



*“No scene from prehistory is quite so vivid as that of the mortal struggles of great beasts in the tar pits. In the mind’s eye one sees dinosaurs, mammoths, and saber toothed tigers struggling against the grip of the tar. The fiercer the struggle, the more entangling the tar, and no beast is so strong or so skillful but that he ultimately sinks.*

*“Human system engineering has over the past few decades been such a tar pit, and many great and powerful teams of problem solvers have thrashed violently in it. Most have emerged with plausible solutions—few have actually worked. Large and small, massive and wiry, team after team has become entangled in the tar. No one thing seems to cause the difficulty—any particular paw can be pulled away. But the accumulation of simultaneous and interacting factors brings slower and slower motion. Everyone seems to have been surprised by the stickiness of the problem, and it is hard to discern the nature of it. But we must try to understand it if we are to solve it.”*

The above is from *The Mythical Man Month*, by Fred Brooks, 1975, pages 2 and 4. The mural of the La Brea tar pits is by C. R. Knight. The quoted text is the opening to the first chapter. The first two sentences in the second paragraph contain three small changes, so that the pitfalls of software engineering become the pitfalls of human system engineering.

Here are the original first two sentences of the second paragraph, with what was changed in bold. Notice how close the analogy was even before the changes:

**“Large-system programming** has over the past few decades been such a tar pit, and many great and powerful teams of problem solvers have thrashed violently in it. Most have emerged with **running systems**—few have **met goals, schedules, and budgets.**”

Fred Brooks was the manager of the largest software engineering project of all time: the IBM 360 operating system, which ultimately consumed over 5,000 person years. It was IBM’s greatest single success, allowing it to dominate the computer industry for decades. Incidentally, Brooks’ advice on how to avoid the tar pits was so insightful that *The Mythical Man Month* went on to become the best selling software engineering book of all time.

# Introduction to the New Paradigm

THE GOAL OF THE MODERN ENVIRONMENTAL MOVEMENT is to change the course of civilization to one that is environmentally sustainable. In the early stages of the movement, the 1960s, 70s, and some of the 80s, this goal looked attainable, as problem after problem was solved. Clean air and water acts were passed in nation after nation. Pollution was fought as if it was a demon. Governments became so committed to environmentalism that most industrialized nations created an environmental agency, charged with the task of preserving and protecting the nation's environment forever. An international agency to encourage environmental stewardship at the global level, the United Nations Environmental Programme, was created as a result of the Stockholm Conference of 1972.

In the beginning these efforts worked. Law after law was passed at the national level to solve problem after problem. At the international level, treaty after treaty brought nations together to preserve and protect the biosphere as a unified whole. The air, the rivers, the oceans, even the land became cleaner. Dramatic success was the norm. Visions of victory danced through the heads of those who sought to make it all happen.

But starting in the 1980s something changed, and that vision was soon shattered. Environmentalists are now waking up to the sober realization that they were not solving the total problem—what the Club of Rome calls *the complete problematique*. Instead, they were only solving the easy problems first, by picking the low hanging fruit. The hard problems, such as climate change, topsoil loss, natural resource depletion, deforestation, and abnormally high rates of species extinction, remain as unsolved as ever.

Then in 2001, when the George W. Bush administration ascended to power in the United States, things grew even worse. The sole remaining economic and military superpower was now fiercely opposed to solving environmental problems of all types. It began moving aggressively to undermine and even reverse much of the progress that had been made, sending many in the environmental movement into an apoplexy of helpless doom and gloom.

What went wrong? How can the environmental movement find its way again? How can it become capable of overcoming the wall of change resistance that has appeared to solving the sustainability problem, and break the deadlock?

## The Five Invisible Traps

Like the mighty beasts that could not escape the tar pits once the first paw went in, the environmental movement is stuck. It cannot pull itself free from its present strongly held paradigm, the one it is using to solve the sustainability problem. The reason this has occurred is environmentalists have fallen into not one but five invisible traps.

**Trap 1** – The first trap is the unconscious assumption that the normal processes (and the many tools that go with them) we use to solve everyday problems, either at home or at work, will also work on this problem. But because the global environmental sustainability problem is actually what's known as a *complex social system problem*, this assumption leads to attempting to solve the problem with the wrong process, which fails. Simple processes will not solve complex problems.

**Trap 2** – The second trap is that because of the wrong process, there is little realization that the change resistance or *social side* of the problem is the crux. Instead, problem solvers are pounding away furiously at the *technical side*. In others words, they are solving the wrong problem.

**Trap 3** – This leads to the third trap. As a result of the blind spot of not seeing that the social side of the problem is the crux, there has been no deep analysis of why there is such stiff, prolonged resistance to adopting a solution. Lack of such an analysis has led to failure to uncover the existence of the fundamental social structure that lies at the heart of the social side of the problem. This invisible structure has a name: The Dueling Loops of the Political Powerplace. And it has an exploiter: the New Dominant Life Form, more commonly known as the modern corporation and its allies. This structure appears to be *the* reason for such strong change resistance.

**Trap 4** – The fourth trap is that if you can't see structures like this, then you can't see where to "push" on the system to solve the problem. Instead, you must make educated guesses, which causes the most intuitively attractive system points to be pushed. But this is a trap, because those ever-so-attractive points are low leverage points. Environmentalists simply do not have the force (numbers, money, and influence) to make pushing on low leverage points work. They must find the system's high leverage points and push there instead.

## 8 Analytical Activism

**Trap 5** – Finally, pulling the beast even deeper into the tar pit is the fifth and biggest trap of them all. The same characteristics of problems that make them attract attention first also make them easier to solve, like local pollution. This creates the seductive illusion that the right process is being used, because the process works at first. Then when it begins to fail on the more difficult problems, such as climate change, it is not at all obvious what went wrong. The natural reaction is to try the same thing all the harder, which is the same way the dinosaurs, mammoths, and saber toothed tigers reacted. For them, and for even the mightiest of environmentalists, the end result is always the same. The fiercer the struggle, the more entangling the tar, and no beast is so strong or so skillful but that he ultimately sinks.

There is, however, a better way.

That better way is human system engineering, using the process of Analytical Activism. Understanding what Analytical Activism is and why it's a better way begins with this line of reasoning:

As overwhelming and insolvable as the global environmental sustainability problem may appear, it is certainly no more difficult than the problems that physicists, chemists, and other scientists have been tackling *and solving* for centuries. So why not take the same approach that has worked so well for science?

### The Starting Premise

*We start with the premise that it is possible to take an analytical approach to the global environmental sustainability problem and solve it, if it is still solvable.*

**Analytical** means the use of analysis to accomplish something. We do this constantly. We analyze the day before us, and make a plan to achieve our various objectives. We receive a request from a friend or a colleague to do something, and we analyze how to best accomplish it.

But the analysis must fit the problem to be solved. If it's an easy problem, then our everyday approach will work. On the other hand, if it's a difficult problem then our normal approach will probably fail. This is the perfect setup for the fifth trap, which is the stickiest of them all. This is the:

### Solving the Easy Problems First Trap

*Without realizing it, the environmental movement has fallen into an invisible trap. The trap occurs because the same characteristics of problems that make them attract attention first also make them easier to solve.*

For example, river pollution is a local problem with immediate consequences. The problem attracts attention because river pollution can lead fairly quickly to illness

due to drinking contaminated water. The problem is usually relatively easy to solve, because it is so local the guilty parties are easily identified and there is jurisdiction to force them to comply with regulations to not pollute. Another feature making this an easy problem is the consequences are so immediate that cause and effect is easily proven, causing a strong reaction to solve the problem now.

At the other end of the spectrum lie the problems that are global and long term. For example, greenhouse gas emissions are a global problem with long term consequences. This problem did not attract much attention at first because the consequences were so distant. But when it finally did attract attention, it was much more difficult to solve because the offending parties were so diffuse and there was often no jurisdiction to make them comply with preferred solutions. In addition, how much of the problem was caused by human interference was hard to determine. This made it much more difficult to persuade decision makers to take action.

Because the easy problems attracted attention first, successes on easy problems started piling up, causing problem solvers to be lulled into a false sense of "I'm using the right process." This quickly led to psychological dependence on traditional problem solving approaches for everything, because they seemed to be working just fine, as they always had. This dependence created a huge blind spot, because problems solvers became so biased toward what was working well that they subconsciously assumed that other approaches didn't even exist.

This explains why, as the difficult problems began to demand attention and solutions started to fail, it was not at all obvious what was really happening. *This caused the natural reaction of trying to improve the wrong process, or trying to improve the wrong solution, instead of changing to the right process.* The result was inability to solve the difficult problems, as well as a growing sense of frustration, desperation, anger, and finally despair.

Thus it was because of The Easy Problems First Trap that the easy problems of the 1960s, 70s, and some of 80s yielded quickly to traditional problem solving methods. But the more difficult ones that came later did not.

The reason they did not is difficult problems are fundamentally different from easy problems. They belong to a class of problems known as *complex social system problems*. These problems, because they are so hideously complex, are difficult to analyze. They also behave counterintuitively, meaning what looks true probably isn't. Thus what looks like a surefire solution

is usually not, and when that solution fails, what to try next is anybody's guess.

Fortunately there is a tried and true approach to solving difficult problems that works. It has the finest pedigree possible, because it is based on the only known method that does work—reliably. It is the approach that the environmental movement must embrace with a passion bordering on obsession, if it is to have any rational hope of solving the difficult problems it now faces. This approach is:

## The Analytical Method

This is easily derived from the Scientific Method, which consists of these steps:

1. Observe a phenomenon that has no good explanation.
2. Formulate a hypothesis.
3. Design an experiment(s) to test the hypothesis.
4. Perform the experiment(s).
5. Accept, reject, or modify the hypothesis.

These five simple steps have worked spectacularly well for another group of problem solvers, scientists, for over three centuries now. With only a slight refinement they can serve just as well for the modern environmental movement. These steps have proven to be so foolproof and productive, if followed correctly, that we should tamper with them as little as possible.

Environmentalists do not run around in white coats observing subtle phenomenon and formulating esoteric hypotheses. They solve real, pressing problems. Thus they need a slightly different process, one that would look about like this:

1. Identify the problem to solve.
2. Hypothesize an analysis or solution element.
3. Design an experiment(s) to test the hypothesis.
4. Perform the experiment(s).
5. Accept, reject, or modify the hypothesis.
6. Repeat steps 2, 3, 4, and 5 until the hypothesis is accepted.
7. Implement the solution.

However, this has too much magic in it. How is the hypothesis created? It offers no clue, making this version too dependant on intuition or trial and error for making the right leap from choice of problem to hypothesis. Better would be to find a good hypothesis most of the time on the first try, instead of cycling through the

steps over and over until guesswork finally stumbles on the right one.

What we need is a repeatable, efficient process for finding productive hypotheses. Adding two steps, we arrive at the nine steps of the Analytical Method listed below:

### The Analytical Method

1. Identify the problem to solve.
2. Choose an appropriate process.
3. Use the process to hypothesize analysis or solution elements.
4. Design an experiment(s) to test the hypothesis.
5. Perform the experiment(s).
6. Accept, reject, or modify the hypothesis.
7. Repeat steps 3, 4, 5, and 6 until the hypothesis is accepted.
8. Implement the solution.
9. Continuously improve the process as opportunities arise.

Executing the process leads to building a *knowledge pyramid* (see page 272) tall and sound enough to solve the problem. Each building block in the pyramid is a productive hypothesis. The process provides the driving questions/goals leading to generation of a steady stream of high quality hypotheses. A **high quality hypothesis** is one with a high probability of being true and highly useful in building the pyramid. The solution may be implemented gradually as you go or all at once. The former is preferred for earlier evolutionary feedback.

A **process** is a repeatable series of steps to achieve a goal. For example, doctors have a standard procedure for diagnosing many types of illnesses, starting with the symptoms. Other examples of processes are a constitution, Robert's Rules of Order, the method of long division, and the Scientific Method. All are much better and more predictable ways of achieving a goal than no process or the wrong process.

Notice what has happened here. The Analytical Method says don't identify a problem and then rush in and solve it. It says that after you have picked a problem to solve, the next step is to pick a process that matches the problem. As a fly fisherman would say, you "match the hatch."

Is this what environmental organizations are doing today? Of course not. You can walk in the door of almost all of them, and if you ask "What process are you using to achieve your mission?" you are likely to get the

most quizzical, mortified look imaginable. Or they may ask “What do you mean?”

Some will say they are following a process. It probably does not have a name. Instead, they will say “We are following standard business practices. We set objectives, organize projects, make budgets, and do whatever it takes. We use CPM and PERT and spreadsheets when we have to. And....”

However, when you interrupt and ask “Is it written down? Is everyone trained in the process and following it? Is the process being continuously improved? Is the process engineered to optimize the organization’s current needs?” you are going to get that quizzical look, if not shown the door. This is because they really don’t have a true process, but they think they do. This is very common, both in non-profit and for-profit businesses.

But if they had a real process, such as the Analytical Method, they would be saying yes to all of these questions. And they would be achieving their objectives, probably so well they could then set even higher ones. That is the potential of the Analytical Method when followed properly.

This brings us to the definition of the title of this book: **Analytical Activism** is the use of the Analytical Method to achieve activist goals.

## The Two Problems

This book is one long application of the Analytical Method, for the sole purpose of helping the environmental movement, as well as other equally worthy movements, find its way again. To do this the book applies the method to two problems: (1) How to transform the environmental movement to Analytical Activism, which is the *transformation problem*, and (2) How to solve the global environmental sustainability problem, which is the *main problem*.

**Part one** illustrates how the Analytical Method is fully capable of solving the main problem if applied correctly. But that will never happen unless the transformation problem is solved, which I believe is the greater challenge. **Part two** deals with the details of solving the transformation problem. Building on that, **part three** provides the practical examples needed to get started on solving the main problem. Thus this book

is less a story about the sustainability problem, and more about the new way of thinking required to solve it, and how we environmentalists as a unified whole can quickly and successfully change to this new way of thinking.

This book presents many tools and abstractions for solving the two problems. One of the most productive is:

## The Importance of Being Able to See Social Structure

Imagine a powerful, pervasive force that affects everything you do, and everything everyone else does too. It cannot be easily detected with the five senses, so it is for all practical purposes invisible. But yet its influence on the behavior of the

world we live in is so strong it cannot be ignored. It must be explained.

One such invisible force was gravity. In 1687 Sir Isaac Newton published the *Principia Mathematica*, with its three laws of motion and the law of universal gravitation. Suddenly all was light. While still invisible, gravity was now a known force that affects the behavior of our world in a predictable manner.

Newton worked in the realm of the physical sciences. Environmental activists work primarily in a different realm: the social sciences. The social world is populated not with bodies in motion or at rest, but with people. The social world is also affected by a large, pervasive force that, like gravity, is not easily detected. But detect it and explain how it works we must, or it

### The Central Argument of the Book

The content of this book is so vast and complex that it may help to provide a crystal clear summary of the central argument. This is very simple:

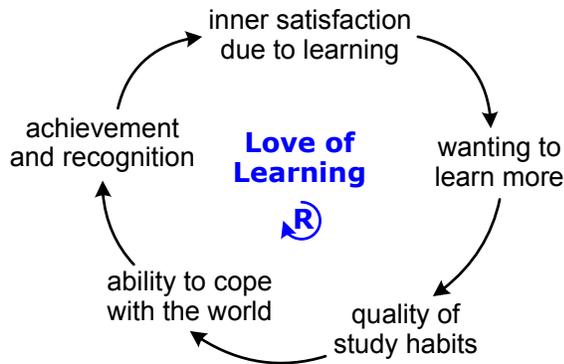
1. The environmental movement has failed to solve the sustainability problem because it is using the wrong process, which is **Classic Activism**.
2. There is a better way. Due to the nature of the problem, an analytical approach is required to solve it. A suitable approach is **Analytical Activism**, though any similar process would work.
3. Thus there are two problems to be solved: (1) How to transform the environmental movement to Analytical Activism, which is the **transformation problem**, and (2) How to solve the global environmental sustainability problem, which is the **main problem**.
4. **The transformation problem must be solved first.**

1% of this book makes the central argument. The other 99% provides dozens of examples of how to apply the new tools and presents the new conclusions environmentalists might come to. The key tool is a process that fits the problem.

The many examples and copious amounts of detail are necessary to paint a convincing vision of how activists, if they switch to the same tools that have worked so successfully for others for centuries, can find their way again.

will continue to thwart our attempts to develop reliable knowledge about how the world of people works.

The powerful, invisible, pervasive forces that dominate the behavior of the social world are the result of social structures. A **social structure** consists of the feedback loops that arise from the nodes and relationships present in the human decision making portion of a system. Feedback loops are what give a social structure its characteristic behavior. An example of a feedback loop is shown below:



This social structure consists of a single reinforcing loop, called **Love of Learning**. It may be the single most important loop in the educational system. As each node increases, it causes the next node to also increase. In this manner the loop goes round and round, increasing in strength with each cycle, as you go through a lifetime of education. If the loop is well established in your home, community, school, and employer, then your love of learning will grow and grow to as high as you care to soar.

Next, let's demonstrate the importance of being able to see social structure.

Imagine two groups of educators sitting around trying to come up with a plan to improve an educational system. One has the above social structure to work with and has been trained on how to use it and find additional loops. The other group has no such structure or training. If all else is equal, which group will come up with the most effective plan? Now here's the real question: Which group is more likely to come up with a breakthrough?

Once the structure of a particular social world is known, all is light. You can now see why that world behaves the way it does, and how, if you make a structural change here and there, that world is likely to respond. *This is because the many relationships between cause and effect are now predictable, including the behavior of the system as an emergent whole.*

Computer simulation models of social structures are the central product of the field of system dynamics. The application of the principles of system dynamics allows

problem solvers to walk up to a complex social system problem, find and analyze its dynamic structure, develop a solution, and implement that solution—all with a speed, efficiency, and high quality that was impossible before.

The “Dueling Loops” simulation model presented Part One is a social structure. It explains why such strong resistance to adopting a solution to the sustainability problem is present. Once this structure was built the rest was easy. The low and high leverage points became blindingly obvious. The sample solution almost built itself by logically growing from the high leverage points and the thorough understanding of the system the model allowed. Such rapid, efficient progress from problem identification to a high quality solution hypothesis would have been impossible without the ability to see the structure of the problem.

You will know you can see social structures when your thinking or modeling begins to hinge on how memetic infection drives a social system's key feedback loops. A **meme** is a mental belief or behavior that was learned from others. Memes evolve just like genes do. Because all learned behavior is memetic, and solving the main problem and the transformation problem both require gigantic amounts of new learned behavior, modeling the memetic infection involved takes us right to the heart of these problems.

*It follows that the transformation problem boils down to one critical change: How can we transform the environmental movement so that it can now see these invisible social structures, which are as real as gravity, and so finally see social problems clearly for the first time?*

Once you've read most of this book, your view of the sustainability problem and how to solve it may change radically. If so, this is good news, because it means you have grasped:

## The New Paradigm

The central strategy of this book is to paint a new paradigm. *If the environmental movement comes to accept this new viewpoint of their world, environmentalists will be able to solve the global environmental sustainability problem, because their efforts will be more productive by an order of magnitude.* This holds for all types of environmentalists: grassroots activists, scholars, corporate managers, politicians, and many more.

The new paradigm consists of five sequential insights. Each builds on those before it and becomes successively more valuable. This crescendo leads up to the fifth and final insight, which is the knockout punch that actually solves the problem. The new paradigm is:

1. *The process must fit the problem.*

## 12 Analytical Activism

2. *The social side of the problem is the crux.*
3. *The phenomenon of strong, prolonged, successful solution adoption resistance clearly exists. Therefore there must be an invisible social structure that is the fundamental cause of that phenomenon.*
4. *A satisfying hypothesis for this structure is The Dueling Loops of the Political Powerplace and its current exploitation by the New Dominant Life Form.*
5. *There is a high leverage point in this structure that has never been tried.*

These are large and unconventional abstractions. They are not easy to comprehend. But once they click your world will change, because now it will be obvious what must be done to solve the problem at the strategic level.

Let's examine the new paradigm one insight at a time:

**1. The process must fit the problem** – This is because low **process efficiency** (defined as the ratio of input to desired output) is the main reason the modern environmental movement is unable to solve the global environmental sustainability problem. This has occurred because the movement has settled into the comfortable illusion that its current process, Classic Activism (described in detail starting on page 34), is just as capable of solving difficult problems as easy ones. It follows that the movement must switch to a process with high process efficiency if it is to achieve its mission. Seen from this viewpoint, the sustainability problem is really a process efficiency problem.

*That the process must fit the problem is 90% of the new paradigm.* The right process would quickly show:

**2. The social side of the problem is the crux** – The transformation of society to environmental sustainability requires three steps: The first is the profound realization we must make the change, because if we don't our descendants are doomed. The second is finding the proper practices that will allow living sustainably. The third step is adopting those practices.

Society has faltered on the third step. By now the world is aware it must live sustainably, which is the first step. There are countless practical, proven ways to do this, which is the **technical side** of the problem and the second step. But for strange and mysterious reasons society doesn't want to take the final step and

adopt these practices, which is the change resistance or **social side** of the problem. *Therefore the social side of the problem is the crux.*

Acknowledging this leads to the conclusion that:

**3. The phenomenon of strong, prolonged, successful solution adoption resistance exists. Therefore there must be an invisible social structure that is the fundamental cause of that phenomenon.** – There is no doubt this phenomenon exists, as shown by the way the ecological footprint curve shown below has continued marching upward, ever since the modern environmental movement began in the 1960s. *The efforts of the movement have had only a negligible effect on this curve.*<sup>1</sup> The footprint went into overshoot about 1985 and is currently at around 125% of carrying capacity. The Living Planet Index shows the concurrent deterioration in the health of the world's ecosystems.

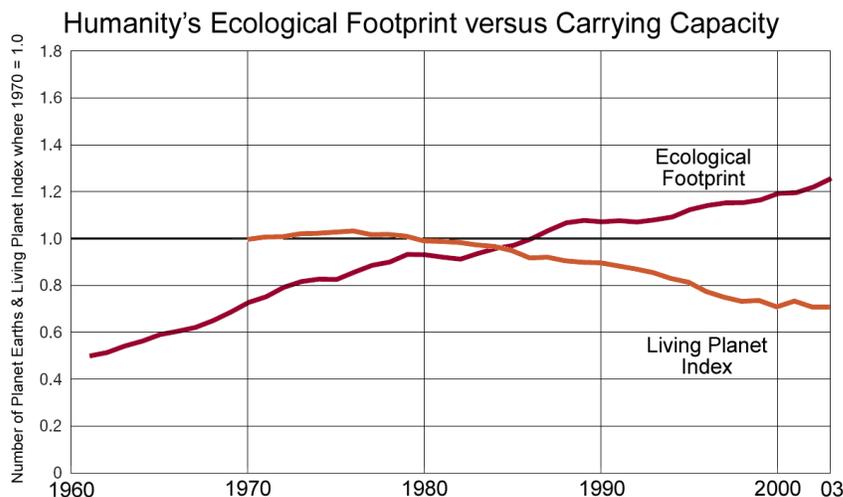
Something must be causing this phenomenon. Because it is clearly based on human behavior, and because human behavior in the large is caused by social structures, the fundamental cause of this phenomenon must be a particular social structure. There can be no other root cause.

Applying a process that fits the problem and seeks to find this invisible structure leads to the following unconventional but profound conclusion:

**4. A satisfying hypothesis for this structure is The Dueling Loops of the Political Powerplace and its current exploitation by the New Dominant Life Form.** – Now the chain of insights is leading somewhere. We have arrived at the fundamental cause of failure to solve the problem. Like the good physician who never gives up, we have diagnosed the cause of the patient's illness at last.

**4. A satisfying hypothesis for this structure is The Dueling Loops of the Political Powerplace and its current exploitation by the New Dominant Life Form.** – Now the chain of insights is leading somewhere. We have arrived at the fundamental cause of failure to solve the problem. Like the good physician who never gives up, we have diagnosed the cause of the patient's illness at last.

This structure consists of a race to the bottom among corrupt politicians battling against a race to the



top among virtuous politicians. Because the race to the bottom has an inherent structural advantage over the race to the top, it is the dominant loop most of the time, as it is today. Furthermore, the race to the bottom is currently being exploited by the New Dominant Life Form, which is the modern corporation and its allies.

The goal of most corporations is to maximize the net present value of profits. The goal of most individuals, once they have gotten past the survival and security stage, is to maximize quality of life for themselves and their descendents. *These goals are mutually exclusive, which explains the very strong, prolonged resistance to solving the global environmental sustainability problem.*

Because we have captured the fundamental structure of the problem in a simulation model, inspection of the model causes the solution to the problem to suddenly become blindingly obvious. This leads to the very good news that:

**5. There is a high leverage point in this structure that has never been tried.** – Because Classic Activism leads to pushing on low leverage points, it should be no surprise there are a number of higher leverage points that have not been tried. The one with the most potential to solve the social side of the problem in a single stroke is *general ability to detect political deception*.

This ability is currently low. If environmentalists can unite and raise it to a high level the race to the bottom will collapse, leaving the race to the top dominant. Politicians will then respond correctly to the truth about the global environmental sustainability problem because it will now be in their best interests. If they come to the same conclusion that environmentalists have, that sustainability is civilization's top priority and nothing else comes close, then civilization will at long last enter the Age of Transition to Sustainability.

The five insights point the way to the new paradigm. If most environmentalists come to accept this radically different way of approaching the sustainability problem, then the environmental movement can find its way again. There will be nothing stopping the entire field of environmentalism from shifting into a whole new way of thinking and working that will soon crack the problem of how to move civilization into the Age of Transition to Sustainability.

But this is a bold and radical step. It is every bit as revolutionary as the way the field of biology completely reoriented itself around Darwin's theory of evolution, or the way all of science threw off the chains of thousands of years of listening to the voice of intuition and tradition, and turned en masse to the new paradigm of the Scientific Method. It will not be easy, because it's never been done.

But there is no other way.

## The Lesser Key Concepts

There are some additional lesser key concepts. These play supporting roles in developing the new paradigm to its full potential. They are:

**A. Sustainability is the ability to continue a defined ability indefinitely.** For more on this and why the standard Brundtland definition of sustainability is faulty please see page 131.

**B. All large social transformations are process revolutions.** – Examples are the invention of agriculture 10,000 years ago, the invention of logic by Aristotle in 500 BC, the invention of the Scientific Method in the 17<sup>th</sup> century, and the invention of modern democracy in the 18<sup>th</sup> century, starting with France and the United States. In each case, the invention of a radically better process caused a large social transformation, so large that we are still feeling the impacts of all of them today.

Transition to sustainability will be humanity's next large social transformation, either before or after the fact that it must be done. This transition is so crucial and will take so long it can be called The Age of Transition to Sustainability. Given the principle that all large social transformations are process revolutions, it follows that to begin this transformation a radically better process must be invented.

Process revolutions all use the same basic structure. This is explored in The Basic Structure of Process Revolutions simulation model on page 174.

**C. The right precipitating event will lead to the right transformation.** – History has shown this to be true many times, such as Thomas Paine's 47 page pamphlet on *Common Sense*, the Age of Reason, and the way the Powell Memo precipitated the rise of the conservative movement in the US in the late 20<sup>th</sup> century. A careful analysis of the patterns involved can give us the insights needed to engineer the right precipitating event for the transformation of global society to the Age of Transition to Sustainability.

**D. The more difficult a complex social system problem is, the more important it is to push on high leverage points.** – Easy complex social system problems can be solved a vast variety of ways. But difficult problems can only be solved a small number of ways. Finding them requires capture of the social structure of the system, and then a careful study of its leverage points, with the goal of finding the most stable and predictable high leverage points. Only then can a difficult problem be solved reliably.

## 14 Analytical Activism

**E. If problem solvers cannot see a social system's structure then they are blind.** – If you have not captured the system's structure, then you cannot see its predictable cause and effect relationships. If you cannot reliably predict how a system will respond to solution alternatives, then you cannot rationally design a solution that will solve the problem, and so must rely on the same guesswork and groping around that a blind person uses to navigate a new and unknown space.

**F. The only known method for producing new reliable knowledge is the Scientific Method.** – Solutions to difficult problems require many pieces of cause and effect knowledge to be created as the problem solving process being used proceeds. Each piece must have rock solid reliability, or it cannot be used to build a greater whole. Thus if the problem solving process being used is not derived from the Scientific Method, then it cannot solve difficult problems.

\* \* \*

Environmentalism is stuck in the tar pit of Classic Activism. Because the process does not fit the problem, every move, every struggle to solve the problem only pulls the beast in deeper to the wrong approach.

There is, however, a better way. In fact it is so much better that once scientists adopted a process that fit their problem, back in the 17<sup>th</sup> century, their productivity increased a hundredfold.

What will happen when environmentalists finally do the same, 400 years later in the 21<sup>st</sup> century?