stop trying to understand who we are, why we are here, and how we belong. From the moment of our first breath, we have learned. We have observed and smelled and tasted and touched and laughed and cried. We have walked and talked and taken things apart and put them together. We have wondered about the blueness of the sky, the vastness of the universe, the depths of the ocean, the awesome complexity of our minds, the intricacy of our bodies, the mystery of our spirits, and the transcendence of our souls. And in our irrepressible quest to know, experience, explore, discover, and play, we create our world.

OUR MIND-BRAIN-BODY SYSTEM

Advances in technology have enabled us to observe not only the patterns and structures of our brains, but also the very process of learning as it occurs. We now understand that the brain is not a blank slate or an immutably hardwired computer. It is a magnificent, pattern-seeking, complex living system whose structures are not fixed.

Continuously evolving in complexity, this dynamic, self-adjusting "plastic" living network can not only atrophy with disuse, but can also change, "grow" (build extensive and more intricate neuronal connections), and actually reshape itself in response to challenging, stimulating, and sensory-enriched environments. Because thoughts have a powerful role in mind- and brain-shaping, learning actually *changes* the physical structure of our brains, as noted by Renate Nummela Caine and Geoffrey Caine in *Making Connections: Teaching and the Human Brain*. Among neurologists, it is commonly held that nerve cells that fire together wire together. This amazing capacity of the human brain to transform itself is not limited by time: It is present throughout our lives as long as we continue to actively learn. Fortunately for us, we can indeed teach old dogs new tricks—and nature tells us we must. Continuous learning—growth—is essential for sustainability.

New knowledge has also changed our understanding of learning and intelligence, and this has enormous implications for learning and schooling. We now recognize that human intelligence is composed of multiple potentials that must be intentionally ignited and activated. Cognition is not a fragmented, independent, and prescribed process of acquiring bits of information. It is both biological and social: a dynamic process of constructing meaning by matching new learning to existing patterns and creating new patterns of connections. Emotions and feelings are not enemies of reason or deterrents to rational thinking; they are essential to learning. It has become clear that our mind cannot be separated from our body and our emotions, that cognition and emotion are inextricably connected. We now understand that learning is not a bounded and linear process of acquiring information, but a holistic and networked process of active engagement and construction of knowledge and meaning. Just as the mechanistic model of the universe is being discredited, so is the disembodied model of our mind-brain-body system.

A new story of the natural world has thus emerged. It is a story of unity, wholeness, reciprocity, interdependence,

and co-creation. This "songline" of life is the deeply resonant story that flows through all living systems, including our own. And it tells us that living systems, whether a single cell, an organism, or a rainforest, are fundamentally dynamic "learning systems": open, creative, exploratory, interdependent, resilient, intricately networked, and free.

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Within these learning networks the potential for transformation is innate because they are free to preserve, renew, restructure, and recreate themselves. This capacity for creative and self-directed internal adaptation, called *self-organization* (by Fritjof Capra) or *emergence*, is a key characteristic of all living systems. Unlike closed mechanical systems that change through external pressure, living systems internally respond to external triggers—disturbances and constraints—in ways that are self-sustaining. External forces do not direct or determine the system's response. The autonomy and dynamic interdependence of living systems ensure they are continuously self-referencing and in a co-creative relationship with their environment.

And yet we cannot underestimate our individual and collective power to consciously "provoke" our system's transformation in the direction we desire; shared intention and collective purpose drive system innovation and transformation. At the same time, the process of self-organization is internally determined. Contrary to our current management view, real change in living systems—including our schools—occurs from the inside out. We and our systems change because we continuously learn. There is a conscious shift in our awareness, perception, and meaning about who we are. The source and catalyst for living system transformation is change in internal meaning, not change by external mandate.

THE NEED FOR DEEP LEARNING

The nature and quality of our children's minds will shape who they become, and who they become will shape our world. Unfortunately, the world now being mapped into the minds of our children is one of scarcity, fragmentation, competition, and winning. Our current story conceives learning as a mechanistic, prescribed, and easily measured *commodity* that can be incrementally and uniformly delivered to our children. This narrative could not be more wrong. Learning emerges from discovery, not directives; reflection not rules; possibilities, not prescriptions; diversity, not dogma; creativity and curiosity, not conformity and certainty; and meaning, not mandates.

As mapmakers and architects of our future, it is imperative that our children experience the world as a gift, engaging joyfully in its co-creation and experiencing its abundance, wholeness, connections, and interdependence. To meaningfully engage requires integral and wise minds able to bring a holistic, connected, and imaginative context to experience and to how we ethically act within and make sense of our world. The significance of educating for "integral thinking" is the power of an altered worldview. When we perceive and experience wholeness, we are transformed. We no longer see nature, people, events, problems, or ourselves as separate and unconnected.

Integral minds seamlessly weave together four contexts of knowing:

1. The multiple ways we come to know, perceive, and belong to our world and one another: the objective, analytical, and experimental *and* the personal, communal, experiential, and transcendent. Integral minds connect our exterior *and* interior ways of knowing and our scientific *and* indigenous ways of knowing.

2. Our unique combinations of multiple intelligences: linguistic, logical-mathematical, spatial, bodily-kinesthetic, musical, interpersonal, intrapersonal, and naturalistic.

3. The "languages" of disciplinary domains: their organizing concepts, symbol systems, and modes of inquiry.

4. The multiple dimensions of learning: learning to know, learning to do, learning to be, and learning to live together.

The attributes of our current culture and story of schooling—rapid, passive, and often superficial acquisition of disembodied information, punitive accountability systems, excessive individualism, risk aversion, and the repudiation of emotion and spirit—reflect our current societal and economic ambitions and predispositions. Our schools have executed the current cultural orthodoxy and pathology quite well—fragmentation, acquisition, consumption, unhealthy competition, speed, and winning—and then wonder why contentment and a sense of meaning and purpose remain so elusive. Ben Okri captured the dangers of this conditioning in his book *Birds of Heaven* when he wrote, "Beware of the stories you read or tell; subtly, at night, beneath the waters of consciousness, they are altering your world."

The questions that hold the greatest challenge for mind-making are not, "*What* did you learn today?" but rather, "*How* did you learn today and *who* are you now?"

Our children's response to this unnatural design of schooling is often *shallow* learning, not the *deep* learning so essential for their future. Shallow learning estranges the learner from her deepest self. It separates her from the experiences, stories, and questions that foster meaning and connections, and from a sense of deep relationship and belonging to others and to something much bigger than herself. It asserts the preeminence of rapid coverage and acquisition over engagement and more deeply constructed understanding. Shallow learning more likely produces risk-adverse, uncurious, and emotionally disengaged learners who either believe they are inadequate or believe they understand far more than they really do. In either case, they emerge ill-equipped to respond to the intricate, complex, and very messy problems we face that defy simplistic categorization, linear analysis, and rapid resolution.

Deep learning is radically different from shallow learning. While shallow learning validates only one way of knowing, deep learning is holistic and inclusive: It recognizes that we are living in a "both/and" universe, not an "either/or" one. It understands that it is often through the integration of polarities and seemingly disparate ways of knowing that genuine understanding and wisdom can be created.

Deep learning is both active and reflective. It is a continual process of mind-making that changes us forever. The questions that hold the greatest challenge for mind-making are not, "*What* did you learn in school today?" but rather, "*How* did you learn in school today and *who* are you now?" By immersing the learner in the interdependence and wholeness of the world and meaningfully engaging her in the "big" ideas, questions, paradoxes, and problems of the human experience, deep learning transforms her. It reignites her passion and insatiable curiosity and weaves a tapestry of connection and a timeless web of belonging that grounds her learning in the roots of personal meaning and purpose. Deep learning provides a context of connections and wholeness that reconnects children to all the ways they come to know and reestablishes their physical, cognitive, and spiritual intimacy and resonance with the natural world and one another.

Deep learning is our radical connection to all of life, and it invites and ignites all the ways we come to know:

- The power of the intellect *and* the power of the body, emotions, and spirit;
- The power of knowledge *and* the power of relationships;

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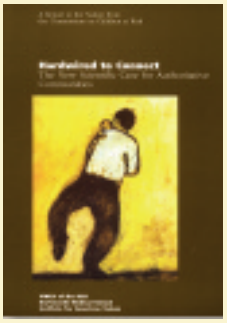
Hardwired to Connect



Responding to the rising incidence of mental and behavioral distress among US children, 33 doctors, research scientists, and mental health and youth service professionals examined recent scientific findings in their respective fields. This Commission on Children at Risk published its results in a report. Following is a brief excerpt.

SCIENCE IS INCREASINGLY DEMONSTRATING that the human person is "hardwired" to connect.

First, a great deal of evidence shows that we are hardwired for close attachments to other people, beginning with our mothers, fathers, and extended family, and then moving out to the broader community.

Second, a less definitive but still significant body of evidence suggests that we are hardwired for meaning, born with a built-in capacity and drive to search for purpose and reflect on life's ultimate ends.

Meeting the human child's deep need for these related aspects of connectedness—to other people and to meaning—is essential to the child's health and development. Meeting this need is primarily the task of what we are calling "authoritative communities"—groups of people who are committed to one another over time and who model and pass on at least part of what it means to be a good person and live a good life.

The ten main planks of the new scientific case for authoritative communities are:

1. The mechanisms by which we become and stay attached to others are biologically primed and increasingly discernible in the basic structure of the brain.
2. Nurturing environments, or the lack of them, affect gene transcription and the development of brain circuitry.
3. The old "nature versus nurture" debate—focusing on whether heredity or environment is the main determinant of human conduct—is no longer relevant to serious discussions of child well-being and youth programming.
4. Adolescent risk-taking and novelty-seeking are connected to changes in brain structure and function.
5. Assigning meaning to gender in childhood and adolescence is a human universal that deeply influences well-being.
6. The beginning of morality is the biologically primed moralization of attachment.
7. The ongoing development of morality in later childhood and adolescence involves the human capacity to idealize individuals and ideas.
8. Primary nurturing relationships influence early spiritual development—call it the spiritualization of attachment—and spiritual development can influence us biologically in the same ways that primary nurturing relationships do.
9. Religiosity and spirituality significantly influence well-being.
10. The human brain appears to be organized to ask ultimate questions and seek ultimate answers.

The research suggests that the human need to know what is true about life's purpose and ultimate ends is connected to brain functions underlying many spiritual and religious experiences. According to researchers Eugene d'Aquili and Andrew Newberg, these findings suggest that human beings appear to have "no choice but to construct myths to explain their world," the word "myth" used non-pejoratively as a religious explanation. These findings may also explain why modern psychiatry in recent years has appropriated some spiritual practices, such as mindfulness, in an effort to alleviate patients' suffering and enhance functioning.

Excerpted from "Hardwired to Connect: The New Scientific Case for Authoritative Communities," sponsored by the Institute for American Values, YMCA of the USA, and Dartmouth Medical School.

Copies of this report are available from the Institute for American Values, 1841 Broadway, Suite 211, New York, NY 10023. Phone: 212.246.3942; fax: 212.541.6665; www.americanvalues.org; info@americanvalues.org.

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- The power of externally validated, objective, analytical, and experimental ways of knowing *and* the power of internally validated, personal, reciprocal, communal, and transfor mative ways of knowing;

- The power of rationality and objective truth *and* the power of subjectivity and experiential truth;

- The power of the algorithmic *and* the power of the aesthetic;

- The power of precise observation *and* the power of intuition and wisdom;

- The power of reason *and* the power of passion and discernment;

- The power of rigorous skepticism *and* the power of wonder.

What could our children accomplish if we stopped trying to externally mandate and structurally direct their learning into existence? Who might they become if we worked with their natural desire to learn—to inquire, create, seek novelty, explore uncertainty, and seek patterns of connection and meaning? What might we create if we use the principles of life and learning to design "naturally" right environments and communities that truly liberate their goodness and genius and provide time and space for students to learn who they are and what it means to be fully human?

Our answers to these questions are embodied in the fundamental unity of life in learning—and it is this integration that grounds the design of a generative and more natural system of learning and schooling.

A RETURN TO THE ROOTS OF KNOWING

We stand on the horizon of a global transformation of unparalleled magnitude and importance. A deeper, more transcendent, hopeful, and empowering story of life and learning is now emerging. This new story will change our cultural narrative and enable our children to reclaim their deepest self and reweave their connection to one another, the human family, our planet, and the web of life. It is silently unfolding from the confluence of multiple "new" stories—new stories of the universe, living systems, and learning. These new stories are all rooted in patterns of unity, wholeness, and relationships. The convergence of these generative stories into a new worldview creates new contexts and maps for redesigning the topography of learning and schooling.

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There has never been a more important time to reperceive schooling and the conditions within which the minds, hearts, and spirits of our children and our future are grown. Mind-shaping is world-shaping. *As leaders, we must reconnect our children to the roots of their knowing and their humanity and to their unknowable and abundant potentials as learners.* Our children must feel at home in themselves, with others, and in the natural world. The human future will be defined by our children's minds and the nature and quality of their presence on the earth. Through deep and natural learning, these "new minds" will imagine and create a just world for all.

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