DESIGNING A WORLD THAT WORKS FORALL

How the Youth of the World are Creating Real-World Solutions for the UN Millenium Development Goals and Beyond



by Medard Gabel and the Design Science/Global Solutions Lab

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DESIGNING A WORLD THAT WORKS FOR ALL

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NOTE: This PDF contains an excerpt from the book, *Designing a World that Works for All.* For the complete version, go to <u>www.designsciencelab.com/book</u> where you may order a printed paper-back copy or download a free PDF version

by Medard Gabel and the Design Science/Global Solutions Lab

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INTRODUCTION

Design Science/Global Solutions Lab

What you are about to read is the product of many young people from around the world.

This book represents the work of hundreds of young people from five continents and 35 countries. They came together each summer and worked extraordinarily hard on understanding what the most pressing problems facing their world are, and even harder at designing solutions and strategies

Design science is the organized use of imagination and science to develop innovative and viable solutions to critical real-world problems. for eliminating these problems.

This book was developed over a period of five years (2005-2010). It would not exist if not for some extraordinary people at the United Nations who provided their input, guidance and feedback along the way. These people took time out of their busy schedules and provided not only the

guidance but also the inspiration that was needed to complete our tasks. They are listed above in the Acknowledgements.

The youth who participated in the programs that produced this book were part of the *Design Science Lab*. These Labs are ongoing and take place each June. Other *Design Science Labs* take place during the school year. The *Design Science Lab* is a workshop where the tools of design science are used by groups to collaboratively develop creative solutions to global and local problems and strategies for the implementation of those solutions.

These particular Labs are focused on developing solutions and strategies for reaching the UN's Millennium Development Goals¹ and are held each summer between 2005 and 2015. Each year's Lab focuses on a specific topic, such as poverty, food, energy, health care, education or environmental sustainability.

These *Design Science Labs* have taken place in New York at the UN and the UN International School, in Philadelphia at Chestnut Hill College and at the University of North Carolina in Asheville. They are put on by two organizations—BigPictureSmallWorld and Global Education Motivators.²

The goals of the Lab included:

- Learning about the Millennium Development Goals, their usefulness to the world, and how we can use them to make the world a better place
- Developing viable strategies for achieving one or more Millennium Development Goals
- Develop strategies for meeting the basic human needs of everyone in the world
- Learning design science and how to apply it to global and local problems
- Increasing our understanding of global dynamics, world resources, human trends and needs, and options for humanity's success
- Increasing the public's understanding of these issues through disseminating the strategies as widely as possible
- Serving as an incubator and growing force for developing and disseminating design science techniques for complex problem solving and development of viable solutions to the worlds problems
- Learning a methodology for changing the world.

Attending the Labs are groups of college and high school students and professionals ranging in age from 16 to 55 with the average age of 22. Labs run for one very intense week, where participants learn and apply the concepts and tools of design science as they develop their strategies to achieve the Millennium Development Goals (MDGs). The participants are briefed by UN staff from the UNEP, UNDP, UNICEF, WHO and others on the MDGs, their context, history, measurement, the progress made so far, and strategies in use for reaching them. An introduction to design science is then provided. Lab participants typically work ten to twelve hours a day on developing their solutions. On the last day of the Lab, participants go to the UN where they conclude the Lab with a

The work of the Design Science Labs are focused on demonstrating how, using present day technology, known resources, and limited financial wherewithal global and local problems can be solved in sustainable and affordable ways. The overall strategies developed by the participants of the Lab, as will be seen in this book, are more than the sum of their parts. Together, they describe a world where the basic human needs of all of humanity are met, the Earth's environmental life support systems are allowed to regenerate, and the world is safe and secure from war and crime. presentation of their work to, and feedback from, UN staff. An overview of this work is what is presented in this book.

The ideas and words describing the strategies are those of the Lab's participants. I (Medard Gabel) edited for consistency and filled in a few spots here and there where appropriate. Each chapter is different and reflects the team or individual that developed it, as well as the nature of the problem or issue being addressed.

Designs for changing the world—Design Science

Design Science is a methodology for changing the world. It involves the application of the principles and latest findings of science to the creative design and implementation of solutions to the problems of society. It is a way of recognizing, defining, and solving complex problems that is based on innovation and thrives on transparency. It takes a whole systems, global, anticipatory and regenerative approach that fosters creative collaboration and synergy in the development of comprehensive solutions to both global and local problems.

Unlike many planning and political processes that compartmentalize issues and seek to develop solutions in a vacuum, Design Science stresses comprehensive thinking based on a clear understanding of the state of the world, available resources, appropriate technology, culture, environmental constraints, and the interconnections between world problems and opportunities. The Design Science planning process provides a framework for devising solutions to current problems as well as anticipating future needs.

Design Science is also different from other problem solving and planning methodologies in its comprehensive, anticipatory, inclusive, and transparent approaches to the development of solutions. It takes a 'whole to particular' approach that is both global in perspective and in its examination of options. It seeks to build capacity rather than merely solve problems, and to develop solutions that are transformative rather than merely the reforming of already inadequate systems. It is informed by a moral vision that places a priority on designing ways of meeting unmet basic human needs in ways that are environmentally sustainable and socially just.

The core of this approach to problem solving and planning is both a concern with whole systems—the whole Earth, the entire history of the

"If a problem can't be solved as it is, enlarge it." —Dwight Eisenhower

planet, the global economy, all of technology, and all of humanity, both those living now and those yet to be born—as well as a recognition that everything is implemented locally, and that the "whole" is merely the context for the local. Design science has both a global perspective and a local focus. It recognizes that it is the local upon which the success or failure of a particular design solution will thrive or die.

Design Science is *comprehensive*, in that it starts from the whole system and works back to the special case. It deals with all facets of a problem including the larger system of which the problem is a part; in this sense, design science seeks to build capacity, not just solve problems. It is *anticipatory*, in that it seeks to recognize the threats coming down the pike before they arrive full blown on an unsuspecting or ill-prepared society; and it deals with the way things are going to be when the solution is going to be implemented, not just the way things are in the present. It is a *design* strategy, in contradistinction to a political or 'let's pass-a-law-and-change-human-behavior' approach; it seeks to change the larger system of which the specific problem is a part through the introduction of innovative artifacts or policies.

This "comprehensive anticipatory design science" is at least as much a perspective on the problems of the world as it is a methodology for tackling those problems. When applied to contemporary problems, it can lead to strikingly fresh insights and solutions.

Design science is a tool that is based on a global perspective and a systems approach to the problems of the world. It assumes that globalization has made the world an ever more interconnected whole, and any successful problem solving of society's systemic ills needs to be an approach that is global, comprehensive, visionary, and based on science, not politics, ideology, or wishful thinking. The entire world is now the relevant unit of analysis, not the city, state, or nation. We are onboard, as Buckminster Fuller pointed out, "Spaceship Earth," and the illogic of 200+ nation state admirals all trying to steer the spaceship in different directions is made clear through this metaphor—as well in Fuller's more caustic assessment of nation states tending to act as "blood clots" in the world's global metabolism.

We need to focus on creating wealth, not just reducing poverty. Development, not growth is our goal; we need to transform society, not just enlarge it.

The design science process is augmented by vast quantities of statistical information about the state of the world, its resources, human trends, needs, and technology. With the advent of personal computers and the Internet this information became almost universally available—and with it, design science found its perfect complement. Coupled with the tools of the information age, design science gains the power to reach its potential. The Internet has not leveled the global playing field so much as expanded it, and the good-ol'-boy-status-quo-maintaining political process can now be subverted by a process that brings Thomas Jefferson into the twenty-first century.

In Fuller's words, design science is a process where individuals or teams of people can "make the world work, for 100% of humanity, in the shortest possible time, through spontaneous cooperation, without ecological offense or the disadvantage of anyone."

Making the world work for 100% of humanity reflects Fuller's global perspective as well as his values. We are not here just to make ourselves rich, famous, or top consumer of the day or decade, or here just for the 5% living in our part of the world; we are here for all humanity. The "spontaneous cooperation" is instructive in light of the previous discussion. The phrase does not read, "make the world work for 100% of humanity through a central government, or through enforced coercion by a strong military" but through cooperation that arises from a fundamental transparency of society and its needs. If everyone knows what the situation is, has a clear vision of what should be and what needs to be done, we cooperate to get it done—as we do as a society in times of emergency.

Fuller said: "I am enthusiastic over humanity's extraordinary and sometimes very timely ingenuities. If you are in a shipwreck and all the boats are gone, a piano top buoyant enough to keep you afloat that comes along makes a fortuitous life preserver. But this is not to say that the best way to design a life preserver is in the form of a piano top. I think that we are clinging to a great many piano tops in accepting yesterday's fortuitous contrivings as constituting the only means for solving a given problem."

Design science is a method for developing the life preserving and enhancing solutions to society's problems. The *Design Science/Global Solutions Lab* uses the principles and methodology of design science and applies them to developing comprehensive strategies for the solution of global problems, primarily under the aegis of the United Nation's Millennium Development Goals. The Design Science/Local Solutions Lab takes an identical approach but the focus is on solutions that are to be locally implemented.

In summary, design science is a problem solving and strategic design and planning process based on the following "big picture" assumptions and design protocols:³

• *Whole world*—The whole world is now the relevant unit of problem solving; problems need to be seen from a global perspective.

"A map of the world which doesn't include Utopia isn't even worth glancing at."

-Oscar Wilde

- *Long-term*—The long term is the framework in which we must operate; given this perspective, prevention, rather than treatment or cure, is the logical and most economical option.
- *Think Comprehensively*—Framing problems in their widest possible context helps see upstream interconnections and causative factors that can impact downstream problems and options.
- *Everybody wins*—Solutions with winners and losers are not sustainable.
- *Transparency* is key; solutions that don't make their assumptions and true costs and impacts visible to everyone are not sustainable.
- *Capacity, not problems*, is the focus; we need to see "problems" not as something that needs to be "solved," but as a symptom of something larger—the need to enlarge the capacity of a system; we need to focus on creating wealth, not just reducing poverty.
- *Needs as markets*—the world's needs are real or potential markets; problems are unmet needs that can often be met through creative products matched to the real needs of real people; poverty is a mandate for design and entrepreneurial innovation and creativity, not just government intervention and paternalistic imposition of top down "solutions."

"You can no longer save your family, tribe or nation. You can only save the whole world."

-Margaret Mead

- *Design replaces politics*; design sees what is needed, not what is just expedient or politically easy, and figures out how to make it happen; design starts with a vision of what is needed, not what is popular; it seeks to find or design an artifact that solves a problem or builds the capacity of a system in such a way that the source of the problem is eliminated.
- *More with less* is the design ethic; getting ever-higher performance out of every gram of material and erg of energy invested in every function performed by our human-made life-support is critical to making the world's limited resources meet the needs of our growing population and to reducing our impact on our environment.
- *Biology replaces mechanics*; viewing the world as a living system fosters a respect for a problem's complexity, an awareness of the context or environment in which it is embedded, and the possible solutions that can result in strengthening the health of the system and the elimination of the problem.
- *Development, not growth* is our goal; we need to transform society, not just enlarge it.
- *Respect Gestation Rates*—everything has its own gestation rate, and working with these is essential, whether it is the growth and development of a technological option or societal change.
- *Scalability* is essential; if a solution to a problem, or a product or service for a market cannot be scaled up from the prototype stage to wide spread adoption and use, it is still born.
- *Look for the trim-tab*—Small and strategically placed interventions can cause large-scale and profound change; find the design leverage points where a small amount of change can bring about large impacts.
- *Preferred state planning*—what we want and where we want to be in ten years is more important than what the problem is right now; the vision of the ideal is more important and powerful than reacting to what is thought possible given current limitations; perspective adds opportunity, vision drives action; resources follow vision. The design science process begins with a vision statement of where we *want* the world to be. This vision of the preferred future is based on and informed by an ethical view of what should be, and then transformed through comprehensive design into an economically compelling solution.

"The fundamental difference between creating and problem solving is simple. In problem solving we seek to make something we do not like go away. In creating, we seek to make what we truly care about exist."

-Peter Senge

Global Preferred State

Strategies for achieving the Millennium Development Goals and Preferred State

As listed in the above assumptions and protocols, the Design Science problem solving process begins with a vision of how the world should be. This vision is usually specific to the general issue or problem being addressed, such as poverty, food and hunger, energy supply, education and the like. It is often helpful though to begin the design process with a broader preferred state for the whole world that encompasses the well being of all the world's life support systems. The following is such a global preferred state:

All of humanity—every child, woman, and man in every country in the world—has, on a sustainable basis,

- Abundant supplies of nutritious and culturally appropriate food.
- Adequate housing complete with sanitation facilities and clean running water.
- Abundant supplies of energy that are clean, safe, and affordable.
- Access to local comprehensive health care and the latest advances of medical science.
- Access to education, so that literacy is universal, as are opportunities for advanced (college level) education; access to the Internet is universal.
- Access to communication and transportation facilities that are readily available and affordable, so that anyone can communicate with anyone else on Earth who wants to be communicated with, and people can travel anywhere they want to go.
- Access to employment opportunities and fulfilling work—including vocational alternatives, re-training, and on-the-job-training—are available to all.

- Access to open borders, free of trade and emigration restrictions, subsidies, and other barriers to market-driven economies.
- Access to information so that all public negotiations (for example, labor contracts, legislation, and government contracts), accounting practices, and elections are transparent and open to inspection by anyone at anytime.
- Access to decision making, so that all citizens have a significant role in decision-making processes that affect their lives, and each lives in a peaceful, democratic, secure and safe world that is free from crime, terror, and nuclear, chemical, and biological weapons.
- Access to a clean, healthy environment that is free of toxic wastes, pollution of all kinds, soil erosion, and damaging industrial and agricultural practices.
- The biosphere and its resources are self-regenerating, with humans cooperating to ensure this.
- Biodiversity is increasing throughout the world.
- Around the globe, strong social incentives foster democracy personal initiative, trust, cooperation, respect, and love—and discourage all forms of torture, degrading treatment, and punishment.
- Access to an independent and impartial tribunal to which each person is entitled, on an equal basis; each person has the right to nationality and to perform public service in one's own country.
- Access to rest and leisure.
- Access to special protection, care, and assistance for mothers and children.
- Freedoms of speech, of the press, and of religion are the rule everywhere.
- All forms of prejudice—against another's ethnicity, race, religion, origins, gender, age, sexual preference, or income level—are gone.
- Every culture and nation respects and celebrates the unique value of all others, and provides strong social supports for individuals, families, and communities.
- The arts in all forms are widely appreciated and cultivated.
- Spiritual growth and fulfillment is the norm for all humans.⁴

OVERVIEW AND PROBLEM STATE

Context/World Systems

In a very real sense the state of the world today is the preceding Preferred State with a negative qualifier attached. That is, all of humanity does *not* have "abundant supplies of nutritious and culturally appropriate food and clean water"; they do not "live in more than adequate housing complete with sanitation facilities and clean running water," etc.

In addition, and more specifically, the world today is characterized by⁵:

- 1 billion people are not adequately nourished or face the specter of hunger
- 884 million do not have access to clean water
- 1.6 billion people are without access to adequate sanitation
- 2 billion people are inadequately housed; 600 million live in urban slums
- 100 million people are homeless
- 800 million to 2.5 billion people have no access to essential health services
- 10 million children under 5 die from easily preventable causes each year
- 42 million people who die from curable infectious and parasitic diseases each year
- 40 million people are infected with the AIDS virus
- 300 million people seek treatment for malaria each year
- 2 billion people are infected with tuberculosis
- 900 million adults are illiterate
- 100 million children are not in primary school
- 1 billion people are without access to electricity
- 3 billion people are without access to adequate supplies of energy
- 1.2 billion people live on \$1.00 per day or less
- 2.8 billion people live on less than \$2.00 per day
- 40 million children are laborers
- 50 million people are refugees or displaced
- 7 million tons of carbon are added to atmosphere each year
- 2.5 billion tons of topsoil are eroded from world croplands per year

SUMMARY/SYNERGY

The whole is more than the sum of its parts.

This book documents the explorations of many young people as they sought to understand our world and to figure out and design ways of making it work better for everyone. What is missing from the individual chapters or strategies are the interactions and resulting synergies of these parts as they combine into a whole that is exciting in its possibilities.

The preceding chapters describe a progression of technology, programs, policies and actions that, if implemented, transform the world as we know it to a world as we want it. Taken individually, each strategy can stand alone in making a significant contribution to improving some aspect of the human condition. Each strategy has links, interactions and impacts on the other strategies. Taken collectively, the strategies are more than the sum of their parts. They would, if implemented together, have a profound impact on our collective wealth, health, and potential. They would not only result in meeting the Millennium Development Goals, but also go beyond them and transform the world in even more profound ways.

These strategies for transforming the world are suffused with a sense of values and vision that is bold, inclusive and caring— and which is for the entire world, not just a part of it. In some cases, the strategies are revolutionary and transformative, in others, "merely" dealing with critical problems. Taken together, all the strategies add up to a synergetic whole that is revolutionary, transformative and regenerative.

The whole, the parts and the interactions of the parts, creates a world where the most egregious forms of brutal poverty are eliminated, hunger and malnutrition eradicated, health, longevity and the quality of life are improved and the environment is allowed to regenerate. Where, in short, basic human needs are met, basic human rights fulfilled, and our environmental life-support systems are strengthened.

The global and local strategies described in this book help illustrate

the creativity, values, vision, and commitment of the youth and concerned citizens of the world. They also represent what an interdisciplinary, multigenerational group of non-experts can do when provided an opportunity and methodology for tackling the critical and complex problems facing the world.

Your feedback is most welcome—as is your ongoing participation in this evolving work. One way to do this is to send us your comments and suggestions by emailing us at info@designsciencelab.com. Those wishing to take part in upcoming Labs are urged to contact BigPictureSmallWorld at www.bigpicturesmallworld.com, or check in at www.designsciencelab.com.



Participants of the Design Science Lab presenting to the United Nations at the conclusion of the Lab.









