

the code of authentic living

CELLULAR WISDOM



Joan C. King



Word Keepers, Inc.
Published by Bibliocast
Fort Collins, Colorado



Word Keepers, Inc.

Bibliocast/Sat Nam Imprints/Imagine Books

Books are available at special quantity discounts for bulk purchases for sales promotions, premiums, fund-raising, and educational needs.

For details, write or telephone:

www.wordkeepersinc.com


Tel 970.225.8058

Fax 877.445.1007

Copyright © 2009 by Joan C. King

Some of the material in this book was originally published in *Cellular Wisdom: Decoding the Body's Secret Language* © 2004 by Joan C. King

All rights reserved, including the right to reproduce this book or portions thereof in any form whatsoever.

Interior and Cover Design:  Fleur de Lis Design

Cover Image: Karin Kuhlmann ©2008 Artists Rights Society (ARS), New York / VG Bild-Kunst, Bonn

Library of Congress Cataloging-in-Publication Data

King, Joan C.

Cellular wisdom: the code of authentic living

Joan C. King

P.cm.

Includes bibliographical references.

ISBN-13: 978-0-9795315-9-0

ISBN-10: 0-9795315-9-4

1. Personal growth Problems, situations, contemplations, etc.
2. Self-actualization(Psychology), etc. 3. Body's wisdom (Principles of Biology and Physiology)-how the body's wisdom mirrors the wisdom of our larger lives, models, and principles, etc. 4. Spirituality(Metaphysics)-Creative problem solving through awareness of the body's signals and symbols, etc.

I. Title

First Bibliocast/Word Keepers, Inc. paperback edition June 2009

Manufactured in the United States of America

10 9 8 7 6 5 4 3 2 1

CONTENTS

Introduction—Decoding the Body’s Secret Language 1

PART I:

living exuberantly within the membrane

what is cellular wisdom?

1. Live from the Inside Out	17
2. Turn On and Turn Off	34
3. Shape Life Moment by Moment	51
4. Actualize Life’s Potentials	65
5. Tap Into Renewal	80
6. Claim Abundance	96
7. Reach Out to Others	109

PART II:

living expansively in community

what is community?

8. Discover and Use Your Core Values	134
9. Witness and Use Amplification	151
10. Give and Respond to Feedback	169
11. Provide and Accept Support	189
12. Protect the Vulnerable	207
13. The Richness of Diversity	225
14. Access Genius	242

Conclusion	260
Bibliography	263
Index	264
Acknowledgments	269
Letter to the Reader	270
Author Biography	271

INTRODUCTION

decoding the body's secret language

FOR MORE THAN TWENTY YEARS, I have studied the physical workings of the body as a research scientist and medical school professor. My specialty is neuroscience: the structure and function of the brain, spinal cord, and nerves. My personal research has focused on the dynamic interplay between the brain and the pituitary gland in the control of reproduction. Basic science—experimental studies, laboratory research, hard data and their analyses—has been the center of my professional life.

Yet in the past several years, an amazing thing has happened. My research lab at Tufts University School of Medicine in Boston became much more than a temple of science. I discovered it to be a temple of the human spirit as well. I began to see, in ways that went beyond everything I had been taught and everything I was teaching in my courses in medical neurosciences, that the physiological processes of the body—interactions within and between individual cells, organs, and system—had significance beyond human physiology, beyond the physical plane altogether. I began to see that fundamental human truths, a primer, even, for living an authentic and self-fulfilling life, were written in the cells, spelled out in the synapses, outlined in the interactions between the body's organs and organ systems. The basic science I knew opened like a flower, and I became more than the research scientist, professor, and administrator I had been.

The Code of Authentic Living is a window into the truths I discovered, the lessons that our bodies can teach us about the basic principles on which the human spirit operates and moves and breathes. It shares the

“aha!” understandings that emerged for me about how to live our lives, the principles that are implicit in the biological principles of human neuroscience. It reveals the body’s cellular wisdom—the life lessons implicit in the secret language of the body.

My understanding of the body and its processes shifted in these past few years, taking on unfamiliar shapes—beginning, even, to shine and pulse with new meaning. Cellular Wisdom continues to bring a new awareness of previously unseen promise, fresh ways of viewing the fundamentals of one’s life, one’s relationship with self, and relationships with others.

Stepping Off into Space

It was the summer of 1996. My husband and I had both given scientific talks at an international conference on hormones, brain, and behavior in Turin, Italy. I had delivered a paper detailing my research into the mechanisms governing neuronal interactions in the reproductive cycles of female rats. We were on the way to Rouen, France, where we would attend another international meeting and give another set of presentations. The neuroscience paper I was scheduled to present in a few days was research-based and abstruse.

For the moment, however, we were on holiday, touring the lush, green, French countryside. We had stopped for the night at the Hotel Beau Site in Tailloire. At dinner that evening in the candlelit dining room, I overheard a young, English-speaking woman telling her husband how terrified she’d been watching him parasail that morning.

The word parasail reverberated in my consciousness. I’d always been fascinated by the sight of people floating beneath colorful, billowing sails, suspended high in the air. Something clicked inside of me, and I said to my husband, “There’s parasailing here. Before we leave tomorrow morning, I want to try it.”

My husband looked at me as though I had gone mad, and I guess in a way I had. Generally, I’m paralyzed by heights. Moreover, I can’t swim. Neither of us could visualize my actually jumping off a cliff and sailing into the air over Lake Annecy. Yet something inside me told me I had to do it. I needed to perform a daring action, to demonstrate that I was ready to break free of my old way of being.

Why was I compelled to do this crazy thing? I was a respected neuro-

scientist with a long list of publications to her name, Chair of the Department of Anatomy and Cellular Biology and director of a research center at Tufts University School of Medicine. I had reached what many would call the pinnacle of success, but I felt overwhelmed by the demands of running a large university department, juggling three budgets, and responding to the exacting requests of three deans, while maintaining an active research lab. Often, I felt caught between what my head told me had to be done for the good of the department, and what my heart told me the faculty would feel about the changes I, as an administrator, was forced to make. More than once, returning home after an exhausting and contentious day, I spent the evening in tears.

Academia had been my home. It was more than a job; it was a way of life. Teaching, research, and giving talks at scientific meetings like the ones on this trip were all I knew. Consequently, when thoughts of leaving that life entered my head, I berated myself. Who would be foolish enough to leave a tenured professorship?

Yet everything I had learned about neuroscience was telling me that it was time to make a change. I had seen in the laboratory that the smallest building blocks of life, the cells which make up the organs and systems of the body, direct their activities from a centrally located nucleus. I had come to believe that this same principle—that living systems function by directing their activities from their core—applies to life at every level. I knew, without question, that if I did not begin to live from the center of my being, I would collapse, or explode from the tension.

So, at five the next morning, we drove to the top of the mountain, Le Col de la Forclaz, overlooking Lake Annecy. My husband was humoring me, I guess, figuring I'd back out at the last minute. I scrunched down in my seat, barely daring to look out of the car window at the view below.

As I suited up at the site, I asked the man in charge, "Are people afraid to do this?"

"Lady," he replied, "anyone who hasn't done this before is afraid."

I took a deep breath, closed my eyes, and ran toward the cliff. Suddenly the air swooped under my sails, and I was lifted into the air. I had let go of the earth, yet invisible forces still supported and guided me from the moment I untethered and stepped off into space.

That day was September 1, 1996. Exactly one year later, I untethered again. I resigned my position as department chair and took a sabbatical, which I then extended by a year's leave. I was flying toward an unknown

future in which science, in a way I could not yet see, would direct my activities from the core. Invisible forces under my wings would have to show me the way.

Biology as a Source of Wisdom

My first hint that the principles of hard science held the keys to human mysteries came in the early 1970s, when I was a graduate student at Tulane. I had been taught that neurons, the cells which make up the brain and spinal cord, were the most stable cells in the body. The neurons of an adult animal might die, but they did not change their structure. Yet as I peered through an electron microscope at the neurons of the brains of the adult female rats I was studying, I saw regular cyclic variations within individual cells. Organelles, miniature organs within the cell, seemed to appear and then disappear in a regular and repeatable pattern over a four-day period.

I tried to discuss these findings with my professors. The response was always skeptical. "Expand your sample," I was told. "Do more animals." Experimental research involves months of time: time to breed animals, time waiting for them to be born and to reach puberty, time to take vaginal smears over several months to determine when they established regular estrous cycles. Then, there is sampling animals on each day of the cycle, preparing the tissues, cutting brain sections thinly enough for an electron beam to penetrate, examining multiple sections in exactly the same region of the brain, taking photographs, developing the images, analyzing the data. All of this, and I could not know what the research would show until it was finished. I did more animals. The results were the same.

Convinced I was seeing something that other researchers had overlooked, I began to speculate about what might be causing the organelles to appear and disappear. I had injected one group of female rats in my study with the male hormone testosterone when they were five days old. As I expected, my tests showed that these rats had abnormal ovaries and were incapable of cycling. The mysterious organelle I was studying was apparent in their brain samples. I ran the same tests on a control group of rats whose estrous cycle was normal. Their brain samples also showed the organelle, but with a significant difference. The organelle appeared and disappeared at regular intervals. Not only were the rats' ovaries affected by early exposure to a hormone, but their brains were different,

too. In normal adult animals, I was forced to conclude, the physical structure of the cells of the brain can change. The brain, as science describes it today, is plastic.

The implications of what I was seeing were profound. If the brain is malleable, even this most stable aspect of our physiology can change in response to changing conditions. Under the microscope, I had seen neuronal changes in response to the wash of ovarian hormones triggered during the monthly reproductive cycle. What other conditions might cause changes? Does the brain change physically, for example, when hormones are removed or altered during menopause? What about other life events? What changes might they trigger?

I was aware, of course, of the dynamic principles that guide interactions between other organs, such as the heart, liver, and kidney, and between organ systems such as the digestive and circulatory systems. Organs and organ systems retain their high levels of responsiveness by changing, by turning off and turning on in response to conditions. If an organ were to remain stuck in the on position all the time, its sensitivity would decrease, and soon it would lose its ability to respond. This is also true of neurons, which are on only when they are actually conducting an impulse. I did not imagine, however, that this principle might influence physical structures within neurons. To what extent, I asked myself, is life at every level malleable, plastic?

Patterns repeated on many levels in the body usually indicate the presence of a basic underlying mechanism. Key principles are obvious in many different circumstances, at many different levels of the body's functioning. Take, for example, the principle that information flows from the interior of a cell to its outer reaches. The same pattern is repeated in the way instructions pass from the interior of a population of cells to cells on the periphery. Moreover, the principle underlying this pattern—that guidance originates from the center—can be seen everywhere in the body. Could it be, I wondered, that this pattern holds true in the larger mechanisms of personal and social interaction as well? Could it be a principle that we might follow to make our lives happier and more fulfilling?

I began to ask questions that pointed beyond my research in the lab, toward the principles that direct these larger life processes. How might we, like the physical components of our bodies, learn to change as a result of changing conditions so that we maintain our sensitivity and our ability to respond? Could the physiological truths of biology, the way cells and organs and organ systems operate, hold important lessons for how we live

our lives, how we think and feel and make decisions? Most important, could biology be a source of wisdom that we might tap into for guidance?

Change from the Center

Looking back, it's clear that my life up to this time had prepared me for these speculations. Experience had taught me that the ability to respond from one's center to changing conditions is essential to optimal functioning. Immediately after high school, I had entered a convent of Dominican sisters in New Orleans. When I joined the order, I told the sister interviewing me that I loved science and had wanted, since childhood, to find out what makes people tick. The order did not deem psychology, my first choice of college majors, appropriate. Instead, the sisterhood sent me to study chemistry, biology, and earth sciences at St. Mary's Dominican College in New Orleans. Later, I went to Florida State University to study nuclear chemistry and physics. As soon as I completed my studies, I began teaching at St. Mary's.

The pace of my academic and religious life was unforgiving. Up every morning at five for chanting and meditation, then off to my eight o'clock class. By five I was back at the convent for more chanting, dinner, and evening prayers. During the after-dinner recreation period, I was often too exhausted to speak. Long before lights out at ten, I was asleep. Summers were equally hectic, as I was sent off to graduate courses at various institutes and universities. Clearly, the system of my life was stuck in the on position. I was in danger of losing my sensitivity and my ability to respond.

Though some days I felt like I was running a race I couldn't win, it never occurred to me that I could leave the convent. Then one night, during an animated conversation in which I expressed my unhappiness with the unbending rules of the convent, one of the sisters said to me, "Well, then, if that's the way you feel, why don't you leave?"

That night, after lights out, her words reverberated in my mind, gaining momentum through the night. Finally, it dawned on me. Change, fundamental change that would alter the very structure of my life, was possible—even necessary—if I wanted to stay vital and keep growing. By the next morning, I was dancing around my room with a new chant on my lips: "I can leave, I can leave, I can leave."

When I told the Mother Superior that I would be leaving at the end of

the semester, she was astonished. I was an excellent teacher and had been an exemplary nun. Eleven years after entering the convent, I left. Within a year, I began to study psychology and neuroscience, earning a master's degree at the University of New Orleans and a Ph.D. in neuroscience from Tulane. After post-doctoral studies, I was hired as an assistant professor at Tufts University in Boston and began teaching neuroscience to medical students. I found that I enjoyed simplifying the principles of the brain's functioning so that students could readily understand them.

My lab research at Tufts also focused on uncovering the parameters underlying the brain's operations. I probed the principles that directed the activities of individual neurons and neurons linked in circuits. I selected a particular set of neurons to study. "My" neurons synthesized a hormone that controlled the pituitary gland. That hormone (LHRH) acted on the pituitary gland causing it to secrete another hormone (LH).

For months my research associates and I meticulously mapped and recorded the position of each neuron that made LHRH in the brains of the lab rats. We color-coded the neurons according to different conditions. Viewing them on the computer screen, cells that made LHRH during one condition would show up green, those that made the hormone during a second condition would be red, and those producing LHRH during a third condition would be blue.

After months of work, we entered the final keystrokes and began to view the results. On the screen before us, we saw a three-dimensional model of the LHRH-synthesizing neurons. Much to our surprise, the neurons in the center of the brain were white, even though this was not one of the colors we had coded. Surrounding the white cells were others that were distinctly red, green, or blue. Each of the colored cells showed up in one of the conditions but not in the others.

Then we got it! The central cells showed up as white because white is the combination of red, green, and blue. The white cells in the center of the brain seemed to be activated in all conditions. Could it be that the neurons in the center of the population were like a light switch, turning on other neurons as needed?

Body systems also have central control mechanisms; for example, the brain controls the nervous system, the heart, the circulatory system. The job of the central control center is to provide a seamless flow of information to coordinate activity within a cell, between cells, and between organs and systems. Without such control centers, communication breaks down, vital functions do not take place, and disease or death results. Is

this also what happens when we operate from fragmented pieces of ourselves rather than from our core? The elegant mechanisms of the body underscore that to be healthy and whole, we must live our lives from the core essence of who we are.

The Body's Secret Language

The research work I was doing in the lab simply wouldn't stay there. It kept spilling over into my life. I thought about a friend who had recently confided that she was leaving her husband of many years. Pushed by her father to excel in business, this woman had become a top financial planner. The man she married had a similar drive for success, and the couple built a life focused around their high-powered careers.

Then, suddenly, the structure of my friend's life began to crumble. No longer able to endure the pain of dragging herself to work each day, forcing her mind to focus on how to make her rich clients more and more money, she left her secure position in a respected investment firm. Wanting to help people, ordinary people, understand how to leverage their income, she started her own small consulting business. One change led to others, and within a year, she had decided to separate from her husband.

Why, I wondered, did both her first career and her personal life dry up at the same time? Could it be that she had been living her life from the periphery and not from the core? I could not help but compare my friend's story to what I had seen in the lab. Once I began to see the pattern, I noticed it everywhere—in my life, in the lives and experiences of my friends, and in the ways we all interacted with the institutions, corporations, and social organizations in our lives. I began to believe that the principles that operate in the body can be meaningful guides to constructing authentic and self-fulfilling lives.

I thought, for example, about the fact that many organizations become increasingly ineffective over time. I wondered if this diminishment was related to the loss of a core vision. Steve Jobs catapulted Apple computers into the mainstream of American schools and homes in the 1990s. Not too long after Jobs left the company, Apple Computers almost died. Jobs returned and despite dire predictions, Apple once again soared to prominence. As members of an organization, each with their own agenda, begin pulling the organization in directions that are not aligned with its vision, the energy of the organization's original focus dissipates, and effort frag-

ments. Eventually, the organization breaks down. It is as if the animating spirit of the institution has dried up, and the institution can no longer thrive.

My own life corroborated my speculations. The multiple demands of my professional life as a teacher, researcher, and university administrator seemed to be fragmenting me, strangling my creativity, drying up my spirit from within. I spent my sabbatical and the year-long leave that followed thinking and writing about these issues. I wanted to get to know myself again. Who was I underneath my achievements, skills, and competencies? What did I really want out of my life? Where did I want my life to go? As a part of this process, I consulted with a personal and professional coach. She encouraged me to ask myself difficult questions and to formulate a plan for rekindling my passion for life.

After eighteen months of hard thinking, my path was clear. I had looked inside and consulted my core values. They pointed me toward starting a coaching business of my own, through which I might help others rediscover how to live exuberantly from the center of their being. I called my business *Beyond Success* to indicate that success was not the answer to the yearning of the spirit. As a coach, my specialty would be helping people apply the dynamic principles of biology and physiology to their personal struggles and to their interactions with others.

My training in the laboratory gave me many ideas about how to proceed. I organized a focus group to test the principles I was formulating. Time and again, my living room research bore out the validity of the methodology I was developing. I recall one evening when the topic of fear seemed to dominate the conversation. I described to the group one way that animals handle fear.

“If you turn an animal quickly onto its back, it freezes.” I said. “The condition is called tonic immobility.”

One of the group members, a woman named Naomi, sighed audibly. “The same thing happens to me!” she said. “I’ve been tearing myself up over it for years. When I’m afraid, I just freeze. I had no idea my reaction had a name. I just thought I was a person who couldn’t be counted on to think clearly when something scary is going on.”

Heads nodded throughout the room. The sense of relief in the group was palpable. Knowing that tonic immobility is a physiological response to having one’s world turned upside down gave them permission to relax. We talked about how freezing up creates a natural pause, allowing our competing responses to calm down so that we can tune in, think more

clearly, and marshal our forces for action. The conversation became animated as person after person recounted situations in which they could have benefitted from this knowledge. How reassuring it was to learn that we could follow the lead of the body in handling fearful situations.

Your Body's Truths

Books about mind-body interactions are popular today. We have come to understand that physical illnesses often have messages for us. In fact, our thoughts and emotions affect our health and the way our bodies function.

The concept of cellular wisdom takes the mind-body connection a step further. It invites you to consider that the principles of physiology—the basic biology of the body—contain key truths that you can use to create an authentic, fulfilling life. Cellular wisdom uses these biological principles as a basis for addressing the following question: How can you make all the components of your life—your body, emotions, psyche, and spirit—function as a harmonious and synchronous whole?

The first section of this book looks at the principles that operate within the membranes of a person's individual body, within and between the cells, organs, and organ systems that keep each of us healthy and functioning with ease and joy. The second section of the book examines the principles that guide our lives as social beings—one-on-one relationships with a partner, family member, friend, or colleague; interactions with the organizations, companies, and other groups in which people have memberships—and the relationships with the institutions and other systems that impact our lives in community. Cellular Wisdom, you will discover, is wisdom written in the body. Lessons for exuberant living are coded into the elegantly complex dance of chemical and energetic interactions—the physiological component of your every thought, word, and deed.

You are the scientist of your life. As you explore problems and decisions from the perspectives offered here, you may see alternatives that had not suggested themselves to you previously. If you choose to test these new ways of thinking and acting in your life, you can rest secure in the knowledge that the principles that guide you come from a most reputable source—the truths that your own body teaches.

PART I

*living
exuberantly
within the
membrane*

WHAT IS CELLULAR WISDOM?

Every cell in your body is a genius!

Encoded into its molecules is the ancient wisdom of the earliest cells, refined over billions of years, the energetic essence of our evolutionary heritage. Eons ago, before the first cells evolved, molecules synthesized in a random fashion. There is no memory of these events. They simply occurred from time to time, with no order, no permanency. Over time, perhaps a billion years, simple molecules evolved into complex ones, until, about four billion years ago, the first cells took form.

When the complex molecules of the nucleic acids, DNA and RNA, came into being, memory was created, as these molecules had the gift of self-replication. Mitochondria entered the cells to function like power plants, turning molecular oxygen into fuel that cells use.

In the next movement of the evolutionary dance, cells joined together to form simple creatures composed of a single cell type, such as sponges. Step by step, such one-dimensional beings evolved into complex life forms, composed of many different types of cells—brain cells, bone cells, muscle cells. Groups of similar cells joined together to form cellular communities, and tissues, organs, and organ systems came into being.

We humans are the inheritors of this evolutionary genius. The creative energy from which the first cell emerged has not been lost. It hums within the coding of every cell of our bodies.

The life of each cell, whatever its function, is orchestrated from within by an abundance of stored information. Every moment of every day, the evolutionary blueprint coded into DNA and RNA is translated effectively and harmoniously into a cell's sustaining and communicating activities. The synchronicity of molecular events within cells and between cells is a symphony of reliable and repeatable events.

The tens of thousands of genes archived in the cell nucleus are not all turned on simultaneously. Rather, they are called to play their parts at specific times, at the precise moment they are needed. The marvelous dance of life in which our cells are engaged at every moment is the physiological substrate of cellular wisdom.

Yet the music that infuses cellular wisdom goes beyond physiology. Physics teaches us that, at its essence, everything is energy. We humans are beings of energy. If you've ever been present at the moment of death, you've witnessed the potency of this continuum of energy. A mysterious life force, made up of the source energy that reverberates within each molecule in every cell in our body, withdraws as we die. When this life force dissipates, energy no longer courses through our neurons, generating thoughts and motivating interactions.

Source energy that animates every living being was available before the emergence of subatomic particles, molecules, or cells. Eternally creative, ever seeking new dimensions, it continues as energetic force relentlessly pursuing new expressions.

Like all living beings, cells cannot thrive in isolation. Although they have boundaries—membranes that define their limits—much of each cell's activity is directed to communicating with other cells. Billions of years ago, as cells differentiated to generate a variety of cell types, they learned to signal each other by releasing specifically designed molecules. Once communication was established between cells, the activities of cells could be coordinated. Organs and organ systems evolved when cells learned to act cooperatively and harmoniously.

Our ability to communicate has given us the vast repertoire of behaviors characteristic of complex beings. Most profoundly, the source energy that resonates as communication between cells, and between beings composed of communicating cells, makes possible the miracle of interactive transformation. The miracle lies in the synchrony—one cell type, such as muscle or nerve, each at a certain stage of development, provides the cues to initiate the transformation of the other. Without this interaction, transformation would not occur. The energy waves that allow for communication and interconnection make up the expansive dimension of cellular wisdom.

When we open ourselves to source energy, we connect with cellular wisdom, for source energy is our link to the creative energies of the universe. We humans are an aggregate of vibrantly alive cells. We thrive, as have cells for billions of years, when our actions and interactions are aligned with the energy that animates and sustains our cells.

What does an experience of cellular wisdom feel like? Its most vivid and dramatic manifestation occurs in times of transition and change. Think back to a time in your life when the existing order broke down, and an unknown future was gestating. Maybe it was a time when you changed

careers, separated from a partner, or lost a child or a parent. Suddenly, life was different, marked by a different texture, different emotions, a different way of thinking. A special energy, which we recognize as part of our deepest self, characterizes these times. It is the energy of the Void, the energy that powers all creation, the energy that resonates within our cells at every moment. It may make us light-headed or giddy. We may laugh or cry more easily. We may feel a hollowness at the pit of our stomach, a clutching sensation in our chest. These are physiological expressions of the void that marks the impending emergence of a new dimension of life. In the energy vortex of the void, we may feel lost. In a way, we are lost—to an old way of being.

Yet out of this void, something new is being born. A new reality is unfolding from the field of possibility, perhaps accompanied by a sense of loss; perhaps, by a sense of wonder. At moments of transition, the vortex of creative energy that is our life force is activated. Its waves carry the blueprint that informs every new aspect of our lives. If we surrender to the vortex of energy, Cellular Wisdom will direct us on a path that leads to emerging new dimensions of our lives, for the energy of all new creation is Cellular Wisdom in action.

Dramatic transitions are not the only times we can experience the source energies of Cellular Wisdom. This energy is available to us whenever we are fully conscious of the present moment, because the present moment is the only place this energy exists. We cannot experience source energy in past events or in reveries about how we felt at some former time. We cannot connect with it in future events or in fantasies about how we may be months or years hence. Moreover, we cannot find this energy in our minds, because our thoughts are not our actual experience. Nor can we feel it when our emotions are agitated. Only in a peaceful experience of the present moment can we enter the stillness and connect with the energetic hum of our being.

There are many things we can do to relax into the now and connect with the energy at our core. Some of us access this state while engaging in exercise; others by listening to music, painting, or viewing a magnificent sunset. Meditative and contemplative spiritual traditions teach many techniques for quieting thoughts and tuning into ourselves. We know when we've made the connection, for we experience the sense that all is well.

We can drop into this state instantly, suspended between tasks, even in the midst of a busy day. No one need know that we are experiencing the energy that pulses through our bodies at the deepest level.

Frequent connection with source energy gives us access to that state of wholeness and joy which is the harmony underlying all activities. As you will discover in what follows, connection to source energy is not difficult, because Cellular Wisdom is always present, always accessible. Quite simply, we tune into it by becoming aware of its presence.

Moreover, we elicit the connection to Cellular Wisdom by yearning for it. Yearning focuses and aligns our energies. Many of us think of ourselves based on images that we developed years ago, images that no longer apply. When we love who we are now, with all our imperfections, we actively open to source energy within us. The energy that animates us at the cellular level unfolds our spirit, moment by moment. Since we last spent time with ourselves, we may have added new dimensions. What draws us today may not be what drew us yesterday.

Any journey within leads, paradoxically, to heightened awareness of the expansive energy which permeates all life. The energy we encounter when we look inside ourselves is the same energy that guides the movement of the heavenly spheres—the stars, galaxies, universes. Each living being has a characteristic profile of energy frequencies expressed within his or her body, but our spirits are not confined by physical limits. Our individual energies pulses in and out of the sea of all energy, all love. When we tap into that confluence of energy, we arise renewed, knowing that the energies in our bodies are moving within the harmonies of vast cosmic music.

We each have an interior teacher who can help direct our lives, in the interior domain and with others, exteriorly. The goal of this book is to introduce you to this teacher and help you to understand and recognize its messages. There is nothing that you have to do to earn the presence of Cellular Wisdom, for it is nothing less than the essence of who you are.

CHAPTER 1

live from the inside out

EACH OF THE BODY'S ONE HUNDRED TRILLION CELLS is a dynamic, living entity, continuously engaged in the energetic dance of life. The life of a cell is orchestrated from a central command center called the nucleus, located at the heart of the cell. Every moment of every day, the genetic information coded into the complex molecules of DNA stored in the nucleus directs the cell's activities.

The principle that information flows from the center of the cell to its outer reaches is true at every stage of our development and for every type of cell. The DNA in the nucleus of the simple, cellular being from which we each developed contains the code used to translate our distinct genetic information into molecules. Early in our development, cells differentiate into various types—muscle cells, bone cells, glandular cells, neurons, and so on. Each cell carries in its nucleus a copy of the original DNA blueprint.

When internal or external signals reach the cell, particular segments of the DNA code are activated, causing the cell to generate the specific molecules it needs to carry out its activities. Cellular activity is precise and appropriate: cells generate only those molecules called for by the activated segment of DNA and only those molecules that are appropriate to its type.

Simply put, from the moment of conception until we die, cells live from the inside out, responding from their core precisely and appropriately to the signals they receive.

Like cells, each of us has a blueprint at the heart of our being. As we become more aware of the dynamics of our lives—what works for us and what does not—our individual blueprint of truth and values becomes more and more clear to us. When we make decisions in accordance with this blueprint, we feel vital and fulfilled. When we make decisions that contradict this truth, or operate from fragmented pieces of ourselves rather than from our core, we feel frustrated and distressed.

As is true of cells, there are many different types of people, each with distinct strengths and abilities. We become more responsive to those internal and external signals that activate aspects of our inner blueprint as we continue our process of self-discovery. When we respond to signals that resonate with our core values, events unfold that evoke our essential selves, and we discover new opportunities for self-expression. Like cells, we thrive when we live energetically from the inside out.

Examine the Blueprint

The cell is to be our wisdom textbook, so let's begin with a simple tour of its structure and functioning. Each cell is a complex assembly of tens of thousands of molecules and larger structures, suspended in a gel-like fluid. The cell's outer boundary is a plasma membrane, the interface between the cell and its external environment. We might think of this membrane as the cell's skin and sense organs.

Inside, the cell is divided into several compartments. The membranes that separate these compartments specialize in transmitting signals between the cell's various "rooms." The nucleus, which houses DNA—the director of cellular activity—is also surrounded by a membrane that separates the command center from the gel-like fluid.

The mechanism through which the DNA blueprint directs the synthesis of needed molecules is quite complex. In simple terms, however, strands of DNA receive a signal telling them to open so that the blueprint they encode is accessible. Specialized enzymes in the nucleus read the code on the DNA strands and transcribe the code to another molecule, a type of RNA. The RNA then crosses the nuclear membrane to carry instructions from the DNA into the gel-like fluid.

In the fluid, other types of RNA translate the code and direct the synthesis of proteins with the help of other specialized cellular factory sites, or organelles. The molecules in these factories are each created in the right

amount, at the right time, to serve a specific purpose. They are then sent to sites within or outside the cell. The energy to fuel these cellular processes is generated by yet another molecule, which is manufactured in another cellular factory, called the mitochondria. Other organelles within the cell carry out the task of breaking down molecules that are no longer needed.

Though greatly simplified, this brief tour illustrates the ceaseless dynamic balance that goes on within the cell as it responds to internal and external signals, synthesizing new materials needed for life, sending them to places where they perform their functions, and breaking down those materials that the cell no longer needs.



LIKE OUR TRILLIONS OF CELLS, we are also a ceaseless hub of creative, communicative, and destructive activity. We take in signals from our own bodies and from the outside world, respond to them in creative ways, and discard those structures—ideas, feelings, sensations—that we no longer need. All too often in the rapid pace of modern life, however, we seem to bypass our central control mechanism, moving instantly from stimulus to response without consulting our inner blueprint. When we make decisions based on the expectations of a parent, spouse, or peer group, or act in a certain way because we have always done it that way, we are ignoring the first principle of cellular wisdom: *examine your blueprint and act accordingly*.

How can we become aware of the life instructions—the core values and beliefs that are coded into our essential blueprint? Any process that encourages introspection, including meditation, journaling, and creative or artistic expression, can help us get in touch with the essence of who we are. When we're caught up in the flow of life, an uneasy feeling or uncomfortable sense that something is out of sync can signal that we are not living life from the inside out.

I think, in this regard, of Cassandra, acknowledged by her peers as a most successful criminal lawyer. Now forty-four and divorced, Cassandra was becoming increasingly uncomfortable with the arguments she was making to defend her clients, especially those she sensed were guilty. Though she was finding it harder and harder to feel good about her work, she continued, as she had for many years, to craft winning arguments and chase down supporting witnesses.

As she interviewed the defendant in her latest case—a high school teacher who was accused of having sexual contact with a fifteen-year-old female student—Cassandra became deeply agitated. On the surface, the man seemed sincere in his outrage over the student’s accusations. His principal called him an exemplary teacher, and he was well liked by his colleagues. Yet, as she pushed to find more character witnesses and asked more questions, Cassandra sensed that something was not quite right. The man seemed too eager to concur with her suggestion that the young girl in the case was disturbed and given to fantasy. Slowly, as she had been trained to do, Cassandra developed a strategy to discredit the information that the girl provided. So convincing was her presentation in court that the teacher was acquitted of all charges. Cassandra was celebrated as a winner.

But Cassandra did not feel like a winner. In fact, she had never felt this distressed, even after her divorce. Knowing that every accused person deserves the best possible defense was no longer enough to justify her performance in the courtroom. When she passed the young girl’s parents in the corridor after the verdict, her eyes filled with tears, and she could not meet their gaze. Cassandra’s profession was no longer in sync with her values. She was not living according to her inner blueprint.

What might Cassandra do to get in touch with her core values and use them to guide her actions? In the course of this book, I’ll suggest many strategies for putting Cellular Wisdom to practical use. Here’s a process you can use to begin examining your inner blueprint.

REVIEWING YOUR LIFE CHOICES

Find a quiet place where you will not be disturbed for an hour or more. Sit comfortably and take a few deep breaths. As you exhale, sigh audibly or say, “Aaaaaahhhhhh.” Relax. Think about the answers to the following situations. If you wish, record your answers in a journal or notebook.

- Think of an important choice or decision you made in the past year. Mentally compare how you felt before making the choice.
- What emotions or thoughts did you have while making the choice?
- How did you feel after making the choice?

- Looking back on these events, how do you feel now about the choice you made?

Compare this recent choice to two or three previous life choices—perhaps the choice of a college major or profession, the choice to begin or end a relationship, the choice to buy a house or move to a different city, the choice of a spiritual affiliation or an important set of social or cultural activities.

- What do you notice about the circumstances surrounding these choices?
- Which choices made you feel particularly happy and fulfilled?
- What was it about these choices that made you feel this way?
- Which, if any, made you feel uncomfortable?
- What was it about the choices that led to the uncomfortable feeling?
- What do you discern about the values or beliefs that led to the life choices you've made?
- What patterns do you notice?
- If you could go back in time to when you made one of these choices, what would you do differently? Why?

We come to know ourselves by discovering which choices lead to a sense of deep fulfillment and joy and which make us feel uncomfortable and unfulfilled. Those that make us happy generally resonate with our essential blueprint. Those that make us uncomfortable and regretful may not.

Taking a moment to examine the choices you've made and how you feel about them can help you begin the process of examining your inner blueprint and discovering the truth of who you are. In my own life, I have discovered how important it is to make choices based on core values. For instance, when I was asked to serve as president of Women in Neuroscience (WIN), I took the time to investigate whether this position would be compatible with my values.

WIN's stated mission is to promote the careers of women who work in a challenging scientific field. Because my work as a coach and teacher focuses on personal and career development for professionals, the fit seemed to be a good one, but I also took the time to assess how I was

feeling about taking on this added responsibility. I asked myself honestly whether the position might feel like too much, given the other activities I value. Would I come to resent the time I would have to spend attending meetings and doing administrative chores, rather than seeing clients or working on my writing? No red flags popped up.

In spite of the prospect of my being away from home more often, my husband gave me his full support. I then had a series of conversations with the woman who was then president of WIN. She reassured me that my new responsibilities would mesh easily with my current life, and that WIN's organizational culture would allow me to run the organization using a team approach, an important value for me. I agreed to take the job.

One of my first actions as president was to invite WIN's other officers to participate in a exercise designed to help us identify our personal values. After completing this exercise, we worked together to articulate a set of shared values that would guide us as a leadership team. Because I took the time to do my inner and outer homework, I found my work with WIN to be satisfying and joyous.

You can probably think of instances in your own life when decisions you made had a similarly happy outcome, but you can probably think of other times when things did not turn out as well as you had hoped. In both cases, ask yourself how conscious you were of your process of decision making. If you discover that your habit is to make decisions by the seat of your pants, or because one choice seems easier than another one, you've been risking disappointment. Make your core values—that inner blueprint so like the DNA at the heart of the cell—the principle that consciously guides your decision making. In doing so, you will better the odds that your choices will lead to positive and life-affirming results.

The Power of the Right Fit

Cells differ from each other in significant ways, structurally and functionally, yet each plays a vital role in the body. Bone cells, muscle cells, and cells in our connective tissue support the body's physical structure. Skin cells and cells that make up the sense organs help us interact with the external world. Cells in the pancreas make insulin; cells in the ovaries make estrogen; white blood cells in the lymph nodes make antibodies to fight infection. In each case, the cell's structure, vital functions,

and life cycle are directed from within by the DNA blueprint in its central nucleus.

Let's look briefly at the lives of two very different types of cells—neurons and red blood cells.

The job of neurons is to transmit information. These cells develop before we are born and generally do not reproduce in adults. Although some are lost along the way, neurons are our constant companions from birth to death. Neurons are linked into intricate networks. Messages passing between them are carried by an array of neurotransmitters, which are specialized molecules that cross cell boundaries to carry impulses to other cells. Each neuron is a vital link in the transfer and integration of information.

Say, for example, that you want to raise the index finger of your right hand. When the decision to initiate movement is made in the motor cortex of the brain, a motor neuron (we'll call it neuron 1) fires. An electrical signal travels along the membrane of neuron 1's long tail descending through the spinal cord. In a person who is six feet tall, this single neuron can measure several feet in length. In a giraffe, by comparison, a similar motor neuron can be as long as six feet!

When the signal reaches the spinal cord, it is transformed from an electrical signal into a chemical one. A neurotransmitter is released from the ending of neuron 1 to transmit the chemical signal to a motor neuron (we'll call it neuron 2) in the spinal cord at the level of your shoulder.

Neuron 2 receives the input from neuron 1, along with input from as many as ten thousand other neurons that relay information about the tension in muscle and the state of the body. Neuron 2 takes in all this information, integrates it, and sends an electrical signal through its long tail down the right arm. When the signal reaches the index finger, neuron 2 transforms its electrical signal into a chemical one and releases its own neurotransmitter. This neurotransmitter activates receptors that cause contraction of the flexor and extensor muscles in the finger. The muscles contract, and your index finger moves.

In contrast to neurons, red blood cells are the simplest cells of the body. They have no nucleus or internal organelles. Essentially, they are disc-shaped balloons filled with hemoglobin and enzymes. Their simple design helps them perform one vital function with utmost efficiency: delivering oxygen and removing carbon dioxide from other cells in the body. And unlike neurons which are with us from before birth until death, red blood cells are short-lived. After delivering oxygen and removing carbon dioxide

CHAPTER 6

claim abundance

ABUNDANCE IS ALLURING. However much love, beauty, health, wealth, or pleasure we have in our lives, we always want more. We seem to be programmed with an innate drive to better ourselves, to improve on what we have, to be all that we can be. Our desire for material abundance is due, in part, to our extravagant culture. Advertisements entice us with promises of the pleasures of a new car, whiter teeth, the latest fashions, a fabulous vacation. Dreams of abundance induce sweet feelings of luxury and ease.

Not all experiences of abundance are sweet, however. Many of us have been stung by people who aggressively pursue the job that draws the highest salary, the most expensive home, the most lucrative investment portfolio, the most prestigious school. We may have experienced these out-of-control desires ourselves. As we witness the sometimes addictive grasping for more and more abundance, a question emerges: Can we learn to enjoy abundance gracefully, even to pursue it—without becoming enslaved by it?

Our bodies teach us that balance is possible. Abundance, even extravagance, is evident everywhere in our physiological makeup. Yet mechanisms exist within our body systems to regulate and control abundance before it damages us. These mechanisms model ways for us to claim our abundance without losing our balance or our sense of proportion.

Extravagance and Letting Go

No dilemma surrounds extravagance in the body. The developing nervous system generates far more neurons than will be incorporated into the mature system. Similarly, millions of sperm are produced, even though only a single sperm is needed to fertilize an egg. Yet the body has the built-in wisdom to recognize that uncontrolled, unregulated growth can be harmful, even deadly. Cancer develops because the normal mechanisms that limit cell growth fail. In the healthy body, unneeded cells die. In this way, the body balances extravagance by letting go naturally of what is not needed.

As the nervous system develops, those neurons that will not contribute to mature functioning die. For example, as many as eighty percent of neurons that are generated to carry impulses from the retina to the brain—neurons critical to our ability to see—die during the process of gestation.¹ Neurons that make up the receiving component of the eye-brain circuit develop in the retina. As they grow, these neurons send their processes (the long tail that transmits the impulse) toward a target in a part of the brain called the thalamus. Only those neurons that are successful in connecting the retina to this target survive. The others die.

The death of these excess neurons is not induced by disease or trauma. The neurons are destroyed by the activation of “suicide genes” within the neurons. These genes seem to be turned on by a program from within the neurons, initiated by death-signaling molecules from the neurons themselves, or from surrounding tissues. At the same time, the developing brain target secretes substances that inhibit the activation of suicide genes in those cells that have successfully made the connection and become functional components of the eye-brain circuit.

Like excess neurons, sperm that do not succeed in fertilizing an egg also die. Each instance of ejaculation produces three hundred million to four hundred million sperm, clearly an instance of extravagant abundance. Yet the genetic makeup of reproductive cells makes them very fragile. A sperm cell contains only half the required number chromosomes. Female reproductive cells, called ova, also contain only half the required number of chromosomes. Neither kind of reproductive cell lives very long on its own. Only the fertilized egg, the union of the sperm and ovum, has the complete set of chromosomes necessary to sustain life.

Perhaps the male body is so extravagant in producing sperm because the window of opportunity during which fertilization can occur is so lim-

ited, and the journey sperm must take toward the egg is so arduous. Sperm must swim upstream to reach the oviduct where fertilization takes place. They move at a rate of three millimeters per minute, so it takes a sperm thirty to sixty minutes to reach the egg. Only the most vigorous sperm get there; weaker sperm do not reach the egg in time. Abundance assures that some sperm are successful and that reproduction happens.

The message about abundance is clear: the body zealously pursues both generation and destruction, yet in a dynamic relationship, extravagant growth is balanced by death. Those cells that contribute to the appropriate functioning of the body are nurtured and supported; those that do not are let go.



THE SAME BALANCE SHOULD BE TRUE IN OUR LIVES. Those aspects of abundance that support and nurture us should be fostered; those that do not should be let go. In a way, the process of shaping our lives so as to enjoy appropriate abundance is similar to the way Michelangelo is said to have sculpted his famous statues. He described his method as chipping away the excess marble to allow the figure of David to emerge from the marble block. We, too, can sculpt our lives by removing the excess and allowing our true shape to emerge. As a first step, we assess what is really important to us—what we wish to retain and what we wish to let go, what nurtures us and supports our true expression, and what blocks and inhibits it.

As long as we let go of that which does not advance us, we can pursue abundance with a passion equal to the body's extravagance. Holding on to what is extraneous—those things and experiences that do not advance us or contribute to our well-being and that of others—is terribly damaging. The key to thriving, joyful abundance lies in achieving a dynamic balance between generation and destruction, between extravagance and letting go.

SCULPTING A LIFE OF ABUNDANCE

Step One: Self-Assessment

Find a quiet place and settle in. When you are comfortable, breathe deeply. Slowly fill your lungs with oxygen and feel the life energy streaming into every cell of your body. Exhale and release everything that binds or restricts you. With the intention of allowing appropriate

abundance to flow to you, allow your mind gently to scan your current life. Effortlessly, without tension, reflect on the following questions:

- In what specific ways is my life rich and abundant right now?
- How do these various aspects of abundance nourish me and support my true self-expression?
- What single step could I take right now to increase my experience of appropriate abundance?
- In what ways is excess present in my life right now?
- How do these excesses block or inhibit my sense of well-being?
- What single step could I take right now to let go of some aspect of excess, or diminish its presence or influence in my life?

After answering these questions, take some time to draw up a plan for increasing some aspect of appropriate abundance and for eliminating some aspect that seems excessive or that inhibits your well-being. If you wish, write your plan as a contract with yourself. Be as specific as possible, and make each step in your plan small and achievable. Sign and date your plan.

For instance, if you determine that good relationships with family members are an important aspect of your abundance, make a plan to organize a family reunion, or to send a weekly e-mail to your sister in a faraway state, or to post photos from your vacation on a website to share with your family. If you decided that the clutter in your house is an aspect of excess you'd like to eliminate, schedule a day in the next week to fill boxes to give away to charity, or to plan a garage sale, or to decide what you might give away to friends as wonderful gifts.

Maximizing Potential

Genetics is big news these days. There was great excitement in the media when the team of scientists involved in the International Human Genome Sequencing Consortium announced that they had finished counting and mapping the genes in human chromosomes.² Yet the findings of the consortium also raised questions. Scientists had estimated that they would find one hundred thousand genes or even more, yet the first draft of the human genome map revealed that humans have fewer than half that number, approximately thirty to forty thousand genes. To put this number

into perspective, human beings have about twice the number of genes as the *Drosophila* fruit fly, but about the same number found on the chromosomes of a corn plant!

Even if a few thousand additional genes are added to the human genome map, scientists must answer a difficult question: How can such a small number of genes generate the biological complexity of human beings? Only one explanation makes sense: Each gene must be utilized to its maximum potential.³

We know that human genes can generate the large number of proteins necessary to make up the complex organs and systems of the body by cutting and pasting together chemical components. This technique, known as alternative splicing, makes it possible for many different, but related pro-teins to arise from a single gene. Alternative splicing is most evident in the human nervous system.⁴ More than five hundred alternative variants of one primary gene transcript are expressed differentially in the hair cells within the inner ear, giving us the capacity to hear a gradient of sound frequencies from high to low tones.



IT SEEMS CLEAR THAT BY CREATIVELY using their potential, human genes are able to accomplish the wonders of human complexity. The most creative people are also accomplished at maximizing their potential. Consider, for example, physicist Richard Feynman, whose contributions to quantum physics are unquestioned. In 1965, he was awarded the Nobel Prize for Physics. Author Michael Michalko reports that Feynman's IQ measured 122—certainly above average, but less than the range for people termed geniuses.⁵ What accounts for Feynman's astonishing creative facility?

In his own books,⁶ Feynman describes his joy in asking questions and his ability to turn a problem around and examine it from multiple angles. Because he loved physics, he continuously sought to challenge himself. Even the breakthroughs that led to his Nobel Prize, Feynman says, were the result of creative play: "The diagrams and the whole business that I got the Nobel Prize for came from that piddling around. . . ."⁷

Feynman's love for probing into how things work began in childhood. From the time he was eleven or twelve, he took radios apart and fixed them in a home lab. Innovative and creative, Feynman models for us a way to maximize our potential: Find something you love and

explore the many different ways of expressing it.

A friend told me the story of Stephanie, the middle child in an accomplished Boston family. Her older brother, Joe, was a financial whiz who attended Harvard. Her younger sister, Lisa, a talented pianist, was headed for the Conservatory of Music. Stephanie's successes were not so celebrated. Often she felt as if she did not belong in her family. She wondered whether her family even noticed she was there.

Stephanie's way of coping with being ignored was to create an imaginary family. In her fantasy, her more modest accomplishments were enthusiastically appreciated. Over the years, the characters within this imaginary family came to seem almost like real people. Her imaginary father read her school papers aloud and lavishly praised their insightfulness. Her imaginary mother was delighted by her creativity in gardening and flower arranging. Her imaginary older brother spent time teaching her about the stock market, while her imaginary sister always played new pieces for Stephanie first and prized her feedback.

In her last year of high school, Stephanie wrote a story for her English class that brought this imaginary family to life in a series of moving vignettes. Her teacher was so impressed with Stephanie's story that she entered it in a college scholarship contest. To Stephanie's surprise and delight, her story took first place. The prize was a year's tuition to study creative writing at a small New England college. Imagine Stephanie's pride when, after she broke the news to her real family, her father read her story aloud and praised its creativity and insights!

Like Stephanie, we can learn to maximize our potentials by leveraging what we have to achieve optimum results. The following exercise builds on the insights you gained from the work you did in manifesting hidden potentials at the end of Chapter 4. Here, you explore ways to maximize your potential as a means of claiming appropriate abundance.

SCULPTING A LIFE OF ABUNDANCE

Step Two: Maximizing Your Potentials

Review your answers to the exercise for “Finding Your Potential” in Chapter 4. Follow the method explained in Step One in this chapter to enter a place of quiet and relaxed reflection. Allow the energy streaming into your cells to help you to maximize your potentials, and reflect on the following questions and scenarios:

- What potentials have you activated already in your life?
- With great ease, imagine many ways you might use these potentials, in various circumstances, occupations, locales, and applications.
- Which of these imagined ways seem effortless, bringing you joy as you visualize putting it into practice?
- Now ask yourself: What potential might I activate to help bring the balance of appropriate abundance into my life?
- In your mind’s eye, imagine that activating this potential helps you to let go of some specific instance of excess and/or to increase your experience of abundance. Make your mental picture as vivid as you can. See the activation of this potential as effortless and as bringing you joy.
- Now ask yourself: What potential might I activate to help me make necessary, but difficult changes in my life?
- In your mind’s eye, imagine that activating this new potential helps you make a specific and positive change. Make your mental picture as vivid as you can. See the activation of this potential as effortless and as bringing you joy.
- Now ask yourself: What potential do I wish to maximize within the next year?
- In your mind’s eye, see yourself activating this new potential. Make your mental picture as vivid as you can. Imagine the reactions of people in your life, the effect your new activity has on your health, circumstances, and emotional outlook. See the activation of this potential as effortless and as bringing you joy.
- If you wish, take some time to draw up a plan for activating this potential as a contract with yourself. Be as specific as possible about what you will do, but make each step small and achievable. Sign and date your plan.

For instance, say that you have a facility for making desserts. You have already manifested this potential in concocting wonderful treats for your family and friends. Now allow yourself to imagine that you have started a business making the cheesecakes everyone raves about for local restaurants, or that you have begun giving classes in fancy desserts at the gourmet cooking supply shop in your town, or that you have written an article about your cakes that is published by a glossy cooking magazine. Imagine the financial and emotional consequences of activating this potential. If it seems appropriate, decide that as a first step, you will fine-tune your five favorite cake recipes and choose one to submit to a cooking magazine.

Complementarity and Redundancy

Abundance is also demonstrated in the body by the principles of complementarity and redundancy. *Complementarity* is the collaborative action of two or more parts of the body that share a common characteristic. Any action carried out by complementary parts is more powerful than what either part could do alone, as the shared action both reinforces what the two have in common and uses their differences in service to a shared goal. *Redundancy* refers to a characteristic shared by body parts. We might think of it as a kind of insurance policy. If one part cannot carry out an action, another part with the same characteristic can. Within our cells, as within our lives, complementarity and redundancy unlock new sources of energy and power.

The simplest example of complementarity and redundancy occurs within a single cell. As we saw in Chapter 1, the DNA in the nucleus of a cell holds the blueprints to produce molecules within the cell. We learned in Chapter 2 that another organelle within the cell, the mitochondria, is an energy factory that drives the activity of molecular production. Like the nucleus, the mitochondria also contains DNA. Mitochondrial DNA contains the codes to generate molecules that transfer energy within the cell. The complementary link between the instructions contained in the nucleus and the energy to carry them out is DNA. Though the tasks of the DNA in the nuclei and the DNA in the mitochondria are different—each produces a distinct set of products or transcripts—complementarity allows the two components to work in tandem to direct and energize cellular functioning.

Redundancy refers to the characteristic shared by two body parts. The

nucleus and the mitochondria of cells share the characteristic that each contains DNA. Moreover, no other organelle within the cell, except for these two, contains DNA. The repetition of DNA in these two components insures that the cell will be able to carry out its essential functions.



COMPLEMENTARY AND REDUNDANCY WORK TOGETHER in our lives as they do in our bodies. When you miss out on an opportunity—you fail to get a promotion you have been hoping for, or the man you hoped to marry leaves you for someone else—you may experience depression or despair. Cellular Wisdom suggests, however, that opportunities are never lost. Though one avenue to advancement may be closed, a complementary aspect of your life may benefit from what has occurred, or an opportunity may emerge in another guise. Having lost the promotion, you have more time to spend with your family; now that your relationship has ended, your former love's roommate, who has always wanted to ask you out, does so, and you marry within the year! The lesson of the body is to stay mindful and open so that you can recognize and activate complementary elements and become aware of alternate or redundant sources of abundance.

Remember Stephanie and her scholarship-winning story about her imaginary family? During her first year at college, her writing teacher, Professor Moore, invited her to join the writing workshop he sponsored. The students in the group met weekly to read aloud and discuss their work. They provided Stephanie with thoughtful feedback—the perfect complement for her creativity. She was often inspired by a character or technique in another student's story, and she used that inspiration to fuel her own creative process. The students in the group soon came to feel like family, united as they were by the same dedication to great writing and to helping each other improve.

Stephanie's new clarity about her life goals—she was sure that she wished to make writing her career—opened a whole new set of possibilities for abundance in her life. She began to actively explore various ways she might manifest her goal of becoming a professional writer. Perhaps, she thought, I'll apply for a summer internship at a magazine or publishing house, or volunteer to write a column for the college newspaper, or keep a detailed travel journal on the trip I plan to take

to Spain next year—and then try to turn it into a novel. Like Stephanie, once we make the shift into abundance thinking, our lives can be filled with rich and potent opportunities.

SCULPTING A LIFE OF ABUNDANCE

Step Three: Recognizing Hidden Opportunities

Follow the method above to enter a place of quiet and relaxed reflection. When your body and mind are at ease, consider the following:

- Allow your mind to scan your life and recall a time when you felt that you had lost out on an opportunity. Review the circumstances of this event and allow the feelings you had at the time to rise into consciousness.
- Now gently bring your mind back from that time into your present life. Looking back from the perspective of the present, bring to mind several positive consequences that arose from the lost opportunity. Allow the feelings associated with these positive consequences to rise into consciousness.
- Now scan your current life and bring to mind a situation in which you anticipate or fear that you may lose out on some opportunity.
- Allow yourself to imagine freely what positive consequences may occur—what other aspects of your life may benefit, or what other opportunities may open up—if your fearful imagining does manifest itself.
- Remind yourself that no one can see the future, and that when you stay mindful and open, any life occurrence can transform itself into a rich and potent opportunity for happiness.

A River of Abundance On Call

Once we're aware of the many possibilities for abundance in our lives, we can relax into the appreciation of the abundance that's available to us moment by moment. The body illustrates this "abundance on call" as well. Most cells in the body store nutrients not immediately needed in the form of glycogen, a compact, starch-like substance that can be changed into the simple sugar glucose as the body needs it. However, neurons do not store glycogen; they rely on nutrients transported to them by blood cells. If the blood supply is cut off, neurons are deprived of nutrients and may die.

Yet the advantage of accessing abundance on call as the need arises is greater than the risk. Given that neurons do not devote energy to hoarding nutrients, they are free to employ their energy for other uses. Neurons, we might say, are totally focused in the present, trusting that the abundance they need will always be available.



THE STORY OF LISA FITTIPALDI, an artist who began painting after she became blind, illustrates trust in the availability of abundance can help reshape a life after catastrophe. In March 1993, Lisa, forty-three years old and a certified public accountant, was driving home on the interstate from an Austin, Texas, hospital where she was employed as a financial analyst. Suddenly everything went dark and she almost collided with a truck. She lost her vision, but it returned. Three weeks later, her sight disappeared once more.

After consulting an ophthalmologist, Lisa learned that she was permanently blind because of a condition that prevented blood from nourishing her optic nerves. She could not see, even though she had corneal implants and her beautiful blue eyes shone. At a loss in the world of the blind, she spent her days in bed, depressed and crying. One day her husband threw a child's coloring set at her and said, "Do something!" She took the watercolors and painted three transparent jars.

That was just the beginning. Today, Lisa paints realistic scenes containing complex images, a delicate blending of hues and colors, lights and shadows (a sampling of her work is posted to www.blindartist.com). When she paints with watercolors, Lisa discerns the colors by the texture

of the powders. She describes cobalt blue as sticky—stickier than yellow, which is light and smooth. Red is even smoother.

Lisa was told that oils would be more difficult for her to use. Rather than feel defeated, she was challenged. Now she paints with oils, even though she cannot distinguish the colors by texture or smell. Instead, her husband puts the paints on a special palette, in alphabetical order. Lisa told me that she has a photographic memory for text and graphics—she just knows where things are on the canvas.

Lisa's evolution in painting reflects how much she has grown since the day she learned she was blind. She did not choose the acceptable way to function as a blind person; rather, she used her creativity to find ways to live in a sighted world. She describes her blindness as liberating, not as cataclysmic, and she describes herself as “the most well-centered person you've ever met.” When I spoke with her, I asked whether she was this way before she became blind. “No,” she responded.

Her inspirational success as a painter—she told her story to a national audience on the *Oprah Winfrey Show*, and has been featured in more than forty magazine and newspaper articles both in the United States and overseas—has also enhanced the lives of others with visual and hearing impairments. Using the proceeds from the sale of her paintings, Lisa founded and now directs the Mind's Eye Foundation, which supports the development of software for blind and visually and hearing-impaired children. She continues to serve on the Texas State Independent Living Council, appointed by then-Governor George W. Bush.

What happened to Lisa could be viewed as a tragedy, but it is also an example of genius unveiled. When she began to paint, she had no expectations. She simply turned away from self-pity and opened herself to creativity, trusting the river of abundance that's always on call to unveil the impossible. She hopes that the sighted world will learn what she learned: You can do anything if you create the opportunity.

SCULPTING A LIFE OF ABUNDANCE

Step Four: Claiming Your Abundance

In a quiet place, where you will not be disturbed, make yourself comfortable and do the following:

- Run your mind over your current life. What resources or sources of abundance are always on call for you? For instance, is there a close

friend or family member you can rely on utterly? Or a hobby or activity that never fails to nurture you? As you consider this question, note any reactions in your body. Is there a sense of free-flowing energy? In what ways do you sometimes block your access to this river of abundance on call? As you consider this question, note any reactions in your body. Is there a tightness in your solar plexus? Does your throat feel constrained, or is there some other physical response you can identify?

- What might you do to overcome this sense of blockage and gain free access to abundance on call? Lisa Fittipaldi had to give up her self-pity and trust her creativity. What might you need to give up? What might you need to trust?
- Has anyone ever thrown you a lifeline or issued you a challenge, as Lisa Fittipaldi's husband did for her? What outside influences might help you gain greater access to your river of abundance?

After answering these questions, take some time to draw up a plan for gaining greater access to your river of abundance on call.

CHAPTER NOTES

- 1 Pascal Meier, Andrew Finch, and Gerard Evan, "Apoptosis in Development," *Nature* 407, no. 6805 (2000): 796–801.
- 2 Eric S. Lander et al., "Initial Sequencing and Analysis of the Human Genome," *Nature* 409, no. 6822 (2001): 860–921.
- 3 Eörs Szathmáry, Ferenc Jordan, and Csaba Pal, "Molecular Biology and Evolution. Can Genes Explain Biological Complexity?" *Science* 292, no. 5520 (2001): 1315–1316.
- 4 Paula J. Grabowski and Douglas L. Black, "Alternative RNA Splicing in the Nervous System," *Progress in Neurobiology* 65, no. 3 (2001): 289–308.
- 5 Michael Michalko, *Cracking Creativity* (Berkeley: Ten Speed Press, 2001).
- 6 Richard P. Feynman, *Surely You're Joking, Mr. Feynman* (New York: Bantam Books, 1985); Richard P. Feynman, *What Do You Care What Other People Think?* (New York: Bantam Books, 1988).
- 7 Richard P. Feynman, *Surely You're Joking, Mr. Feynman* (New York: Bantam Books, 1985).

CHAPTER 14

access genius

IN THE FIRST HALF OF THIS BOOK, we explored the cellular landscape within and worked to identify our values and articulate them. In the second half, we looked at the interactions between the systems of the body and worked on improving our human relationships and fostering more harmonious communities. This final chapter asks: What is the best we can be as individuals and as a community? And, what do we need to do to get there?

Most people would agree that the highest expression of human consciousness is genius—that remarkable combination of intellectual and personal qualities that allows a person to see beyond the obvious, to sense connections that escape narrower vision, and to express what they see in a way that ignites others and catalyzes change.

Who comes to mind when you say the word *genius*? Leonardo da Vinci? Thomas Jefferson? Marie Curie? Albert Einstein? All these are great geniuses, to be sure. A book I first read many years ago, *The Man Who Tapped the Secrets of the Universe*, is about a genius who's considerably less well known, but an example of genius, nonetheless.¹ Walter Russell was born in Boston in 1871. Because of financial reversals in his family, he left school when he was ten and took a job as a clerk in a dry goods store for \$2.50 a week. Over the next several years, he taught himself to play the organ and, by age thirteen, he was working as a church organist. With the money he earned, he put himself through art school

and became an illustrator for books and magazines. He also painted portraits, including one of the children of President Theodore Roosevelt. Although he never studied architecture, he designed the first Hotel Pierre in New York City, among other buildings. When he was fifty-six, he began to create sculptures of many famous figures, including Thomas Edison and Mark Twain. In his sixties, he won prizes for figure skating and continued to skate into his eighties.

Russell's philosophy of genius is simple: Mediocrity is self-inflicted and genius is self-bestowed. If Russell is right, and anyone can be a genius, we might wonder: What role does the body/mind play in unfolding our genius? What qualities can help me to recognize my own genius and to access the genius of others?

As we see in what follows, the complex weave of interconnections that make up the "great intermediate net" of the nervous system is the essential physiological component of genius. This neural network allows for three qualities of mind clearly evident in the life of Walter Russell and every other great genius we might name: creativity—the ability to see beyond the obvious, shift perspectives, and explore ideas in new ways; interconnection—the ability to see relationships between ideas; and experience—the ability to learn from what has gone before, adapt to new circumstances, and extend what is known in new directions.

Walter Russell's ability to adapt to the changing circumstances of his life, to apply what he had learned about painting first to architecture and then to sculpture, and to exercise his creativity in so many fields—from music to art to figure skating—demonstrate how these three qualities of mind define a life of genius. Let's look now at what we can do to recognize and develop our own genius qualities.

The Great Intermediate Net

The qualities of genius depend on the ability to sense the environment and respond to it in unique ways. This ability developed slowly over our evolutionary history. Early in evolution, sensory cells, which detect things in the external environment, were directly connected to muscle cells. Under this arrangement, every stimulus led to the same response, the contraction of muscle fibers. Contracting muscle fibers allowed an organism to move toward or away from a stimulus—a response vital for its survival. As evolution progressed, neurons appeared, first simply as connectors

between sensory cells and muscle cells. With continuous evolution, more and more complex organisms emerged with progressively larger numbers of neurons. As the neurons became more numerous, they coalesced into larger and larger interconnecting networks.

Eventually, these interconnecting networks came together to form the great intermediate net. Because of the net, each stimulus can elicit thousands of different responses. I might respond to a stimulus—say, the smell of freshly peeled figs—by remembering the row of fig trees on my Italian grandfather’s farm. On another occasion, the same smell might remind me of the explosion of tastes as I bit into a fig. The same stimulus can elicit different responses from the same person at different times. Moreover, the smell of figs might elicit a completely different set of associations and responses from the person standing next to me. Because of the great intermediate net, the same stimulus can traverse any of thousands of pathways, activating one neuron and then another, and allowing me to bite into the fig or to see that it is overripe and throw it away.

This wonderfully responsive and flexible weave of interconnections is formed by all the neurons that are not directly involved in carrying incoming sensory messages to the spinal cord, or outgoing messages from the spinal cord to the muscles or glands. The net comprises the intermediary neurons that connect the neurons involved in direct sensory and motor function, and all neurons in the neocortex of the left and right hemispheres of the brain. The net links these newest structures of the brain to the older parts, such as the smell brain, the emotional brain, and the brain stem and spinal cord.

This great net is totally present to incoming stimuli, moment by moment, alert and ready to respond. It is engrossed in the moment and unaware of the future. Taken as a whole, its multiplicity of pathways transcends, by many orders of magnitude, the computing power of the direct link between neurons in the sensory and motor pathways. It would not be an exaggeration to say that the great intermediate net gifts us with our extraordinary capacities as human beings.

As impulses travel across neurons and between neurons along the network, I interpret my world. When I pick a fig, the familiar movements and smells activate neurons that store old memories and emotions. Each memory, in turn, activates responses from other neurons. I recall the texture of the skin on the outside of the fig. This memory reminds me of my grandfather teaching me how to tell a ripe fig from one that is overripe. A warm feeling spreads through my body as I remember how warm and nurturing my

grandparents were.

The great intermediate net mediates our thoughts and feelings, memories and desires, beliefs and intentions. As the net's neurons pulse and communicate in multiple directions—up, down, this side, that side, across short axons, long axons, branches of axons—a synchrony of cellular wisdom emerges. The net is always ready. Pulsing with enormous potential, it awaits our direction.

To see the net in motion, watch a professional basketball player in the final series of the playoffs, after a season of honing his skills. Marvel at his coordination and speed as he dodges, swoops, dribbles, and scoops the ball into the basket. It's the net that integrates his sensory and motor neurons, keeping him in touch with his memories of the skill and experience of each player on each team. And it's the net that allows him to anticipate moves and strategies, while remaining aware of the time remaining on the game clock and the position of each player on the court. Compare this multilevel awareness and repertoire of choices to simple sensory-motor reflexes, such as we experience when the doctor strikes the tendon just under the kneecap, and we involuntarily kick out a leg. Such responses are all that is available to the lower organisms from which we evolved. They would have found the genius necessary to play pro basketball quite beyond their reach!

Creativity

As we've said, creativity is the ability to see beyond the obvious, shift perspectives, and explore ideas in new ways. The key to thinking in this way seems to be staying in the present—seeing a problem as new, and exploring it and all its relationships without reference to the past. Staying in the moment allows new ideas and perspectives to emerge. Poet Mark Strand described his state of mind when he is writing: “Well, you're right in the work, you lose your sense of time, you're completely enraptured, you're completely caught up in what you're doing, and you're sort of swayed by the possibilities you see in this work. . . . [T]he idea is to be . . . so saturated with it that there's no future or past, it's just an extended present in which you're making meaning.”² In fact, the process of staying in the present with a problem is short-circuited when we begin to evaluate our ideas.

One of the most important techniques of creativity is brainstorming, in

which you allow the flow of creative associations to take you in many directions without judging which ideas are valuable and which are dead ends. It's not difficult to see that the process of creative brainstorming is absolutely dependent on the great intermediate net. We've already noted that the intermediate net is totally present to incoming stimuli. Though it allows us access to past memories, its focus is reacting to what's happening right now, without an overlay of evaluation and self-judgment.

For instance, I often encourage my coaching clients to brainstorm about a problem they're trying to solve. Vanessa came to see me, quite upset. She was in the midst of a divorce. Her finances were limited, yet she needed to find an office to conduct her consulting business. I helped Vanessa recall times when she had been creative in solving problems. I assured her that a creative answer was waiting to be revealed to her; to find it, she simply needed to release any anxiety and worry and focus on the situation at hand. Then I asked Vanessa to describe her ideal office in detail. She began listing the features, such as the amount of space she needed, her desire for lots of light streaming in the windows, and a location close to the business center of town.

While such brainstorming is occurring, more and more neurons and neural pathways are being activated in the intermediate net. Consciousness acts like a spotlight, shining here and there, making connections, illuminating thoughts and memories, trying out possible solutions. As the process continues, more and more neurons are recruited, activating more of the great intermediate net.

Suddenly, Vanessa stopped speaking and looked at me, her eyes shining. "What is it?" I asked her.

"My ex is moving to New York," she explained. "We are trying to sell our condo, but the real estate market isn't very good right now. I can ask my ex if we can wait to sell the condo for six months, until the market improves. During that time, I can use the condo as my office. It's perfect! I can't believe it—the solution was there all the time, but I didn't see it."

Have you ever had a similar experience? If so, did you notice an almost audible click when things fell into place? When Vanessa released her anxiety, she was able to see her situation from a new perspective, connect the condo she needed to sell with her need for an office, and solve her problem.

Just as the net makes creative problem solving possible for individuals, it can help corporations and communities to think creatively about their current situations. The same associative process that takes place in an individual involved in creative work can take place within a group of individuals

who are working together to solve a problem. We might even say that business and community groups can function as an “extended intermediate net” linked by a complex network of social and corporate interconnections.

For example, Pitney Bowes Credit Corporation (PBCC), a division of Pitney Bowes, a manufacturer of office supplies, recently reinvented itself by adopting a corporate model that fosters just this kind of associative, creative thinking. Matthew Kissner, PBCC’s president and CEO, calls his division an idea factory.³ His first week on the job, he handed out buttons with the words *That’s the way we’ve always done it* in a red circle, crossed out with a slash. Instead of adhering to PBCC’s traditional business—financing the sale and leasing of equipment—Kissner refocused the division on creating customer services, such as establishing a credit card geared to small businesses. Because the majority of PBCC’s customers were small businesses, the card proved to be a popular service and PBCC’s revenues shot up.

To encourage teamwork and creativity, Kissner moved his division into a building designed to encourage brainstorming and collaboration. White boards outlining the goals for the quarter appeared in every department. Traffic signs included words that reminded workers of strategies for success, such as *Grow the customer base* and *Capitalize on the power of people*. Instead of an annual retreat open only to high-ranking employees, Kissner made the gathering an attractive perk for employees whose performance during the year was exceptional. In Kissner’s words, he wanted “people to bump into each other, talk about what they’re doing, and exchange information that they wouldn’t otherwise exchange.”⁴ Employees were encouraged to be information gatherers. One area of the building, called the Cranial Kitchen, featured booths where employees could watch training videos or surf the net.

The results of this emphasis on creativity were astonishing. In 1998, the reinvented division brought in thirty-six percent of the profits for Pitney Bowes, although it accounted for only two percent of the parent corporation’s workforce. One of its new services, a revolving line of credit that helped small businesses finance their postage costs, attracted four hundred thousand customers within the first nine months! The creativity apparent at PBCC demonstrates, on a corporate scale, the marvels that are available to all of us when we make the effort to access the innate potential of our creative genius.

A similar kind of cooperative effort can help communities solve their problems. In 1997, a massive flood of the Red River carved a five-mile-wide path through Grand Forks, North Dakota, and East Grand Forks, Minnesota.⁵ Every business was flooded, and only a few houses were

spared. In the aftermath of the flood, many people wanted to turn their backs on the river and rebuild their lives elsewhere, but others rallied behind the idea that the river could be tamed and turned into an asset for the communities. These folks consulted a Massachusetts company for answers. With the company's help, they built a one-thousand-foot wall protecting the downtown areas and supplementing two dikes that protected the rest of the city. As inspiration for the reconstructed downtown, the residents looked to the past—to the Roaring Twenties, when East Grand Forks was a local entertainment center. They lobbied the state legislature for liquor licenses and mapped plans for restaurants facing the river. A historic saloon became the centerpiece, rebuilt as the art deco landmark. Now there are offices and boutiques in the flood-protected downtowns, and the cities are once again thriving centers for business, shopping, and entertainment. Today the people of Grand Forks and East Grand Forks say they're living in the luckiest cities in the world.

Possibilities for personal and communal growth abound when we have the courage to look beyond the ordinary to find them.

ACCESSING YOUR CREATIVITY

Find a place and time that is conducive to exploring your inner landscape. Surround yourself with things that might help you to remember your genius, such as an award you were given, a photo of a special event, a project, or piece of art you created. First, consider the following question:

- When was the last time you devised a creative solution to a problem or a new way of doing something that surprised others? What do you remember about this occasion? How did this event make you feel?
- Do you ever have inspirations but not act on them? When was the last time that happened? What stopped you from acting on the inspiration?
- The first step in accessing your creativity is giving yourself permission to do so. Do that now. Remind yourself of how you feel when you follow through on a creative idea. Choose several activities from the following list to help you anchor your commitment to creativity:
 - Read a book on creative thinking, such as *Cracking Creativity: The Secrets of a Creative Genius*, by Michael Michalko;⁶

Creativity: Flow and the Psychology of Discovery and Invention, by Mihaly Csikszent-mihalyi;⁷ *Discover Your Genius: How to Think Like History's Ten Most Revolutionary Minds*, by Michael J. Gelb;⁸ or *Think Like A Genius: The Ultimate User's Manual for your Brain*, by Todd Siler.⁹

- Keep a creativity scrapbook in which you place anything that catches your attention—photos, quotations, fabric, your own drawings or poems, an ad from a magazine. Take the scrapbook out from time to time and brainstorm about different ways to use what you've collected to create something new: a card for a special occasion, a gift for a friend, an illustration to accompany a poem, or some other project.
- Whenever possible, do something you need to do in a new way. Drive to work using a different route. Go to a play instead of a movie. Write or eat with your non-dominant hand. Cook a new kind of ethnic food.
- Try out your commitment to creativity by exploring an issue or problem in your life that is unresolved.
- Give yourself three weeks or more to explore the issue or problem.
- During the first week, spend ten minutes each day brainstorming. Write down whatever ideas come without evaluating them.
- At the end of the first week, engage in a physical activity like dancing, or a centering activity like yoga or meditation. When your mind is clear and you are in an expansive state, peruse what you have written. Use a highlighter to mark any words or phrases that draw your attention.
- Write these words or phrases on a separate piece of paper. Draw lines between words that seem to go together or group them under larger headings.
- Spend the second week continuing to brainstorm about the idea.
- At the end of the second week, make a mind map. Draw a circle in the center of a piece of paper. Write the issue or problem in the circle.