

**R. Buckminster Fuller**  
**Operating Manual**  
**for Spaceship Earth**

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## Introduction

All of humanity now has the option to “make it” successfully and sustainably, by virtue of our having minds, discovering principles and being able to employ these principles to do more with less.

R. BUCKMINSTER FULLER

It is a great honor to write the introduction for this new edition of three of my grandfather Buckminster Fuller’s most important books, *Operating Manual for Spaceship Earth*, *Utopia or Oblivion*, and *And It Came to Pass—Not to Stay*. To be able to introduce his work to a new generation of concerned humans at this critical moment in human history is indeed a privilege. These works, written 30 to 40 years ago, are time capsules of wisdom for which we are now ready. They provide desperately needed keys that can help us unlock the doors to a sustainable future for all of humanity.

During the last few years of his life, my grandfather, my grandmother Anne, and I were living together in Los Angeles, just around the corner from my mother’s home. Anne lived at this house full-time, while Bucky continued lecturing around *Spaceship Earth*, orbiting in and out of this “west coast” base and his central office in Philadelphia. One day when I was driving him to the airport for one of his many trips, he said to me, “Jaime, we have half an hour now during this drive. What is the most important thing we can be thinking about?” I don’t remember specifically how we responded on *that* occasion, but I am sure it centered on the big picture of “making the world work for 100% of humanity.” You never caught Bucky veering from that focus—it was the “North Star” by which he always navigated.

And thus, in the few short moments that we have together during this introduction, I would like to begin where Bucky always began, by

reflecting on “what is the most important thing we can be thinking about right now?” In the many years I was privileged to share with him—whether in our family setting, working with him on projects, traveling as his assistant, or producing his public lectures—he always spoke about how humanity was entering a “critical moment.” His research led him to conclude that we had reached a fundamental “fork in the road,” and were confronted with the most profound choice imaginable—*utopia or oblivion* for all of humanity. He asserted that for the first time in human history, we had gained the potential to destroy life on this planet as we know it, and at the same time acquired the know-how to meet the basic survival needs (food, shelter, energy, water, etc.) of 100% of humanity on a sustainable basis: using then present resources and technology, and phasing out the use of fossil fuels and nuclear energy.

I was in the audience for hundreds of Bucky’s lectures during the 28 years we shared life. Whether he was discussing planetary trends, nature’s principles of design, the engineering strategies of his inventions, or how a “little individual” can be effective as an agent of change, he never lost sight of this big picture of our world. Living and traveling with him day after day, I can truly say he was a person who lived his every moment with the perspective that our world was in an emergency, and that his every choice, his every action (as well as ours), could be the “straw that broke the camel’s back” or made the difference in assuring our survival.

Bucky’s focus on “earthians’ critical moment” was indeed powerful and persuasive to many of those with whom he came in contact. And yet, like any new idea or insight ahead of its time, people could only begin to digest the true scope of his words. It seemed so large, that making the link with one’s everyday life could be difficult. “Is it true that we can ‘make the world work for all of humanity?’” “Even if it is true, how can I, as one person, do anything about it?”—were typical questions that naturally followed for those first encounter-

ing his message. In the years that followed, while many became involved in addressing some aspect of the challenges facing our society, the urgency of humanity’s “critical moment” could still seem remote from the comfortable daily lives that most of us in the “developed” countries enjoyed.

Yet, today “earthians’ critical moment” no longer is a new idea or a remote possibility. A comprehensive global crisis is now clearly dawning in humanity’s collective awareness, interweaving dramatic climate change and massive environmental destruction as we hover close to “points of no return”—not to mention the ongoing hazard of nuclear weaponry, and persistent large-scale extreme poverty. It has become harder and harder to avoid the recognition that we are in a full-scale planetary emergency. For example, scientists suggest that if the trends continue in the dramatic melting of the North Pole’s ice cap, it could be gone completely within five years. Yet even as we become more aware, it can be very difficult to move fully out of *denial* about our predicament, without the cognition that there is a future scenario where we can turn this *emergency into an emergence* of sustainability for all life on earth.

How can the book in your hands amplify your capacity to understand that scenario and to participate in steering *Spaceship Earth* into a path of *emergence* into “safe harbor”? It is my experience that one of Bucky’s greatest gifts is his capacity to illuminate the very largest picture possible in a way that allows us to more easily discover the specific actions we can take right now, today, that will make the biggest difference in addressing the crises before us. He described this process as the discipline of being both “macro-comprehensive and micro-incisive.” Either side of the polarity by itself would, in his view, be imbalanced—and hence ultimately ineffective. Bucky called this “grand strategy” of problem-solving *comprehensive anticipatory design science* and suggested it was the most effective approach for addressing the global challenges facing humanity.

Bucky championed a *design revolution*, maintaining that it was far easier “to reform the environment than to attempt to reform people.” For example, he posited that if you designed a new bridge, and then built one over the dangerous roaring river near a local village—where villagers had historically lost their lives attempting to cross—people would naturally discover its usefulness in their lives. The old patterns of life would organically give way to new, as the villagers began to use it. Ultimately, solving the very complex problem of how we make Earth’s finite resources and “energy income” sustain a human population that could reach over 9 billion by mid-century, without destroying our ecosystem in the process, will require design innovations to re-engineer our world’s life support systems. Just as this year’s computer is higher performance and lighter weight than last year’s, or compact fluorescent light bulbs use less energy and last longer than the comparable incandescent light, it is only by increasing the overall efficiency of our global infrastructure—*doing more with less*, as he observed nature doing constantly—that we can realize the dramatic potential of comprehensive success for all humans.

So, “what is the most important thing we can be thinking about”—now? What about tomorrow? While the particular matters of tomorrow will not be known until then, the urgencies of this “earthians’ critical moment” will probably be a context in which we will be thinking and living from now on. The only question, Bucky asked, is whether we will respond deliberately and constructively, or be reactive by default. In a letter to an associate he wrote:

I am pitting a world-around, bloodless, constructive, design transformation revolution against a world-around destructive bloody revolution. The Design Science revolution can be won by all. The bloody revolution can be won by none.

The good news is that the *design revolution* is alive, well, and flourishing all around our planet. While only some involved would call it by that name, individuals, organizations and institutions around the

world today are designing and implementing solutions to the most vexing problems before us, using many of the same principles Bucky employed. Even while most of the public debate on the front pages of the newspapers and mainstream television focuses on the “bloody” side of the coin, if you look just a little further, this most encouraging news of the design revolution continues appearing everywhere else. The attention and participation we each give to this design revolution will add to its strength. In the end, will it be enough—and soon enough? Who knows? Surely it will depend on what each and every one of us does... every moment of every day for the rest of our lives.

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Something hit me very hard once, thinking about what one little man could do. Think of the Queen Mary—the whole ship goes by and then comes the rudder. And there’s a tiny thing on the edge of the rudder called a trim-tab. It’s a miniature rudder. Just moving that little trim-tab builds a low pressure that pulls the rudder around. Takes almost no effort at all. So I said that the little individual can be a trim-tab. Society thinks it’s going right by you, that it’s left you altogether. But if you’re doing dynamic things mentally, the fact is that you can just put your foot out like that and the whole big ship of state is going to go. So I said, “Call me Trimtab.”

Buckminster Fuller, page 46 of the transcript of an interview with Barry Farrell for *Playboy*, February 1972

Confronted with a deep sense of the urgency of our planetary predicament, I was humbled by the task of deciding which three of Bucky’s twenty-four books would be the most fitting for republication—which would be the most powerful *trimtabs* for our times. From the beginning *Operating Manual* was a no-brainer: a short, concise, and yet comprehensive map of the *whole* picture of the “how to make the world work” for everyone. It had been in 1969 one of his best sellers. Then there was its counterpoint and sequel *Utopia or Oblivion*: hard core Bucky, comprehensive and then some, unabash-

edly redundant, an unadulterated, uncut, and unplugged journey largely through a sampling of the talks he gave around the world.

At first I thought the third book should be a final installment of a trilogy outlining his planetary visions: maybe his *Earth, Inc.* or *Grunch of Giants*. And then, an *aha* moment: the *world* out of context was a world in trouble, and the world was only a facet of the Bucky I knew—always considering the true *big picture* to be the *universe*. So I turned to the “lyrical” philosophical Bucky, and the volumes of his “poetry,” or as he called it, his “ventilated prose.” In contrast to his “writings” which evolved out of transcripts from his lectures, his “poetry” is intimate by nature—reflecting an innovator in the realm of language and cosmology, beginning from a pen in hand. I wanted a well-rounded series, and *And It Came to Pass* could not be more round. It moves from the universal and sublime to the staggering awe of this dynamic world in transformation—finally sealing the deal for me with its inclusion of my favorite piece of his writing, “How Little I Know.”

Rereading these three books for the first time in a few decades took me on an unexpected journey. Even though Bucky’s worldview permeated our family life during my childhood, and after his passing in 1983 much of my own life’s work has continued to be interwoven with his legacy, this re-reading had a dramatic effect on me. Remarkably there has been some quickening of comprehension that has been reverberating in my awareness ever since the project began.

While I had been given all his books as a teen, and probably “read” them at the time, I only gleaned an inkling of what they actually meant. I have had occasion to reference them from time to time over the years, yet I had never sat down, to re-read them cover to cover, as I did this past winter during a concentrated three-month period. With the perspective of being in my middle years, and with the dramatic evolution in the circumstances of our world, I felt I was hearing Bucky’s core message for the first time, and it resonated deeply. On the one hand

it seemed to be a distant voice from the past, on the other a message precisely designed for our times in the nascent 21st century.

As I read, I kept being reminded how humans are fascinated with going back, or forward, in time. With the now universal presence of video cameras, I am sure we have all had one of those moments when someone says, “Hey, let’s make a recording of ourselves talking to our grandkids after we’re gone”; what would you say?—what wisdom could you provide to guide their way? Re-reading Bucky felt like discovering just such a buried treasure in the attic, an important message from a grandfather. It was Bucky in another time, speaking to us now, as we find ourselves in “crunch time” trying to figure out how to successfully *triage* the crisis before us. And it is precisely the fact that Bucky was so “ahead of his time,” “before” all the \*%#&\$@! hit the fan, and looking toward a fast approaching “critical moment,” that makes his message so valuable for today.

Growing up, I intersected with the creation of each of these books in their making. *Utopia or Oblivion* derives from lectures given by Bucky during the sixties. And from my earliest memories I think of him being in constant motion during that time—going from one lecture to another—which often brought him to Los Angeles where I lived. While I can’t recall the first time I actually attended one of Bucky’s public lectures, by the end of the sixties I had been to many. And his “thinking out loud,” as he described his talks, might show up at any moment when he was around: in the car, around the dinner table after a meal, or while being interviewed in the house.

In my early teens I remember particularly watching him edit the publisher’s galleys for his book *Operating Manual for Spaceship Earth*. Whether sitting next to him on an airplane to the east coast, during the summer cruises on his sailboat off the coast of Maine, or around the dining room table at our home (always a favorite spot for him to work), I watched him go over and over again this bundle of pages,

marking it up with notes, colored arrows, diagrams, and attached pieces of paper. During informal gatherings of family, friends, or associates he would also read, or have others read, the manuscript aloud as it progressed. It was a fascinating process to observe, and piqued my interest about what his books might have to say. By the time I got into high school I was hungry to be able to read his books “by myself,” and at my request, he gave me a set for Christmas.

Recently, I was also quite startled to discover another intersection showing up in the Fuller Archive at Stanford University. As I examined the working manuscript files for *And It Came to Pass—Not to Stay*, I found at the end of one draft of the manuscript a log of all the places it was re-typed (Bucky was always very keen on thorough documentation):

Buckminster Fuller, August 4, 1974, Bear Island, Maine;  
Corrected and retyped at Shiraz, Iran, September 24, 1974;  
Corrected and retyped again at Bombay, India, October 1, 1974;  
Corrected and retyped at New Delhi, India, October 6, 1974;  
Corrected and retyped at Philadelphia, Pennsylvania, U.S.A.,  
November 22, 1974;  
Corrected and retyped at Philadelphia, Pennsylvania, U.S.A.,  
December 4, 1974;  
Corrected and retyped at Philadelphia, Pennsylvania, U.S.A.,  
January 31, 1975.

It caught my attention because they were the places I traveled with Bucky at the beginning of the year and a half period I spent touring with him all over the world. It was an extraordinary schedule. During that period he averaged one lecture every three days.

Like going through some kind of “worm-hole” in time, it also sent shivers up my spine, when I came upon a piece of small loose-leaf unlined paper, in another folder in the Archive. This folder seemed to contain the very initial working materials for one of the chapters

of this book—then entitled “The Poem of 1976.” Amidst the cut-up and taped-together pages of typescript, I saw this piece of paper with my own handwriting:

true wealth  
is the already accomplished  
organization of human capabilities  
to clothe  
shelter feed  
protect, inform  
and accommodate  
the initiatives of human life  
the magnitude of true wealth  
consists of the number  
of forward days  
of the number of human beings  
already provided for

The stanza was then marked up by Bucky, with drawings of geometrical structures filling the other side of the page. That piece of paper was a hologram of an afternoon working with him. It reflects the process of a man who was intent on assessing the state of the world, its “trendings,” and the options for success.

These books are akin to a first “snapshot” of our times taken by a man who was looking as hard as he could at the future of *Space-ship Earth*. Just as in the famous 1968 “Earthrise” photograph of our planet from the moon taken by astronaut Bill Anders aboard Apollo 8, it’s as if we are seeing ourselves for a first time. And while the technology of Bucky’s camera lens was very primitive compared to today’s, his “big picture” of the challenges and potentials for humanity entering the 21st century is remarkably sharp.

You will see, pervasive in Bucky’s writing, his predilection for looking forward and attempting to anticipate where the trends were leading.

He enjoyed, and felt the import of, making predictions: *prognostications* as he liked to call them. For example, in the time he wrote the three books of this series, he dreamed of access to the early room-sized “main-frame” computers. He wanted to use them to computerize the vast *world inventory of resources, human trends and needs* that he, with staff assistance, had collected and assembled “by-hand” for over thirty years. In these books he repeatedly made predictions about how the application of the computer was going to dramatically change our world.

There he was in 1975 saying:

Advantaged by the computer’s capability  
To inventory, permutate and reevidence  
All relevant metabolic information,  
Humanity is about to discover  
That whatever it needs to do  
And knows how to do  
It can always afford to do.  
And that that in fact is only  
And all it can afford to do.

*And It Came to Pass—Not to Stay*, p. 94

We have certainly been greatly “advantaged by the computer’s capability to inventory, permutate and reevidence” everything under the sun. Yet, even though a small Apple II computer was given to Bucky’s office staff by Apple in the last few years of his life, he did not live to take advantage of this capability to see his *inventory of global data* “computerized.” Though he could see it coming, he never experienced doing research with the vast data bases of planetary information we now have at our fingertips.

You will notice that some of his predictions, such as expecting population to level off at 5 billion people well before the year 2000, were off. Nonetheless, population experts now agree with him in predict-

ing the actual stabilization of population (the U.N. estimates almost 9 billion by 2050). And the insights that he had about the dramatic and inexorable decrease in birth rates as a function of improving standards of living, and the bulge of population from steadily increased life spans, turned out to be right on.

In 1965 at a US Department of Labor Committee meeting there is Bucky saying:

... It is now also dawning upon industrial society that it could be even more successful while depending exclusively upon the potentially enormous energy income—in contradistinction to living almost exclusively by burning up our capital principal, that is our “savings-account” energy in the form of fossil fuels.

The natural energy “income” for instance, the harnessable ocean tides, wind, sunpower and alcohol-producing vegetation, can be made to flow through the wires and pipes to bring adequate energy to bear on the levers, to step-up man’s physical advantage efficiently to take care of all of humanity...

*Utopia or Oblivion*, p. 301

Or there he is in 1967 on one of his favorite words, *synergy*, saying as he always did in his lectures:

... synergy is the only word in our language meaning behavior of wholes unpredicted by behavior of their parts ... since my experimental interrogation of more than one hundred audiences all around the world has shown that less than one in three hundred university students has ever heard of the word synergy, and since it is the only word that has that meaning it is obvious that the world has not thought there are any behaviors of whole systems unpredictable by their parts. This is partially the consequence of over-specializa-



tion and of leaving the business of the whole to ... the feudal kings or local politicians.

*Operating Manual for Spaceship Earth*, p. 79

In our day *synergy* has become a word used so much, from business journals, to candy bars, to neighborhood health spas, you would think we intuitively knew what it meant. Let's hope this is a harbinger of our capacity to see the "whole picture" ever more clearly. For as Bucky used to exclaim, "when people know what it is all about they don't need someone else to tell them what to do."

For those of you reading Bucky for the first time, I offer a few specific tips for your journey through his universe. You may find, with the pulsation from the *macro* to the *micro*, from the *comprehensive* to the *incisive*, that your mind is stretched and turned in a way that is, at first, disorienting. Think of it instead as a re-orientation—a real orientation that can at first be dizzying. Give yourself a lot of time. His books are thinking tools, catalysts for "shape-shifting," for leaping far beyond the "box" of normal habitual thought processes. Perhaps a dose-a-day will be your pace, to thoroughly examine and digest the ideas as they come—paying attention to the changes in your own awareness ... daily, weekly, even monthly. Be encouraged: like learning a new language or a new computer program, I trust the current brain researchers would confirm that reading Bucky is just the kind of endeavor that can help us build brain cells and their interconnections.

Bucky also invents new words, or uses common words in ways that are new, precisely because he is attempting to steer clear of the limiting habits of thinking we all inherited. Starting at the age of 32, he made it a discipline, to think carefully about the words he used, resisting the temptation of saying things the way "everyone says them," dispelling the attempt to make them more palatable. For example, he would frequently point out "we still say the words *sunrise* and *sunset*,

even though we have known for hundreds of years that the earth revolves around the sun!" In response, someone wrote him suggesting alternatives, *sunlight* and *sunclipse*—which he quickly adopted.

When reading Bucky I find it useful to apply a strategy also taught in foreign language classes: as you begin to converse in a new language let the words pass through without attempting to grasp even one individually. Stick with the continuity, even if it means that on the first time through you miss a number of details. For if you get the continuity, and are able to stay focused on the big picture and the underlying principles, you will glean a sense of the context, even if all the details are not yet clear. And with this general *sense* of what he is saying, you may discover the inspiration that draws you back a second time, to begin progressively examining the details. Bucky suggested this was in fact a principle of universe: there is a fundamental advantage in any problem solving or critical thinking when one starts with the "whole" or overview, and then proceeds to the "parts" or details.

A long-time friend and close associate of Bucky's, Don Moore, a gifted systems analyst and engineer, always used to say, "Bucky is the one person I have ever met for whom nothing was ever out of context." And for Bucky the context, the way to see clearly our way through the challenges facing humanity, is always by "starting with the whole universe." For Bucky the answers to the problems of our world are all around us in the beautiful design of the universe. And in the end, more than the facts, figures, particular predictions, or solutions he developed, were the underlying principles of universe to which he was pointing. Thank goodness, nature reveals to us the state of the art in design and technology, if we will look.

Jaime Snyder

California, May 2008