

# Foreword

This is a book about research, analysis and solutions. It's about the system we all operate in. It's about saving the environment.

Are you someone who wonders why doctors, business executives and scientists seem to succeed most of the time, while environmental initiatives time and time again fail to solve the really big problems of environmental degradation, such as climate change?

Sure, when we behave as activists we can get some things done, or stopped, or publicized, but after decades of that there's little doubt amongst environmentalists, climate-change scientists and researchers that the global environmental sustainability problem is *still not solved*. It is the most difficult and most urgent problem facing humanity. Yet despite a plethora of activist initiatives, government programs and corporate promises, we still seem to be in reverse gear. There has been huge progress at the local level, but at the global level the difficulty of the problem (to quote the author) "literally runs off the chart".

This book is about a way to get what those doctors, business execs and scientists have: the right process. Following the principle that "the process must fit the problem" is an emerging solution approach that might just work.

This book is for the researcher, the public policy officer, the activist. Researchers should be hungry to verify the analysis to date, to dive deep into the science behind the modeling and to design the programs for implementation. Common Property Rights offers public policy a more palatable option for internalizing externalities: no taxes and no trading schemes. The activist will delight in the possibilities of using the power of systems thinking to the benefit of the environment by having the system "want" to solve the problem. All this can be done by applying a generic, reusable and efficient process.

Effectively using the book will require you to convince yourself that getting to a high level of process maturity is your goal. If not then this book will be of little value. If you are working on the sustainability problem as a whole rather than a smaller problem, your goal needs to be one of using a process with high maturity.

I work in a field that has an extraordinary degree of process maturity for its core activities. This is the world of engineered pro-

cess plants. To put in place billions of dollars of capital plant, efficiently and economically, there are thousands of process steps, hundreds of people involved and limited time. Without the right process, matured over several decades, this would not be possible.

Process maturity is not yet a characteristic of the sustainability movement. Environmentalists do not have what engineers have: the right process. My first-hand experience of this comes from eight years of trying to overlay a new process (for designing sustainability principles into engineered plant design) onto the matured traditional process. The system I work with every day classically resists such attempts strongly. I did not realize that this is symptomatic of trying to solve intermediate causes of resistance until I was exposed to the System Improvement Process and understood what root cause analysis can really bring to problem solving.

I can illustrate what I mean by talking about the modern notion of proving “The Business Case for Sustainability”. There are only two ways sustainability ideas, initiatives or principles make business sense. Either they will cement your future license-to-operate or they will improve the financial bottom-line. These are the long-term benefit and the short-term benefit respectively.

There are very few sustainability ideas that make sense financially in the short-term. You can certainly find those few nuggets of financial improvement if your organization is prepared to hunt them down, evaluate them thoroughly and has the right process to accommodate them. But sadly the majority of organizations do not have the process or the patience to do so. So what happens? Either the great ideas are not looked for or when found are not evaluated: there is an assumed position that sustainability does not make financial sense, because most sustainability ideas do not. This creates an adverse emotional context for most engineers involved in process plant design.

To make sustainability make financial sense in more cases than it does now should be the goal, if we are to “properly couple” the human system to the environment. This book lifts the curtain on the systemic change-resistance that prevents this and offers up several solution elements. I will now have to change my strategy and look for my own solution elements to improve the engineering systems I work with. I am looking forward to the root cause work ahead of me.

There is a great quote by Edwin Friedman:

*The colossal misunderstanding of our time is the assumption that [logic and] insight will work with people who are unmotivated to change. Communication does not depend on syntax, or eloquence, or rhetoric, or articulation but on the emotional context in which the message is being heard.*

This quote does two things for me. Firstly it reinforces the idea that what is obviously good to me (logical, persuasive, etc.) means nothing until my audience is ready to hear my message. And secondly I understand that something extremely powerful is at work if “logic and insight” won’t work with engineers, who are normally logical and clear-thinking. This book tells me what that is: systemic change resistance.

If you like the idea of serious root cause analysis, deep systemic changes to our economic system, productive ideas for research programs, or a look at what with further refinement may become an eminently workable public policy approach, then please read on and enjoy. Jack’s style is articulate, persuasive and thorough, and very easy to read. I hope you can take something from this work that will advance the cause of sustainability in your chosen field.

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Brisbane, 2011

# Introduction

The purpose of this book is to demonstrate that difficult social system problems can be systematically analyzed to find their root causes, which can then be resolved by informed reengineering of the system's structure. This can be done with a process that any dedicated activist or organization can learn and apply.

According to theoretical physicist Stephen Hawking, “Galileo, perhaps more than any other single person, was responsible for the birth of modern science.”<sup>1</sup> How did he do it? Einstein described the exact reason: (*Italics added*)<sup>2</sup>

*Purely logical thinking* cannot yield us any knowledge of the empirical world; all knowledge of reality starts from experience and ends with it. Propositions arrived at by purely logical means are completely empty as regards reality. Because Galileo realized this, and particularly because he drummed it into the scientific world, he is the father of modern physics—indeed, of modern science altogether.

Galileo replaced “purely logical thinking” with experimentation and observation as *the* foundation of science. It was through his innovative experiments with balls slowly rolling down inclined planes that he arrived at a clear understanding of the concept of acceleration. Possibly triggered by observing a swinging chandelier and timing its motion with his own pulse, it was his experiments with pendulums that allowed him to propose the concept of inertia. It was night after night of observation with his own handmade telescopes that caused him to reject the popular theory of geocentricism and firmly support Copernicus' radical heliocentric theory. So firmly, in fact, that he was hauled before the Roman Inquisition in 1633 where he was found guilty of heresy, forced to recant, and kept under house arrest for the rest of his life.

Although Galileo publicly recanted, inwardly he never did. Once he had seen for himself what experimentation and observation could do there was no turning back. Even under house arrest he wrote and smuggled out the book Einstein admired the most: *Two New Sciences*.

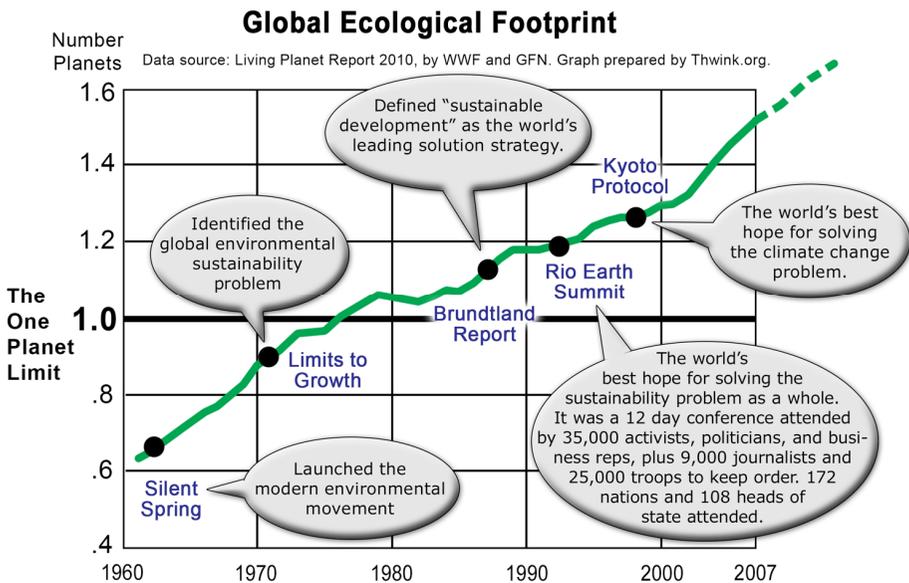
Discovery of the power of experimentation and observation to arrive at the truth caused Galileo to forever reject blind allegiance to knowledge based on tradition and authority. He had to see it and prove it himself. That is the fundamental attitude embodied in the work of every true scientist today.

What exactly is the use of experimentation and observation to discover new knowledge, at the highest level of abstraction? It's a process. *Thus what Galileo really did was provide science with the seed of its foundational process.* This allowed the Scientific Method to quickly reach full maturity. Once scientists were armed with the Scientific Method they could solve problems that had long withstood all attempts at solution. Ground breaking discoveries quickly became the norm. Be-

ginning with the Scientific Revolution and continuing with the Industrial Revolution, the hard sciences of physics, chemistry, biology, astronomy, medicine, electronics, and many more took off like a rocket and our world has never been the same.

What might happen if public interest activism (which includes academic, business, government, and NGO efforts) had the seed of a foundational process, one mature enough to work most of the time? Might that transform the field into a hard science, one routinely capable of solving problems that have long been insolvable?

This book is written for those who are desperately struggling to solve society's most difficult problems and are looking for a better way. Like Galileo, they sense there must be a better way than the "purely logical thinking" of intuition. They have seen chandeliers swinging and have their own emerging insights, but need to be able to reliably grow those insights into solutions that work. In short, activists need the equivalent of the Scientific Method. They need a foundational process mature enough to solve every problem on the list of the world's most pressing problems. At the top of that list sits the problem shown below.<sup>3</sup>



The ecological footprint measures how many planets it would take to provide the total ecological services being used. As soon as the graphed line grew past the one planet limit sometime around the 1970s, the world's environmental impact rate became unsustainable. We are now living on borrowed time.

The environmental sustainability problem is so difficult to solve it literally runs off the chart. The latest updates were in 2003 and 2007. Both times the top of the graph had to be extended because footprint growth has become unstoppable. The footprint keeps right on rising and running off the chart, as the projected future growth on the right predicts will happen next time the graph is updated.

There's a historical pattern at play here. Countless individuals and organizations have tried as hard as they can to solve the sustainability problem. Solution after solution has been proposed. Some have been implemented. Major advances have occurred, such as the five shown on the graph. But despite all these noble efforts, the problem remains as unsolved as ever.

This will change if environmentalism can move from art to science. The transformation requires the same thing any successful scientific field requires: a solid foundation that enables it to routinely solve its central problems.

## Process driven problem solving and its benefits

Scientists succeed because they are process driven problem solvers. Activists can do the same, once they have a process that fits activist problems.

In this book a **social problem** means any problem involving the misbehavior of large groups of people and whose solution would benefit the common good. Examples of social problems are sustainability, slavery, institutional poverty, and corruption. The goal of this book is to provide you and your organization with the tools needed to solve the sustainability problem or any difficult social problem. The entire strategy hinges on these two fundamental principles:

1. **Difficult complex system problems can be solved only by resolving their root causes.**
2. **The more difficult the problem, the better the process used to solve it must be.**

Everything in this book arises out of these two principles. The book is essentially one long presentation of an advanced root cause analysis process, along with how it can be applied to the sustainability problem. If the concepts presented are *diligently applied and improved as needed* you can expect these tangible benefits:

1. **Faster time to solution**, due to getting it right the first time by focusing on root causes and high leverage points.
2. **Lower cost of solution**, since resolving root causes is much more efficient than attempting to resolve intermediate causes and because solutions that work become so much easier to find.
3. **Increased solution reliability**. This is the natural consequence of resolving root causes with solutions that work instead of attempting to resolve intermediate causes with solutions that work temporarily, partially, or not at all.

4. **Higher acceptance of your work.** The job of selling your research proposals to funders and your solutions to institutions, including government, becomes much easier. This occurs because you can prove a solution set that has a high probability of working since it resolves clearly identified root causes and is backed up by rigorous analysis, a model, and testing of all key assumptions.
5. **Better cooperation.** Satisfying stakeholders and building coalitions becomes much easier because proposed solutions can be shown to be highly cost efficient, highly reliable, and to resolve the root causes of systemic change resistance as quickly as possible.

These are the same extraordinary benefits scientists have enjoyed for centuries. All we've done is expand these benefits to social problems by employing a process designed for that type of problem: the System Improvement Process. It contains 23 steps, all of which must be done well to solve the complete problem. The process is summarized in the diagram on page 130.

At the bottom of that diagram is the 23<sup>rd</sup> step: continuous process improvement. This is the most important step of all. It's what will allow you, your organization, and public interest activism to grow the seed of a young process into one that works for all of us, as reliably as the Scientific Method works for scientists.

A **process** is a reusable well structured series of steps and practices to achieve a goal. The great benefit of a mature formally defined process is *the process asks the right key questions*. It guides you along the long road from problem discovery to final solution. That road is so fraught with unexpected peril that it cannot be navigated without a reliable guide.

The main components of a good process are always the same: The process fits a particular type of problem. The process has a series of formally defined steps. The process employs a number of tools needed to perform the steps. Most importantly, the process is continuously improved.

If you've never used a formal problem solving process, it can be a daunting concept to grasp because *process driven problem solving* is a new paradigm for most people. It's a new way of thinking and working. No longer is your work an art. It becomes a finely honed science. Creativity is still required but it now occurs within a structured work flow.

## The quest for a process that fits the problem

In 1962 Rachael Carson's *Silent Spring* launched the modern environmental movement. Ten years later in 1972 *The Limits to Growth* identified the sustainability problem, modeled it, and educated the public on the importance of proactive action

now. Yet decades later the problem remains unsolved. In 2004 the third edition of *Limits to Growth* painted the grim situation in these blunt terms: (page xvi)

...we are much more pessimistic about the global future than we were in 1972. It is a sad fact that humanity has largely squandered the past 30 years in futile debates and well-intentioned, but half-hearted, responses to the global ecological challenge. We do not have another 30 years to dither. Much will have to change if the ongoing overshoot is not to be followed by collapse during the twenty-first century.

Things are no better today. The Copenhagen UN Climate Summit of December 2009 ended in dismal failure. No agreement on binding targets was reached. The next summit, in Cancun in December 2010, did not break the deadlock. The best it could do was a toothless agreement “Recognizing that climate change represents an urgent and potentially irreversible threat to human societies and the planet, and thus requires to be urgently addressed by all Parties.”<sup>4</sup> Other sustainability problems like species extinction, deforestation, soil fertility loss, and chemical pollution remain just as unsolved and just as potentially lethal.

The evidence points to one undeniable conclusion. It’s the one haunting every person who’s been working on the sustainability problem for a long time. Despite the effort of millions of front line activists, scholars, and some enlightened politicians and business leaders, the sustainability problem continues to grow worse with no credible solution in sight.

Why is this? WHY IS THE HUMAN SYSTEM UNABLE TO SOLVE THE SUSTAINABILITY PROBLEM? (Question 1)

This was the question I asked myself ten years ago. To answer it I took a radically different approach. I studied the system. But others have tried that.

The difference is I studied the system using *a process that fits the problem* with the goal of finding and resolving the *root causes*, with emphasis on the all-important *systemic change resistance* subproblem. To my knowledge, no other researcher or organization has done this.

A new approach is sorely needed because we have all the proof we need the old paradigm is not working. That paradigm was thoroughly discredited in 2004 with publication of *The Death of Environmentalism* memo by Michael Shellenberger and Ted Nordhaus. The memo created such a stir that Grist.org wrote a special series on it. Here are some excerpts:<sup>5</sup>

Environmental leaders were rather dismayed late last year when upstarts began offering high-profile obituaries of their beloved movement.

The paper—based on interviews with 25 leaders in the mainstream environmental movement—argues that environmentalism is ill-equipped to face the massive global challenges of our day, particularly climate change.

The movement has become a relic and a failure, the authors say, coasting on decades-old successes, bereft of new ideas, made fat and complacent by easy funding, narrowly defining “environmental” problems, and relying almost exclusively on short-sighted technical solutions.

They conclude that the environmental movement should meet its maker, as it were, and give way to a more cohesive, coordinated, and ambitious progressive movement.

If environmentalism is so ineffectual as to be irrelevant, what is to replace it? WHAT IS TO BE THE NEW PARADIGM OF ENVIRONMENTALISM? (Question 2)

These are the two questions I’ve struggled with for ten years now. The first question quickly led to the second. Ultimately I discovered the answer to both questions is the same. The answer is the central hypothesis of this book:

**Environmentalists are unable to solve the sustainability problem because they are using a problem solving process that does not fit the problem.**

The corollary is that will change once environmentalists adopt a process that *does* fit the problem. This is analogous to the way science was before invention of the Scientific Method, the way business was before invention of the double entry accounting process, and the way the life sciences were before discovery of the process of evolution. No field can solve its central problems without the right foundation.

I’m a systems engineer. Before I began working on the sustainability problem I was a business consultant. As a hired problem solver it was my business to solve tough business problems using business management and systems engineering skills. In 2001, after half a lifetime of incognizant slumber, I went through my own transformation experience. I decided that all the business problems I’d ever worked on didn’t matter one hoot compared to the environmental sustainability problem. So I switched to working on the problem full time as if my life depended on it. The first thing I did was take a long hard look at the problem through the mindset of a systems engineer and business problem solver. By good fortune one of my consulting specialties was process improvement.

That long hard look lasted two years and led to the answer to the two driving questions. Why are environmentalists failing to solve the sustainability problem? Because it’s a *complex* system problem but environmentalists are treating it as a *simple* system problem, one that can be solved with simple approaches, the ones activists have long been using. What is to be the new problem solving approach? That’s obvious. It’s one that treats the problem as a complex system problem. In

other words, environmentalists need a problem solving process that fits the sustainability problem so well the process leads to quick solution.

At that point the task before me was to develop the process. This took about seven years. During that time I analyzed the problem by studying the actual system (rather than the literature), critiqued the results (with the help of many others), improved the process so it could do better, and plunged back into analyzing the problem again. Every time I encountered a roadblock and was stuck for awhile, I didn't get discouraged. I knew the problem was not me. And it was not that the problem was hard. *It was that the process was immature.* After many process improvement iterations and tweaks the process stabilized. It took another year to pull together all the work I'd done, fill in the gaps, and write it up. The process, the analysis, the sample solution elements, and the book are still evolving (maybe they always will be) but they are stable enough for a first edition.

Here is what I found.

## A quick summary of the book

This book presents the System Improvement Process (SIP) and uses it to analyze the sustainability problem. The same tool used in *The Limits to Growth*, system dynamics modeling, is used. Because it only identified the problem, *The Limits to Growth* focused on the symptoms of the problem and their intermediate causes. This book takes the next step by focusing on finding the root causes. Four main root causes are presented, along with twelve sample solution elements. The flagship solution element, Common Property Rights, is the main solution element and thus the title of the book. But the real message of the book lies in its subtitle.

This book presents everything from the viewpoint of how the process is applied, so you can compare how SIP works to the process you're presently using. You can use all of SIP or just the part you need. SIP is flexible and easily changed, so after you've used SIP for awhile you will no doubt modify it to fit your particular needs.

Earlier we listed the benefits of process driven problem solving. Now we list the benefits in this book:

1. It presents a new promising approach to solving the sustainability problem.
2. It presents a detailed analysis using that approach.
3. It finds four main root causes, all of which are novel and promising.
4. It offers 12 sample solution elements that will give readers much to consider.
5. It explains why environmentalists have been unable to solve the problem.
6. It explains why the world's political systems are broken and thus are incapable of solving the problem.

## Examples of how to apply what's in the book

How exactly can you help solve the sustainability problem using this book? There are almost as many ways as there are petals on a daisy:

1. If you're working with an environmental organization, you're probably facing difficulties in mission achievement. (I feel your pain!) Examine SIP. Compare it to the process your organization is using. Are there elements of SIP that could be added to your process, such as root cause analysis, feedback loop modeling, systemic change resistance, or the concept of high versus low leverage points? Or should you think bigger and replace your process with SIP or another suitable process?
2. Suppose you're working on a solution similar to one of those in this book. Find the high leverage point your solution should be pushing on and the root cause that will resolved. Does this help to design your solution so it will be more effective?
3. Perhaps you've been working on a particular social problem with little success. Study of this book should explain why. Usually it's because attempted solutions are not resolving root causes.
4. You may have been working on developing a solution and then lobbying to get it adopted. But politicians are not receptive. The opposition keeps winning. Your fine ideas languish, wither on the vine, and die. You're burnt out and ready to give up. Study this book. It offers the alternative of working on the change resistance side of the problem. WHY are politicians so unreceptive? What's the root cause of that in your case? Where's the highest leverage point for resolving that root cause? Is there a way you can redirect your energies to create a novel solution that pushes on that high leverage point? Solving the change resistance subproblem won't be easy. Once change resistance falls to a low level, the system will "want" to be sustainable. Then you can get back to what you were doing before. Only now the system and its politicians will welcome your solution.
5. As you read this book you will find problems. (There are plenty!) Find one you can fix. Zero in on it as if the fate of the world depended on you. Work out a fix and let us know so we can improve the process, the tools the process uses, the sample solutions, the book, etc.
6. You may be a member of that fabled species, *Homo experimentis*. Numerous assumptions and conclusions in this book are untested. They are conjecture. Find one that's important and needs confirmation. Experiment like mad on it until you come to a strong conclusion. Then contribute that finding to the book and its contents, or environmentalism in general. That sort of contribu-

tion can make a HUGE difference. Science moves forward in a big way only when theory is founded on proof.

7. Suppose you like what you find in this book but are mortified that you've been practicing the process of Classic Activism (There's a whole chapter on it) without knowing it. So are all your fellow activists. Quietly work to convert them to a process that's much more likely to work. I've tried. It won't be easy. But it's got to be done or public interest activism will remain stuck where science was before it adopted the Scientific Method.
8. Likewise, suppose you're in the academic community, have been working away on the sustainability problem, and are flabbergasted to find out you've been practicing Superfluous Researchism or Black Box Comparative Analysis. (There's a chapter on each of these.) Suddenly you realize why you and your field have been making such little progress on solving the sustainability problem. It's because these two processes, like Classic Activism, simply don't fit the problem. They can't deliver, no matter how long and how cleverly they are applied. It's a losing battle. Figure out how to spread that message to your peers. It won't be easy. They will shoot the messenger and all sorts of things. But that didn't stop Galileo, who was almost burnt at the stake. It didn't stop Darwin, whose theory of evolution was attacked from the start. It shouldn't stop you.
9. It could be you're an experienced author. Why not write a few articles or a book of your own to improve and spread these ideas? Goodness knows they need to see the light of day. If the right people read your work they will examine the new paradigm and hold it up to the lens of truth. If it passes, you have helped solve the sustainability problem.

Note what's missing in this list. There's nothing on how you can save energy, buy green, or plant a tree. That's **feel good environmentalism**. (It's also step 3 of Classic Activism.) It feels good to preach and do. It's doing something rather than nothing. But it's a drop in the bucket because it only changes the behavior of a few people in a small way. We don't need more tiny incremental changes. If we want to solve the problem we must initiate massive changes all across society. We don't need to feed the elephant more peanuts. We need a game changer! We must therefore change the system because this is a systemic problem.

## Systemic problems

There is a class of problems that behave so differently from those we normally encounter that when we do encounter them, *we fall into a hidden trap*.<sup>6</sup> We assume our normal problem solving processes, the ones that have worked so well all our lives, will work here too. It's an assumption made so fast and subconsciously it's never noticed. It's a false assumption because during our everyday lives we never change the system (with very rare exceptions). Thus none of our habitual processes can work on the class of problems known as systemic problems. For that class we need an entirely different process.

**Systemic** means arising from the structure of a system. For social problems, **systemic** means originating from the structure of the system in such a manner as to affect the behavior of most or all social agents of certain types, as opposed to originating from individual agents. A **systemic problem** is thus caused by the structure of the system. Therefore the only way to solve a systemic problem is to change the fundamental structure of the system. Systemic social problems are also known as **complex adaptive system problems**. The sheer overwhelming complexity of the system, unanticipated adaptive responses by social agents, and counterintuitive system behavior prevent easy analysis and solution.

Years ago the Wikipedia entry on sustainability was short. (It's since tripled in size.) It began with this paragraph. Note the fourth word:

**Sustainability** is a systemic concept, relating to the continuity of economic, social, institutional and environmental aspects of human society, as well as the non-human environment. It is intended to be a means of configuring civilization and human activity so that society, its members and its economies are able to meet their needs and express their greatest potential in the present, while preserving biodiversity and natural ecosystems, and planning and acting for the ability to maintain these ideals in a very long term. Sustainability affects every level of organization, from the local neighborhood to the entire planet.

Systemic thinking is a rare but learnable skill. Since most people can't think systemically they can't handle defining sustainability as a "systemic concept." That's why the above entry, after thousands of edits by "helpful" contributors, got watered down to this first paragraph, copied on June 25, 2011:

**Sustainability** is sometimes known as the capacity to endure. In ecology, the word describes how biological systems remain diverse and productive over time. Long-lived and healthy wetlands and forests are examples of sustainable biological systems. For humans, sustainability is the potential for long-term maintenance of well being, which has environmental, economic, and social dimensions.

The first definition arose from the viewpoint of systems thinking. It's not a popular definition. But it is a deeper more useful and correct definition.

The second definition reflects popular thinking. It's therefore superficial. The "capacity to endure" is terribly ambiguous. If a system has the capacity to endure but it's not used, is the system sustainable? If population collapses due to overshoot, the human system and the biosphere both still exist. They have endured. Is that sustainable? And so on. The second, third, and fourth sentences try to clear up this confusion but fail. "Sustainability is the potential for..." Well, the potential is there today. We *could* be sustainable if we wanted to but we're not. Since sustainability is defined as "the potential," then according to the definition the world is already sustainable.

A shallow incorrect definition might seem an obstacle to using the definition as a starting point for understanding and solving the problem, but this popular definition of sustainability (like so many others)<sup>7</sup> is not designed for that. It is feel good environmentalism designed to please as many people as possible and make them think they understand what sustainability means. That it does. But it does not encourage the correct thinking needed for solution.

In systems engineering the **goal state** of a system is the preferred state, as opposed to the undesired **present state**. A problem is defined as the difference between the present and goal state, plus constraints. When a system moves from its present state to the goal state a problem is considered solved.

The second definition contains no description of the goal state, so there's no way to determine what "the capacity to endure" really means. It tries with "long-term maintenance of well being," but "well being" is too vague to be useful. What if "well being" conflicts with environmental sustainability? It doesn't say.

By contrast, the first definition clearly describes the goal state. It's where "society, its members and its economies are able to..."

The current paradigm of environmentalism and its present process for solving the sustainability problem are reflected in the second definition. The definition, like the process, is weak and ineffective because both are a mish mash of a little of everything that's popular, using everyday thinking.

Where environmentalism needs to be is reflected in the first definition. It starts by elevating one's thinking to seeing that "sustainability is a systemic concept." It doesn't stumble around from there. Instead it classifies the system (human society and the non-human environment) into four subsystems: economic, social, institutional, and environmental. Then it continues thinking systemically by talking about configuring the system so that it can be sustainable. The goal state is clearly described. The definition is loaded with rich and correct content. It sets up the reader for understanding how to go about solving the problem by changing the system.

Systemic is the level of thinking on which activists need to operate. Systemic thinking, better known as systems thinking, is not an easy level to reach. But once you arrive there's no turning back because it's so productive.

Since the central problem of environmentalism is a complex system problem, the field must move to a process for thinking systemically, as well as systematically.

That's what the System Improvement Process (SIP) provides. This book is all about SIP: what it is, how to apply it, and what's been discovered so far by applying it. It's a book where you can drink deeply and quench your thirst for a better way forward.

## How this book is organized

The book begins assisting you with your own transformational journey by starting gently. The flagship solution element, *Common Property Rights*, is presented in Part 1. This is one long example of the result of process driven problem solving and thinking systemically. When starting out people learn best by example, not theory, so there's only a little process theory. Part 1 presents a practical, comprehensive, radically efficient solution element that's totally different from anything being proposed today. Why? Because it's designed to resolve a root cause that's so subtle it has remained undetected by the present paradigm.

Part 2 shifts gears into the central argument of the book, that *The Process Must Fit the Problem*. Environmentalism is failing to solve the sustainability problem because it's suffering from an acute case of process immaturity.

Part 2 is not demanding material technically. But it's quite demanding intellectually because it requires a large change in the way you think. The goal of Part 2 is to move your headspace into naturally thinking in terms of process driven problem solving. Dramatic examples of process failure and success are woven into a story of The Six Deadly Sins of the Wrong Process, how the System Improvement Process can correct that, and how the three main groups of problem solvers are each using a process that doesn't fit the problem. The story ends with a look at process maturity, defect reduction, and key principles.

Part 3, *Analysis and Solution Convergence*, is the meat of the book. How SIP was applied to the sustainability problem is presented in elaborate detail. It's all there so you can drink as deeply as you want.

The book ends with a pleasant surprise. For complete sustainability all three pillars of sustainability must be strong. The three pillars are environmental, economic, and social. The root cause analysis has gone so deep it appears that resolving the root causes of the environmental pillar also resolves the root causes of the economic and social pillars. Solving the *complete* sustainability problem is the ultimate dream of many and perhaps the ultimate draught.

Best wishes and good luck on your journey. Systemic thinking and the right process can go a long way.