

Richard Buckminster Fuller's Plea for Comprehensive Design

The father of the geodesic dome left a legacy of passionately held ideas that challenge us to create a new 21st-century discipline: comprehensive design.

GREAT FIGURES OF HISTORY tend to be remembered for the concrete accomplishments they leave behind: books, influential systems of ideas, transforming inventions or discoveries, works of art, inspiring speeches, or acts of leadership that capture our imaginations by their dramatic impact on the world of practical affairs. The life and career of Richard Buckminster Fuller, father of the geodesic dome, fall easily into none of these categories.

His career is, in many ways, a story of failures, of promise unrealized. Yet, he continues to mesmerize many precisely because of his frustrations, dreams, unfulfilled hopes, and missed opportunities, which seem disturbingly to mirror those of our civilization. Nowhere is this clearer than in Fuller's plea for a profession of comprehensive design.

By comprehensive design, Fuller meant the integration of numerous technological, urban development, and industrial disciplines into a single, powerful tool dedicated to the creation of good housing and community infrastructure throughout the world—not just America. In the 1940s, he believed that the intellectual, technical, and economic re-

sources were already available to end poverty and manage environmental problems effectively.

The fact that we have entered the 21st century far from achieving these aspirations may have more to do with the way our social structures and design professions function than with the validity of Fuller's ideas. Indeed, if architects, planners, engineers, inventive technologists, and urban development professionals

owe any single figure a debt of gratitude for heralding the importance of their individual fields of expertise in solving society's problems, that figure is Fuller.

While the ideas of many thinkers can be studied meaningfully without knowing much about their lives, that is not an option with Fuller. Design was his consuming personal passion on so many levels that it is impossible to grasp the work without first obtaining some measure of the man. Born in Massachusetts in 1895, Fuller was descended from the Reverend Timothy Fuller, a member of the Constitutional Assembly that founded the United States. Such an ancestry may have reinforced his sense of being destined to help usher in changes that would benefit all humankind. Although his preoccupation with technological innovation came early, with childhood excursions on Maine's Penobscot Bay marked by ponderings on improvements in boat design, it was a personal trauma in his late 20s that foreshadowed his lifelong dedication to the quest for technologically empowered solutions to social problems. His daughter Alexandria died after being stricken with pneumonia shortly before her fourth birthday. Fuller believed their poor housing had played a role in her illness. This conviction contributed to the profound emotional force with which he evolved from a man fascinated with invention into a prophet of technological change, possessed of a burning desire to use inventive techniques to improve the housing, transportation, and general living conditions of all humanity.

For Fuller, technological design was a calling—a vocation that took him from his formative experiences in naval service, a cotton mill, a meat packing company, a trucking firm, and a construction concern to a creative

design career of astonishing public visibility that eventually seemed to encompass the whole spectrum of industrial innovation.

For a period, he appeared to an awed America to be Thomas Edison, Albert Einstein, Henry Ford, Frank Lloyd Wright, and Leonardo Da Vinci all in one. He created a housing template that promised to revolutionize homebuilding. He conceived an automobile that looked like an incarnation of the future. He devised a map of the world unlike any other previously imagined. His design images, which came to resonate strikingly with those of Europe's Bauhaus, suggested a unique and distinctively modern artistic flair even when his purposes were stridently functional.

Fuller's theoretical commentaries, moving from mathematics and engineering to economics and assembly-line industrial management, communicated an exciting sense of change, of history in the making, of a new age about to be born. On Fuller's drawing board, *tomorrow* itself seemed to be taking shape: in his startling sketches, abstruse theories, practical know-how, intuition, and science appeared to converge with an explosive energy and tone that was quintessentially American.

However, as time passed, it became clear that little about Fuller was predictable, including his responses to the expectations of his admirers. He did not emerge as the industrial mogul that many thought he would become. His designs did not transform the world. He continued to receive public attention and even adulation, but the position into which he finally settled was on the fringes of American intellectual life, as a kind of curiosity, like one of those eccentric uncles whose charming exploits elicit fondness



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from the whole family but whom no one would seriously think of putting in charge of anything.

Only by looking at the reasons for these changes in Fuller's credibility as a thinker can we understand the man and appreciate his true contribution, the value of which is closely related to its unusual nature. According to biographer Martin Pawley, Fuller secured financial backing to launch a company to mass-produce a revolutionary type of prefabricated housing, but the initiative fell apart, evidently as a result of Fuller's inability to share control or even delegate it along the lines generally accepted as a basic principle of modern management. A similar fate awaited his venture to launch a new kind of automobile, which he called the "Dymaxion" car.

Managerial eccentricities, though, cannot fully account for the collapse of Fuller's forays into business. Such shortcomings might well pose major problems for the head of any large corporation, but autocratic managers are far from uncommon, and their existence does not necessarily wreck their companies, even if it makes life unbearable for their staff. This is especially so if such people are surrounded by diplomatically skilled associates with a great financial incentive to make the company succeed.

It therefore seems likely that Fuller's personality and his naiveté in management cannot account for more than part of the story of Fuller's failure as a practical businessman. For the rest of the explanation, we must look beyond questions of business style to the way in which Fuller thought and articulated his thoughts. It is here that we find a valuable key to his wayward but intriguing accomplishments.

Fuller's writing is not just odd, it is very strange and, to anyone accustomed to *normal* writing in business, professional life, or scholarship, it contains passages that can only be described as baffling. He expressed his ideas in many publications, including *4-D Timelock*, *Nine Chains*

to the Moon, Operating Manual for Spaceship Earth, Utopia or Oblivion: The Prospects for Humanity, and Approaching the Benign Environment and Synergetics: Explorations in the Geometry of Thinking. His book *Ideas and Integrities* (1963) has special significance in that it seems to have been intended as a credo or summary of his overall philosophy.

It also illustrates the idiosyncratic pattern of his expression and the problems that this raises. Parts of the book read like a parody of “managementspeak” combined with pseudo-scientific jargon and genuine scientific terms used in bizarre ways, mingled with phrases lifted from German metaphysical philosophy. The following is an example: “The cerebral advantages are progressively pyramided upon the compounded and irrevocably cumulative basic-data-grid of technology and science. The web-interstices of the basic-data-grid, in which there are still many blank spaces, are, however, being ever more closely woven together with the memorial strands fashioned by mind, will, and courage out of utter intellectual integrity.”

This passage is not unfairly taken out of context; the volume is full of such writing. One is reminded not so much of Edison, Ford, or Frank Lloyd Wright as of another thinker whose development and personality paralleled Fuller’s in remarkable ways: Alfred Korzybski, the Polish-American creator of the philosophical technique known as General Semantics. Like Fuller, Korzybski took all knowledge as his province, writing texts that sprawled from logic and mathematics to neurophysiology and linguistics, crossing the neat boundaries respected by scholars.

Neil Postman, a highly respected professor and critic in the academic world, who for a decade edited the General Semantics journal, *Et Cetera*, remarked that Korzybski was doomed to be an academic pariah because studying such a maverick would not help any young scholar win tenure.

Similarly, it is not surprising that Fuller left Harvard without graduating. Still, Korzybski managed to have a discernible influence, with *Et Cetera* publishing noteworthy articles and with general semanticians like Postman and Samuel Hayakawa producing respectable bodies of work on communication and culture.

But although Fuller, who died in 1983, has been the subject of various interesting publications and even a U.S. postage stamp [page 156], he remains today a towering but solitary presence. To learn from him, it is necessary to engage his willingness, even compulsion, to belong to no discipline established in his time—a daunting undertaking for any designer who needs to earn his living in a conventional business setting.

The concept of livelihood is a central idea in Fuller's thinking about design, and one that causes considerable discomfort to any designer who reads Fuller perceptively. In seeing the profession of design—which he regarded as neither art nor science but a hybrid discipline encompassing both intuition and scientific method—as a calling, Fuller expected designers to be motivated primarily by an ethical concern to improve society, not by financial aspirations.

The intensity of his moral fervor is illustrated by the fact that at the age of 32 he contemplated suicide but decided he had no right to dispose of his life: he had a duty to devote his energies and insights to improving the lot of humanity. Like a mystic or an existential philosopher, he withdrew from the world

for a year, taking a vow of silence while he engaged in omnivorous private study and thought.

During this period, he detached himself psychologically from the immediate practicalities of earning a living, even though he had a family to support. Somehow, he believed, he and his family would not be permitted to starve. And they did not, although one can only imagine the strain of their survival.

This period in his life hardly represents the role model toward which the parents of young architects, planners, and designers like to see their children gravitate. Yet, what many might see as Fuller's perversity was part of an enduring intellectual tradition: that of the large-scale reformer for whom the improvement of society is a responsibility transcending all others. Fuller was not

only philosophically but also biologically rooted in this tradition.

One of the 19th century's leading reformist writers was his grandaunt Margaret Fuller, a pioneering feminist and cofounder with New England sage Ralph Waldo Emerson of the famous intellectual magazine *The Dial*. In a revealing essay, "Margaret Fuller's Prophecy," Fuller wrote of the destructive chasm between technological-industrial culture and literary-philosophical-ethical culture and—with obvious pride—of his distinguished relative's belief that social progress would come to depend on the merging of these two cultural streams.

Fuller's desire to join the intelligentsia of the industrial and technological professions with the moral purposes of the humanities connects powerfully with a central chord in

American life that continues to shape public debate in our own age: the tension between the large-scale reformer, pursuing an ambitious program for social improvement, and the conservative mind that prefers modest, piecemeal actions, however imperfect, to global reform campaigns considered by the conservative mind to be messianic, rash, and unrealistic interference.

Fuller interestingly—and to some, bewilderingly—bridged this political divide. On the one hand, he believed that the creative furnaces of society drew their best power not from politicos but from creative individuals, such as himself. On the other hand, he believed that the potential of such minds could be properly unlocked only by large-scale social concern and by aspirations that went beyond the short-term profit motive.

For Fuller, this did not mean negating the profit motive but supplementing it with broader purpose. The source of such purpose he saw as the same source that provided ideas for new business ventures—persuasive individuals. The commercial market had to be given direction by the creative ideas of practitioners of comprehensive design. Upon the shoulders of the comprehensive designer, he believed, rests the task of inspiring and coordinating the resources, intellectual and material, that we possess and that he judged were more than equal to the task of creating living environments that would be marvels of efficiency and dignity.

What Fuller meant by “comprehensive design” forms a cornerstone of his most mature thought. His concept of the design profession revolves around four precepts. First is the recognition of the designer as a major force in society. In previous ages, architects like Sir Christopher Wren exerted an influence on the public imagination and the body politic that few if any architects or designers equaled in Fuller’s time, in spite of the celebrity

of a few figures like Frank Lloyd Wright. Fuller wished to see designers accorded a status reflecting the importance of the built environment to civilization.

Second, he believed that to achieve this status, it was necessary to deepen the purpose of the designer. What he did not want were the superficialities of purpose that were used, he believed, by the Bauhaus. In the same vein, Fuller criticized industrial designers in the automobile industry as using design methods that he loathed—disguising design inertia and failure with bogus novelties, packaging, and tricks of advertising. By contrast, he wanted the aesthetics of design to proceed from genuine technological innovation.

Third, in addition to deepening the thinking of designers, Fuller wanted to broaden it, encouraging designers to think not just locally but globally. It is this aspect, perhaps, that aroused the greatest skepticism, and it is here, that many of his readers may decide to stay with him or break away. Design, for Fuller, meant designing for humanity, using the tools of technological innovation and industrial capacity to improve the living conditions of the world—what he, in his persistent love of neologisms, called “livingry.” This impulse in Fuller was fueled not by reverence for political managers but by a conviction that technological evolution was rapidly making the world one place, whether politicians of any persuasion liked it or not.

In this regard, Fuller anticipated Canadian media philosopher Marshall McLuhan’s idea of a “global village” being created by new technologies that were, McLuhan argued, extending the human nervous system in unprecedented ways. Comparing Fuller with McLuhan is instructive. Both men were political oddities defying convenient labels. McLuhan was a prophet of the future and of change, yet was neither a scientist nor an engineer, but a literary scholar with conservative religious

leanings. Fuller, despite his obsession with the application of industrial planning on a national and worldwide scale, was an authentic American original, an archetypal industrial individualist who scomed the niceties of collectively accepted customs to travel his own path.

Much of the challenge that Fuller presents is political; his demands seem to offend every orthodoxy—whether accepted patterns of professional training, of reasonable prioritization of regional agendas, or of normal industrial motivation. But a thoughtful consideration of his life and the body of his work shows that he was trying to create a political mindset of his own that he hoped would help make possible a new profession of comprehensive design, not least by trying to convince designers of all kinds that their mission made it impossible for them to

sidestep political issues. Fuller sought to equip comprehensive designers with a sense of veneration for the future and for our descendants, to whom we must bequeath the results of the planning decisions that we adopt today. Design, like all applications of knowledge, had, for Fuller, a decisive and transgenerational moral content. The future, he considered, is something to believe in and to serve.

The fourth precept of Fuller's thought was his belief that the designer is obliged to bring together different paradigms of thought and make them into something new and provocative. He himself was an inveterate user of images and vocabularies taken from one intellectual field in order to illuminate another. He would explain industrial and historical changes by citing the transfer and metamorphosis of ideas among marine

technologies, land-based technologies, and aviation technologies.

Engineering, architecture, history, the physical sciences, economics, the social sciences, and the humanities were all grist to the mill of the polymathic humanitarian that Fuller hoped the comprehensive designer would turn out to be. His disregard for the territorial claims of various disciplines exemplified his attitude to the politics of academe, which he saw as made up of barriers as artificial as those that the politics of bureaucracy erected to discourage inventive professionals from focusing on the real problems facing humanity rather than on the petty objectives of patronage.

Was Fuller politically naive? Without doubt. In addition, he was a clumsy writer, an indifferent businessman, and a designer whose unfinished works can sadden and

infuriate at the same time. But he was also a man of immense gifts. Fuller understood what design means, offers, and demands, and he knew these things as intimately as a mariner knows the currents, hidden riches, and greatness of the sea. He belongs among those dreamers who, although their optimistic visions may be unattainable and their criticisms of our shortcomings unjust, nevertheless can spur us on to worthwhile accomplishments when we allow them to, because even a small fraction of what they demand of us can sometimes be enough to change the world. **U**

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